

“APPLICATION OF THE DELPHI TECHNIQUE IN TECHNICAL AND VOCATIONAL LEADERSHIP”.

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ABSTRACT:

This study aimed to identify the domains of technical and vocational leadership for technical and vocational system in Malaysia. The study used Hallinger and Murphy model as the underpinning theoretical framework. In the earlier stage, a face to face meeting was conducted to explore the domains of technical leadership. Thirteen experts were selected based on their expertise and experience. They confirmed 12 domains of technical and vocational leadership for the technical and vocational institution system. Importance of acquired is expected to improve the technical competence of the organization, particularly technical institutions to achieve the aspirations outlined transformation. In addition, these studies also acquire domains for leadership to guide the administrator to assess the weaknesses and constraints existing in themselves. It is hoped that the results of this study could assist the top management in technical institutions to spearhead the direction and leadership of the institution towards a more creative and innovative system in line with the government's desire to transform the technical institution system to becoming a preferred choice of higher education institution.

Keywords:

leadership, technical and vocational, Delphi Technique

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INTRODUCTION

Leaders who have a bad attitude will organize their institution badly. Leadership is a critical aspect in an organization. Generally, leaders have to assemble a strategic plan where leaders give directions. According to Spears (1996); Buck (2014) and Hallinger et.al., (2018), motivate followers to carry out the aspired strategic planning arranged by the organization (Qian et. al., 2017). This is a conventional leadership concept. However, the evolution of the leadership concept produces many theories and leadership strategies. According to Jo Owen 2011); Urick, 2016; and Hallinger et.al. 2018; 2019), leadership is something enigmatic as it does not have the consensus about a specific leadership definition. From a historical chronology, there had been several great leaders that portrayed unique leadership traits. The great leader may have

leadership skills like Genghis Khan, Nelson Mandela and Niccolo Machiavelli. Genghis Khan was very skilled in terms of setting war strategies till he was able to unite Mongolians and then founded the Mongolian Empire by conquering a huge part of Asia, including North China (Jin Dynasty), West Xia, Central Asia, Persia and Mongolia. Nelson Mandela was famous for being a leader who fight for independence through anti-apartheid activities which ended the white minority regime and discrimination towards black people in South Africa Qian et.al. (2017). Whereas Machiavelli was famous for his political theory in retaining ruling powers (Boyce and Bowers (2018). By looking at these successes, one can figure out how amazing these leaders were even though they had different leadership traits.

According to Qian et.al. (2017), to instill an innovative culture, leaders need to give incentives to employees that contribute ideas that are non-conventional and out of the box. Nguyen et. al., (2017) and Shaked, (2020) stated that an idea is valuable in determining the success of a company or organization. The former president

of Massachusetts Institute of Technology (MIT), Gibson and Dodge (2010) also voiced out that future competitions depend on who is able to create a new idea and build innovation. A proactive, innovative and competitive leader is highly needed in the era of globalization (Boyce, 2017; Bradt, 2010; Shaked, 2020; Husnuzan, 2012; Irdyanti, 2019; 2020; Mustapha & Husin, 2002). Globalization is a phenomenon specific for human behavior in which companies and organizations are racing to create success or they will be left behind. (The Levin Institute, 2015). The presence of information and communication technology has fasten globalization changes (Bellibas and Liu, 2017). Rapid world economy in the era of globalization has caused leaders to be competitive and innovative.

Uncertainty and great competition in world economy needs a country like Malaysia to continue competing in a global level. New Economic Model (NEM) was introduced and focused on increasing the productivity of organizations. However, it is not easy to reach that objective. Leaders need to constantly be able to come up with a new creative and innovative ideas where they will be able to break through, think outside of the box and beyond the limit. (Harris et.al, 2017; Lisa, 2017; Marianne Abib-Pech, 2013; Nguyen et.al., 2017). According to NEM, government needs to outline a few main strategies to develop and maintain Malaysia as a high-income earning country. In one of the strategies, the government attempted to elevate tertiary education by transforming technical and vocational education (TVE). Although many strategies have been carried out there are still a few weaknesses in the TVE system. A few experiments show that technical institutions administrators still practice conventional leadership without inserting creative and innovative elements in organization managements (Hallinger et al., 2017; Khairudin et al., 2019; Irdyanti, 2015; 2019; 2020). Therefore, it is critical to evaluate TVE's leadership especially in a technical and vocational system.

