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Developing and Validating an Instrument to Measure the Marketability of Terengganu Graduates Based on Soft Skills and Graduate Awareness

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Abstract: Skills that students need to have, such as interpersonal skills, are very important skills that every student needs to master. It is the ability of a person to work cooperatively in a group, including verbal and nonverbal communication skills. It can distinguish individuals in terms of emotions, motivation, temperament and intentions, has empathy and can know the beliefs, fears and hopes of other individuals, which is sensitive to the feelings and emotions of others. In line with its importance, the Ministry of Higher Education (MHE), has introduced soft skills that need to be applied to students in institutions of higher learning. There are seven main elements of soft skills introduced, namely communication skills, critical thinking and problem-solving skills, teamwork skills, entrepreneurial skills, leadership skills, continuous learning and information management, and professional ethics and morals. These soft skills are considered skills that provide added value to graduates. If these skills are possessed by every graduate, then they are considered excellently competent. This study was conducted to develop and validate an instrument based on the Exploratory Factor Analysis (EFA) process to measure the soft skills constructs possessed by Terengganu graduates to enable the government to provide various preparatory programs or courses for them to enter the real world of work.This study used a quantitative research method based on Structural Equation Modelling (SEM) to analyze the various relationships between variables in the study model. Before the data was analyzed using Structural Equation Modeling (SEM), Exploratory Factor Analysis (EFA) was conducted to identify the suitability of the items used in the study instrument. This study describes in detail the procedure for conducting Exploratory Factor Analysis (EFA) for each construct. The findings of this study show that the validity values based on Kaiser-Meyer-Olkin (KMO), Total Variance Explained (TVE), Factor Loading and reliability values based on Cronbach's Alpha, have met all the required values.

Keywords: Validity, Reliability, Soft Skills, Graduate Awareness, Graduate Employability

Introduction

In a rapidly developing country, the role of the university as an Institute of Higher Education (IHE) to enable students to deepen and expand their knowledge is as important as its role as a center for training professionals. Education at the university not only aims to promote the mental and spiritual development of students, but also to hone their skills to meet the demands of professional and

technical jobs among young people and further develop the country's economy. Therefore, the role of educators in general and the role of higher education in particular in providing training towards equipping students with skills and attitudes that are appropriate for job demands is very appropriate to implement. Usually, the general view often refers to the failure of students to get jobs due to not having the skills needed by employers. In fact, there have been complaints and concerns voiced by employers lately that IPT do not provide their students with sufficient knowledge and skills for them to step into the world of work. This is because the market value of each student is seen in various aspects and employers are more inclined to look for potential employees who have various skills without having to provide in-service training (Haslinda, Muhammad Nubli & Zarina, 2015). A study conducted by the UPM Academic Development Center (ADC) found that issues related to soft skills were ranked tenth during interview sessions compared to academic issues which were ranked eighteenth (Mohamad & Azali, 2018). This shows that matters related to the development of skills, especially students' soft skills, need to be given serious attention, especially at the level of Higher Education Institutions in our country. Various programs have been carried out by the university with the aim of producing students and the community who are dynamic, cultured and have a high sense of patriotism towards the country in addition to fostering soft skills such as communication skills, teamwork skills, leadership skills and critical thinking and problem-solving skills. In addition, this program is implemented to increase unity among students of various races who participate. What is important is the extent to which current prospective graduates manipulate all aspects provided at the university and also utilize issues towards self-development as a student with high intellectuality. This question focuses on the direction of students after graduation in addition to the question that arises about the suitability of the relationship between the study program studied and the world of work.

Explortory Factor Analysis (EFA)

EFA is conducted to identify some components that exist in the set of questionnaires that have been formed. EFA is a statistical technique that transforms a set of original construct data linearly into a set of smaller constructs that can give a comprehensive picture of all the information contained in the original construct (Duntemen, 1989). The purpose of EFA is to reduce the dimensions of the original data to several smaller components that can be interpreted more easily and meaningfully (Duntemen, 1989; Lewis-Beck, 1994 & Field, 2016). According to Tabachnick and Fidell (2013), EFA needs to go through several stages. The first stage calculates the correlation matrix between all the factor-analyzed constructs. The next stage involves extracting some factors from the correlation matrix and determining the number of factors formed. The rotation of the factors is done to improve the interpretation so that the factors are more meaningful and can be interpreted. The final and most important stage in factor analysis is to interpret the results of the factors obtained and give an appropriate name to each factor. According to Chik, Abdullah, Ismail and Mohd Noor (2024; 2022) and Hoque et al (2017), if researchers adapt instruments that have been built by previous researchers and modify statements to fit the current study, then they need to re-run the EFA procedure. This is because the current study area may be different from previous studies, or the current study population is significantly different from previous studies in terms of socioeconomic status, race and culture. Thus, there may be some items that have been constructed before, no longer suitable for the current study or there may also be a different item structure in the current study compared to the structure in the previous study. Therefore, researchers need to recalculate the Internal Reliability value of the current instrument, which is the new Cronbach's Alpha value (Chik et al., 2024; 2022; Hoque et al., 2017). In

