

A New TVET Leadership Model: Combination of Innovative and Instructional Paradigms

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ABSTRACT

This study was designed to determine the constructs to develop a new model of innovative instructional leadership for polytechnics system in Malaysia. The study used Hallinger and Murphy theories as the main underpinning leadership development framework. This study has utilized a model development approach as its research design. In an earlier stage, a modified Delphi technique was used to gather initial data regarding innovative instructional leadership. Eleven experts were selected based on their expertise and experience. They confirmed 13 constructs for the new innovative instructional TVET leadership model. Besides the experts, a stratified random sampling was used to select the polytechnic lecturers. A new instrument was developed which consisted of 13 constructs and 185 items and it was distributed to the lecturers in the selected polytechnics to verify the proposed constructs of the innovative instructional leadership. The empirical data collected were analyzed using descriptive and inferential statistics that included confirmatory factor analysis. Alarming results showed that the lecturers at the polytechnics disagreed that their administrators possessed the innovative instructional leadership particularly related to strategic thinking, innovative thinking and network management. In addition, the study also found that the administrators of the polytechnics have only moderate level of innovative instructional leadership for most of the constructs. Based on the confirmatory factor analysis, it was found that only 65 items out of 185 items that are valid to measure the innovative instructional leadership in the polytechnics system in Malaysia. In conclusion, this study confirmed the importance of innovative instructional leadership in the polytechnic system in Malaysia. The usage of this model is expected to map the leadership competence of the polytechnics administrators.

Keywords: Technical and Vocational Educational and Training (TVET), innovative instructional TVET leadership model, polytechnics, modified Delphi technique, Malaysia

INTRODUCTION

Leadership is a critical aspect in an organization. Generally, leaders have to assemble a strategic plan for the staff to follow. This is a conventional leadership concept. The evolution of the leadership concept has produced several theories and leadership strategies. However, according to Owen (2011), there is no consensus regarding the definition of leadership. From a historical perspective, there had been several great leaders that portrayed varied leadership traits. A great leader may have leadership traits of Genghis Khan, Nelson Mandela or Niccolo Machiavelli. Genghis Khan was very shrewd in terms of war strategies that he had conquered a huge part of Asia, including China, Persia and Mongolia. Nelson Mandela was famous for being a leader who fought for independence through anti-apartheid activities which ended the white minority regime and discrimination toward black people in South Africa (Zoll, 2012). Whereas Machiavelli was renowned for his political theory in retaining ruling powers (Avolio & Gardner, 2005). It seems that these leaders have one thing in common: innovative thinking.

Innovative theory was coined by Joseph Schumpeter in the early 20th century. He was an economic and political thinker. He believed that innovation is the key to economic development. He also theorized a new innovative action would replace an old innovation as a creative destruction process where innovative development cannot be avoided for economic continuity. Therefore, an investment in innovation is critical to generate economic development (Schumpeter, 1942). Romer stated that ideas and technological discoveries are the driving engines of economic growth (Wysocki, 1997). According to Bennis, Spreitzer, Cummings and Corsini (2001), to instill an innovative culture, leaders need to reward employees who contributed new ideas. Future competitions depend on who is able to create a new and innovative idea. A proactive, innovative and competitive leader is highly needed in the era of globalization (Mustapha, 2013). Globalization is a phenomenon where companies and organizations are competing to create successes or they will be left behind. (Jack, 2018). The presence of digital technology has catalyzed globalization changes (Castillo & Hallinger, 2017). Rapid changes in world economy in the era of globalization have forced leaders to be competitive and innovative in order to survive.

In Malaysia, *Model Baharu Ekonomi* (New Economic Model) was introduced in 2010 and it was aimed to increase the productivity of public and private organizations. However, it was not easy to achieve high productivity. Leaders need to constantly be able to come up with creative and innovative ideas where they have to break through, to think outside of the box and to go beyond the limit (Harrari, 2007; Abib-Pech, 2013). Based on the new economic model, the government has outlined key strategies to develop and maintain Malaysia as a high-income earning country. In one of the strategies, the government attempted to promote tertiary education by transforming technical and vocational education and training (TVET). Although several strategies have been carried out there are still significant weaknesses in the TVET system including the polytechnic system. Past research has shown that polytechnic administrators still practice conventional leadership without inserting creative and innovative elements in their organizational management (Rasul et al., 2015). Therefore, it is critical to evaluate TVET's leadership especially in a polytechnic system.