THEORETICAL BACKGROUND

Many studies in technical and vocational education (TVE) field have used the quantitative design approach. However, in this article we will discuss on the Delphi Technique approach which is can be used in the TVE researchers for structuring a group communication process to facilitate group problem solving and to structure models. The method can also be used as a judgment, decision-aiding or forecasting tool (Hallowell & Gambatese, 2010) and can be applied to planning and administration program. The Delphi Technique can be used when there is incomplete knowledge about a problem or phenomena (Skulmoski, Hartman, & Krahn, 2007). The method can be applied to problems that do not lend themselves to precise analytical techniques, but rather could benefit from the subjective judgments of individuals on a collective basis (Robert Loo, 2002; Garcia-Santos et al., 2019; Province, 2019) and to focus their collective human intelligence on the problem at hand (Azid et al., 2019, Linstone & Turoff, 1975). Also, the Delphi is used to investigate what does not yet exist (Clayton, 1997; Hacker, 1988; Powell, 2003). The Delphi method is a mature and a very adaptable research method used in many research by researchers across the globe. To better understand its diversity in applications, one needs to consider the origins of the Delphi method.

In the 21st century, there have been several leadership theories such as distributed leadership that focuses on the distribution of several different expertise in an organization (Harris & Spillane, 2008). According to Harris et.al., (2017), distributed leadership is the tendency for higher-ups to distribute work to followers based on expertise, skills, and knowledge of the particular follower. However, he stressed that the key factor of a successful distributed leadership depends on how it is made easier, moved and given support. Next, sustainable leadership founded by Hargreaves and Fink came about in the year 2003. Hargreaves and Fink (2003) defined sustainable leadership as an initiative among leaders and followers in developing organizations without affecting the development and other environment today and the future. Sustainable and distributed leadership has led to a new dimension in education. Sustainable and distributed leadership are connected with each other based on the practice and

principle that are more open and emphasize on continuity as well as collaboration in an organization.

Furthermore, innovative leadership that was expanded by Şen & Eren (2012) have classified innovative leadership as a new approach in developing organization. Innovative leadership supports the accomplishment of mission and vision of an organization or group by using technology and new processes. Innovative leaders need to have an innovative mindset to ensure continuous success and retain to be competitive (Şen & Eren, 2012). The need for innovation in an organization has led to a new focus towards the roles of leaders in creating strategies and a more creative venture. Next, several other leadership theories such as Prime Leadership, Resonant Leadership, Futuristic Leadership and Digital Leadership. Although many theories and leadership models have been developed but researches had chosen Instructional Leadership and Innovative Leadership as a core in this research. This leadership have been chosen because the technical and vocational institution is an institution that is involved with the teaching and learning process where it is important to be more creative and innovative in the future (Tee et al., 2020). Therefore it is important for technical institution to have an instructional organization management that is more creative and innovative to increase technical institution quality to a direction that is more competitive (Azid et al., 2019).

RESEARCH METHODOLOGY

This study used the Delphi Technique. The Delphi Technique is a procedure to find a consensus among group members about the future, the need for quantitative questionnaire (Hsu & Sandford, 2007). The Delphi Technique is a means of communication between groups of experts to assist the development of group decision - group judge. Hacker (1988) also emphasized the Delphi Technique is an exploration technique for technology forecasting maneuverable and is designed so as to facilitate discourse and communication between experts without disruption of societal behavior in a discussion that prevents the formation of a conclusion or belief. According to Helmer (2002) argues that Delphi Technique is one of the method structuring a group communication process to be more effective among individuals or whole groups while solving complex problems. The above discussion clearly shows that the Delphi Technique is the best method to be adopted to obtain the consent of the expert to identify the attributes of this instructional leadership. Through this technique, the first stage of the development phase dimension was implemented beginning with the first round of which is to obtain the consent of the domain through expert panels in the development of this instrument.

Initially, this research used the Delphi Technique to achieve the initial results regarding the instructional leadership. The Delphi Technique is a cycle series technique with specialists that are chosen in order to predict future events and to achieve a consensus and agreement (Custer, Scarcella, & Stewart, 1999). To develop construct and item regarding the instructional leadership in Malaysia's institution technical system, researchers have used the Delphi Technique to develop the construct and item with specialists from the reinforced technical institutions leadership in Malaysia. Skulmoski et al. (2007) and Custer, Scarcella, & Stewart (1999) stated that this technique is suitable for roaming and exploring construct development from the specialists' perception including literature review. Besides, this technique also aims to form an agreement among the specialists regarding the issue. This was also stress by Keeney, Hasson, & McKenna, (2011) that through such technique, agreement among the specialists will be obtained for the confirmation of domain or future construct development. The rational use of such technique compared to other techniques is the agreement in getting specialists' point of view towards an item without the need to face others, thus the identity of each chosen specialist will be kept confidential which will allow the specialist to freely give their point of views and mark the given modifying scale based on their own professional knowledge. The data

received from the Delphi panel are used to develop the construct and item in this leadership research.

