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(BEAM)**



**POLITEKNIK MUKAH SARAWAK**

# BORNEO ENGINEERING & ADVANCED MULTIDISCIPLINARY INTERNATIONAL JOURNAL (BEAM)

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## **PREFACE**

**Borneo Engineering & Advanced Multidisciplinary International Journal (BEAM)** is a peer-reviewed journal that publishes original theoretical and applied papers on all aspects of Engineering, Management, Business, Accounting, educations, IT and Linguistics to publish high-quality papers and references. The topics to be covered include, but are not limited to quantitative, qualitative, and hybrid research on new approaches to using technology to improve learning, design, and educational results. Articles on applied theory in educational practice, as well as practical applications of research, current policy initiatives and research evaluations, theoretical, pedagogical, and methodological challenges relating to educational technology, are all welcome. This journal is open access journal that provides an online publication (published twice a year). I would also like to congratulate and thanks all individuals exclusively to technical and editorial boards for their interest and strong support to this publication.

Best wishes,

Dr. Habsah binti Haji Mohamad Sabli

Chief Editor, **BEAM International Journal**

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# Post Covid-19 Outbreak, Perception and Employability Rate: The Case Study of Alumni of Politeknik METrO Betong Sarawak

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## Full Paper

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## Abstract

The Covid-19 outbreak has stunted the growth of economies all over the world and affected the job market as a whole. Therefore, this study was conducted to examine the influence of post covid-19 outbreak in the relationship between perception and the employability rate of alumni from Politeknik METrO Betong Sarawak (PMBS). A total of 70 questionnaires were evaluated. The results revealed that there is no significant linear correlation between perception and employability rate ( $p\text{-value}=.936$ ). Meanwhile, the results also revealed that there is significant linear correlation between post Covid-19 outbreak and employability rate ( $p\text{-value}=.049$ ). However, this study found that post Covid-19 outbreak moderates the relationship between perception and employability rate ( $6.6\%$  ( $R^2 = .066$ )). The results of the study are beneficial for both the higher learning institution and industry so as to align their educational programs with the changes in market needs.

**Keywords:** - Covid-19; perception; employability rate; job ready; technology-related skills; alumni; curriculum; career advancement

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## 1. Introduction

As an introduction of the study, this chapter discusses the background of the study, problem statement, research objectives as well as research questions. The theoretical framework, hypotheses, significance of study are also presented in this chapter.

### 1.1 Background of Study

With the recent launching of the COVID vaccination in Malaysia, it has giving people a ray of hope that this able to put an end to this global illness. However, many are still wondering how the economics and business recovery will look like. According to United Nation World Tourism Organization, travel and tourism is among the most affected factors and would put 100 to 120 million direct tourism jobs at risk. Travel restrictions were

imposed with many countries close its borders to tourist. As a result, international tourist arrival has also decreased tremendously, and these affected the revenue generated from the tourism industry (UNWTO, 2020).

However, Malaysia is generally projected to show a hike in gross domestic product (GDP) by 7.0% in 2021. It was further elaborated that the vaccine helps to ease the spreading of the virus, thus the recovery of economy will gradually take place (International Monetary Fund, 2021). Recently, Malaysian Association of Tour and Travel Agents has submitted 37 recommendations to the government to help revive the tourism industry affected by the COVID-19 pandemic due to the prolonged border closures and travel restrictions resulting in more than 5,000 travel agents being affected. This is essential in support of the industry to boost their business confidence (MATTA, 2021).



## 1.2 Problem Statement

At the time this paper was written, Malaysia has just begun its vaccination exercise, where the front liners are among the first group to be vaccinated. At the same time, Malaysia is under movement control orders (MCO) and stricter curfews were imposed. According to Baum and Nguyen (2020), hospitality and tourism will undoubtedly re-emerge from the effects of the pandemic over an extended timeframe and at varying speeds in different countries, however with limited personal mobilities, it is still uncertain and remain unknown as to when people will have their full access to tourism and hospitality activities. This was of the same issue when Ebola attacked the west Africa and was said to have had impacted the travel and tourism industry longer than previous epidemics (World Travel and Tourism Council, 2018). However, COVID-19 has claimed 2.5 million lives worldwide and 1130 death cases in Malaysia as of February 2021 (Ministry of Health Malaysia, 2021) and despite the quarantines and curfew as well as policies introduced by the government bodies, it shows no sign of declining. Covid-19 outbreak is deemed as career shock that has affected people across career and life stages globally (Akkermans et al., 2020). In research conducted in India, Ellikkal and Rajamohan (2020) explained that COVID-19 impacted both graduates and non-graduates and job losses among graduates are quite high. It is of a much higher magnitude than previous crises because of its global scale and the widespread shutdown of travel, businesses, and life activities (Higgins-Desbiolles, 2020).

As eloquently stated by Suleman (2020), it is worth noting that those graduated in 2020 is transitioning into unstable labour market caused by the pandemic. Therefore, the researcher suggested the policy makers should investigate the design of labour market policies and aid them with social assistance as the graduates definitely are struggling to be in an internship programmes or land themselves a job offer. However, prior to this global illness, Bahrim et al. (2019) found that unstable economic, lack of skills and demanding attitude were among the setback of the unemployment among graduates. Graduates are picky about the company or the company that offering them a job or an interview (Balakrishnan, 2017).

In 2018, 96.15% of alumni chosen to work after completed their Diploma in Tourism Management in PMBS and the remaining 3.85% opt to further their studies (PMBS Tracer Study, 2018). However, according to Malaysian Trades Union Congress (MTUC), over 30, 000 employees in hotel sector in Malaysia have lost their jobs while 10, 000 workers have been forced to take unpaid leave because of the Covid-19 pandemic (Bernama, 2020). The top 3 hardest hit industries in Malaysia in terms of permanent or temporary unemployment have been the tourism/travel industry (63%), hospitality/catering industry (62%) and food and beverage industry (50%) and this crisis has affected the quality of life in comparison with life prior to Covid-19.

Job scarcity is heightening as organization has slow down their recruitment activity and that bring greater competition among job seekers (Jobstreet, 2020).

Therefore, noting the scarcity of job opportunity during the crisis, there is a need, and it would be interesting for this current study to explore on these two elements, namely employability rate and perception of tourism alumni from PMBS towards post COVID-19 outbreak.

## 1.3 Research Objective

The following research objectives guided the present study:

1. To investigate the relationship between perception and employability rate.
2. To identify the relationship of post COVID-19 outbreak and employability rate.
3. To analyse the moderating effect of post COVID-19 outbreak on perception and employability rate.

## 1.4 Research Questions

The research questions of this study are as follows:

1. What is the relationship between perception and employability rate?
2. What is the relationship of post COVID-19 outbreak and employability rate?
3. To what extent does the post COVID-19 moderates the relationship between perception and employability rate?

## 1.5 Theoretical Framework

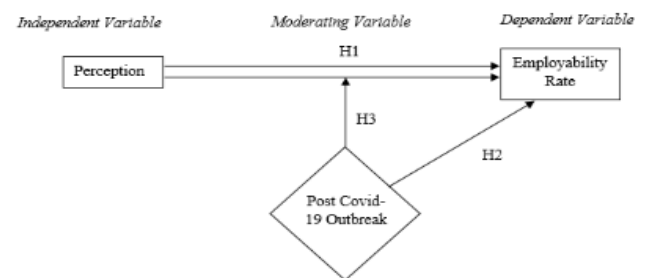


Fig. 1. Theoretical framework of present study

## 1.6 Hypotheses

- H1: There is a relationship between perception and employability rate.  
 H2: There is a relationship between post COVID-19 outbreak and employability rate.  
 H3: Post COVID-19 outbreak moderates the relationship between perception and employability rate.

## 1.7 Significance of Study

This study examined and verified the relationship between perception and employability rate, and the

moderating role of COVID-19 outbreak as a whole. Lack of competencies such as management, leadership, technical, strategic and operational skill were the results of training exposure and unrealistic expectations from industry in terms of preparedness to enter the real workplace environment. However, perceived crucial competencies are different across age group. Younger people value more on technical skills, whereas those with more years of experience put emphasis on soft skills, managerial and specific technical skills such as cultural awareness (Marinakou and Giousmpasoglou, 2020).

This is congruent with De Witt (2018), where learning and team experiences aid in preparation for industry careers. Besides, presentation and interaction skills are perceived as important set of skills that contribute to career readiness. Information gained may help the future of all graduates as skill mismatch between the skills supplied by college graduates and skills demanded by hiring industries is deemed as an important mechanism behind the career loss by graduating during global issue such as recession (Liu et al., 2016). Besides, this will give an insight to the industry practitioners to relook into their current mechanism in handling practical students so that both parties will be getting maximum output out of this collaboration.

## 2. Literature Review

### 2.1 Covid-19 Outbreak

According to an article "COVID-19: Kerajaan umum perintah kawalan pergerakan mulai Rabu," the first COVID-19 case reported in Malaysia was on 25<sup>th</sup> January 2020, which involved 3 China citizen whom entered this country through Singapore (Berita Harian Online, 2020). As stated by Karim (2020), first positive case involving Malaysian reported on 4<sup>th</sup> February 2020. As COVID-19 worsening, on 16<sup>th</sup> March 2020, Prime Minister Tan Sri Muhyiddin Yassin had announced the enforcement of Movement Control Order (MCO) that begun from 18 March 2020 until 31 March 2020 (Leong, 2020). This MCO involved restriction of mass gathering activities such as social, religious, sport and culture ("Malaysia: Government closes", 2020). All nonessential government sector, private businesses, schools and universities will not be opened until 31 March 2020 ("Malaysia: Government closes", 2020). As mentioned by Baum and Nguyen (2020) hospitality businesses can be expected to be re-open and how this industry capability to survive and revive remains an unknown in a post COVID-19 outbreak.

### 2.2 Employment During Covid-19

Human Resource Ministry claimed that up till 27 November 2020, nearly 100, 000 Malaysian have lost their income and jobs due to implementation of MCO in March 2020 (Tan et al., 2020). While the chief Executive Officer of Social Security Organization (SOCSO), Mohammad Azman Aziz as cited by Chung (2020), said one of many sectors hit worse by the pandemic were accommodation and food and beverage industry, which has an accumulated a total of 13, 053 job losses. This was

supported by data from the Malaysian Association of Hotels (MAH), where its president mentioned that more than 100 hotels had closed their operations since the implementation of Movement Control Order (MCO) in March 2020 and 7000 employees had directly affected while others lost their income on unpaid leaves or prolonged pay-cut (Kaur, 2021). Above all these, COVID-19 pandemic has exposed Visit Malaysia 2020 campaign a major risk due to the cancellation of hotels, flight tickets and tours to Malaysia (Foo et al., 2020). Chinazzi et al. (2020) also supported the statement as operators of hospitality and tourism in multiple countries have been ceased down and domestic (in some countries) and international travel has all but prohibited. Indeed, one of major factors behind the COVID -19 global spread were air and sea travel. However, according to data retrieved from IL5G (2021), in 2018, prior to the pandemic, the report recorded a total of 70% graduates of PMBS has obtained a job, regardless working in the field or vice versa.