BACKGROUND OF THE STUDY

Technical and Vocational Education and Training (TVET) plays a vital role in economic development of a nation (Mustapha, 2013; 2017). In some countries like Germany, TVET has known to produce competitive and skilled workers. Based on the New Economic Model (NEM), the Malaysian government has underlined the importance of developing and maintaining world-class talent for Malaysia to become a high income country. Hence, the government is trying to mainstream TVET as one of the preferred choices of the education system. However, TVET still has a negative image among parents and students where the majority of parents preferred academic track for their children.

In Malaysia, each year, about 100,000 secondary school leavers enter the job market without any formal skills training. Based on the labor statistics, only 23% of the Malaysian workforce comprised skilled workers. This percentage is much lower as compared to other developed countries. Malaysia hopes to increase the proportion of highly skilled workers to 35% by 2020 (Mustapha, 2013; 2017). According to Ilies, Morgeson and Nahrgang (2005), TVET is an educational system that provides specialized training to increase the number of skilled workers. In addition, UNESCO-UNEVOC has outlined three main themes to sustain TVET: (a) fostering youth employment and entrepreneurship, (b) promoting equity and gender equality, and (c) facilitating the transition to green economies and sustainable development. Most empirical studies in TVET used quantitative research design with an exception of few that used Delphi technique.

A modified Delphi technique was utilized in this study to develop an innovative instructional TVET leadership model for polytechnic system in Malaysia. A model could be used as a decision-making and prediction tool (Manley & Zinser, 2012). A modified Delphi technique could also be used to create a new model or program (Hacker, 1988). In general, a modified Delphi technique can be used when there is incomplete knowledge about a problem or a phenomenon (Skulmoski, Hartman & Krahn, 2007). The technique could be applied to problems that do not lend themselves to precise analytical

techniques. Delphi technique is based on concerted judgments of experts on a collective basis (Loo, 2002). Also, the modified Delphi technique is adaptable and flexible that it could be used in qualitative and quantitative studies. Before delving onto more detailed discussion of the technique, it is proper to review the brief origin of leadership.

In ancient times, our ancestors built and protected their community through cooperative efforts led by an appointed leader or a group of elders. The concerted and cooperative effort was critical to protect and defend lives against ferocious animals or enemies. Throughout ancient history, most appointed leader for a particular community was said to be noble, strong and brave. A leader had to be borned from a noble family, healthy, strong, brave and wise, and influential over others.

In the corpus of leadership, there are several theories that explain the concept of leadership. Genetic theory explains that the root of leadership is based on a trait that is passed on from generation to generation, usually from a father to a son (Bunnell, 2017). The social theory asserts that a leader could be selected and nurtured; in other words, leaders are not appointed through inheritance but each individual is able to be a leader (Yidong & Xinxin, 2013). Scholars and philosophers have written about the characteristics of leaders and their roles since the beginning of human civilization. Plato in his renowned book *The Republic* displayed the life story of Plutarch. Plutarch was a Greek historian that wrote about the life and heroic characteristics of Greek leaders such as *Alexander the Great*.

In modern times, there have been several leadership theories such as distributed leadership that focuses on the distribution of expertise in an organization (Harris & Spillane, 2008). According to Harris and Spillane (2008), distributed leadership is the tendency for higher-ups to distribute work to followers based on their expertise, skills, and knowledge. However, Harris and Spillane (2008) stress that the key factor of a successful distributed leadership depends on how it is made easier, moved and supported. Next, sustainable leadership by Hargreaves and Fink came about in the year 2003. Hargreaves and Fink (2003) defined sustainable leadership as a shared responsibility to reduce negative forces that affect the organization and the environment. Distributed and sustainable leadership are connected to each other based on the principles and practices of delegated responsibility and continues improvement.

Another emerging theory of leadership is innovative leadership. Şen and Eren (2012) classified innovative leadership as a new approach in developing organization. Innovative leadership supports the accomplishment of vision and mission of an organization or a group by using new technology and processes. Innovative leaders possess creative mindset to ensure continuous success and to remain competitive (Medvedeva, 2012). Innovation in an organization has led to a new focus toward the roles of leaders in creating strategic and a more creative venture. Other leadership theories such as prime, resonant, digital and futuristic leaderships are evolving theories. Despite modern leadership theories and models, in this research, the researchers have decided to examine the Instructional and Innovative Leadership (IIL) among Malaysian polytechnics leaders as a core investigation in this research. Polytechnics were selected because they were involved with the teaching and learning process but mainly in the traditional way. Therefore, it is critical to develop an innovative instructional TVET leadership model for the polytechnic system.

