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The Factors of Influence towards Knowledge Sharing Among TVET Educators: A Study on TVET Educators within Hulu Langat District

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Abstract*—Similar to other higher education institutions, knowledge sharing among highly skilled instructors and other instructors is important in improving the quality of training and skills development in the Technical Vocational Education and Training (TVET) institutions. In this borderless world, information technology enables knowledge sharing activities to be carried out more efficiently, quickly and widely. Understanding the influencing factors of knowledge sharing activities in TVET institutions is important since a number of failures have been reported due to the lack of awareness in contributing new knowledge. Therefore, this study is conducted to identify the factors that influence knowledge sharing activities among instructors in TVET institutions and to propose a framework to the knowledge sharing activities. A quantitative study involving 96 respondents was conducted and the data that was analysed using multiple regression analysis found that there are four (4) factors that contribute to knowledge sharing activities in TVET institutions: organizational, content, cooperation and technological. The proposed framework is expected to assist in the development of a repository of knowledge sharing among instructors in TVET institutions.*

***Keywords*— knowledge management, technical and vocational institution, empirical assessment, TVET, knowledge sharing.**

I. INTRODUCTION

Knowledge among Technical Vocational Education and Training (TVET) instructors should be strengthened from time to time because it can indirectly enhance the quality of graduates in the technical fields [1]. This is consistent with the Master Plan of the National Skills Development Training 2008-2020, which is to improve the quality of training and skills development in Malaysia. In addition, the transition from the industrial era to the knowledge economy (k-economy) era as revolution of the 21st century has posed a challenge for TVET institute to produce not only skilled but also knowledgeable workers to meet the human resource needs of the post-industrial world in line with the changing job [2]. Thus, instructors need to be equipped the updated knowledge in order to fulfil this requirement.

Knowledge sharing activities can promote the proliferation of new knowledge and add value to existing knowledge among TVET instructors institution. Moreover, through this activity, the loss of knowledge in an institution can be prevented when transfer, promotion and retirement among knowledgeable instructors occurs. Hence, to exploit knowledge, institutions require a knowledge sharing network that can meet the demands of a changing knowledge [3]. However, knowledge activity often fails because most people prefer to seek knowledge from contributing to the new knowledge [4], [5]. This situation, coupled with a failure to understand the relationship between conflicting interests, have led many organizations fail to develop an efficient mechanism for managing [6][8]. Therefore, understanding the factors contributing to knowledge sharing activities in TVET institutions is necessary.

The past study of knowledge sharing had been done in many areas of business and corporate companies. A number of benefits can be provided to a company through this activity. However, in the recent years, the sharing of knowledge can be seen to advantage in the field of education. Previous studies have relate sharing of knowledge in higher education institutions, such as the analysis of underlying factors for knowledge sharing [3], establishing cooperation in the academic field through knowledge sharing [9], intrinsic and extrinsic motivation for knowledge sharing [4], behavioral knowledge sharing among academics [6] and research on practices and

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knowledge sharing process in the higher education in the United Kingdom [8]. Meanwhile, the study in schools focuses on factors influencing of ICT usage for knowledge sharing among teachers [10] and perception of knowledge management in school [11]. The study of knowledge sharing in TVET should be explored because each knowledge sharing activities in educational institutions is different [8]. Thus, this study is conducted to identify factors that influence knowledge sharing activities among instructors in TVET institutions, and to develop a framework for the success of the knowledge sharing activities by taking technical and non-technical factors into account, as well as to test the framework.

II. BACKGROUND OF STUDY

2.1. Technical Vocational Education and Training (TVET)

In the work and education environment, there are differences between the works that require individuals to do it practically by hand and those require the usage of intellectual knowledge such as mathematical, verbal and analytical skills [2], [12]. In Malaysia, there are three (3) different streams of education and training system. Table 1 shows the main streams of the education and training system in Malaysia.

Table.1 : The Main Streams of Malaysia Education and Training System

Stream or Pathway	Institutions	Workforce Preparation
Higher Education	Universities and other institutions of higher learning, both public and private	Professional and managerial positions such as engineers, architects, and surveyors.
Technical and Vocational Education	Polytechnics, technical colleges and community colleges	Supervisory positions such as technical assistants and supervisors.
Vocational Skills Training	Skills training institutions, public and private	Skilled and semi-skilled workers.