this study, the researcher conducted a pilot study on 100 Terengganu graduates based on soft skills and graduate awareness and re-conducted EFA on items measuring the construct.

Findings

Exploratory Factor Analysis (EFA) for Communication Skills Constructs

Each item in the Communication Skills construct uses five (5) items and is labeled KB1 to KB5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Communication Skills construct. The results of Table 1 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling Adequacy Measure (KMO) is 0.859 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; Hoque et al., 2017).

Table 1 *KMO Values and Bartlet's Test for Communication Skills Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.859
Bartlett's Test of Sphericity	Approx. Chi-Square	1225.925
	df	10
	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 2 below shows the total variance value estimated by the items used to measure the Communication Skills construct. Reading from Table 2 below found that the Communication Skills construct measured using five (5) items in one component can measure the Communication Skills construct by 69.806%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 2 *Total Variance Explained for Communication Skills Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.490	69.806	69.806

Findings from Table 2 above show that Communication Skills construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 3 below shows the distribution of items accepted to measure Communication Skills construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should

be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 3 *Factor Loading for One (1) Component Communication Skills Construct*

Component Matrix[a]	
Items	Component
KB1	0.837
KB2	0.818
KB3	0.864
KB4	0.902
KB5	0.749

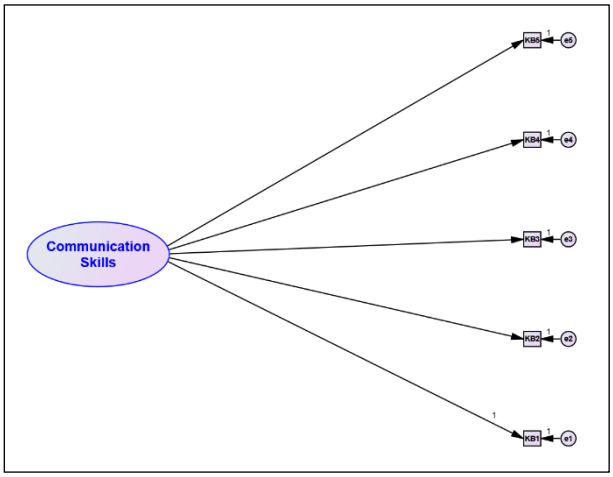

Figure 1. Position of Components and Items for Communication Skills Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 4 below shows the value of Cronbach's Alpha equal to 0.890, for each item in the Communication Skills construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 4 *Cronbach's Alpha Value for Each Item in the Communication Skills Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.890

Exploratory Factor Analysis (EFA) for Critical Thinking and Problem Solving Skills Constructs

Each item in the Critical Thinking and Problem Solving Skills construct uses five (5) items and is labeled KP1 to KP5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Critical Thinking and Problem Solving Skills construct. The results of Table 5 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling Adequacy Measure (KMO) is 0.830 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 5 *KMO Values and Bartlet's Test for Critical Thinking and Problem Solving Skills Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.830
Bartlett's Test of Sphericity	Approx. Chi-Square	1534.743
	df	10
	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 6 below shows the total variance value estimated by the items used to measure the Critical Thinking and Problem Solving Skills construct. Reading from Table 6 below found that the Critical Thinking and Problem Solving Skills construct measured using five (5) items in one component can measure the Critical Thinking and Problem Solving Skills construct by 66.855%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 6 *Total Variance Explained for Critical Thinking and Problem Solving Skills Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.343	66.855	66.855

Findings from Table 6 above show that Critical Thinking and Problem Solving Skills construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 7 below shows the distribution of items accepted to measure Critical Thinking and Problem Solving Skills construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 7 *Factor Loading for One (1) Component Critical Thinking and Problem Solving Skills Construct*