METHODS

Research design has two aims that are to prepare answers to research questions and to control variables (Chua, 2009; Kahn, 2006). Model development is the main research design used in this study. According to Richey and Klein (2007), model development is a systematic study of design, development and evaluation processes with the aim of establishing an empirical basis for a creation of an instructional or non-instructional model, tool, or product. In this study, the researchers used model development design to construct a measurement model of innovative instructional TVET leadership. Besides model development design, this study also employed modified Delphi technique to obtain relevant constructs for the model.

In the first phase, this research used the modified Delphi technique to obtain experts' opinion regarding the initial constructs for the innovative instructional leadership. The modified Delphi is a cycle series technique based on experts' agreement to confirm relevant constructs (Keeney, Hasson, & McKenna, 2011). To select the constructs and to develop the items regarding the innovative

instructional leadership in Malaysian polytechnic system, the researchers used the modified Delphi technique. Skulmoski et al. (2007) and Keeney, Hasson and McKenna (2011) stated that this technique is suitable for exploring and confirming the relevant constructs based on the experts' perception. According to Loo (2002) and Manley and Zinser (2012), using modified Delphi technique, a strong agreement among the experts is required to confirm the constructs.

The confirmed constructs from the modified Delphi panel of experts were used to develop the items for the instrument. A set of questionnaires was constructed based on the Delphi's input. The constructs were tested and verified in several rounds before they were incorporated in the instrument. Then, the instrument was validated in a pilot study before it was administered to target respondents who were the administrators and lecturers at the five polytechnics in Malaysia. Confirmatory Factor Analysis was carried out to determine the Instructional Innovation Leadership (IIL) measurement model based on the survey data consisted of 575 respondents.

Research procedure

This study comprised four phases. Figure 1 showed the executing procedure of those phases. The first phase involved the construct definition process that covered the determination, development and purification of the constructs. This stage was critical in ensuring that only valid constructs can be included in the research. Initial constructs were derived from an extensive literature review and refined to be included in the modified Delphi technique. The second phase was research design. Researchers have selected the research design, population and sample, data collection and data analysis methods. The third phase involved process of determining the compatibility of the measurement model. Based on the empirical data that were collected using the research instrument, the measurement model would be developed and tested. It also involved the determining of relationship between latent and observed variables. In the fourth phase, the validity assessment of measurement model was tested using convergent, discriminant and nomological validity.