Source: [13]

TVET programs help students who demonstrate a strong tendency towards practical or vocational activities to further study in the field of actual pre-employment skills [12]. The original establishment of TVET is to provide labour for industrial purposes. However, with the technological revolution and innovation in science and technology in the 20th century, a new domain of knowledge and new disciplines has become important at all levels of education and training. Thus, new challenges for TVET are to provide human resource requirements along with the post-industrial world changing jobs and employees who are not only skilled but also knowledgeable. There are various institutions that provide TVET programme in Malaysia with the government as the main provider. Table.2 below is an overview of Ministry, Technical and Vocational Institution and their Role in Malaysia.

Table.2 : Ministry, Technical and Vocational Institution and their Role in Malaysia

Ministry	Technical and Vocational Institution	Role
Ministry of Human Resource (MOHR)	Japan Malaysia Technical Institute (JMTI) Advanced Technology Training Centre (ADTEC) Industrial Training Institute	Prepare trainees to become skilled workers. Target group is mainly school leavers.
Ministry of Education (MOE)	Polytechnic Community College College of Technical and Vocational	Focus on education and training opportunities to ensure better career.
Ministry of Youth and Sports (MOYS)	Higher National Youth Skills Institute National Youth Training Institute	Provide basic skills for life through lifelong learning, with most participants are young and unemployed youth
Ministry of Rural and Regional Development (MORD)	Kuala Lumpur University High Technology College of MARA (Malay for Indigenous People's Trust Council) Training Institutes of MARA GiatMARA	Provide quality workers to meet the requirements of the state in order to create skilled workforce and be competitive Bumiputra

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		(Malays and other indigenous Malaysians) entrepreneurs.
Ministry of Agriculture (MOA)	MOA Institute (CAM)	Encourage the younger generation to engage in agriculture
Ministry of Defence (MOD)	The Corporation Affairs Former Army (PERHEBAT)	Provide training for military retirees
Construction Industry Development Board Malaysia (CIDB)	Malaysia Construction Academy	Provide training in the construction industry

Source: [12]

It is shown that TVET institutions in Malaysia were conducted by various Ministries. Each Ministry has one or more technical and vocational institutions that are responsible for fulfilling the training and skills programs. Different institutions have their own targeted group of participants and training programme at different levels. Nevertheless the role and goals are the same, to ensure the learning needs of all residents whether the youths or adults are met through equitable access to education and life skills program accordingly [12].

2.2 The Importance of Knowledge Sharing in Education

Academic institutions, professional organizations and the corporate networks worldwide are trying to create a better database for forming efficiency and effectiveness in achieving the goals of learning and professional development [14]. Most organizations are beginning to recognize the transformation of capital and knowledge as a valuable asset [15]. In the context of education, knowledge sharing is a process of knowledge transfer either implicitly or explicitly not only to the individual but also to a large group either through printed or non-printed materials [10].

In the formation of a knowledge society, educational institutions need to be sensitive to the rapid changes of the new knowledge that is often so quick in order to provide students with an understanding in line with the current need [15], [16]. Thus, in the modern education system, web-based learning provides a new solution for knowledge searching, collaboration, knowledge transfer, information sharing and retrieval better than before [15]. With the approach of web-based knowledge sharing system, it can facilitate the search for new knowledge and to establish cooperation in different academic areas through the establishment of social networks [3]. Hence, knowledge sharing activity for TVET institutions is viewed as important for the survival of "knowledge-enabling", "knowledge-empowering" and "knowledge-intensive industries" [17].

III. RELATED WORK

3.1 Knowledge Sharing Model in Education Fields

In knowledge sharing activities that involve searching and contributing of knowledge, non-technical and technical factors begin to be refined by many researchers in various fields. Therefore, the study of knowledge sharing should be explored in skills institutions since every educational institution is different [8]. To acquire the key factors influencing knowledge sharing activities in TVET institutions, four (4) models of knowledge sharing in the field of education have been identified. The four models are [18], [6] and [4] for higher education institutions, and [7] for the schools. The summary of the factors identified in previous Table.*3*.