### 2.3 Perception

In research conducted by Le et al., (2018), the researchers found that there is a mismatch between expectation of a student on entering the hospitality industry and the realities of working in the industry among the students of higher tertiary education. While students of vocational education and training are well-prepared for the lower-level operational roles, the students of higher tertiary education, on the other hand, perceived their chances of being promoted to a higher position are limited due to lack of consistency in the mechanism used in the industry, thus affecting their long-term commitment towards their career in the hospitality industry. Besides, in a research conducted by Chan (2017) in New Zealand, result indicated that long working hours, low wages and seasonality that influenced the availability of the job were the three significant issues that affected the attitudes of undergraduates towards a career in the hospitality industry. In the case of Generation Z, Goh and Okumus (2020) stressed that a clear career prospect should be made known to this group of workforce as they are keen on fast career advancement and being given the opportunity to work across properties and countries. Besides, in order to retain Generation Z as a workforce in tourism and hospitality industry and though personal human contact is the crucial element in hospitality service delivery, incorporating technology in the service rendered may actually help to increase job satisfaction among this group and indirectly increase satisfaction and loyalty of the customer. However, despite their questionable loyalty to stay in the industry, Generation Z view the hospitality profession as fun, interesting, exciting, fulfilling, and they value the travel opportunities that exist in the industry (Goh and Lee, 2018). Adding to this point, Sihite et al. (2019) reported that studying in the hotel and tourism school is a good investment to develop a career and is an excellent investment for the future of the student. Overall,

the nature of work of tourism industry which offering enjoyable and fun environment are considered important and earned positive perception (Rosyidi, 2021).

#### 2.4 Employability Rate

According to Ministry of Education (MOE) (2017), employability rate from 2013 until 2017 for graduates of polytechnic showed an upward trend from 73.9% in 2013 to 94.5% in 2017 and the unemployment rate has significantly decreased from 26.1% in 2013 to 5.5% in 2017. The trend further improved in 2018 as the employability rate for graduates of polytechnics has increased from 94.5% in 2017 to 96.1% in 2018 and this has positively impacted the unemployment rate, as the figure drop from 5.5% in 2017 to 3.9% in the same year. Data also shown that male students have higher tendencies (96.5%) to be hired compared to female students (95.8%) (Ministry of Education, 2018). The employability rate of graduates from Politeknik Merlimau was reported at 98.97%, where only 1.03% graduates were still not able to secure for a job (Politeknik Merlimau, 2019). However, it was alarming when the neighboring country, considering the disruption of the job market by COVID-19 pandemic, Singapore has reported that only 87.4% of polytechnic graduates were employed within six months of graduating in 2020 compared to 90.7% in 2019.

### 3. Methodology

#### 3.1 Research Design

There is no perfect research design or research method, however, the tools a researcher selects will depend on the purpose and context of the study. However, perspectives do not determine methods, but they do influence how we approach research (Hyland, 2016). This research is a quantitative research design with self-administered structured questionnaire and was undertaken at PMBS. In consideration of the English language acquisition of the respondents and for their ease of reading, the survey is constructed using a dual language, English and Malay language. Exploratory design was the approach chosen for this study as its used to study social, psychological and economic processes through the exploration economic pattern. As it involved gathering a range of numeric data, it allows researchers to conduct a simple analysis such as questionnaire and also extremely sophisticated statistical analyses like structured observation and experiments. Instead focusing in broader sample, quantitative research focused on a particular group of people, called sample population (Ahmad et al., 2019). The overall items stated in the questionnaire was fully developed by researchers and proof-read by fellow English lecturer in PMBS.

#### 3.2 Unit of Analysis

Diploma in Tourism Management is a program that being offer in PMBS since 2013. To date, 5 batches have successfully graduated from PMBS. Therefore, for the purpose of this study, only alumni from PMBS that have completed and graduated in Diploma in Tourism Management a year prior to the occurrence of Covid-19 and during Covid-19 were taken as the actual unit of analysis. A group of 22 students that were undergoing their practical training were used as sample in the pilot study.

#### 3.3 Population and Sample Size

The sample consists of the alumni, who have graduated from PMBS in June and December 2019, as well as June 2020. PMBS has a total of 80 alumni of Diploma in Tourism Management from June 2019 till June 2020. In tourism field, sample size table by Isaac and Michael were frequently used by the previous researchers (Barkah et al., 2020; Mhlanga, 2019; Moyo and Tichaawa, 2017; Pramudita et al., 2020 and Silitonga, 2020). Therefore, the researchers adopted the same source for this current study. Based on sample size table by Isaac and Michael (1981), with 5% precision level, a total population of 80 required a minimum sample size of 66. It will be sufficient to represent the population at 95 percent confidence interval, allowing 5% for attrition or within the range of plus/minus 2.5%.

Data is analyzed and descriptive statistics were used to interpret the demographic profile. Regression analysis is employed to examine the impact of variables.

#### 3.4 Data Collection Method

For the purpose of data collection, the study has employed cross sectional study where data were gathered at single point of time from individual student involved between Week 4 of March 2021 to Week 3 of April 2021. The personally-administered structured questionnaire was then analysed using appropriate statistical tools and measure that is in line with its research objectives, such as reliability test, coefficient correlation analysis, and regression analysis.

After discussion with the Alumni Officer and with consideration of the time efficiency, the questionnaires were distributed via Google form for the ease of both alumni and researchers. It took an overall of two weeks for the researchers to get response from all respondents. The link of the survey was given to academic advisor for them to help to disseminate to their former advisees accordingly.

### 3.5 Pilot Study

A pilot study was carried out for clarity purposes of the questions onto 22 respondents who are soon to be alumni of PMBS once they have completed their 3-month practical training. Malmqvist et al., (2019) explained that the result obtained through pilot study allowed the researchers to do some modification and improvisation of the research design to best fit the research study. With this information gained, issues related to effectiveness of the instruments were identified, thus increase the effectiveness of the research instruments. The raw data was then converted to a numerical code and retyped into the Statistical Package for the Social Science (SPSS) version 23.0 software for analysis. Descriptive statistics such as frequency, percentage, mean score and standard deviation will be used in data interpretation of the demographic section.

### 3.6 Reliability Test for Instruments

According to UCLA (2021), Cronbach's alpha or coefficient alpha is a coefficient of consistency or reliability and it measures correlation between variables. The result of this test ranges from 0 to 1, in which 0.95 indicates a high degree of consistency between items and low measurement error.

Table 1. Reliability analysis of pilot study

Variables	N of items	Cronbach's alpha Coefficient, $\alpha$
Section B : Perception	5	.980
Section C : Post Covid-19 Outbreak	5	.832
Section D : Employability Rate	5	.580

Table 1 above indicated that for this pre-testing questionnaire, the value for Cronbach's alpha coefficient,  $\alpha$  were perception ( $\alpha = 0.98$ ), post covid-19 outbreak ( $\alpha = 0.83$ ) and employability rate ( $\alpha = 0.58$ ) respectively. As mentioned by Taber (2017), reliability value within range of 0.58-0.97 can be considered as satisfactory. Thus, the value of reliability test,  $\alpha$  ranges from 0.5 to 0.9, are considered reliable.

## 4. Finding and Analysis

### 4.1 Descriptive Analysis of Respondents

This part was a descriptive analysis of demographic characteristics of the respondents, which consisted their gender, age, employment status, sector, tenure of service, period of waiting to get first job and number of job interview attended by the respondents.

As shown in Table 2, this research involved 70 alumni of PMBS and majority were female with 70% (N = 49) and the remaining 30% (N = 21) were male. The age of alumni involved ranges from 20 to 28 years old. Most of

the respondents are from 23 to 25 years old with 54.3% (N = 38), while those between 26 to 28 years old scored the lowest by 10% (N = 7). The table also depicted the employment status of the respondents. 45.7% (N=32) are currently working, with 44.3% (N=31) are not employed and 10% (N=7) are now pursuing their studies. However, only 44.3% (N=31) of the respondents are working in the tourism and hospitality and another 55.7% (N=39) are working in other fields. Tabulation of sectors are as follow:

Table 2. Demographic profile of respondents

Respondent Profile	Classification	Frequency, N = 70	Percentage (%)
<b>Gender</b>	Male	21	30
	Female	49	70
<b>Age</b>	20 – 22	25	35.7
	23 – 25	38	54.3
	26 – 28	7	10
	29 and above	0	0
<b>Employment Status</b>	In an Employment	32	45.7
	Unemployed	31	44.3
	Continue Study	7	10
<b>Tourism &amp; Hospitality Sector</b>	Yes	31	44.3
	No	39	55.7
<b>Tenure of Service</b>	1 – 3 months	20	28.6
	4 – 6 months	13	18.6
	7 – 9 months	12	17.1
	10 – 12 months	6	8.6
	1 year and above	19	27.1
<b>Period of Waiting to Get First Job</b>	1 – 3 months	34	48.6
	4 – 6 months	14	20
	7 – 9 months	7	10
	10 – 12 months	4	5.7
	1 year and above	11	15.7
<b>Number of Job Interview Attended</b>	1	33	47.1
	2	14	20
	3	6	8.6
	4	4	5.7
	More than 5	13	18.6

Table 3 presented data derived from the information given by the alumni of PMBS. The highest percentage, 20.5% (N=8) represented those that working in retail



field. However, 12.8% (N=5) obtained from those that provide no information about their current working field. Lastly, there are 2.6% (N=1) of respondents are working in the field of automotive repair, manufacturing and pest control field respectively.

Table 3. Tabulation of field sector of respondents

Sector	Frequency (N=39)	Percentage (%)
Self-employed	4	10.3
Construction	3	7.7
Automotive Repair	1	2.6
Retail	8	20.5
Food Service	2	5.1
Delivery Service	2	5.1
Further Study	4	10.3
Unemployed	6	15.3
Government	2	5.1
Manufacturing	1	2.6
Pest Control	1	2.6
No Information Provided	5	12.8
<b>Total</b>	<b>39</b>	<b>100.0</b>

Further to discussion of data in Table 2, there are 28.6% (N=20) of respondents have already been working for a period of 1 to 3 months. Whereas, 27.1% (N=19) have been working for 1 year and above. 18.6% (N=13) of the respondents have work for a period of 4 to 6 month, followed by 17.1% (N=12) of respondents have been working for 7 to 9 months respectively, and lastly, only 8.6% (N=6) of the alumni of PMBS have been working for a period of 10 to 12 months.

48.6% (N=34) responded that they only waited for a period of 1 to 3 months before landed on their first job. Subsequently, 20% (N=14) of respondents indicated that they only waited for 4 to 6 months to get their first job, whereas 15.7% (N=11) have waited for 1 year and above to get a job after graduation. 10% (N=7) required 10 to 12 months to find their first job and marked the lowest was those that required 10 to 12 months with 5.7% (N=4).

Prior to be hired by the organization, 47.1% (N=33) alumni of PMBS responded that they only attended 1 job interview before straightaway being hired. While another 20% (N=14) indicated that they have attended job interviews twice before being offered the job, whereas 18.6% (N=13) have attended the sessions more than 5 times. 8.6% (N=6) and 5.7% (N=4) of respondents have attended 3 and 4 interviews, respectively.

#### 4.2 Reliability Test

In order to assess the items developed for the questionnaire are consistently measuring the constructs, all variables were analysed through reliability test. Bolarinwa (2015) stated that the reliability coefficient (alpha) can range from 0 to 1, with 0 representing a questionnaire that is not reliable and 1 representing

absolutely reliable questionnaire. A reliability coefficient (alpha,  $\alpha$ ) of 0.60 or higher is considered acceptable reliability in exploratory research (Daud et al., 2018).

The Cronbach's Alpha coefficient value for all variables in this study revealed a range of coefficient value from .616 to .808 respectively. The independent variable of perception has a high reliability coefficient of .808 with 5 scale items. The coefficient value of post covid-19 outbreak is .667 with 5 scale items, whereas the dependent variable, employability rate with also 5 scale items, has a coefficient value .616.

Table 4. Cronbach's alpha coefficient for study variables

Variable(s)	Number of scale item(s)	Cronbach's Alpha Coefficient, $\alpha$
Perception	5	.808
Employability Rate	5	.616
Post Covid-19 Outbreak	5	.667

#### 4.3 Hypothesis Testing

Three hypotheses were presented in this part. The first hypothesis determined the relationship between perception and employability rate. Second hypothesis determined the relationship between post COVID-19 outbreak and employability rate. Finally, the third hypothesis determined the moderating effect of post Covid-19 outbreak in the relationship between perception and employability rate.