Component Matrix[a]	
Items	Component
KP1	0.731
KP2	0.899
KP3	0.912
KP4	0.927
KP5	0.923

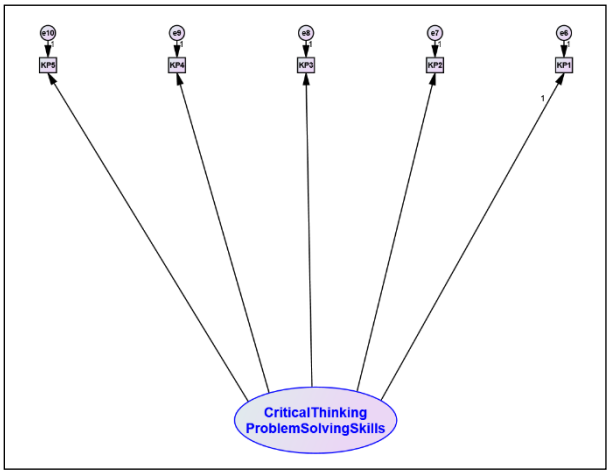

Figure 2. Position of Components and Items for Critical Thinking and Problem Solving Skills Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 8 below shows the value of Cronbach's Alpha equal to 0.851, for each item in the Critical Thinking and Problem Solving Skills construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 8 *Cronbach's Alpha Value for Each Item in the Critical Thinking and Problem Solving Skills Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.851

Exploratory Factor Analysis (EFA) for Entrepreneurial Skills Constructs

Each item in the Entrepreneurial Skills construct uses five (5) items and is labeled KU1 to KU5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Entrepreneurial Skills construct. The results of Table 9 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling Adequacy Measure (KMO) is 0.883 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 9 *KMO Values and Bartlet's Test for Entrepreneurial Skills Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.883
Bartlett's Test of Sphericity	Approx. Chi-Square	1726.771
	df	10
	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 10 below shows the total variance value estimated by the items used to measure the Entrepreneurial Skills construct. Reading from Table 10 below found that the Entrepreneurial Skills construct measured using five (5) items in one component can measure the Entrepreneurial Skills construct by 78.430%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 10 *Total Variance Explained for Entrepreneurial Skills Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.922	78.430	78.430

Findings from Table 10 above show that Entrepreneurial Skills construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 11 below shows the distribution of items accepted to measure Entrepreneurial Skills construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 11 *Factor Loading for One (1) Component Entrepreneurial Skills Construct*

Component Matrix[a]	
Items	Component
KU1	0.873
KU2	0.896
KU3	0.894
KU4	0.913
KU5	0.850

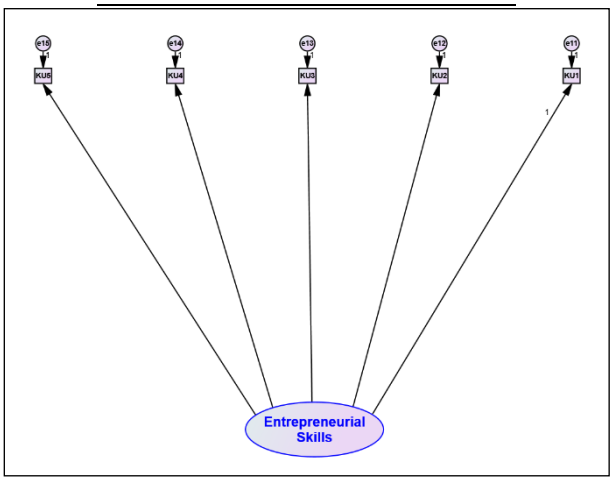

Figure 3. Position of Components and Items for Entrepreneurial Skills Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 12 below shows the value of Cronbach's Alpha equal to 0.931, for each item in the Entrepreneurial Skills construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 12 *Cronbach's Alpha Value for Each Item in the Entrepreneurial Skills Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.931

Exploratory Factor Analysis (EFA) for Leadership Skills Constructs

Each item in the Leadership Skills construct uses five (5) items and is labeled KK1 to KK5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Leadership Skills construct. The results of Table 13 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling

Adequacy Measure (KMO) is 0.867 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 13 *KMO Values and Bartlet's Test for Leadership Skills Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.867
Bartlett's Test of Sphericity	Approx. Chi-Square	2084.395
	df	10
	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 14 below shows the total variance value estimated by the items used to measure the Leadership Skills construct. Reading from Table 14 below found that the Leadership Skills construct measured using five (5) items in one component can measure the Leadership Skills construct by 81.164%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 14 *Total Variance Explained for Leadership Skills Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	4.058	81.164	81.164

Findings from Table 14 above show that Leadership Skills construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 15 below shows the distribution of items accepted to measure Leadership Skills construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 15 *Factor Loading for One (1) Component Leadership Skills Construct*

Component Matrix[a]	
Items	Component
KK1	0.901
KK2	0.919

KK3	0.937
KK4	0.835
KK5	0.900

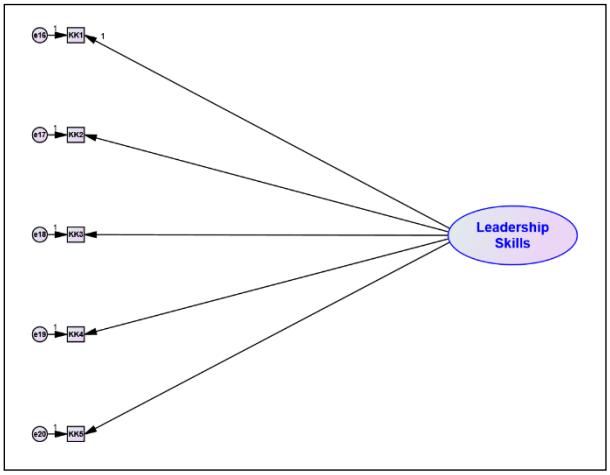

Figure 4. Position of Components and Items for Leadership Skills Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 16 below shows the value of Cronbach's Alpha equal to 0.941, for each item in the Leadership Skills construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 16 *Cronbach's Alpha Value for Each Item in the Leadership Skills Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.941

Exploratory Factor Analysis (EFA) for Information Management Constructs

Each item in the Information Management construct uses five (5) items and is labeled PM1 to PM5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Information Management construct. The results of Table 17 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling Adequacy Measure (KMO) is 0.827 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 17 *KMO Values and Bartlet's Test for Information Management Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.827
Bartlett's Test of Sphericity	Approx. Chi-Square	1580.940
	df	10
	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 18 below shows the total variance value estimated by the items used to measure the Information Management construct. Reading from Table 18 below found that the Information Management construct measured using five (5) items in one component can measure the Information Management construct by 74.090%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 18 *Total Variance Explained for Information Management Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.705	74.090	74.090

Findings from Table 18 above show that Information Management construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 19 below shows the distribution of items accepted to measure Information Management construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; Hoque et al., 2017).

Table 19 *Factor Loading for One (1) Component Information Management Construct*

Component Matrix[a]	
Items	Component
PM1	0.792
PM2	0.871
PM3	0.894
PM4	0.873
PM5	0.869

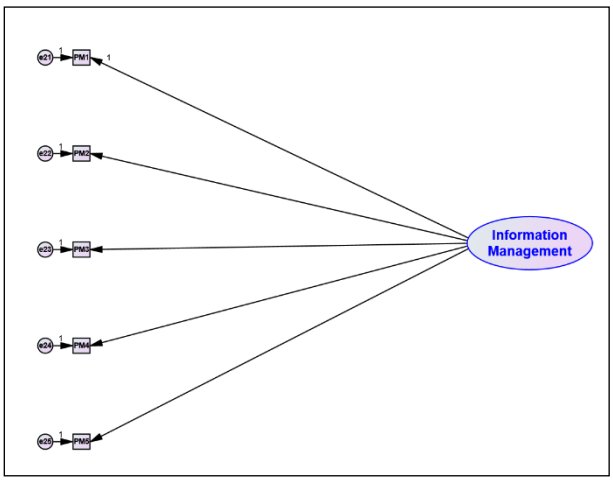

Figure 5. Position of Components and Items for Information Management Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 20 below shows the value of Cronbach's Alpha equal to 0.912, for each item in the Information Management construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 20 *Cronbach's Alpha Value for Each Item in the Information Management Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.912