Table.3 : Factors Identified in Previous Studies

Model	Area	Factors
[18]	Sharing of knowledge and its impact on performance among academics at three (3) institutions of higher learning	Culture, Technology, Communication, Organization
[6]	Knowledge sharing among academic staff at private universities in Malaysia	Organization, Individual, Technology
[4]	Extrinsic rewards and Organizational Citizenship Behaviour (OCB) to influence an individual's decision to share knowledge among trainers in the oil and gas training institutions in Malaysia	Extrinsic Rewards Individual Rewards Group Rewards Tangible Extrinsic Rewards Intangible Extrinsic Rewards Organization Citizenship Behaviour Altruism Courtesy Conscientiousness Civic virtue
[7]	Encouraging factors for knowledge sharing activities for	Assignments factors, Organizational Factors, Individual,

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	school teachers in Malaysia.	Technology, Ministry of Education, Malaysia Policies

From the previous model, there are three (3) main factors that were identified as factor influencing knowledge sharing in academic institution. The factors are organizations and individuals for non-technical approach, and technological factors for technical approach.

3.2 Framework of Knowledge Sharing for TVET Institutions

Knowledge sharing is an activity that involves seeking knowledge and contribute knowledge [19], [20]. Success in knowledge sharing activities occurs when the individuals involved are satisfied with the process of sharing knowledge and achieve the desired goal through these activities [21]. In addition, the process of sharing is not just collecting data and information but also the value and quality of shared knowledge should be taken into account [6]. As for the success of a knowledge sharing system among the instructor of TVET institutions, non-technical and technical approaches need to be studied in influencing knowledge sharing activities.

3.2.1 Non-Technical Approach

Non-technical approach refers to the element that is not a component of information technology. There are four factors identified as factors influence in knowledge sharing activity in TVET environment namely organizational, individual, content and cooperation factors.

First of all, organizational factors refer to TVET institutional environment that influence knowledge sharing activities among instructors. Past studies have shown that an organizational culture affects the knowledge sharing activities within an organization [10], [22], [23]. This is because organizations that adopt a culture of knowledge sharing among employees have this activity naturally conducted. Besides that, the organizational structure also has an influence in knowledge sharing activity. Organization structure is related to the communications flow among divisions and units in an organization. An organization that does not put the confidentiality status of documents and bureaucratic problems that are too complex will facilitate smooth knowledge sharing between units [10], [22], [23]. This will ease knowledge sharing activities without having to go through a difficult procedure.

Secondly, individual factor derived from the encouragement of individual judgement or internally through beliefs, perceptions, expectations, attitudes and feelings [6]. Belief in sharing knowledge refers to the concerns of the individual against the abuse of their knowledge by others and less confident of the validity of the sources of knowledge [24]. In order to achieve a better sharing of knowledge, high levels of trust in each other is needed [25]. In addition, the awareness to spread a new knowledge with colleagues is one of the individual factors that will influence knowledge sharing activities [7], [8]. If this awareness does not exist among instructors, it is difficult to undertake knowledge sharing activity in TVET environment.

Next, the validity and accuracy of the content of knowledge should be considered before it is distributed. Users will find the knowledge important and beneficial if the source is believed to be true. As for individuals who contribute, they would also feel confident to contribute knowledge that is assessed by someone who is knowledgeable in the relevant field. Thus, the role of subject matter expert (SME) was seen as vital in maintaining the quality of the learning objects [26]. SME refers to the lecturers who are expert in their fields, as well as actively engaged in teaching and learning activities by helping to plan learning outcomes, content creation, review of content and provide valuable feedback [14].

Finally, cooperation between TVET institutions generally aimed at improving human capital development [17]. Through cooperation in knowledge sharing it can encourage knowledge exchange and increasing knowledge among TVET instructors. According to [27], there are six (6) things that need to be taken into account in forming a successful partnership of cooperation. They are environment structure, cooperation structure process, communication, source, destination and community features. To ensure cooperation in knowledge sharing is continuously on-going, monitoring and coordination is required. Through monitoring and coordination, it can ensure that each member of the partnership is aware of the policies developed from time to time [19].

3.2.2 Technical Approach

Technical approach refers to the use of technology as an intermediary in knowledge management through the use of software and hardware to support knowledge sharing activities [6].