##### 4.3.1 Correlation Coefficient for Perception and Employability Rate

#### H1: There is A Relationship Between Perception and Employability Rate

Table 5 stated the figure of  $r=.010$  indicates a very weak positive correlation between perception and employability rate, and with  $p\text{-value}=.936$  higher than the significance level ( $\alpha=0.05$ ), the correlation is not statistically significant. Hence, hypothesis 1 (H1) is not supported as there is no significant linear correlation between perception and employability rate.

Table 5. Results of Pearson correlation for perception on employability rate

		Perception	Employability Rate
Perception	Pearson Correlation	1	.010
	Sig. (2-tailed)		.936
	N	70	70
Employability_Rate	Pearson Correlation	.010	1
	Sig. (2-tailed)	.936	
	N	70	70

#### 4.3.2 Correlation Coefficient for Post COVID-19 Outbreak and Employability Rate

##### H2: There is A Relationship Between Post COVID-19 Outbreak and Employability Rate

Table 6 stated the figure of  $r=.237$  indicates a weak positive correlation between post covid-19 outbreak and employability rate, and with  $p\text{-value}=.049$  smaller than the significance level ( $\alpha=0.05$ ), the correlation is however, statistically significant. Hence, hypothesis 2 (H2) is supported as there is a linear correlation between post Covid-19 outbreak and employability rate.

Table 6. Results of Pearson correlation for post COVID-19 outbreak on employability rate

		Employability Rate	Post Covid-19 Outbreak
Employability Rate	Pearson Correlation	1	.237*
	Sig. (2-tailed)		.049
	N	70	70
Post_Covid-19 Outbreak	Pearson Correlation	.237*	1
	Sig. (2-tailed)	.049	
	N	70	70

\*. Correlation is significant at the 0.05 level (2-tailed)

#### 4.3.3 Regression Analysis for Post Covid-19 Outbreak on Perception and Employability Rate

##### H3: Post COVID-19 Outbreak Moderates the Relationship Between Perception and Employability Rate

Table 7 disclosed that only 6.6% ( $R^2 = .066$ ) of the variance in employability rate were collectively explained by both perception and post COVID-19 outbreak. Meanwhile, the remaining 93.4% can be explained by other variables do not present in this research. Thus, Covid-19 outbreak moderates the relationship between perception and employability rate and this supporting hypothesis 3 (H3).

Table 7. Results of linear regression for post Covid-19 on perception and employability rate

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.256 <sup>a</sup>	.066	.038	3.251	1.930

a. Predictors: (Constant), Perception, Post\_Covid

b. Dependent Variable: Employability\_Rate

## 5. Discussion, Limitation and Recommendation

### 5.1 Discussion of Findings

This section revolves around three research questions and three research hypotheses as postulated in the first chapter.

#### 5.1.1 The Relationship Between Perception and Employability Rate

The objective of the first research question is to measure the relationship between perception and employability rate. The discussion on this research question was based on Hypothesis 1, which is:

##### H1: There is a relationship between perception and employability rate

Hypothesis 1 (H1) proposed that there is relationship between perception and employability rate among alumni of PMBS. Data gathered from the respondents are analysed using the correlation coefficient analysis presented in Table 5. For the purpose of this study, the element of perception measured the skills obtained during study such as team and internship experience, team collaboration, presentation and communication skills acquired by the alumni during the course of three years studied in PMBS. Based on the findings presented, it is observed that there is no significant linear correlation between perception and employability rate though the skills and knowledge imparted are crucial for their career readiness. This was emphasized by Çalışkan and Özkoç (2020), where hospitality industry demands functional and multiskilling employees, hence the suitable set of skills provided to them at school. However, the researchers argued that on-job training and personal development opportunities able to eliminate job insecurity and elevate the employment perception. Social media-based communication and marketing strategies, green skills, an extensive portfolio of language and cultural skills are among the new skills that organizations warrant to accommodate business needs.

However, the skills gained by alumni of PMBS throughout their study is consistent with the previous research. In current labor market in Malaysia, ethic and professionalism are the qualities that graduates must possess as it is required by the competitive job market (Adnan et al., 2017). On the other hand, Pereira et al. (2019) argued that employability rate may be measured through amount of funding and larger number of vacancies available in the courses offered by higher institution as this reflects the quality and status of the institution itself. Besides, the researchers also noted that entrepreneurial skills are among the skills listed as needed in most fields that help a smooth transition from education to labor market. Notably, entrepreneurship is deemed as an important field as it aids new job creation that indirectly affect the economic growth in Malaysia (Nagarathanam and Buang, 2016). Hence, Hypothesis 1 is supported.

#### 5.1.2 The Relationship Between Post COVID-19 Outbreak and Employability Rate

The objective of the second research question seek to identify the relationship of post COVID-19 outbreak and

employability rate. The discussion on this research question was based on Hypothesis 2, which is:

## **H2: There Is a Relationship Between Post COVID-19 Outbreak and Employability Rate**

Hypothesis 2 (H2) proposed that post Covid-19 outbreak influences the employability rate of alumni in PMBS. Data gathered from the respondents are analysed using the correlation coefficient analysis presented in Table 6. Based on the findings presented, it is observed that there is a weak positive correlation between post covid-19 outbreak and employability rate. Covid-19 has likely to affect the vulnerability of people and heighten the risk of unemployment (Suomi et al., 2020). According to Gill (2020), Covid-19 has forced the workforce to work online remotely (or also known as work from home) and be familiar with flexible working arrangements. As a result, workers now need an updated set of employability skills, particularly skill in digital media usage, to navigate remote communication in this new norm. The researcher further emphasized that students who already have working experience during Covid-19 outbreak has gain a distinct advantage in the graduate recruitment process against students that have not experienced such working conditions.

Kamaruddin et al. (2020) stated that graduate employability has become the issue since economic slowdown due to Covid-19 outbreak. It is due to employment opportunities have sharply decreased due to the rise in number of closed businesses due to inability to survive during COVID-19. Thus, students perceived that COVID-19 have a significant impact on the prospect of works in the future as compared to science students. Hence, the findings of the study confirm that Hypothesis 2 (H2) is supported as there is relationship between post Covid-19 outbreak and employability rate.

### **5.1.3 The Moderating Effect of Post Covid-19 Outbreak in The Relationship Between Perception and Employability Rate**

The objective of the third research question is to identify whether post Covid-19 outbreak has a moderating effect on perception and employability rate. Data gathered from the respondents are analysed using the correlation coefficient analysis presented in Table 7. Based on the findings presented, it is observed that employability rate was collectively explained by both perception and Post COVID-19 outbreak.

## **H3: Post COVID-19 Outbreak Moderates the Relationship Between Perception and Employability Rate**

Table 7 disclosed that only 6.6% ( $R^2 = .066$ ) of the variance in employability rate were collectively explained by both perception and Post COVID-19 outbreak. Meanwhile, the remaining 93.4% can be explained by other variables not present in this research. Generation Y seen a proper career management influenced career expectation in an organization, and career expectation

positively affects organizational identity and career satisfaction (Kong et al., 2020). This is in line with (Fok and Yeung, 2016), where the researchers highlighted that organizational culture and human resource management strategies, as well as external environment, can influence the work attitudes and loyalty of generation Y. While the American students shown a positive attitude towards the idea of choosing a career in the industry, students from Macau, on the other hand, showed less optimism with regards to this issue, though both group shared the same negative thoughts about the industry such as issues on job stability, low skill set, low social status and low pay.

Other than that, Al-Youbi et al. (2020) have stated that preventive measures taken by governments all over the world to contain the spread of Covid-19 has undeniably affected the socioeconomic of many countries. This scenario would put 100 to 120 million direct tourism jobs at risk (UNWTO, 2020). Businesses were left with no choice but to shut down their operation, left the workers become unemployed, while some are working on reduced wages. The researchers also noted that new set of skills are highly favored in education, service and healthcare sectors. As the new norm requires workers to work remotely from home and be virtually available. Virtual skills acquisition among other soft skills highlighted by the researchers, may improve the chance of workers to be retained and hired. However, irrigation, tourism, manufacturing and construction sectors assigned less importance to the development of new skills in the COVID-19 pandemic and instead emphasized conventional skills among their workers as these sectors require their workers to be present on site for their day-to-day operations. This brought to the bottom line, where by putting pandemic covid into perspective, this requires a renewed alignment and a strong collaboration between the labor market and educational institutions.

A new curriculum that keeps pace with the current technological developments, internship and project work must be made mandatory in order for industry partnership successful (Adnan et al., 2017 and Zeidan and Bishnoi, 2020) and for the sake of graduates' marketability (Chiu et al., 2016). This talents cultivation programme is a unique educational mode that minimize the gap between expectations of students and industry requirements. The researchers further commented that the importance of internships and their strong influence in desire to stay in the hospitality industry, however, cannot be too firmly emphasized. Hospitality students rely on internships as to explore their future careers and this programme provided an opportunity for students to understand their working environment and further career path at early stage along with the skills, knowledge and competencies that are crucial for entry-level professionals in the hospitality industry. Thus, Covid-19 has a relationship to perception and employability rate and this supporting hypothesis 3 (H3).

## 5.2 Limitations and Recommendations for Future Research

The findings of this study illuminate important differences in perception and post Covid-19 outbreak, and its outcome affecting employability rate among the alumni of PMBS. The result shows that post Covid-19 outbreak moderating the relationship between perception and employability rate. The study is limited as its empirical analyses are conducted based on data gauged at a specific point of time due to the constraints in resources such as time factor. The results therefore were limited with regards to generalizations, and therefore are not a complete representation of the entire population and other industry players in hospitality industry. An additional research should be carried out in order to improve the current study and increase information and understanding on alumni perception and the employability rate by given this global pandemic issue. Prior to this, there is a need to develop a full understanding of how the alumni perceived the importance of soft skills provided by the learning institution as a way to enhance their career readiness.

Considering the little amount of research conducted in the field and numerous issues have not been address by this study, additional research should be carried out specifically in the field of global health pandemic, Covid-19. There might be an unobserved variable that future research needs to investigate. The aspect of sample size for an instance. The analysis derived from data collected did not represented the opinion of alumni from other polytechnic institution. Replication in other higher learning institution with different setting can be considered as to broaden the database for further generalizations. Besides, it will be best to conduct this study through the perspective of the organization so that future researcher would be able to garnered knowledge through the perspective of both alumni and the organization.

## 6. Conclusion

The study has combined three variable, namely perception, post Covid-19 and employability rate in one study. The results revealed that this study has achieved its objectives and answered all the research questions. Hypotheses were supported or otherwise were elaborated by the researcher. Furthermore, the element of post Covid-19 outbreak has a positive effect in the relationship between perception and employability rate.

Travel and tourism is among the most affected sectors caused by the Covid-19 pandemic. With the new norm that has been put into practice and working remotely is the option that help to content the spread of Covid-19, new set of technology related skills should be learned as this is the quality that organization sought for. This implied that higher learning institution can play a proactive role by exploring and incorporating the feedback from industry players into the curriculum in order to ensure the graduates are 'job ready' and the quality of graduates is of the highest level. It is with hope

that the finding of this study can be used as a basis to understand the industry players and their hiring intention.

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# The Relationships between Infrastructure Access Towards Adoption of Online Learning in TVET Institutions

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## Abstract

This study is to examine the relationships between infrastructure access provided by the organizations toward online learning platforms during Covid 19 pandemic. The pandemic Covid-19 has hit the world, which resulting face-to-face learning and teaching being converted to online learning. This scenario suddenly becomes a burden for lecturer as Politeknik Mukah Sarawak (PMU) is one of the Technical and Vocational Education and Training (TVET) institutions strengthen more on practical's and skills. The paper's hypotheses are generated using the Technology Acceptance Model (TAM). Cross-sectional data from the questionnaire were collected from 98 lecturers in PMU. Hence, the present study aimed to revisit the infrastructure access provided by institutions to lecturers using the approach in PLS-SEM. The Infrastructure Access and adoption of online learning were constructed as a reflective measurement model. The survey findings further revealed that infrastructure access is significantly associated with the adoption of online learning among lecturers in PMU. This research's outcomes can benefit decision-makers such as institutions, regarding funding and promoting successful online learning overall.