Exploratory Factor Analysis (EFA) for Professional Ethics and Morals Constructs

Each item in the Professional Ethics and Morals construct uses five (5) items and is labeled EM1 to EM5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Professional Ethics and Morals construct. The results of Table 21 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling Adequacy Measure (KMO) is 0.866 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 21 *KMO Values and Bartlet's Test for Professional Ethics and Morals Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.866
Bartlett's Test of Sphericity	Approx. Chi-Square	1258.644

	df	10
	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 22 below shows the total variance value estimated by the items used to measure the Professional Ethics and Morals construct. Reading from Table 22 below found that the Professional Ethics and Morals construct measured using five (5) items in one component can measure the Professional Ethics and Morals construct by 69.126%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 22 *Total Variance Explained for Professional Ethics and Morals Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.456	69.126	69.126

Findings from Table 22 above show that Professional Ethics and Morals construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 23 below shows the distribution of items accepted to measure Professional Ethics and Morals construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 23 *Factor Loading for One (1) Component Professional Ethics and Morals Construct*

Component Matrix[a]	
Items	Component
EM1	0.857
EM2	0.894
EM3	0.874
EM4	0.878
EM5	0.823

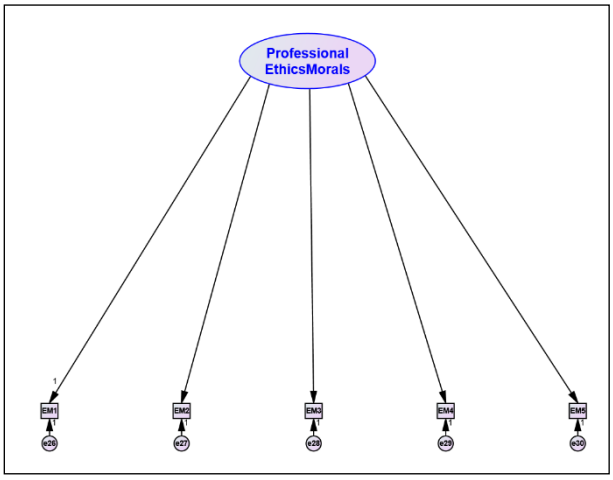

Figure 6. Position of Components and Items for Professional Ethics and Morals Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 24 below shows the value of Cronbach's Alpha equal to 0.887, for each item in the Professional Ethics and Morals construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 24 *Cronbach's Alpha Value for Each Item in the Professional Ethics and Morals Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.887

Exploratory Factor Analysis (EFA) for Graduate Awareness Constructs

Each item in the Graduate Awareness construct uses five (5) items and is labeled KG1 to KG5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Graduate Awareness construct. The results of Table 25 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling Adequacy Measure (KMO) is 0.870 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 25 *KMO Values and Bartlet's Test for Graduate Awareness Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.870
Bartlett's Test of Sphericity	Approx. Chi-Square	1601.457

	df	10
	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 26 below shows the total variance value estimated by the items used to measure the Graduate Awareness construct. Reading from Table 26 below found that the Graduate Awareness construct measured using five (5) items in one component can measure the Graduate Awareness construct by 76.230%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 26 *Total Variance Explained for Graduate Awareness Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.811	76.230	76.230

Findings from Table 26 above show that Graduate Awareness construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 27 below shows the distribution of items accepted to measure Graduate Awareness construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 27 *Factor Loading for One (1) Component Graduate Awareness Construct*

Component Matrix[a]	
Items	Component
KG1	0.873
KG2	0.826
KG3	0.895
KG4	0.904
KG5	0.866

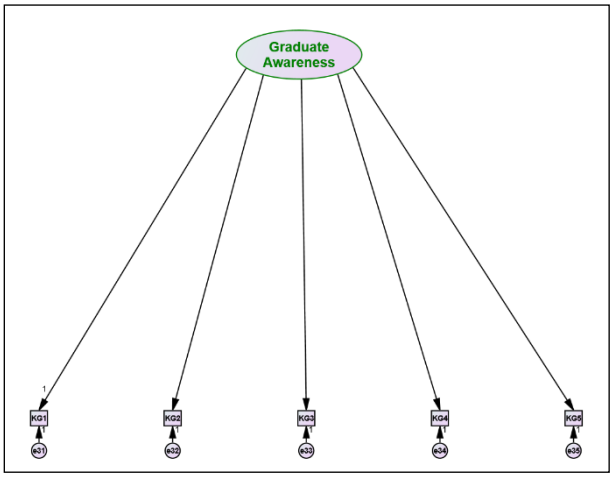

Figure 7. Position of Components and Items for Graduate Awareness Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 28 below shows the value of Cronbach's Alpha equal to 0.922, for each item in the Graduate Awareness construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 28 *Cronbach's Alpha Value for Each Item in the Graduate Awareness Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.922