First, information technology infrastructure plays an important role in extending the reach of learning objects for knowledge generation and germination. Information technology infrastructure refers to physical facilities, service and management that supports the use and sharing of computerized information systems in an organization [7]. There are many mechanism of knowledge sharing technology such as telephone, email, web conferencing, short messaging software, web sites, virtual community

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sites, email distribution lists, web forums, online knowledge repository and others [28].

Second, Learning Object Repository (LOR) requirements are seen as crucial in sharing learning content either internally or across the education institutions [29]. By using LOR it can stimulate the activity of archiving, sharing, collaboration and provide substantial support in learning [30]. Repository is also known as one or more databases which are integrated together through a search engine. Learning object, on the other hand, can be described as any digital object that can be reused to support learning [30]. There are four (4) characteristic of LOR in knowledge sharing system highlighted. They are interoperability [31]-[38], reusability [31], [35], [36], [39], accessibility [31], [34]–[36] and usability [34].

Next, interoperability characteristic is defined as the ability of the system to communicate and interact with other systems [32]. These features facilitate knowledge access and more widespread among TVET instructors. Meanwhile, reusability refers to sharing object or digital sources that can be used and modified to meet the needs of different users and different learning purpose. Appropriate learning objects can help the learning process in a more effective and efficient way [40]. Besides that, the availability of a system to a wider group of user including those with special needs is important [8]. The characteristics of user profiles should be identified by the developer so that the application is matched to the user needs of accessibility. In addition, usability is the rate people believe that using a system that does not burden them and is easy to use [41]. There are many failures to emphasize usability aspect and this may cause most developed systems are not fully utilized [42].The problem for users in usability is when a lot of effort or steps are required in using the system. Therefore, the system needs to be simplified, user-friendly or only needs a few steps to be used.

Finally, the uses of social networking sites have a great potential in education and knowledge sharing practices [43]. In the knowledge sharing activity, frequent interactions between the parties involved is required [19]. By using social networking site, it allows communication among social community [3]. Beside that, social media elements such as “like” and “comment” are also able to motivate instructor to contribute their knowledge.

3.2.3 Knowledge Sharing among TVET Instructors Measurement

Knowledge sharing among instructors assists in producing graduates who are easily accepted by the industry [17]. Thus, knowledge and skills among TVET instructors should be continuously updated to be in line with industry technology. Technology usage in knowledge sharing activities facilitate in access and dissemination of new knowledge quickly through networks [3]. Not all TVET instructors are from technical and vocational education background. There are instructors graduated from universities and other institutions of higher learning, both public and private, who are not familiar with the technical and vocational education. By knowledge sharing, it is able to expose TVET instructors with technical and vocational education and indirectly help them to be qualified as TVET instructor with Malaysia Skills Certificate. The Malaysia Skills Certificate is a formal nationally recognized certificate issued by the Government to individuals who have shown capabilities that are required or practiced, and been equipped with competencies to perform tasks and functions [44].

3.3 Theoretical Framework

There are two (2) approaches that influence knowledge sharing activities in TVET environment, namely technical and non-technical approach. Non-technical approach includes organizational factors, individual factors, content factors and factors of cooperation, while technical approach is the technology factors. Fig 1 below shows the theoretical framework of this study.

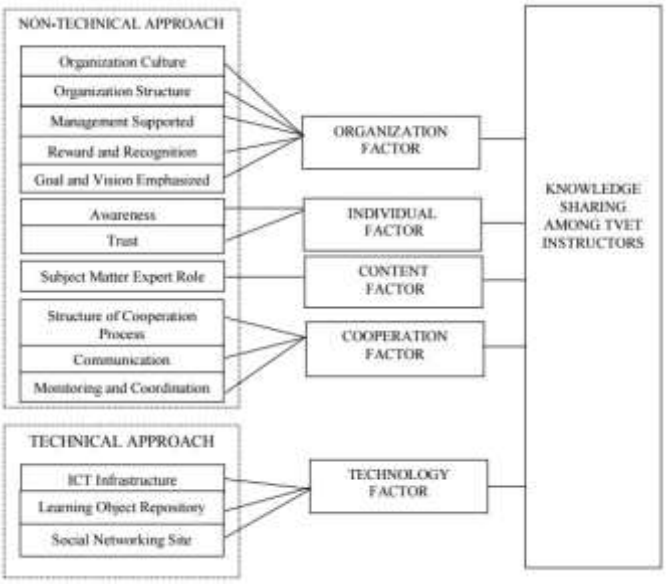

Fig.1 : Theoretical Framework

IV. METHOD

Each study has a different design depending on the goals of the study. The method used by previous research in a related field was referred. Thus, quantitative study is appropriate for this study. The quantitative research was conducted through questionnaires on TVET instructors to test hypotheses developed. The questionnaires may

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facilitate data collection, measurement of variables and cooperation from respondents [45].