When the instrument research is constructed based on Delphi's panel, it should be verified and administered to target sample which are the technical institutions administrators such as director, deputy director and head of department. The research instrument constructed a set of questionnaires where the data gained from the sample using questionnaire can involve more, wider and thorough respondents. Zainuddin (2012) specified that the main benefit of the questionnaire is that if it is presented well, it can produce a more trusted result. This research uses questionnaire that is build based on the construct that has been verified by Delphi panel that was carried out in the earlier phase. According to Mohd Majid (2005), the use of questionnaire towards a larger population is more practical and effective, saves time and money as well as its execution. Questionnaires are said to be easy to be administrated and is easy to be understood by respondents.

Fig. 1 - Planning of Delphi Techniques

FINDINGS AND DISCUSSION

The Development of Research Methodology

The research of needs analysis were identified up to 17 constructs that adapted from the researcher's past research and document review analysis. The checklist had been arranged using the five point Likert scale from the most important construct to the least important before distributed. The most important scale was labelled with the value of 1 until the value of 5 for the least. (Cheryl (2018); Donna (2018); Jennifer, (2018); Kristina & Goran (2017); Pat (2018); Sarah and Nina, (2018)). The Delphi Technique was used in the research to find the most important domains among the expertise. The checklist was distributed to 13 experienced experts who are knowledgeable in the area of technical and vocational education during the meeting face to face. During the first round, the researchers conducted the phase of needs analysis with the experts. The meeting was carried out along with the checklist that was developed based on the previous research and scientific writing of the study. The face-to-face meeting is essential to be conducted to gain accurate screening and clear understanding of the experts on the research. (Jennifer, 2018; Kristina and Goran, 2017; Pat, 2018). After the Delphi technique was carried out and the checklist was collected, the findings as shown in Table 1.

Table 1

Instructional Leadership Domain	Expertise	Curriculum Analysis	Literature Review
<i>Personality</i>			
Setting vision and mission	√	√	
Strategic thinking	√	√	Hallinger
Innovative thinking	√	√	(1985), McEwan
Managing changes	-	√	(1998), Murphy
Self-personality	√	√	(1990), NASSP
Endurance	-	√	(2001), Liedtka
<i>Organization</i>			(1990), Moss &
Creating a conducive environment	√	√	Jerome (1994),
Managing educational management	√	√	Tee et al. (2020)
Functions			
Promoting the academic climate of learning	√	√	
Organizing abilities	√	√	
Monitor the teaching and learning process	√	√	
Class supervision	-	√	
Clear pedagogical presentation	-	√	
Networking dominion	√	√	
<i>Staffing</i>			
Providing necessities and verification	√	√	
Concerns	√	√	
Team work	√	√	

Based on the Table 2, the number of respondents

in the research were 13 people in total. Majority

of the respondents were female who had over 10 years of working experience.

Table 2

<i>Respondent (N= 13)</i>	
Category	Percent
<i>Gender</i>	
Male	40.8
Female	59.2
<i>Experience</i>	
Less than 1 year	-
1-5 years	11.6
6-10 years	40.6
More than 10 years	47.8
<i>Age</i>	
25 - 30	8.5
31 - 35	34.8
36 - 40	21.9
41 - 45	11.9
46 - 50	9.7
51 - 55	4.6
56 - 60	1.4
Above 60	7.2

Regarding to the Table 3, the domain personality is the most important of instructional leadership and the least important is the staffing domain, each domain have been analyzed by using SPSS software.

Table 3

Instructional Domain	Leadership	Percentage (%)	Literature Review
<i>Personality</i>		74.3	Hallinger (1985),
<i>Organization</i>		13.4	McEwan (1998),
<i>Staffing</i>		12.3	Murphy (1990), NASSP (2001), Liedtka (1990), (2007) dan Moss & Jerome (1994)

Subsequent of the Delphi Rounds

In some Delphi considers about Round 1 is a need analysis stage, where pros respond to open completed request while in various examinations individuals are drawn closer to respond to unequivocal proposals contained in a sorted out review. Dhall (2019) noted, in focusing the examination there is a levelling to be struck between making express proposals that individuals respond to and keeping a versatile inspiration to leave space for unconstrained duties from individuals. Despite the fact that an underlying conceptualizing round is maybe

perfect, since conceptualizing permits rises of numerous and differed thoughts Dhall (2019), the hindrance of adopting this strategy is that it adds an extra round to the Delphi procedure.