Exploratory Factor Analysis (EFA) for Graduate Employability Constructs

Each item in the Graduate Employability construct uses five (5) items and is labeled PG1 to PG5. Next, the use of an interval scale to measure the items is between one (1) (Strongly Disagree) to 10 (Strongly Agree). The EFA procedure using the Principal Component Analysis (PCA) method with Varimax Rotation was conducted on the five (5) items that measure the Graduate Employability construct. The results of Table 29 below show that the Bartlet Test value is significant (P Value < 0.05). The Kaiser-Meyer-Olkin Sampling Adequacy Measure (KMO) is 0.790 which exceeds the minimum value of 0.6 (Chik et al., 2024; 2022; Hoque et al., 2017). Both of these achievements (significant Bartlet Test, & KMO value>0.6) reflect that the observed data is suitable for the next procedure in EFA (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 29 *KMO Values and Bartlet's Test for Graduate Employability Construct*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.790
Bartlett's Test of Sphericity	Approx. Chi-Square	852.675
	df	10

	Sig.	0.000

Total Variance Explained (TVE) is important for researchers to know what percentage of the items used can measure a study construct. Table 30 below shows the total variance value estimated by the items used to measure the Graduate Employability construct. Reading from Table 30 below found that the Graduate Employability construct measured using five (5) items in one component can measure the Graduate Employability construct by 75.796%. This value is sufficient because it exceeds the minimum requirement of 60% (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 30 *Total Variance Explained for Graduate Employability Construct*

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.790	75.796	75.796

Findings from Table 30 above show that Graduate Employability construct is measured by only one component. Thus, the researcher wants to know the selected items to measure the component. Table 31 below shows the distribution of items accepted to measure Graduate Employability construct. All items have a factor loading value exceeding the minimum limit of 0.6 and items that are less than 0.6 should be discarded because they do not contribute to the measurement of the construct (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 31 *Factor Loading for One (1) Component Graduate Employability Construct*

Component Matrix[a]	
Items	Component
PG1	0.893
PG2	0.873
PG3	0.882
PG4	0.858
PG5	0.844

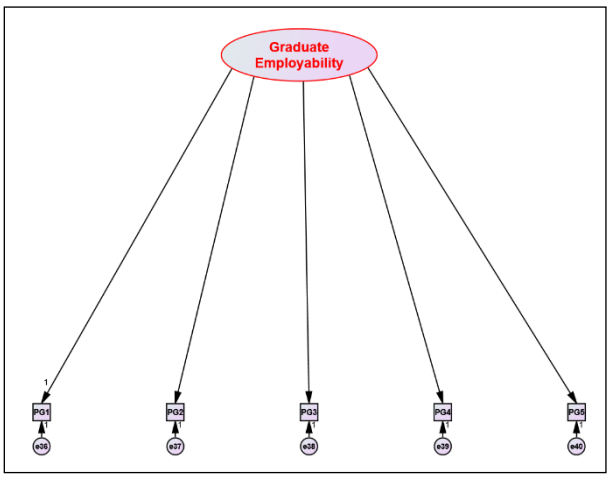

Figure 8. Position of Components and Items for Graduate Employability Construct (Before and After EFA)

Another piece of information that researchers need to report is the reliability value of the items that have been built to measure that construct. The measure of instrument reliability is estimated through Cronbach's Alpha value that exceeds the minimum limit of 0.7 to be adopted in the study. Table 32 below shows the value of Cronbach's Alpha equal to 0.755, for each item in the Graduate Employability construct that exceeds 0.7 and can be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017).

Table 32 *Cronbach's Alpha Value for Each Item in the Graduate Employability Construct*

Component	Number of Items	Cronbach's Alpha
1	5	0.755

Overall Results of Exploratory Factor Analysis (EFA) Constructs

Based on the results of the EFA on the questionnaire items, no items were excluded. Table 33 below shows the latest ranking of item categories after the EFA was conducted and Figure 9 shows all the items in the study model after EFA.