4.1 Population, Sample and Location

The population for this study are instructors at the Technical Vocational Education and Training (TVET) Institutions offering courses at certificate level. In Malaysia, the administration of TVET institute throughout the country is in the capital city of Malaysia which is in Kuala Lumpur and Putrajaya. Hulu Langat district is a desirable area because of its location that is near between the two (2) locations. Furthermore, the high population density had led to various TVET institutions been established in surrounding areas. Sampling within Hulu Langat district can represent other TVET instructors in different locations.

To determine the appropriate sample size for this study, the number of TVET within Hulu Langat was determined using random sampling technique, also known as probability sampling. For this study, stratified random is used to determine the size of the sample. This technique is used when an unbalanced distribution of subpopulations is taken [45]. Below are the steps in acquiring the numbers of sample for this study.

Step 1: Collecting data of the population of TVET institutions within Hulu Langat district that offer programs at certificate level according to the ministry.

Table.4: Number of Academic Staff for TVET Institutions within the district of Hulu Langat

Ministry	Institution	Number of Academic Staff
Ministry of Education (MOE)	Hulu Langat Community College	44
Ministry of Youth and Sports (MOYS)	Dusun Tua National Youth Institute of Skills	86
Ministry of Rural and Regional Development (MORD)	GiatMARA Hulu Langat	6
	Total	136

Step 2: Sample size is determined through "*Small Sample Technique*" by [46]. The suitable number of sample for this study is 92 people by rounding the population size of TVET institutions within Hulu Langat from 136 people to 140 people. The [47] sample size for population table as Table 5 below.

Table.5: Sample Size for Population

Population	Sample	Population	Sample	Population	Sample
10	4	170	120	500	230
15	8	180	130	600	240
20	12	190	140	700	250
25	16	200	150	800	260
30	20	210	160	900	270
35	24	220	170	1000	280
40	28	230	180	1100	290
45	32	240	190	1200	320
50	36	250	200	1300	340
55	40	260	210	1400	360
60	44	270	220	1500	380
65	48	280	230	1600	400
70	52	290	240	1700	410
75	56	300	250	1800	420
80	60	320	260	1900	430
85	64	340	270	2000	440
90	68	360	280	2100	450
95	72	380	290	2200	460
100	76	400	300	2300	470
110	80	440	320	2400	480
120	84	460	340	2500	490
130	88	480	360	2600	500
140	92	500	380	2700	520
150	96	520	400	2900	540
160	100	540	440	3100	560

Source: Krejcie dan Morgan (1970) in Sekaran dan Bougie (2010)

Step 3: The determination of the number of sample for each institution is determined through the ratio method with the addition of 10 percent in order to avoid sample error [48]. This addition is to allow incomplete findings or those with external elements to be excluded from the analysis. Table 6 shows the number of samples for each institution according to the ratio method with the addition of 10%.

Table 6: Samples Size for Each Institute According to the Ratio Method with the Addition of 10%

Ministry	Institution	No. of Academic Staff	No. of Sample = (Overall Sample Size / Population Size) x Level Size	No. of Sample with the Addition of 10%

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Ministry of Education (MOE)	Hulu Langat Community College	44	30	33
Ministry of Youth and Sports (MOYS)	Dusun Tua National Youth Institute of Skills (IKBN)	86	58	64
Ministry of Rural and Regional Development (MORD)	GiatMARA Hulu Langat	4	4	4
	Total	136	92	101

Example for calculation of number of sample for Kolej Komuniti Hulu Langat is shown in Table 7 below.