**Keywords:** *infrastructure access, online learning, performance, Covid19*

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## 1. Introduction

In the face of the Covid 19 pandemic, online learning has become the main medium of teaching and learning in educational institutions in Malaysia. This situation is also experienced by TVET institutions where practicality and skills are the main thrusts in the delivery of teaching and learning. At PMU, all teaching and learning had to turn to theory and simulation alone. The use of ICTs (such as the Internet, computer, telephone, radio, video, and others) to assist teaching and learning activities is defined as online learning (Masrom, 2007). This great challenges to lecturers and students at once. Therefore, lecturers and students need to be mentally and emotionally prepared in the current phase of learning. Online learning approaches are being used by an increasing number of public and private colleges around the country, either to offer distance learning programs or to support full-time on-

campus students (Osman et al., 2009)(OUM, 2018). Infrastructure Access to online learning is very important in this process(Oliver, 2001). In addition to the facilities provided, the acceptance of lecturers and students is also very important. To aid in the development of the system, factors impacting the adoption and use of online learning must be identified. Theory Acceptance Model (TAM) claims that perceived ease of use and perceived utility of technology are predictors of user attitude toward utilizing technology, subsequent behavioral intentions, and actual usage (Davis, 1989). TAM has been used to test user acceptance of a variety of information technology, Davis (1989), Venketesh and Davis (1996) (Legris, Ingham & Collette, (2003); Wu, Schank & Park, (2009), Sabli et al (2021). In this study, online learning was defined as a system that uses the Internet and web technologies to fulfill its objective of delivering information to students and interacting with them via a computer interface.



Finding from (Juhary, 2014) shows students and lecturer have positive attitudes toward using online learning, however technical concerns must be solved to ensure that online learning can function successfully. According to Hericko, Pusnik, and Polancic (2011), users' actual use of technology is heavily influenced by their behavioural intention, which, in turn, is influenced by their prior experience with the technology. Students' judgments of usefulness and simplicity of use, attitudes, and social influence may all play a role in determining their willingness to use online learning. Conferring to previous research (Kuama & Intharaksa, 2016), two areas need to be investigated further, sufficient, and effective Internet access, as well as Internet connectivity 24 hours a day, are required to tackle technological challenges. Second, the design and content of an engaging and practical online course are critical. The classes and exercises must also include sufficient explanations. Furthermore, learning task planning and content must be examined and altered regularly. Due to economic conditions, some students cannot afford to pay for internet capacity to access online learning media and their phones are unable to support their online learning (Simamora, 2020).

The demand for online learning-based courses is increasing as university students become more varied (Volery & Lord, 2000). To aid in the development of the system, factors impacting the adoption and use of online learning must be identified. Several aspects, including technological, pedagogical, and individual factors, must be considered when implementing an online learning effort successfully. However, because many previous studies on the efficiency of online learning systems lacked theoretical or conceptual frameworks, the results were inconsistent, leaving the question of what criteria determine effective online learning delivery unsolved.

Therefore, based on the discussion on infrastructure access and online adoption the following proposition would be hypothesized:

**H<sub>1</sub>:** *Infrastructure Access has a significant influence on the adoption of online learning among academic staff.*

## 2. Methodology

The research is mostly a descriptive-analytical study based on primary data. The academic staff of PMU Sarawak in Malaysia served as the study's sample. A priori power analysis was conducted based on the suggested conceptual framework before determining sample sizes, and the minimal power was found to be higher than 0.95 with an effect size of 0.15. (Hager, 2006). The results were produced from statistical tests typically used in social and behavioural research using G\* Power 3.1 (Faul et al. 2007; 2009) software. A total of 98 respondent from 150 populations was chosen to meet the minimum sample size criteria. The authors distribute 120 questionnaires in total. The TAM model was used to create the questionnaire (Davis, 1989). This study utilized a few standard statistical tools to analyse the data. SPSS (Statistical Package of Social Science)

Version 23 was used for this purpose. In the initial stage, factor analysis was performed on all the measurement items. Data were then keyed in into the Statistical Package for Social Science (SPSS) for subsequent analyses using SmartPLS 3.0 (Ringle, Wende, and Becker, 2015). A two-stage approach in PLS-SEM was used to predict the model, both Infrastructure Access and Adoption of online learning use reflective measurement.

## 3. Analysis and Findings

Table 1 shows the demographic details of 98 micro-entrepreneur sampled from academic staff in PMU. Given the number of questionnaire copies distributed and collected, a response rate of 82% suggests appropriate administration of the data collection process in a month and that non-response error is not a significant issue (Richardson, 2005; Nulty, 2008).

Table 1. Profile of respondent

Variable		Frequency	Percent
Gender	Male	45	45.9
	Female	53	39.1
Age	21-25	1	1.0
	26-30	33	33.7
	31-35	17	17.3
	36 and above	47	47.9
Status	Married	71	72.4
	Single	32	32.6
Department	JKA	13	13.3
	JP	28	28.6
	JKE	13	13.3
	JPA	8	8.16
	JTMK	4	4.08
	JMSK	10	10.2
	JKM	22	22.4
Education	PhD	4	4.08
	Master's degree	35	35.7
	Degree	57	58.2
	Diploma/STPM	2	2.0
Teaching Experiences	<1 year	8	8.16
	1 to 5 years	9	9.18
	6 to 10 years	20	20.4
	11 to 15 years	33	33.7
	< 15 years	25	25.6

### 3.1 Assessment of Measurement Model

The construct reliability and convergent validity of the constructs in this investigation were assessed in Table 2. The Adoption of online learning (0.874) and composite reliability (CR) values of 0.878 and Infrastructure Access (0.905) show that these constructs have internal consistency. After deleting items with low loadings, these

constructs also demonstrate good convergent validity. As a result, they reach an average variance extracted (AVE) value of 0.5, indicating that the items loaded to the corresponding constructs explain more than 50% of the constructs' "variances" (Hair, et al., 2014).

Table 2. Internal consistency and convergent validity

Construct	Item	Loading	Cronbach's Alpha	CR	AVE	Convergent Validity (AVE > 0.5)
Infrastructure Access	IA1	0.706	0.867	0.905	0.675	Yes
	IA2	0.782				
	IA4	0.774				
	IA5	0.819				
Adoption of online learning	CU1	0.826	0.874	0.878	0.725	Yes
	CU2	0.578				
	CU3	0.706				
	CU3	0.819				
	CU4	0.821				
	CU7	0.753				

The assessment of discriminant validity is shown in Table 3. Henseler's Heterotrait-Monotrait (HTMT) (2015) criterion has been used to evaluate discriminant analysis to date. This indicates that the constructs are separate from the criterion, which requires a stricter assessment than the previous criterion, implying that all constructs are distinct at the HTMT0.90 level (Henseler, et al., 2015)

Table 3. HTMT criterion

	Infrastructure Access	Adoption of online learning
Infrastructure Access		
Adoption of online learning	0.818	
Criteria: Discriminant validity is established at HTMT0.90		

### 3.2 Assessment of Structural Model

Table 5 illustrates the results of path co-efficient assessment using a bootstrapping procedure for the hypothesized relationships. The relationships are significant (Infrastructure Access → Adoption of online learning,  $\beta = 0.683$ ,  $p < 0.01$ ; Hence, it is supported.

Table 5. Path co-efficient assessment

	Beta	S.E.	t-value	p-value
Direct Effect				
Infrastructure Access -> Adoption of online learning	0.683	0.087	7.921	**0.000

In this study, the coefficient of determination ( $R^2$ ), effect size ( $f^2$ ), and predictive relevance ( $Q^2$ ) of exogenous variables on an endogenous variable are all

evaluated in Table 6. Infrastructure Access -> Adoption of online learning has a coefficient of determination ( $R^2$ ) of 0.699.

Table 6. Determination of co-efficient ( $R^2$ ), effect size ( $f^2$ ), and predictive relevance ( $Q^2$ )

	$f^2$	$R^2$	VIF	$Q^2$
Direct Effect				
Infrastructure Access -> Adoption of online learning	0.029	0.699	2.349	0.448
Lateral Collinearity: VIF 3.3 or higher (Diamantopoulos & Sigouw 2006)				

$R^2 \geq 0.26$  consider Substantial (Cohen, 1989)

$F^2 \geq 0.26$  consider Substantial (Cohen, 1989)

$Q^2 > 0.00$  consider large (Hair, 2017)

## 4. Conclusion and Recommendations

The aim of this study is to de examine the relationships between infrastructure access provided by the organizations toward online learning platforms during Covid 19 pandemic among academic staff in PMU. The results show Infrastructure Access has a positively considerable influence on the adoption of online learning among academic staff. This is because lecturers need to adapt according to the current situation for the sake of education in Malaysia. Although initially, the skill-based teaching and learning process is quite difficult to teach using online learning platforms. This study is also supporting by finding (Juhary, 2014), shown academic staff students' and lecturers have positive attitudes toward using the online learning.

It is very important for the institution to provide good internet facilities, computers, and other aids so that lecturers can effectively deliver lessons. In addition, shorter classes with lots of interaction can be crucial to a successful online session. To ensure that students are paying attention, pedagogy should be modified with videos, pictorial representations, and humorous comments. As we are forced to transition to an online education system because of the pandemic, we must conduct additional research to broaden its scope, improve its experience, and increase its success rate. Educational institutions should take the necessary steps to ensure that our next generation can benefit from online education and be successful in life.

Due to limitations of distributing to 98 respondents, the future will considerably be using the students and lectures in other institutions in Malaysia. Although face to face sessions will still be the main method in delivering teaching and learning for TVET institutions, online learning can also be used during this current situation.

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# Development of Oil Palm Shell-reinforced 316L Stainless Steel Composite Prepared by Powder Metallurgy Route

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## Abstract

Metal matrix composite (MMCs) gained interest of researchers over the past decades due to demand for excellent and stiff materials. MMCs offer several advantages like high specific strength and modulus, improved elevated temperature properties, low coefficient of thermal expansion, enhanced electrical performance, wear and abrasion resistance. 316L Stainless steel composite was prepared by powder metallurgy route. Stainless steel type 316L acting as metallic powder was mixed with Polyvinyl Alcohol (PVA) and Oil Palm Shell (OPS) as reinforcement. Then, physical observation and shrinkage percentage of the resulting samples was analysed. From the result, the observational best results were shown by 55 wt. % stainless steel samples as porosity are present and their ability to maintain the cylindrical shape of the compacted sample.

**Keywords:** - metal matrix composite, stainless steel, sintering, shrinkage

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## 1. Introduction

The composite material can be defined as a combination of two or more materials with appropriate physical and chemical properties which produce material with better properties compared to its individual constituents (Deshpande, 2019). In the recent decade, extensive research is focused on metal matrix composites (MMCs) due to demand in a high-performance application such in automobile, aerospace, and manufacturing industries (Annaraj et al., 2019). MMCs are a combination of two phases which are matrix phase and reinforcement phase. The main advantages of MMCs are high strength and stiffness, low thermal stress, electric conductivity, and wear resistance (Alem et al., 2020). Other than casting methods, powder metallurgy is a promising method to produce MMCs. The powder metallurgy route consists of three main processes, mixing

of the metallic and reinforcement materials, compaction process, and sintering process.