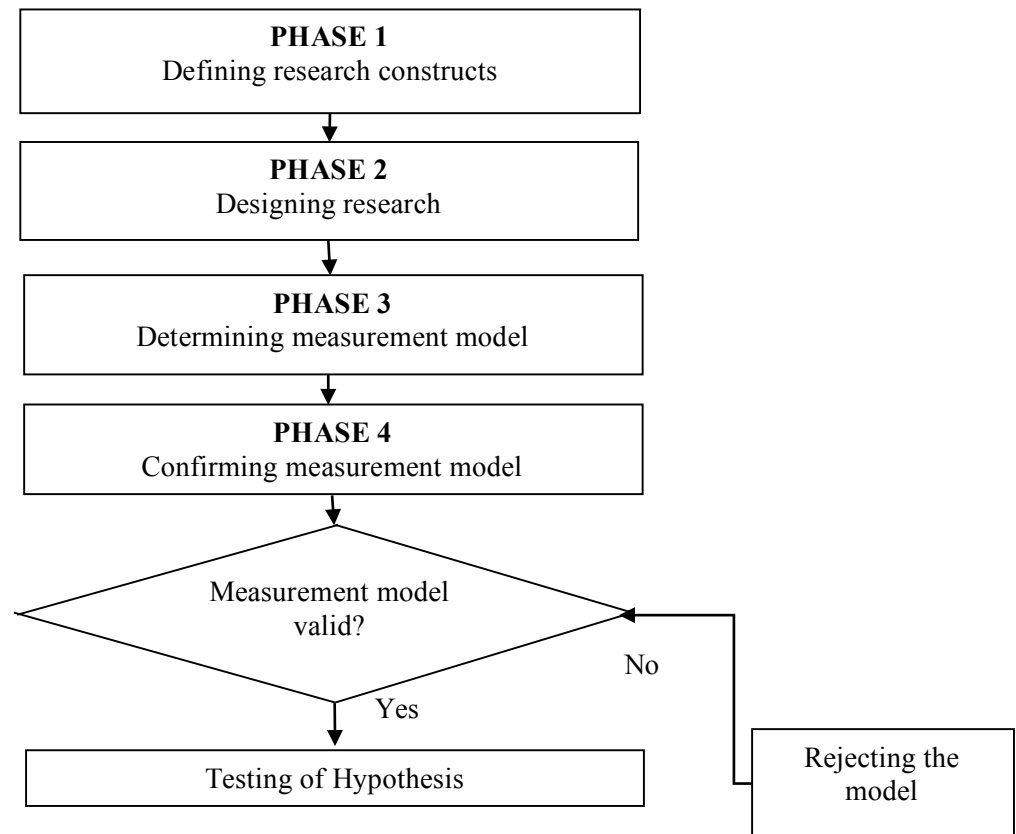


Figure 1: Research procedure

Phase 1: Defining constructs

Defining the research constructs was the first step in ensuring the chosen constructs were appropriate and matched the research objectives.

Phase 2: Designing research

This phase involved the research design process. Decision about Delphi panel and rounds, population and sample, instrumentation, data collection and data analysis was finalized in this stage.

Phase 3: Determining measurement model

Measurement model was formed by measuring the relationship between latent and indicator variables and variant errors. Compatibility of measurement model with the research data was important to show the credibility of the model. If the measurement model was not compatible with the research data then the model was not valid. Hence, the first step in the Confirmatory Factor Analysis (CFA) was to determine the compatibility of the constructs in the measurement model. The results of CFA showed the credibility of the indicator variables to represent the latent variables in the measurement model. In other words, if the confirmatory factor analysis result showed that the items did not represent the resilient latent variables then the measurement model was not valid. Since the indicator variables were formed from the questionnaire items, researchers needed to ensure that those items have a high credibility because an item that has a low credibility would affect the decision-making based on the measurement model. Therefore, the result of CFA's credibility was very critical.

Confirmatory Factor Analysis (CFA) was carried out using *Analysis of Moment Structure* (AMOS) version 20. This analysis was designed to determine the suitability of 13 constructs that were developed to determine the innovative instructional leadership among polytechnic leaders. All items

loaded in the CFA measurement model need to show convergent validity (Hair et al., 2010). Three indicators were used to evaluate the convergent validity which was based on the weighting factor value (λ) more than >0.50 (Hair et al., 2010), extracted average variant value of each construct ≥ 0.50 (Hair et al., 2010), and the credible construct value > 0.60 (Hair et al., 2010). In addition, comparability (good fit) between construct and research data was determined based on the combination of at least one *Absolute Fit Indices* and one *Incremental Fit Indices* (Brown, 2012; Hair et al., 2010).

Phase 4: Confirming measurement model

To confirm a model, the validity of constructs and items is critical. This means that the validity of construct is an index of the accuracy of the measurement model. Constructs that reach an acceptable level of validity indicate that the measuring items obtained from research sample truly described the traits that exists in a population. There are three forms of construct validity – convergent, discriminant and nomological validity. Convergent validity shows how the items for a construct in general can contribute to a number of variants for that particular construct (Hair et al., 2010). There are three methods to measure convergent validity through: (a) determination of standard weighting factor value, (b) extracted average variant, and (c) credibility of construct (De Jong & den Hartog, 2010; Hair et al., 2010).

A discriminant validity shows a uniqueness of a particular construct. A discriminant validity indicator shows to what extent that a particular construct is different from the other constructs (Brown, 2012; Hair et al., 2010). There are two methods to measure discriminant validity. The first method is to make a comparison between the average value of extracted variants (AVE) and the construct that has a squared correlation value (r^2) (De Jong & den Hartog, 2010; Hair et al., 2010). The squared correlation value is obtained from the two constructs. To fulfill the requirements of the discriminant validity between constructs, the AVE value needs to be larger than the squared correlation value (Brown, 2012). The determining method for discriminant validity is also used for the measurement model. The second method to determine discriminant validity is when there are no cross loadings between observation variables and errors (Hair et al., 2010). Nomological validity is conducted to determine the level of relationship between the constructs that have been accurately tested whether each construct is according to theoretical forecast or backed up literature (Hair et al., 2010).