Table.7: Example for Calculation of Number of Sample for Kolej Komuniti Hulu Langat

Institution	Overall Sample Size	Population Size	Level Size = No. of Academic Staff	No. of Sample = (Overall Sample Size / Population Size) x Level Size
Kolej Komuniti Hulu Langat	92	136	44	(92/136) x 44 = 30

According to the ratio method with the addition of 10%, the suitable sample size is 101.

4.2 Validity, Pilot Study and Reliability

For this study, two (2) research lecturers were referred to evaluate the questionnaire. Based on the assessment, some changes were made in terms of abbreviation writing, amendments to the sentences that may seem negative and clarification in the terms used to facilitate the respondents to understand the requirements of the question.

Two (2) instructors were then asked to provide feedback about any confusion arising in answering the question items. As a result of the feedback, some items that do not reflect respondents' perceptions of factors influence knowledge sharing were changed. The pilot study involves 30 instructors from two (2) different TVET institutes consists of 15 instructors from the National Youth Training Institution, Alor Gajah, and 15 instructors from Masjid Tanah Community College.

Based on a pilot study that was conducted, the Cronbach Alpha (α) is obtained through a questionnaire analysis using IBM SPSS Statistics software version 22.0. Only in the Cronbach, Alpha > 0.6 can proceed to the actual distribution of questionnaires. If < 0.6, the items in the questionnaire must be amended. A value of $\alpha = 1.0$ means reliability is high, while the value of $\alpha > 0.8$ is considered good and the value α between 0.6 and 0.70 is acceptable.

V. ANALYSIS

Regression analysis is a set of statistical procedures used to predict and explain the value of the dependent variable based on the value of one or more independent variables. Result of regression analysis is an equation that represents the best prediction of the dependent variable based on the value of the dependent variable based on the value of some independent variable. Overall, the number of questionnaires answered was 98. There were two (2) questionnaires received as incomplete, bringing the total questionnaires used for analysis of 96. This value exceeds 100% of the required sample. Data obtained from questionnaires must meet assumptions such as multivariate outlier data, normality, homoscedasticity, linearity and the independence. It is important to avoid the result from regression model that are not contradictory.

5.1 Regression Testing Assumptions

Data isolates detected by using multivariate statistical methods. There are two (2) statistic method justifications consideration that can be used in multivariate outlier data detected to be disposed. They are Mahalanobis distance and Cook distance. For a sample of 30 (N = 30), the Mahalanobis distance above 11 should be considered to be dispose. While for the number of 100 (N = 100), the Mahalanobis distance above 15 will be considered to be dispose [47]. Therefore, the second justification is used in this study because the sample size for this study is 96 which exceed 30 and almost 100. For the Cook's analysis, the subject is considered isolate if Cook's value is more than 1 and it should be considered to remove. From the data analysis for this study, it shows that all Mahalanobis distance value is less than 15, while Cook's overall value is less than 1. As conclusion, there are no outliers in the data for this study.

Normality of data distribution can be determined through normal P-P plot residuals. If the data distribution is normal, distribution of data is a straight line parallel to the

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linear [49]. Based on the normal plot P-P standard regression residuals of the dependent variable shows the distribution of data is in line with a linear straight line. From the normal P-P plot residuals for this study, it shows that the data distribution is normal. According to the Central Limit Theorem, distribution of the sample is normal or close to normal if the sample size is large enough. Most researchers state that data distribution is normal if the sample size is large enough which is more than 30 without any outlier data [50]. Based on this fact, the distribution of data for this study is assumed to be normal because the sample size is more than 30 with no outlier data.

Homoscedasticity testing describes in which the error term (random disturbance in the relationship between the independent variables and the dependent variable) is the same across all values of the independent variables [51]. By using Scatterplot graph, it can be explained that the relationship between the variables that have a positive relationship. Scatterplot graph in this study shows the majority distribution of data is not more than 3.3 and not less than -3.3. Thus, from the Scatterplot it shows that most of the data is in the main cluster. It means the data meets the assumption of homoscedasticity. However, violation of this assumption does not affect the analysis if the conflict linear relationship between the variables in the analysis are reinforced by evidence of linearity [50].

Linearity tests are needed to ensure a linear relationship between the dependent variable and independent variable. Linearity can be checked through the 'studentized plot' against the appliance for the dependent variable. If the relationship between the dependent variable and the independent variable is not linear, one curve can be observed in plotting the residuals. For this study, based on the residual plotted there is no curve shown. Thus, the researcher assumes the relationship between the dependent variable and independent variable is linear.