In this research, 316L Stainless steel composite is produced by using powder metallurgy route. The powder of stainless-steel type 316L is used as metallic material, Oil Palm Shell (OPS) used as reinforcement and Polyvinyl Alcohol (PVA) as binder. All the materials are mixed homogeneously by using a roller mixing machine. After that, the mixtures are poured into the cylindrical mould to be compacted using a uniaxial pressing machine. After the samples are compacted, the samples are then sintered in two stages by using a tube furnace at temperature of 1150°C. The physical observation and shrinkage of the samples were studied after the sintering process.

## 2. Literature Review



MMCs offer a good combination of properties such as high strength to weight ratio, low thermal expansion coefficient, great wear resistance, and abrasion resistance. MMCs are most popularly used in aerospace, automobile, rails transport, marine, and army sector applications. MMCs fabrication method can be classified into two which are liquid phase processing and solid-state processing. Liquid phase processing can be defined as the process of producing MMCs by mixing the discontinuous reinforcement phase into the continuous metal matrix phase in the liquid state. Solid-state processing methods produced MMCs below the melting temperature of the matrix (Sharma et al., 2019).

Historically, Powder Metallurgy route first discovered was about 3000 BC when Egyptians used iron ores to make tools. Powder metallurgy is the most common technique to produce MMCs. Major advantages of powder metallurgy route are providing a cost-effective shaping process, with virtually no loss of material, to mass produce components with close dimensional precision and required mechanical properties (Tan et al., 2020). In powder metallurgy technique, the metallic and reinforcement powder will be mixed and compacted to produce a green body before proceeding to a further process which is the sintering process. In the sintering stage, the temperature below its melting temperature ( $T_m$ ), usually  $0.6 - 0.9 T_m$  will be selected to make a uniform dense resulting structure (Alem et al., 2020).

Stainless steel is an outstanding achievement of modern metallurgy because of its outstanding near net shape and high raw materials utilisation. (Li et al., 2020). It has been noted that the main difference between stainless steels and other steels is that the former has a few nanometer layers of chromium oxide on the surface while the later form iron oxides as shield to prevent from corrosion happen to the surface of the metal (Abdullah et al., 2018). Thus, 316L stainless steel composite is promising due to its excellent corrosion resistance and great mechanical properties (Patel et al., 2019).

The oil palm, specifically the species of *Elaeis Guineensis*, has historically been cultivated in tropical Africa's semi-wild areas. Based on a research by Chizari in 2017, an estimation of palm oil yield will continue to increase from 2015 to 2020. Nevertheless, the presence of these oil palm wastes has created a major disposal problem. One of the solid wastes that is produced by the oil palm industry is the palm oil kernel or also known as oil palm shell (OPS) (Chizari et al., 2017). There are multiple uses of OPS in the engineering field. It has been used as activated carbon in textile wastewater treatment, bio composite in polymer industry, concrete pavement, biomass gasification and combustion fuel for steam generation. Activated charcoal prime use is as an absorbent and has many applications. One of its main applications is for contaminant removal from water and gases (Yahayu et al., 2018).

### 3. Methodology

Stainless steel 316L powder with size  $7.2 \mu\text{m}$  act as metallic powder was mixed with Oil Palm Shell (OPS) as reinforcement material and Polyvinyl Alcohol (PVA). Stainless steel 316L powder supplied by Maju Scientific Sdn. Bhd. OPS was collected from Bukit Lawang Kluang Palm Oil Mill, Johor. The composition of stainless steel used were 55, 60, 65, 70, 75 and 80 weight percent (wt. %) and the remaining for reinforcement material. The amount of PVA used is fixed at 5 weight percent (wt.%) for all composition.

OPS was crushing using the Fritsch Variable Speed Rotor Mill PULVERISETTE 14 crushing machine. All the material was sieved using a Fritsch sieving machine with the sieving filter arranged following the sequence starting from  $600 \mu\text{m}$ ,  $400 \mu\text{m}$  and  $200 \mu\text{m}$ , and mixed using a roller mixing machine at 100 RPM for 30 minutes. The mixture was carefully poured into a cylindrical mould and compacted at pressure 6 tons with 10 minutes holding time. The sample was sintered at temperature  $1150^\circ\text{C}$  using a tube furnace. The samples are heated in a furnace for 3 hours at a rate of  $2^\circ\text{C}$  per minute and are maintained at  $470^\circ\text{C}$  for 3 hours. This stage would cause a reaction where the OPS particles and stainless-steel powder would be able to bind since the binder would melt at  $60^\circ\text{C}$  for the purpose of holding the sample shape. The sample is then heated again to melt the stainless-steel powder at the same rate of heating until a temperature of  $1150^\circ\text{C}$  is achieved and is maintained for one hour. No more increase of temperature is done after this stage and the samples are allowed to be cooled at a rate of  $2^\circ\text{C}$  per minute. The graph of temperature vs time is as Figure 1.

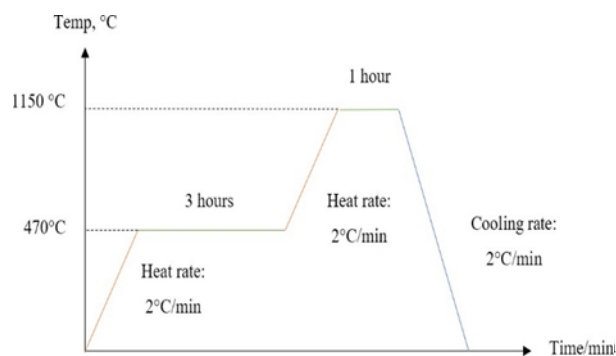


Figure 1. Profile sintering temperature of the sample

Then, the samples were analysed for their physical observation and shrinkage percentage. The physical condition of the samples will be observed using the naked eye to identify the surface condition and is recorded to compare the before and after sintering. Observations will focus on the cracks, colour changes on the surface and physical form of the samples. The durability of the samples is then observed by touching the samples to identify the hardness.

The thickness of the samples is compared to measure the shrinkage percentage. The height is recorded using a

digital calliper for accuracy. The height before sintering is first recorded and changes in height after sintering is then compared with these results. The change in height is then calculated as the shrinkage percentage. The method of shrinkage percentage of sample calculations is shown below:

$$\text{Shrinkage (\%)} = \frac{h_{\text{initial}} - h_{\text{sintered}}}{h_{\text{initial}}} \times 100 \quad (1)$$

where;

$h_{\text{initial}}$  = sample height before sintering

$h_{\text{sintered}}$  = sample height after sintering

#### 4. Finding and Analysis

Before the sample is sintered, as shown in Figure 2 (a), the sample shows a shiny surface with the OPS granule present in the sample as grey colored as if it was mixed with the stainless steel 316L powder. Small cracks can be seen from the outer surface while showing a shiny surface due to the SS316L powder. After sintering, porosity can be seen on the surface of the sample as shown in Figure 2(b). The post-sintered samples still retain the cylindrical shape while the porosity shows the presence of burned OPS. The samples darken to black in colour and little distortion can be seen on the sample shape as seen in Figure 2 (b), where the SS316L powder was melted at the upper part of the sample.

Referring to Figure 2(c), before sintering shows a shiny surface with grey colour from the stainless steel and granules from the presence of OPS grains. Small cracks are visible, and the surface is shiny due to the presence of SS316L powder bonded with the PVA. The pre-sintered samples were fragile and extra attention was needed during. Referring to Figure 2(d), shown that they are still able to maintain the cylindrical shapes with porosities being visible on the surfaces. From the results, it is shown that large pores on the surface while having melted SS316L solids, with shiny silver surfaces. The shiny silver surface formed due to the location of this sample placed in the tube furnace during the sintering process is near to the argon passage to make this sample get sufficient argon gas during the sintering process. It is also able to maintain most of its original cylindrical shapes.

As shown in Figure 2(e), the sample before sintering is cylindrical in shape and grey in colour with visible OPS granules on the surface. Fine cracks can be seen on the surface with shiny grey colour on the surface of the sample. The sample is very fragile at this state and extra care was given during storage. Based on figure 4.8, the sample has darkened into black colour after sintering. The porosity can be seen with the presence of burned OPS grain. Sample in Figure 2(f) shows a slightly larger pores and the cylindrical shape is still visible. The surface is mostly melted into solid SS316L as seen on Figure 2(f).

From Figure 2(g), the sample is shiny grey and shows the presence of the OPS on the pre-sintered sample.

Compaction causes the sample to be held together by the PVA binder and the height was recorded. Referring to Figure 2(h), the sample shown shows large porosity with some grains of burned OPS within it. Both samples darkened to black colour after sintering and were completely hardened.

Before sintering, the sample is shiny grey and shows the presence of the OPS content within it in granule form as shown in Figure 2(i). Tiny cracks are present with the outer surface of the sample being shiny silver in colour. From Figure 2(j), the sample has darkened into black colour while having small pores. The shape had distorted but still visibly shows the cylindrical shape of pre-sintering. The sample shows more porosity while having a shiny silver surface solidified and shows melted SS316L when being touched by hands and is not fragile.

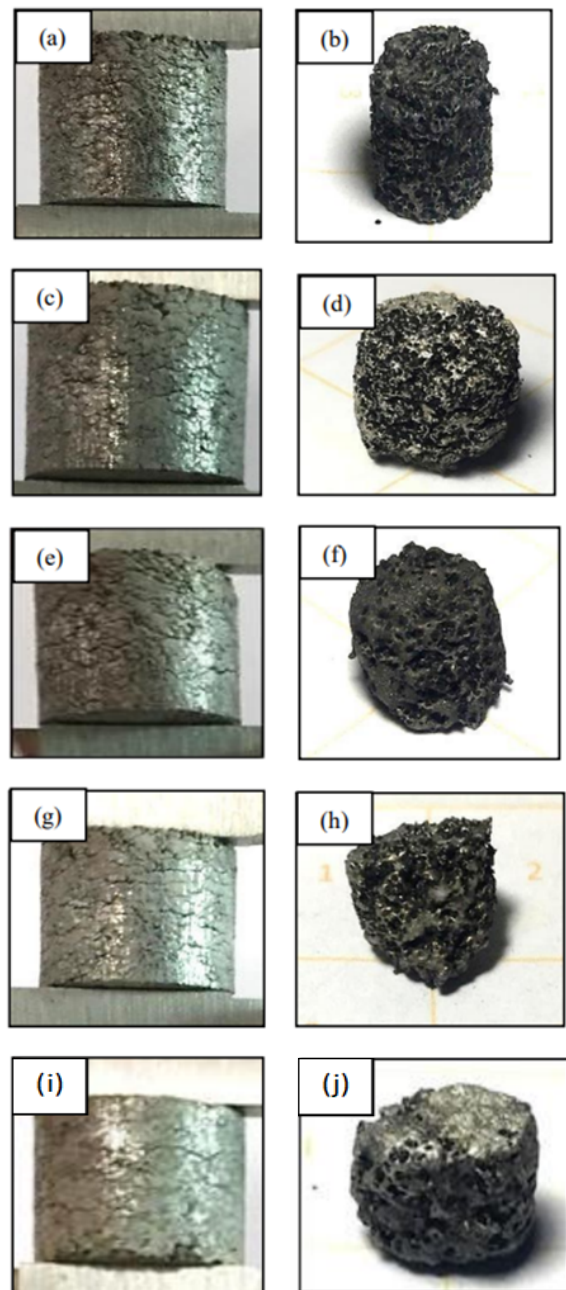


Figure 2. (a) shows 55wt. % SS samples before sinter, (b) shows 55wt. % SS samples after sinter, (c) shows 60wt. % SS samples before sinter, (d) shows 60 wt. % SS samples after sinter, (e) shows 65wt. % SS samples before sinter, (f) shows 65wt. % SS samples after sinter, (g) shows 70 wt. % SS samples before sinter, (h) shows 70 wt. % SS samples after sinter, (i) shows 75wt. % SS samples before sinter, and (j) shows 75wt. % SS samples after sinter

Figure 3 shows a graph of the selected samples to be analysed for the average shrinkage. Each sample is calculated for their shrinkage value and is then used to calculate the average shrinkage of each stainless-steel composition. Highest value of each sample is shown by 55 wt. % at 44.63% shrinkage while the lowest is shown by 75 wt. % at 25.1% shrinkage. The average shrinkage values from this table is then used to generate the chart in Figure 3 to clearly see the trendline of shrinkage percentage changes along the stainless-steel composition.