RESULTS

To identify the relevant constructs, the researchers have reviewed extensively the literature including the past research related to innovative instructional leadership. Next, an interview protocol was developed for the Delphi experts and it went through the validation process by three experts as well as the declaration form was distributed to the Delphi experts. The Delphi panel consisted of 11 experts and they were selected based on specific criteria. After the interviews with the 11 experts were completed in the first round, the list of constructs was drafted. The experts were in agreement that only 13 out of the following 17 constructs were suitable. The constructs before the interview (17 constructs) and after the interview (13 constructs) are displayed in Table 1.

Table 1: Constructs identification

Number	Constructs before the Interview	Constructs after the Interview
1)	Setting vision and mission	Setting vision and mission
2)	Providing necessities	Providing necessities
3)	Showing concerns	Showing concerns
4)	Projecting self-personality	Projecting self-personality
5)	Creating conducive environment	Creating conducive environment
6)	Managing educational management functions	Managing educational management functions
7)	Building teamwork	Building teamwork
8)	Promoting academic climate of learning	Promoting academic climate of learning

Number	Constructs before the Interview	Constructs after the Interview
9)	Organizing talents/abilities	Organizing talents/abilities
10)	Monitoring teaching and learning process	Monitoring teaching and learning process
11)	Having strategic thinking	Having strategic thinking
12)	Having innovative thinking	Having innovative thinking
13)	Building networking	Building Networking
14)	Conducting class supervision	Not chosen by experts
15)	Using effective pedagogical strategies	Not chosen by experts
16)	Showing endurance	Not chosen by experts
17)	Managing changes	Not chosen by experts

For the second, third and fourth rounds – the consensus for the 13 constructs was gained from the Delphi experts. Median and range between quartiles (IQR) were used as indexes for experts’ agreement. The median values of 4 and 5 showed the agreement among expertices toward the constructs while IQR that showed the values of 0 and 1 indicated the unanimous decision of experts toward the constructs. Table 2 illustrated the summary of findings on expert agreement for the second, third and fourth rounds.

Table 2: Experts agreement on the constructs

No	Round	Second	Third	Fourth
	Construct			
1)	Setting vision and mission	11	9	9
2)	Providing necessities	13	13	13
3)	Showing concerns	11	11	11
4)	Projecting self-personality	12	12	12
5)	Creating conducive environment	16	16	16
6)	Managing educational management functions	16	16	16
7)	Building teamwork	16	16	16
8)	Promoting academic climate of learning	15	16	16
9)	Organizing talents/ability	17	17	17
10)	Monitoring teaching and learning process	12	12	12
11)	Having strategic thinking	18	18	18
12)	Having innovative thinking	11	11	11
13)	Building networking	17	21	21

Based on the findings of the modified Delphi technique, the measurement model research consisted of 13 constructs of innovative instructional leadership items (see Table 3). Based on several rounds of testing, CFA confirmed that only 65 items out of 185 items that are relevant in the new innovative instructional leadership model (see Tables 4 and 5). In the nutshell, this study confirmed the importance of innovative instructional leadership in the polytechnic system in Malaysia.

Table 3: Summary of constructs and items used in the CFA

Symbol	Explanation
1	Setting vision and mission construct
2	Providing necessities construct
3	Showing concerns construct
4	Projecting self-personality construct
5	Creating conducive environment construct
6	Organizing educational management functions construct
7	Building teamwork construct
8	Promoting academic climate of learning construct
9	Organizing talents construct
10	Monitoring teaching and learning process construct
11	Strategic thinking construct
12	Innovative thinking construct
13	Networking construct
i1-i8	Setting vision and mission items
i11-i22	Providing necessities items
i29-i33	Showing concerns items
i36-i42	Projecting self-personality items
i49-i61	Creating conducive environment items
i70-i75	Organizing educational management functions items
i79-i82	Building teamwork items
i100-i103	Promoting academic climate of learning items
i120-i125	Organizing talents items
i131-i135	Monitoring teaching and learning process items
i148-i152	Strategic thinking items
i157-i160	Innovative thinking items
i172-i185	Networking items

Figure 2 showed the items and the constructs that have reached a good comparability level. Analysis model in Table 5 shows that the model formed have reached a good comparability level based on the fixed indicators such as CMIN/DF, CFI, and RMSEA (CMIN/DF=3.25, CFI=0.96 and RMSEA=0.06). This gives the justification that the data matched the measurement model that has been hypothesized in Table 5.