Inspection of independence data is required for inspecting the observed values for the variables studied were not associated with each other. Durbin-Watson test can be used to check whether the correlation between the observed values of the dependent variable is consecutive. If the Durbin-Watson statistics is in the range of 1.5 - 2.5, it is assumed that independence is met. Based on the analysis conducted, data meets the independence data assumption with the Durbin-Watson value of 1.904.

The tolerance value is used to assess the strength of the linear relationship between the independent variables involved in the model.

The tolerance value close to 1 indicates that the variance in the dependent variable is small. In addition, the Variance Inflation Factor (VIF) is also used to detect multicolinearity phenomenon that may exist between the independent variables studied. If VIF is greater than 2.50, it signifies the establishment of a high multicolinearity phenomenon among independent variables studied. For this study, tolerance value is less than 1 while the VIF is less than 2.50. The conclusion is that multicolinearity phenomenon does not exist between independent variables studied in this research. Overall, the data used in this study fulfills the assumptions prescribed for multiple regression analysis.

5.2 Multiple Regression Coefficients Significance Testing

The hypothesis needs to be determined before the multiple regression coefficients significance testing can be done. Following are hypothesis for this study:-

- Hypothesis 1 ($H1_1$): organizational factors have a positive effect on knowledge sharing activities among TVET instructors.
- Hypothesis 2 ($H2_1$): individual factors have a positive effect on knowledge sharing activities among TVET instructors.
- Hypothesis 3 ($H3_1$): content factors have a positive effect on knowledge sharing activities among TVET instructors.
- Hypothesis 4 ($H4_1$): cooperation factors have a positive effect on knowledge sharing activities among TVET instructors.
- Hypothesis ($H5_1$): technology factors have a positive effect on knowledge sharing activities among TVET instructors.

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Table.8: Coefficients of Study

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-.404	.158		-2.550	.012
Organisation Factor	.135	.054	.128	2.491	.015
Individual Factor	.024	.034	.033	.692	.491
Content Factor	.117	.056	.122	2.104	.038
Cooperation Factor	.625	.060	.610	10.434	.000
Technology Factor	.189	.059	.181	3.199	.002

Determination coefficient R2 can give an idea of the variation in the dependent variable that can be explained by the regression model produced. For this study R2 =

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0.876, adjusted R square 8.869. This shows that the model explains 87.6% of the variance is the dependent variable, namely knowledge sharing among instructors of TVET institution. Table 8 below shows the coefficients of the study

Based on the coefficient of factors table, the significant value of all factors were less than 0.05, except individual factor. Thus, H2 (regarding individual factor) hypothesis was rejected. Only H1, H3, H4 and H5 which are organization, content, cooperation and technological factors have evidence of significant predictors for the establishment of a framework of knowledge sharing among instructors in TVET institutions. Fig 2 below presents the validated framework after empirical study.