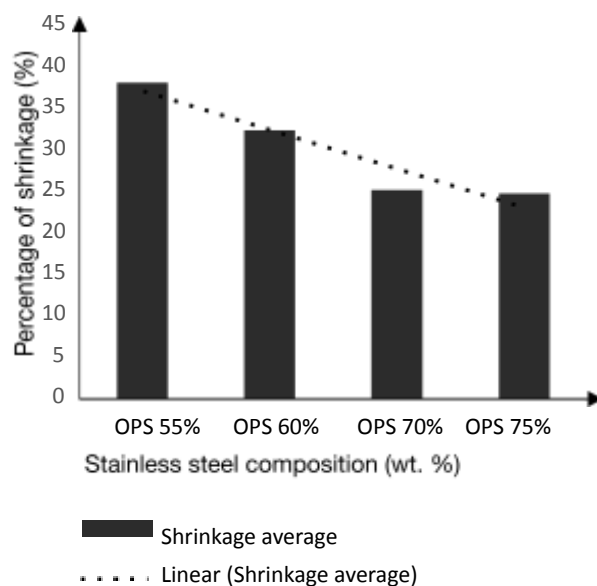


Figure 3. Graph of percentage of shrinkage of sample height for selected samples

From Figure 3, the highest shrinkage is shown by 55 wt. % with 38.21% shrinkage. The data proves that the high composition of OPS causes the sample to shrink the most. The OPS is burned, and the spaces occupied by OPS are then turned into pores. Stainless steel powder solidifies and retains the cylindrical shape. 75% wt. % of stainless steel shows the least shrinkage with only 24.89%. This is due to the high content of stainless steel 316L powder and the least amount of OPS in the sample. Least amount of porosity can also be seen in 75% sample as seen in Figure 2(j) The porosity can be compared with Figure 2(b) where the sample shows higher porosity. Insignificant comparison 70 and 75 wt. % may be due to a sample at 65 wt. % is not present in the graph.

There were also multiple failures in the sample retaining the cylindrical shape. This is due to the binder

composition not suitable since the PVA binder is fixed at 5 wt. % for this study. The quantity and concentration of the binder is critical and should be selected appropriately so as to optimise the mixing process and obtain a homogeneous mixture of metal matrix powder and reinforcement particles. Most samples were black in colour and did not maintain the initial cylindrical shape. The colour change was caused by oxidation during sintering. Sample failures may also be due to other elements existing during sintering that may be present inside the tube furnace.

Overall, 55 wt. % shows the highest potential for further study since it shows the highest porosity and the best in retaining their initial green sample shape. 55 wt. % or lower is suitable to be sintered at this temperature by using a tube furnace.

## 5. Conclusion

Green compact of all samples were successful as the sample was able to maintain the cylindrical shape with mass of 5 grams. The compacted samples were measured carefully to avoid breakage as the samples were fragile. After sintering, the best results were shown by 55 wt. % stainless steel samples as porosity are present and their ability to maintain the cylindrical shape of the compacted sample. Most samples are black in colour and are varying in shape such as elliptical and separated solids while only 2 samples had failed and formed into powder form. The change in colour was due to oxidation during sintering of the samples. The amount and composition of the binder is essential and should be chosen in order to maximise the binding phase and to achieve a homogeneous mixture of metal matrix powder and reinforcement particles.

The height change post-sintering was increasing as the SS316L content was increasing. The shrinkage percentage is decreasing as the SS316L content is increasing which shows that the higher the OPS content, the lower the height change after sintering. Altogether, 55 wt. % shows the highest potential for further study as it shows the highest porosity and best ability to retain the original green sample shape. 55 wt. % or lower is ideal for sintering at this temperature by means of a tube furnace. The suitability of sintering temperature, binder wt. % and type of furnace should be investigated further for samples of 60 wt. % and above since most samples range from 60% to 80 wt. % Hardly able to maintain the cylindrical shape and little porosity is shown.

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## The Use of Canva as Learning Medium of MPU12012 Entrepreneurship

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### Abstract

Canva is an online application that provides attractive designs supporting the creativity of its users. This study focuses on identifying the impact of Canva as a learning medium to enhance and develop students' creativity in the preparation of assignments and learning MPU12012 Entrepreneurship course. The methodology of this study is in the form of mixed mode, which is a qualitative and quantitative (descriptive) approach. The research instruments, namely pre-test and post-test questionnaires were used to identify the level of knowledge of the respondents after the implementation as well as observation of the use of Canva application. The respondents of the study consisted of 17 Electrical Technology Certificate students who attended the MPU12012 Entrepreneurship course for session II 2021/2022 at Beaufort Community College. The overall mean score analysis for the post-test data findings is high with a mean value of 4.19 and a standard deviation of .397. The results of observations and structured interviews on the impact of the use of Canva as a medium of teaching and learning has a very good level of implementation. The average observation data of the entire research was 90.2 percent. Thus, Canva application has a very good impact as a teaching medium as it facilitates understanding and enhances the ability to master learning in TnL sessions.

*Keywords: Canva, entrepreneurship, learning medium, community college*

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## 1. Introduction

Mass changes in the education field especially technology use is one of the Covid-19 pandemic consequences. Educational institutions enforce technology use to facilitate learning in school or university. Technology can be a learning medium, methods and learning sources to students. Suitable learning medium is needed for the learning process. Attractive learning media should be used by lecturers or teachers in order to intrigue students' curiosity in achieving learning outcomes. The development of science and technology encourages changes in human life to suit with current scenario.

Therefore, the advancement in information technology and communication is closely related to science development in education sector.

Teaching and learning process has to be carried out virtually during the execution of Movement Control Order (MCO). Traditional learning (face-to-face) could not be carried out for a period of time for the purpose of social restriction as imposed by the government to restrain the transmission of Covid-19. Educators, with all their means, attempted to carry out teaching and learning activities as planned. Hence, lecturers or teachers are obliged to utilize information technology as learning medium (Dwi Hartatik, 2021). As a result, online teaching that involves technology

advances is convenient for both educators and students in delivering as well as obtaining learning materials.

Both educators and students are facing multiple issues and challenges throughout the implementation of online teaching. According to Ayusi (2021; Wong & Jamaludin, 2021), there are several constraints faced by lecturers during online teaching and learning sessions which are lack of focus, uncondusive and internet limited quota. Moreover, students are said to face lack of motivation issues in which affecting learning outcomes. (Cahyani, 2020; Resmini et al. 2021). Certainly, this situation affected the quality of learning as teacher and students are used to direct interactions in classroom. According to Resmini et al. (2021), Covid-19 pandemic led to a situation where virtual learning and interactions are limited. Again, educators are obliged to prepare good teachings, provide conducive learning environment and use engaging learning medium creatively and innovatively. Thus, students able to understand learning materials and learning outcomes can be achieved.

Learning medium is crucial component in achieving learning outcomes. Collaborative educators and students resulting in effective and fun learning (Boholano, 2017; Junaedi, 2021). Learning medium that is appropriate and suitable with the learning objectives will generate students' creativity in understanding the content of learning materials. Canva application is an online design program that provides various tools for presentation, resume, poster, brosure, graphics, infographics, banner and many more. Tools and design provided in Canva deliver positive impacts for the educators in preparing attractive learning medium. Other than that, Canva can be download for free from Apple Store for IOS users or Playstore for Android users that can be used in mobile phone, tablets and computers. Tanjung and Faiza (2019) stated that Canva has diverse, interesting design that could enhance educators' and students' creativity aside from being practical and time-saving.

### 1.1 Problem statement

To achieve learning outcomes, educators need to be more creative in preparing learning medium or learning materials that could engage students. Learning process could not be executed successfully without learning materials. Learning medium is one of the determining factors in having a successful teaching and learning process. Preparation of engaging teaching materials is required to motivate students in teaching and learning activity.

Respectively, Canva application is chosen as the medium to help lecturers in providing attractive presentation designs for teaching materials of MPU12012 Entrepreneurship. Syllabus of MPU12012 Entrepreneurship is developed to provide basic exposure on entrepreneurship to students. Knowledge and skills acquired able to aid students to venture in entrepreneurship once they finished their studies in the certificate level at community college.

During teaching and learning activity of MPU12012 Entrepreneurship, lecturer has given exposure to students in using Canva as teaching materials. Lecturer has been using Canva as main medium in preparing Business Model Canvas (BMC), lecture, promotional poster, creating Facebook Page and Instagram for offline and online simulation other than preparing lecture presentation slides. Therefore, hands-on course has been given to students at the beginning of the lecture as a measure to ensure they would be able to understand and use Canva. Hence this study aims to describe the impact of using Canva as learning medium to elevate and expand students' creativity in preparing task and learning MPU12012 Entrepreneurship.

## 2. Literature Review

Lecturer or teacher takes the role of a facilitator in teaching and learning. They should be competent in developing teaching and learning materials in raising students' learning motivation and in understanding a lesson. Effective and entertaining lesson is about collaborative and student-centered activity. Accordingly, medium that is based on learning outcome will give good perception towards students because it is pleasant and convenient (Rahmatullah, Inanna & Ampa, 2020). Consequently, lecturer utilized Canva application as learning medium for MPU12012 Entrepreneurship alongside Industry Revolution 4.0 (IR 4.0) and the development of information technology.

According to Junaedi (2021), 85.71% students agreed that Canva application is helpful and provided interesting writing work in English Language Communication and Information Technology subject at Universities 17 August 1945, Semarang. Students too are said to have interest towards teaching and learning materials that was prepared using Canva application. In addition, Mila et al. (2021) stated that the use of Canva as audio-based learning medium gives positive impact to students of Economy Education of University Negeri Makassar. Based on students' assessment response, the effectiveness of the use of Canva application in learning is good with 73.8%. The selection of Canva application can be viewed as suitable because its interactive and attractive content as teaching material.

Furthermore, Tiawan et al. (2020) found that Canva application provides value-added in the aspect of graphic design as one of learning medium towards secondary school students. A total of 42 respondents from SMKN 1 Mount Putri Bogor, Indonesia expressed that Canva allows them to make their homework more attractive. This is aligned with findings of Siswanjaya (2021) that explains the use of Canva in upraising motivation and skills in writing for 30 respondents in their students' project. Students' project involving content writing, language, satisfactory vocabulary with interesting design that was digitally developed using Canva has shown 63% increment.

### 3. Metodology

This study was conducted using a mixed mode design which comprises qualitative and quantitative (descriptive) approaches. The qualitative approach involved observations and structured interviews of 17 Electrical Technology Certificate (SKE 2A) students who enrolled in the MPU12012 Entrepreneurship course for session II 2021/2022. This qualitative approach adapted the level of study's implementation based on the model of Kemmis and Mc Taggart (2008; Siswanjaya, 2021). Kemmis and Mc Taggart's (2008) model includes four (4) levels, namely planning, action, observation and reflection. The researcher cum course lecturer carried out the observations of this study during the teaching and learning session of MPU12012. The instruments employed in quantitative approach are pre-test and post-test questionnaires which aim to identify the level of respondents' knowledge after the implementation and to serve as an observation of the use of Canva application.

Figure 1 shows the steps of the qualitative approach carried out in this research.