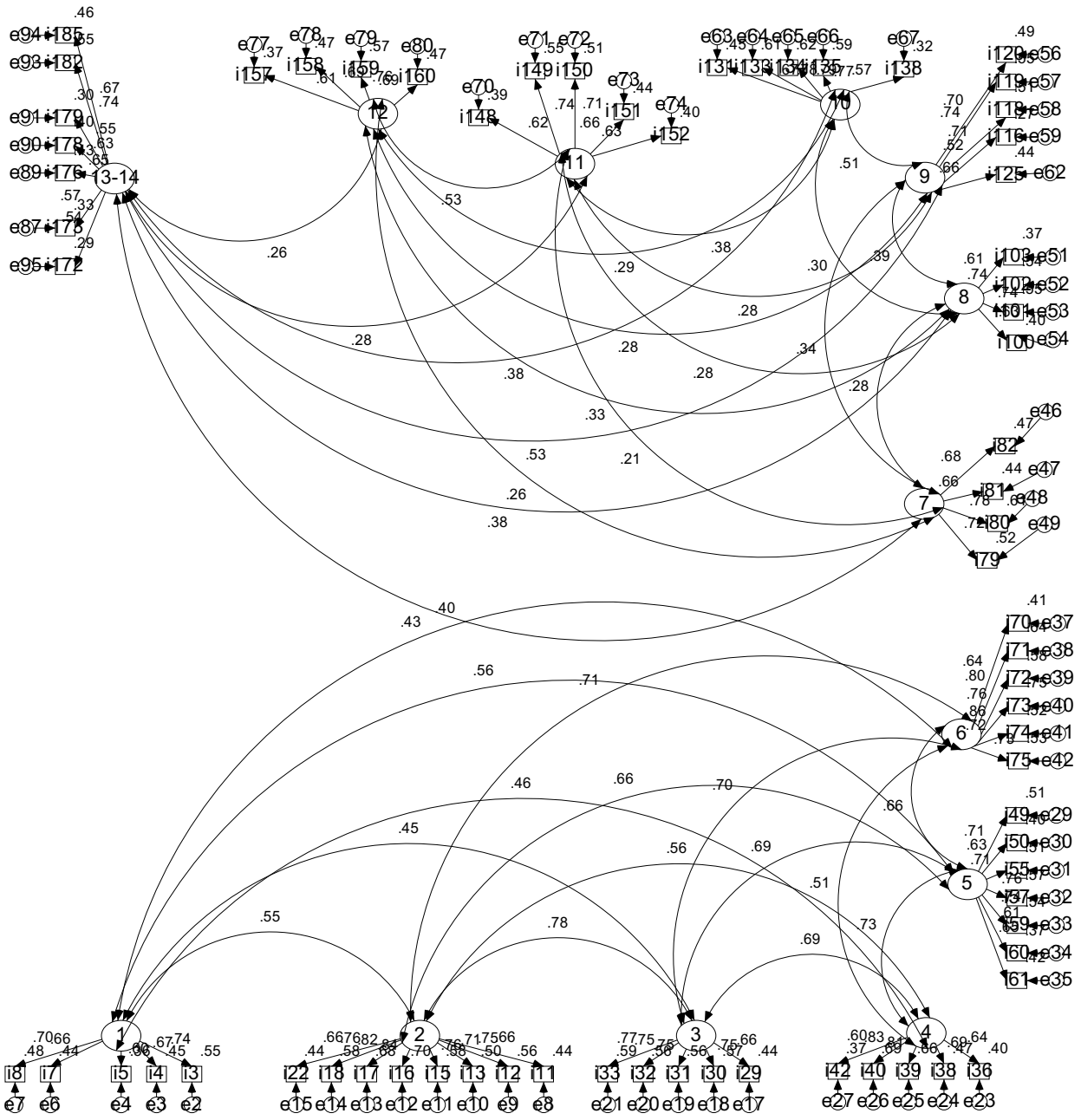


Figure 2: Confirmatory factor analysis (CFA) measurement model for innovative instructional leadership (IIL)