For Round 1 based on the outcomes of pilot Delphi which is from the literature regarding key areas of instructional leadership that “some people” might think are core areas in teaching and learning. Expertise were asked to indicate how important they felt each was using a point scale and to add any additional instructional leadership they felt were important but had not been included in our initial lists.

In Round 2 we nourished back the consequences of the Round 1 overview and solicited specialists to rate the significance from the extra things that had been proposed for consideration in the instructional leadership domain. Initially, the study comprises of 13 domains which depended on the discoveries from specialists in the first round of the development procedure of the instructional leadership domain. In the second round, every master board was solicited to show their dimension from understanding, either unequivocally deviate, dissent, to some degree concur, concur and

emphatically consent to the announcements introduced in the study.

Other than expressing their dimension of understanding, specialists were allowed the chance to include another things in the spaces gave if these things were esteemed applicable yet was not suggested in the first round of Delphi. The consequences of the second round of the review was broke down utilizing middle and bury quartile (IQR). Range between quartiles (IQR) were utilized to depict the accord among specialists for everything whether high, moderate or no agreement and the middle (Median) for everything show the dimension of understanding Peck, Olsen, Devore, (2015).

High consensus	= IQR 0 to 1.00
Moderate consensus	= IQR 1.01 to 1.99
No consensus and above	= IQR 2.00 and above
High agreement	= Median 4 to 5
Moderate agreement	= Median 2.01 to 3.99
No agreement	= Median 0 to 2

(Source: Peck, Olsen, Devore, (2015))

For the final round, Round 3 we fed back the results of Round 2. This comprised rating of the additional instructional leadership domains

and ranking of the domains. We also provided expertise with a consolidated list of the 13 domains they thought should be listed. Our Delphi process are typically run over a 12-13 week so it was essential to identify a viable amount of potential content to deliver in this timeframe. We also asked expertise to indicate their views on their experiences of the Delphi process.

Decision to stop the number of rounds was made when a high degree of consensus had been reached was consistent (Irdyanti et al., 2015). The experts have pointed out that it should be in between 2 to 10 rounds to get the best results that comply with the objectives of the study. However, the researcher also state that the number of rounds can be stopped after researchers have obtain enough information or if there is a preliminary agreement with a number of rounds the researchers need to conduct. Table 4 illustrates how the result was to be presented on the assessed domains. Regarding to the Table 4, criteria of promoting the academic climate of learning has been dropped because it have no consensus range. The final domain of instructional leadership is 12 from 13 domain initially. In this procedure, when the agreement was high while the consensus is not reach, the researcher should consider with consensus rather than agreement (Irdyanti et al, 2015).

Table 4 Data Analysis for the Second to Three Round of Delphi Process

Criteria	Second Round			Third Round			Result
	Med	IQR	Consensus	Med	IQR	Consensus	
Personality							
Setting vision and mission	3	1	High	5	1	High	Retained
Strategic thinking	5	1	High	5	1	High	Retained
Innovative thinking	4	1	High	5	1	High	Retained
Self-personality	4	1	High	4	1	High	Retained
Organization							
Creating a conducive environment	4	1	High	5	1	High	Retained
Managing educational management functions	5	1	High	5	1	High	Retained
Promoting the academic climate of learning	4	1	High	3	2	No	Dropped
Organizing abilities	5	1	High	5	1	High	Retained
Monitor the teaching and learning process	4	1	High	4	1	High	Retained
Networking	4	1	High	5	1	High	Retained

Med = Median, IQR = Inter Quartile Range

CONCLUSION AND SUGGESTION

The research of leadership was carried out because leadership plays an important role in increasing the quality of achievements and success in the management of technical institution system. To produce an effective leadership system, the leadership objectives, execution and direction have to be given proper attention so that any weaknesses can be overcome. This research not only look at the important leadership aspects in the learning and teaching process in classrooms but covers all aspects that is related to the management of leadership in organization level. Failure for leaders to improve themselves in leadership will cause an organization to not experience any changes, viable and competitive. Overall, this research has obtained the domains for leadership to be used as a guide for administrators to measure weaknesses among

themselves. Therefore, the models used were Hallinger and Murphy (1985), Liedtka (1990), McEwan (1998), Moss and Jerome (1994), Murphy (1990) and NASSP (2001) are found to be relevant in this leadership context. The suggestion for the next research is the development of leadership measurement model that can be used as the base and guidance to relevant parties such as the technical and vocational institutions to increase their administrative professionalism. Therefore, it is hoped that the development of the new framework of leadership will give a positive impact to relevant parties and technical administrators system in Malaysia.

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