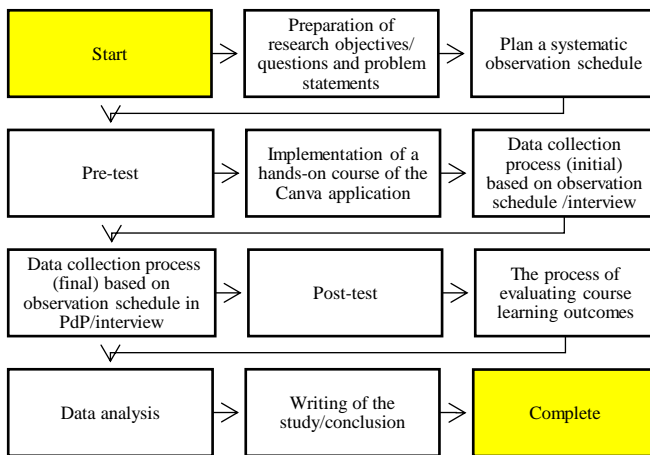


Figure 1. Flowchart of research implementation

The researcher conducted observations and structured interviews with students starting in the third week until the 10th week (23 March-18 May 2022) of the teaching and learning sessions of MPU12012 course. The learning topics involved in the observation of this study are:

- i. Topic 2: Generating Business Ideas
- ii. Topic 3: Marketing Mix
- iii. Topic 4: Marketing in Social Media for Entrepreneurs

Data collection procedures and techniques were carried out by making observations in face -to -face learning sessions. Table 1 shows the level of observation and implementation of the study that was conducted.

Table 1. Level of observation and implementation indicators for the use of Canva

Level of		Implementation Indicators
No.	implementation of the study	
1.	Planning	<ul style="list-style-type: none"> <li>Description of course outcomes (HPK)</li> <li>Interviewing students/respondents</li> <li>Pre-test on the use of Canva</li> </ul>
2.	Implementation	<ul style="list-style-type: none"> <li>Implementation of Canva hands-on courses</li> <li>Canva usage application</li> <li>Preparation of posters, flyers, Facebook Page front page</li> <li>Preparation of offline and online simulation worksheets</li> <li>Teaching and learning methods</li> <li>Monitor the progress of projects/assignments</li> </ul>
3.	Observation	<ul style="list-style-type: none"> <li>Teaching and learning process</li> <li>Corrections/comments from lecturers</li> <li>Evaluation of the produced design</li> </ul>
4.	Reflection	<ul style="list-style-type: none"> <li>Post-test on the use of Canva</li> <li>Analyze pre-test and post-test data</li> <li>Suggestions based on students' opinions before and after the observation</li> <li>Scoring</li> <li>Determine the success of implementation</li> </ul>

#### 2.1 Pilot Study

A set of questionnaires for pre-test and post-test were distributed to the respondents at the planning stage to find out the level of knowledge and application of the Canva application. Next, the same set of questionnaires was redistributed to the respondents to identify their level of knowledge after the implementation and observations were conducted in this study. A pilot study was conducted by the researcher to obtain the reliability value of the instrument and the validity of the pre-test and post-test questionnaires. This instrument has 10 question items that measure three (3) constructs namely visual, content (content) and quality of Canva application as a learning media for MPU12012 Entrepreneurship course.

The instrument uses a 5 -point Likert scale to obtain the degree of respondents' agreement, namely:

- i. Strongly disagree (1)
- ii. Disagree (2)
- iii. Not sure (3)
- iv. Agree (4)
- v. Strongly agree (5)

A total of 30 respondents with similar characteristics to the actual respondents followed this pilot study. This number of 30 respondents is sufficient for a study in the social sciences field (Creswell, 2009; Marohaini, 2013; Othman & Kassim; 2018). Table 2 shows results of the pilot study that was conducted.

Table 2. Values of reliability coefficients of the questionnaire items

	Aspect	Item statement	( $\alpha$ )	Interpretation
B1	Visual	Animations provided are interesting	.93	Very high
B2	Visual	Illustrations provided are interesting	.89	High
B3	Visual	Provides a wide variety of attractive presentation templates	.87	High
B4	Visual	Attractive combination of colors and graphics	.94	Very high
B5	Content	Canva is easy to use	.90	Very high
B6	Content	Appropriate to course learning outcomes and learning objectives	.81	High
B7	Content	Appropriately designed for the needs of tasks/projects	.91	Very high
B8	Quality	Students can easily understand the concept of Canva learning	.83	High
B9	Quality	Can save time in designing	.91	Very high
B10	Quality	Can be used at any time	.81	High

Based on the findings in Table 2, all pre-test and post-test questionnaire items have high reliability and can be used to obtain actual study data because the acceptable Cronbach's Alpha value score is between  $\alpha = .71-.99$  (Bond & Fox; 2015).

Pre-test and post-test data were analyzed using Statistical Package for the Social Sciences (SPSS) software. Pre-test and post-test mean scores was referred to the interpretation of Nunnally's mean score (2011; Mohammad and Mohd, 2021).

Table 3. Interpretation of mean scores

Mean	Interpretation
1.00 – 2.00	Low
2.01 – 3.00	Medium low
3.01 – 4.00	Medium high
4.01 – 5.00	High

#### 4. Findings and Discussion

Table 4 shows the findings of the pre-test and post-test mean scores that were conducted at the beginning of the observation and before the implementation of the Canva application hands-on course.

Based on Table 4, the overall findings of the post-test mean score were high with a mean value of 4.19 and a standard deviation of .397. This indicates an increase because the pre-test mean score is moderately low with mean = 2.63 and standard deviation of .238. These data findings are in line with Riono and Fauzi (2022) who stated that the use of Canva application as a learning medium in Islamic Religious Education in primary schools in Central

Java, Indonesia has a positive impact with an increase of 75-78 percent teaching and learning objectives achievement. Canva-based learning media is able to develop students' creativity in completing a given project or assignment.

Table 4. Use of Canva application (N = 17)

Item	Pre-test score frequency (%)					Post-test score frequency (%)				
	SA (5)	A (4)	NS (3)	D (2)	SD (1)	SA (5)	A (4)	NS (3)	D (2)	SD (1)
B1	-	-	82.4	17.6	-	47.1	47.1	5.9	-	-
B2	-	-	76.5	23.5	-	64.7	29.4	5.9	-	-
B3	-	-	100.	-	-	35.3	35.3	29.4	-	-
B4	-	-	70.6	29.4	-	-	88.2	11.8	-	-
B5	-	-	64.7	35.3	-	35.3	58.8	5.9	-	-
B6	-	-	70.6	11.8	17.6	29.4	64.7	5.9	-	-
B7	-	-	64.7	35.3	-	29.4	58.8	11.8	-	-
B8	-	-	70.6	29.4	-	52.9	41.2	5.9	-	-
B9	-	-	70.6	11.8	17.6	35.3	52.9	11.8	-	-
B10	-	-	47.1	23.5	29.4	41.2	52.9	5.9	-	-
Mean score	2.63					4.19				
Standard deviation	.238					.397				
Interpretation of mean score	Medium low					High				

#### 4.1 Observation Results

Table 5 shows the results of observations and structured interviews that were conducted from the third week to the 10th week (23 March-18 May 2022) for the teaching and learning sessions of the MPU12012 Entrepreneurship course. The researcher conducted face-to-face interviews with students during lectures according to the research planning period. A documentation checklist and field notes were prepared to record the observations on respondents as well as their interview answers.

Table 5. Observation data on the use of Canva application (N = 17)

Level of observation	Implementation	(%)	Level of implementation
Planning	a. Description of course learning outcomes (HPK)	100.0	Very good
	b. Preparation of learning media	94.1	Very good
Implementation	a. Implementation of Canva hands-on course	92.2	Very good
	b. Preparation of posters, flyers, Facebook Page cover, offline and online simulation worksheets	82.4	Very good
	c. Teaching and learning methods	92.2	Very good
	d. Monitor the progress of projects/assignments	84.3	Very good
Assessment	a. Corrections/comments from the lecturer	86.3	Very good
	b. Evaluation of the design that has been produced	92.2	Very good
Overall Percentage (%)		90.2	



Based on the findings in Table 5, the results of observations on the impact of the use of Canva application as a medium of teaching and learning in MPU12012 Entrepreneurship has a very good level of implementation. The average observation data of the entire research was 90.2 percent. This observation data is in line with Siswanja's (2021) study of 30 students at SMPN 1 Terbanggi Besar Lampung, Indonesia which reviewed the effectiveness of Canva application as an English teaching medium. The analysis of the study portrayed that the use of Canva in teaching and learning increased students' English writing assessment scores based on prescribed rubrics by 80.7 percent. Therefore, the use of Canva application as an MPU12012 Entrepreneurship course teaching and learning media is very effective and in fact enhances the creativity of students.

In addition, the selection of Canva as an instructional media is in line with the course learning outcomes because an appropriate instructional media design will increase students' motivation and comfort in learning activities (Mila et al, 2021).

## 5. Conclusions

Based on the results of the study, it can be concluded that the Canva application-based learning media is very suitable to be used in MPU12012 Entrepreneurship course learning. Students can understand the material well if the learning media used is interesting and interactive. Canva application is a multimedia tool that combines the human senses to facilitate the achievement of students' competencies and understanding. One of the factors that determines the success of a learning process is how the teaching media used is interesting enough to grab students' attention to focus during a teaching and learning process. To use Canva application in designing learning media is very suitable. This is because there are various facilities, templates and designs that are effective in helping to prepare the requirements of reports, assignments, projects and simulations in the MPU12012 Entrepreneurship course.

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## **The Analysis of Souvenir Purchase Decision Making Based on Management Resources Approach**

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### **Abstract**

The purpose of this research is to analysis the influence of management resources, men, material, method and market. This research was designed with cross sectional approach. The population in this research was the consumers of knitting mask connector, due to the limitation of time, obtained 55 respondents as the sample. The independent variable in this study is management resources (men, material, method), and the dependent variable is purchase decision making. Using SEM-PLS as the technical analysis, obtained a significant direct influence of men, materials, methods and market on purchase decision making.

*Keywords: Men, Material, Method, Market, Purchase Decision Making*

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### **1. Introduction**

Nowadays, the world tries to awake the tourism sector. Tourism is a service sector that tries to present innovative and integrative services that offers various services including the touristic attraction (Mendes, Ferreira, & Dias, 2022). The most important aspect in tourism that can be considered as the touristic attraction is “what to buy” (on the way to or at the tourism destination), and one of the answers is souvenirs. Tourists have to make purchase decision making in determining what to buy. Many factors affect tourists’ decision in purchasing the souvenirs. One of the most popular souvenirs, Covid-19 aftermath, is knitting mask connector. The decision-making of the knitting mask connector purchase by the customer is a goal that the business expects to achieve with the support of qualified business management resources.

The rationalization that management is required in all types of organizational activities where people work

together in the organization in pursuit of common goals is empirically proven through study, conducted on consumers of an organization/company providing services. The results of data processing showed that: 45% of respondents gave a high appraisal of man resource, 48% of respondents gave a high appraisal of materials, 51% of respondents gave a high appraisal of machines, 50% of respondents gave a high appraisal of methods, 49 % of respondents gave a high monetary appraisal on management resources (Wardani, 2017).

As we have stated before, the purpose of management is to achieve set goals. One of the main goals of a commodity -producing business unit, as a souvenir business unit, is to get as many buyers for their products. Several previous studies have proven this, even thought of in various ways or goals or objections. That is why, based on ideas, the purpose of this research is that is why, based on ideas, the purpose of this research is to analyze the influence of management resources, men, materials, methods, and markets on purchase decisions making in buying the souvenir - knitting mask connector.

As we mentioned earlier, the purpose of management is to achieve the set goal. One of the main goals of a commodity-producing business unit, as a souvenir business unit, is to get as many buyers for their products. Several previous studies have proven this in various ways or goals or objections. That is why, based on ideas, the purpose of this research is to analyze the influence of management resources, men, materials, methods, and markets on the purchase decision making in buying the souvenir knitting mask connector.