Table 4: Overall good fit measurement model of each construct of IIL

No.	Construct	CFI ≥ 0.9	RMSEA ≤ 0.08	CMIN/df < 5.0	GFI ≥ 0.9
1.	Setting vision and mission	0.99	0.01	1.07	0.99
2.	Providing necessities	0.96	0.08	4.45	0.95
3.	Showing concerns	0.98	0.08	4.99	0.98
4.	Projecting self-personality	0.99	0.06	3.26	0.99
5.	Creating conducive environment	0.97	0.08	4.46	0.96
6.	Organizing educational management functions	0.98	0.07	4.73	0.98
7.	Building teamwork	0.94	0.04	1.81	0.99
8.	Promoting academic climate of learning	0.99	0.08	4.43	0.99
9.	Organizing talents	0.95	0.03	4.40	
10.	Monitoring teaching and learning process	0.98	0.07	4.06	0.99
11.	Strategic thinking	0.94	0.07	3.99	0.99
12.	Innovative thinking	0.95	0.04	1.71	0.99
13.	Networking construction	0.92	0.01	1.11	0.99

Table 5: Overall good fit of CFA IIL constructs

	Hypothesized measurement model	Recommended values	Sources
CMIN/df	3.25	≤ 5.00	Hair et al. (2006); McGrath (2011)
CFI	0.96	≥ 0.90	Hair et al. (2006); McGrath (2011); Brown (2012);
RMSEA	0.06	≤ 0.08	Browne & Cudeck (1993); Hair et al. (2006); McGrath (2011)

Validity evaluation of the constructs

Table 6 illustrated the weighting factor values. The the highest credibility can be seen in item number 73 in the education management construct with the value of 0.93. In general, all items have a high weighting factor values ranging from 0.73-0.93. Therefore, they adhere the internal credibility value of ≥ 0.7 . Next, for convergence validity, all items have high significant levels that satisfy the AVE value of 0.5 or higher for each construct. Lastly is CR which is the composite credibility value which satisfies the value of ≥ 0.6 for each construct. The values satisfy the criteria set by Hair et al. (2009) and Bentler and Yuan (2000) The second level of innovative instructional leadership CFA model in Figure 2 also shows that IIL constructs have a discriminant validity where there is no item that is cross-loading or is redundant with other items (Hair et al. 2010). This shows that all items contained in these constructs can be unidimensionally measured, thus, they are valid and credible. In brief, this model has a good fit in terms of convergent validity, discriminant, and a good composite credibility. The decision is based on the overall findings of the measurement model as posited in Tables 5 and 6.

Table 6: Construct validity evaluation

No.	Construct	Item	λ (KC) ≥ 0.7	AVE ≥ 0.5	pc / CR ≥ 0.6
1.	Vision and mission	I4	0.79	0.66	0.89
		I5	0.78		
		I7	0.88		
		I8	0.80		
2.	Infrastructure	I11	0.75	0.56	0.91
		I12	0.73		
		I13	0.78		
		I15	0.77		
		I16	0.86		
		I17	0.84		
		I18	0.76		
		I22	0.65		
3.	Concerns	I29	0.81	0.74	0.93
		I30	0.87		
		I31	0.86		
		I32	0.86		
		I33	0.88		
4.	Self-personality	I36	0.70	0.71	0.93
		I38	0.84		
		I39	0.88		
		I40	0.93		
		I42	0.78		
5.	Conducive environment	I49	0.84	0.69	0.94
		I50	0.78		
		I55	0.83		
		I57	0.88		
		I59	0.88		
		I60	0.76		
		I61	0.82		
6.	Educational management	I70	0.80	0.75	0.95
		I71	0.90		
		I72	0.88		
		I73	0.93		
		I74	0.85		
		I75	0.85		
7.	Teamwork	I79	0.84	0.71	0.91
		I80	0.89		
		I81	0.82		
		I82	0.83		

8. Learning climate	I100	0.79	0.68	0.90
	I101	0.88		
	I102	0.86		
	I103	0.78		
9. Organizing talents	I118	0.84	0.71	0.91
	I119	0.89		
	I120	0.82		
	I125	0.80		
10. Monitoring teaching and learning process	I131	0.83	0.76	0.93
	I133	0.90		
	I134	0.89		
	I135	0.87		
11. Strategic thinking	I148	0.78	0.68	0.91
	I149	0.85		
	I150	0.86		
	I151	0.82		
	I152	0.79		
12. Innovative thinking	I157	0.78	0.69	0.90
	I158	0.84		
	I159	0.86		
	I160	0.84		
13. Network construction	I176	0.75	0.54	0.80
	I178	0.72		
	I179	0.80		
	I182	0.73		
	I185	0.80		