Table 33 *Overall EFA Analysis Construct*

No	Constructs	Validity				Reliability
		Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO>0.6)	Bartlett's Test of Sphericity (Sig.< 0.05)	Total Variance Explained (>60%)	Items Factor Loading (>0.60)	Cronbach's Alpha (>0.70)
1	Soft Skills					
	1a) Communication Skills	0.859	0.000	69.806	5 items > 0.60	0.890

	1b) Critical Thinking and Problem Solving Skills	0.830	0.000	66.855	5 items > 0.60	0.851
	1c) Entrepreneurial Skills	0.883	0.000	78.430	5 items > 0.60	0.931
	1d) Leadership Skills	0.867	0.000	81.164	5 items > 0.60	0.941
	1e) Information Management	0.827	0.000	74.090	5 items > 0.60	0.912
	1f) Professional Ethics and Morals	0.866	0.000	69.126	5 items > 0.60	0.887
	1g) Graduate Awareness	0.870	0.000	76.230	5 items > 0.60	0.922
2	Graduate Employability	0.790	0.000	75.796	5 items > 0.60	0.755

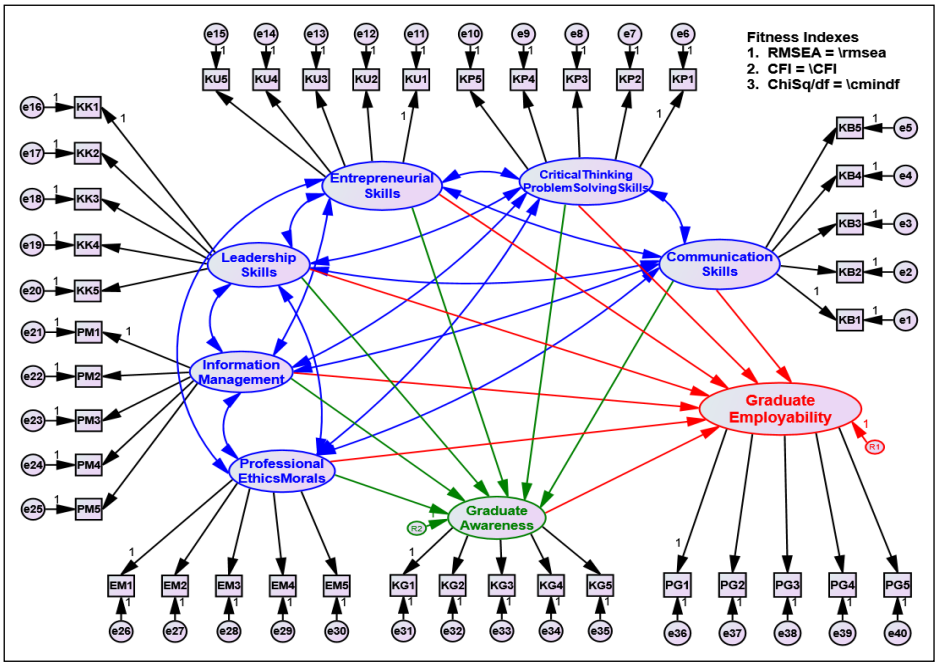

Figure 9. Overall Soft Skills Based on Communication Skills, Critical Thinking and Problem Solving Skills, Entrepreneurial Skills, Leadership Skills, Information Management, Professional Ethics and Morals, Graduate Awareness and Graduate Employability Constructs

Conclusion

Overall, the requirements of the items in each soft skills construct based on Communication Skills, Critical Thinking and Problem Solving Skills, Entrepreneurship Skills, Leadership Skills, Information Management, Professional Ethics and Morals, Graduate Awareness and Graduate Employability,

overall meet the KMO value (> 0.6), achieving the total value of Bartlett.6, (achievement of the % variance value and 0. minimum variance value of 0.6 Alpha Cronbach exceeds the minimum limit of 0.7 for use in the study. This illustrates that the items are not excluded and are eligible to be used in this study (Chik et al., 2024; 2022; Hoque et al., 2017). Therefore, this study can conclude that soft skills, which are related to Graduate Employability from various aspects based on Communication Skills, Critical Thinking and Problem Solving Skills, Entrepreneurship Skills, Leadership Skills, Information Management, Professional Ethics and Morals, Awareness Graduates, serious consideration needs to be given to the future of graduate employment.

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Data Availability: The author has all the data employed in this research and is open to sharing it upon reasonable request.

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