## 2. Literature Review

Management is needed in all types of organizational activities where people work together in an organization to achieve common goals (Wardani, 2017). This argument is supported by a study with the statement: Variable of man, material, and method has significant association to the interest of using, or we can say purchasing, the service given by the organization.

The process of a purchase decision making consists of several steps, that involving complexity, various aspects, or attributes such as: identification, selection, information, substitution, and others (Sofi & Nika, 2017; Pappas & Glyptou, 2021; Methling, Abdeen & Nitzsch, 2022; Ran, 2022). Every business that offers souvenirs wants tourists or customers to purchase as many as they can. Based on previous research, it is believed that to achieve one business goals we need management resources. Management resources consist of men, material, machine, money, and method, the 5M (Abdi, et.al. 2016; Wardani, 2017).

Therefore, based on the literature review, the theory, and the previous study, on the management resources and purchasing decision making, the hypothesis of this research would be:

H1: Management resources has significant effect on purchasing decision making

## 3. Methodology

This research was designed with cross sectional approach. The population in this research was the consumers of knitting mask connector. The sampling technique used in this research was simple random technique. Due to time constraints, a sample of 55 respondents was obtained. The independent variable in this study is management resources (men, material, method), and the dependent variable is purchase decision making. The technical analysis used is SEM-PLS. The Variable used in this research is described in Table 1.

Table 1. The research variables

Variable	Indicator	Symbol
Management Resources (X)		
Men:		
1.	Qualified Souvenir Artisan	X1
2.	Supplier Availability	X2
Material:		
3.	Good Quality Material	X3
Method:		
4.	Unique Knitting Mask Design	X4
5.	Sales Channel Diversity	X5
Purchase Decision Making (Y)		
	Product quality is better comparing to others	Y1
	Bought after comparing with other seller's product	Y2
	The information provided regarding the product is in accordance with the reality	Y3
	Look at the product sold makes you interested in buying them	Y4
	Product packaging is very good	Y5
	Knitting mask connector as souvenir follow the current trend	Y6
	See other consumers wearing knitting mask connector makes you interested in buying them	Y7
	Satisfied with the knitting mask connector	Y8
	Never feel disappointed after buying a knitting mask connector	Y9
	The decision to buy knitting mask connectors due to the good quality of the product	Y10

## 3. Analysis and Findings

### Assessment of Measurement Model

The overall evaluation model, Model Fit and quality indices, in this research were assessed in the Table 2. Based on the data processed, out of the 15 tests/index goodness of the model, good results were obtained for 11 tests/index of goodness of the model (73.3% good). In other words, the model is good and feasible to use.

Table 2. Model fit and quality indices

Classic Indices	Value	Model Requirement	Conclusion
Average path coefficient (APC)	<0.001	$P\text{-value} < 0.05$	close fit
Average R-squared (ARS)	<0.001	$P\text{-value} < 0.05$	close fit
Average adjusted R-squared (AARS)	<0.001	$P\text{-value} < 0.05$	close fit
Average block VIF (AVIF)	-	acceptable if $\leq 5$ , ideally $\leq 3.3$	-
Average full collinearity VIF (AFVIF)	1.853	acceptable if $\leq 5$ , ideally $\leq 3.3$	close fit
Tenenhaus GoF (GoF)	0.499	small $\geq 0.1$ , medium $\geq 0.25$ , large $\geq 0.36$	close fit
Sympson's paradox ratio (SPR)	1.000	acceptable if $\geq 0.7$ , ideally = 1	close fit
R-squared contribution ratio (RSCR)	1.000	acceptable if $\geq 0.9$ , ideally = 1	close fit
Statistical suppression ratio (SSR)	1.000	acceptable if $\geq 0.7$	close fit
Nonlinear bivariate causality directun ratio (NLBCDR)	1.000	acceptable if $\geq 0.7$	close fit
Additional Indices	Value	Model Requirement	Conclusion
Standardized root mean squared residual (SRMR)	0.150	acceptable if $\leq 0.1$	not good fit
Standardized mean absolute residual (SMAR)	0.112	acceptable if $\leq 0.1$	not good fit
Standardized chi-square with 252 degrees of freedom (SChS)	<0.001	$P\text{-value} < 0.05$	close fit
Standardized threshold difference count ratio (STDCR)	0.838	acceptable if $\geq 0.7$ , ideally = 1	good fit
Standardized threshold difference sum ratio (STDCR)	0.581	acceptable if $\geq 0.7$ , ideally = 1	not good fit

The measurement model evaluation was showed in Table 3, the internal consistency, were measured by Cronbach's Alpha ( $\alpha > 0.60$ ) and Composite Realibility (CR > 0.70). Furthermore, the convergent validity was measured by Outer Loading (OL > 0.50) and Average Variance Extracted (AVE > 0.50).

Table 3. The validity and reliability measurements for all constructs

Construct	Item Description	Outer Loading	AVE	CR	Cronbach's Alpha
Management Resources	X1	0.764	0.53	0.84	0.778
	X2	0.752	1	9	
	X3	0.731			
	X4	0.734			
	X5	0.656			
Purchase Decision Making	Y1	0.771	0.51	0.91	0.894
	Y2	0.632	5	3	
	Y3	0.670			

Y4	0.696
Y5	0.762
Y6	0.677
Y7	0.638
Y8	0.867
Y9	0.708
Y10	0.722

Table 3 shows that, from the data processing, the value of outer loading, AVE, CR, and Cronbach's Alpha is satisfying for SEM-PLS model. The internal consistency and convergent validity for all items are fit. All outer loading value is greater than the cut-off value (0.50), AVE is greater than 0.50, CR is greater than 0.70, and the Cronbach's Alpha is greater than 0.60 (cut-off values). For the management resources AVE, values of 0.53, Composite Reliability (CR), values of 0.849. For the Purchase Decision Making AVE, the values of 0.515, Composite Reliability (CR) values of 0.913. These results show that these constructs have internal consistency and good convergent validity.

1. The discrimination validity, is measured from Cross Loading ( $L > L_{others}$ ) and criteria of Fornell Lacker ( $\sqrt{AVEY_i} > \text{Correlation } Y_i, Y_j$ ). The numbers were written in Bold in the Table 3 are loading factor which is symbolized by L.

Table 4. The cross loading result

	X	Y
X1	<b>(0.764)</b>	-0.279
X2	<b>(0.752)</b>	-0.115
X3	<b>(0.656)</b>	-0.117
X4	<b>(0.734)</b>	0.334
X5	<b>(0.731)</b>	0.179
Y3	0.125	<b>(0.771)</b>
Y4	0.297	<b>(0.632)</b>
Y5	-0.387	<b>(0.670)</b>
Y7	0.493	<b>(0.696)</b>
Y8	0.113	<b>(0.762)</b>
Y9	-0.296	<b>(0.677)</b>
Y10	0.096	<b>(0.638)</b>
Y12	-0.125	<b>(0.867)</b>
Y13	0.199	<b>(0.708)</b>
Y14	-0.481	<b>(0.722)</b>

In Table 4, it can be seen that each outer loading in the specified construct has a greater value than the outer loading in the other constructs. It is concluded that the discriminant validity of the SEM-PLS model is met.

Table 5. Correlation matrix results for Fornell Lacker criteria

	X	Y
X	<b>(0.728)</b>	0.678
Y	0.678	<b>(0.717)</b>

Furthermore, it can be seen in Table 5, for each row of the matrix, the AVE value of the construct is generated and has a value greater than the correlation values of the two different constructs. It is also concluded that the discriminant validity of the SEM-PLS model is met. Other results obtained from data processing are the results



of the structural model evaluation as measured by the coefficient of determination ( $R^2$ ) and the magnitude and significance of the path coefficient. Table 6 shows the results of hypothesis testing in a direct relationship of several constructs. . From the formulated hypotheses, all hypotheses are significant with p-value < 0.05.

Table 6. The relationship path among the constructs

Hypothesized Paths	Estimate	P-value	Result
H1: X->Y	0.691	<0.001***	Significant

Note: \*\*\*, \*\*, and \* denote the two-tail statistical significance at 1%, 5%, and 10% respectively

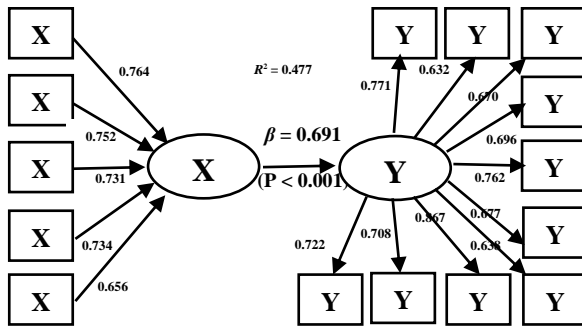


Figure 1. The path coefficient

$$Y = 0.691X + e, R^2 = 0.477$$

The result of the coefficient of determination (R-Square,  $R^2$ ) is 0.477, means that the diversity of endogenous constructs (Y) can be explained by exogenous constructs (X) is 47.7% and the remaining 52.3% is explained by other constructs that are not included in which one, represented by a structural error. In the structural equation, the test results conclude that:

1. There is a significant direct effect of X on Y of 0.691. The higher the X value, the higher the Y value; On the other hand, the lower the X value, the lower the Y value.
2. There is a significant direct effect of X1 on Y of  $0.764 * 0.691 = 0.527924$ . The higher the X1 value, the higher the Y value; On the other hand, the lower the X1 value, the lower the Y value.
3. There is a significant direct effect of X2 on Y of  $0.752 * 0.691 = 0.519632$ . The higher the X2 value, the higher the Y value; On the other hand, the lower the X2 value, the lower the Y value.
4. There is a significant direct effect of X3 on Y of  $0.731 * 0.691 = 0.505121$ . The higher the value of X3, the higher the value of Y; on the other hand, the lower the X5 value, the lower the Y value.
5. There is a significant direct effect of X4 on Y of  $0.734 * 0.691 = 0.507194$ . The higher the X4

value, the higher the Y value; On the other hand, the lower the X4 value, the lower the Y value.

6. The direct effect of X5 which is significant on Y is  $0.656 * 0.691 = 0.453296$ . The higher the X5 value, the higher the Y value; On the other hand, the lower the X5 value, the lower the Y value.

The fact that there is a significant direct effect of qualified souvenir artisan, X; supplier availability, X2 (men); good quality material, X3 (material); unique knitting mask design, X4; sales channel diversity, X5 (method); proved that that the management resource supports the business goal achievement, to convince customers in deciding to buy the knitting mask connector as souvenir. These findings align with the previous research (Wardani, 2017).

#### 4. Conclusion and Recommendations

Previously, it was mentioned, the purpose of this study is to analyze the influence of management, human men, material, method, and market resources on purchase decisions making for the souvenir knitting mask connector. Based on the results of the study, it can be concluded that there is a direct influence of management resources, human resources or men, materials, methods on purchase decisions making in purchasing knitting mask connector. The higher the management resources, man, material, method; the purchase decision making in purchasing knitting mask connectors. This result shows that this research findings supports the previous finding, the management resource supports the business goal achievement (Wardani, 2017).

This finding shows that the higher the men, material, method (quality and or diversity), the higher the purchase decision making in purchasing souvenir - knitting mask connector. This imply that the knitting mask connector business providers have to take into consideration to in maintaining and enhancing the quality of souvenir artisan and availability of supplier (the human capitals/men). Furthermore, this business not only has to take into consideration the on the quality of the materials, but also the diversity of marketing method. Hence, this business can sustainably in providing the souvenir as a crucial component of the tourism development and recovery after the Covid-19 pandemic.

However, there are numerous limitations to this research. For instance, the number of respondents included in the sample of this research is limited, which affects the number of variables. The future research agenda should carefully address all of these restriction factors. Since social science constantly makes assumptions, different variables and sample sizes present opportunities for further study in an effort to broaden our understanding.

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