Note: λ = Weighting factor (Cronbach Coefficient) (KC), CR = AVE Credibility Composite = Average Variance Extracted

DISCUSSION AND IMPLICATIONS

The modified Delphi technique provided a platform for the experts to confirm the proposed constructs. The key strength in modified Delhi technique lies in its ability to obtain opinions and to reach consensus among a panel of experts in several rounds. Hence, this technique is a flexible research technique well suited when there is incomplete knowledge about a phenomenon. Defining the research constructs was the first step in ensuring the constructs were appropriate and matched the research objectives. Next, the researchers selected the Delphi experts based on the specific criteria. The measurement model was formed by measuring the relationship between latent and indicator variables and variant errors. Compatibility of measurement model with research data was important to show the credibility of the model. If the measurement model was not compatible with the research data then the model was not valid. Hence, the first step in the Confirmatory Factor Analysis (CFA) was to determine the compatibility of the constructs in the measurement model. The results of CFA showed the credibility of the indicator variables to represent the latent variables in the measurement model. In other words, if the confirmatory factor analysis result showed that the items did not represent the resilient latent variables then the measurement model was not valid. Since the indicator variables were formed from the questionnaire items, researchers needed to ensure that those items have a high credibility because

an item that has a low credibility would affect the decision-making based on the measurement model. Therefore, the result of CFA's credibility was very critical.

Confirmatory Factor Analysis (CFA) was carried out using *Analysis of Moment Structure* (AMOS) version 20. This analysis was designed to determine the suitability of 13 constructs that were developed to determine the innovative instructional leadership among polytechnic administrators. All items loaded in the CFA measurement model need to show convergent validity (Hair et al., 2010). Three indicators were used to evaluate the convergent validity which was based on the weighting factor value (λ) more than >0.50 (Hair et al., 2010), extracted average variant value of each construct ≥ 0.50 (Hair et al., 2010), and the credible construct value > 0.60 (Hair et al., 2010). In addition, comparability (good fit) between construct and research data was determined based on the combination of at least one *Absolute Fit Indices* and one *Incremental Fit Indices* (Brown, 2012; Hair et al., 2010).

In addition, the CFA conducted on 13 constructs has confirmed 65 out of 185 items that are pertinent in the new model of innovative instructional leadership (IIL) for the polytechnic system in Malaysia. The descriptive analysis used means, median, standard deviation, and quartile between ranges (IQR) to obtain concerted agreement among the 11 experts. Confirmatory Factor Analysis was carried out to determine the Instructional Innovation Leadership (IIL) measurement model based on the survey data consisted of 575 respondents. In CFA, a fit of indices measurement model was achieved with the values of $CMIN/DF=3.25$, $CFI=0.96$ and $RMSEA=0.06$. The data have supported the previous models used in this study such Hallinger and Murphy (1985), Liedtka (1990), Murphy (1990), Moss and Jerome (1994), McEwan (1998) and NASSP (2001).

CONCLUSION

The research on innovative instructional leadership (IIL) was conducted because the lack of measuring model of IIL in Malaysian polytechnic system. Specifically, the main objective of this study was to determine the constructs to develop a new model of innovative instructional TVET leadership for the polytechnics system in Malaysia. This study has utilized a model development approach as its research design. In the first phase, a modified Delphi technique was used to gather initial data regarding the relevant constructs of innovative instructional leadership. Eleven experts were selected based on their expertise and experience. They confirmed the 13 constructs of innovative instructional leadership for the polytechnics system. Based on the 13 constructs, a total of 185 items was developed and distributed to the respondents in the selected polytechnics to determine the innovative instructional leadership of polytechnic administrators. Empirical data collected were analyzed using descriptive and inferential statistics such as means, standard deviation, correlation and confirmatory factor analysis. The alarming result showed that lecturers at the polytechnics disagreed that their administrators possessed the innovative instructional leadership particularly related to strategic thinking, innovative thinking and network management. In addition, the study also found that the administrators of the polytechnics have only moderate level of innovative instructional leadership for most of the constructs. Based on confirmatory factor analysis, it was found that only 65 items out of 185 items that are important in the new TVET leadership model. The main implication of this study is that the new TVET innovative instructional leadership model could be used to measure and map the competencies and professionalism of leaders in polytechnics and other TVET institutions.

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