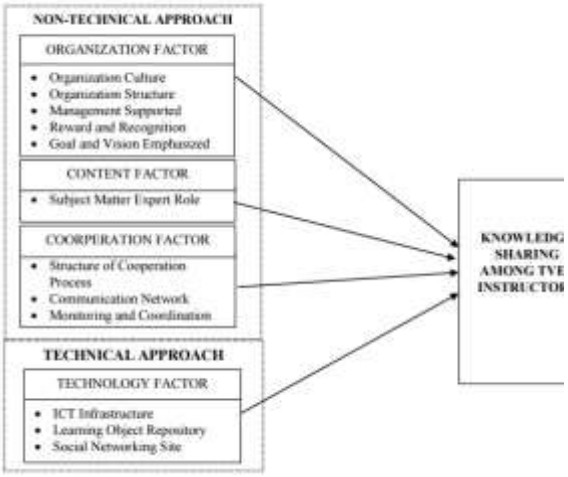

Fig.2 : Validated Framework of Knowledge Sharing in TVET Institutions

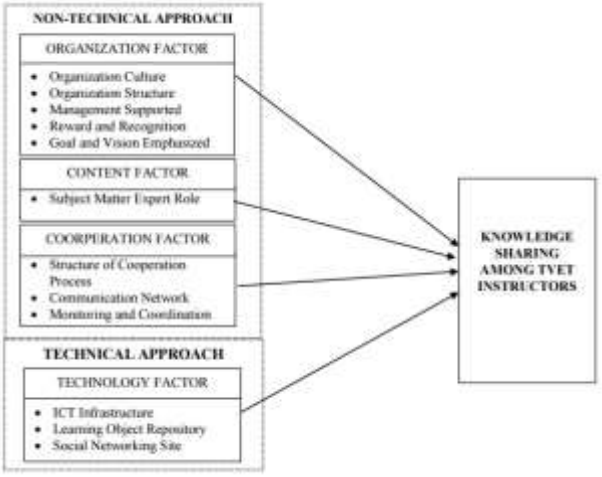

Fig.2 : Validated Framework of Knowledge Sharing in TVET Institutions

VI. DISCUSSION

There are five (5) factors identified which are organization, individual, content, cooperation and technology. In the context of TVET institution, the institution itself plays an important role in influencing knowledge sharing activities. It can be done by implementing knowledge sharing culture in the institution environment [52]. Through this, it enables this activity to be as a practice among TVET instructors. Besides that, organizational structure is able to facilitate the knowledge sharing activities [10], [22]. The organization structure procedure for knowledge sharing has to be easy (without complicated procedure), and not too restrictive when sharing (without high confidentiality status). In addition, the goals and vision of the institution need to be clarified so that instructors know the importance of knowledge sharing in their institutions [10], [22], [23], [53], [54]. Moreover, top management support through joint involvement, providing assistance and financial resources, as well as providing professional development program, is able to influence knowledge sharing activities [55]. Supported by the top management may encourage instructors to increase skill and re-skill their knowledge. Besides that, rewards and recognition from the institution may motivate instructors to contribute their knowledge [4], [5]. Thus, organizational factor plays an important role as factors influencing knowledge sharing activities.

The content factor for this study is to see the relationship expert role in increasing the confidence level of the instructors to contribute their knowledge. Experts play an important role in maintaining the quality of the content [4], [5]. In the context of TVET, institutions experts are referred to as instructors in their field and participate in the activities of teaching and learning and also known as subject matter expert (SME). SME plays an important role in reviewing, correcting and approving the technical work [26]. They help to develop learning objects, create content, review the content for accuracy and provide valuable feedback. The feedback and review by SME can increase the confidence level among TVET instructors to share their knowledge. The cooperation factor for this study refers to the elements that influence the formation of knowledge sharing among TVET institutions. The element that had been studied is the process of cooperation, the monitoring and coordination, and the establishment of communications network in influencing knowledge sharing activities. Establishment of cooperation through the sharing of knowledge can create a smart partnership among educators in TVET environment. Cooperation between TVET institutions can enhance human capital graduates to be able to improve the technical skills of instructors, to meet the demand and supply of labor that corresponds to the needs of the

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industry, increase the skills of the instructors, and encourage the transfer of knowledge between institutions and society [17].

Technological factor is also among important factors in knowledge sharing implementation in TVET. The quantitative findings are consistent with the previous research by [17], [7]) and [22]. ICT infrastructure such as the internet, mobile devices and computers facilitate the spread of knowledge and convenience in searching information [22]. In addition, learning object repository is required in order to establish a knowledge sharing internally or across the education institutions [6]. LOR should be involved in the TVET environment to create smart partnerships among TVET institutions. There are four (4) characteristics of LOR in knowledge sharing that should be considered, namely interoperability [29], accessibility [31]–[38], reusability [31], [34]–[36] and usability [31], [35], [36], [39]. These characteristics facilitate access of new knowledge that is more widespread, accessible by different potential users, can be reused for other purposes, as well as easy to be learned and understand when rarely used. The social networking site could be used as a platform to communicate and allow interaction among instructors. In addition, elements such as *like* and *comment* in the social site helps in motivating users to share their knowledge. In the borderless world, technology is now indispensable to support knowledge sharing activities.

This study found that individual factor is not an influence in knowledge sharing activity in TVET institution. This contradiction is obtained from the previous findings by [56] and [19]. Among the possible reason to this finding is due the success of a project or task depends on the environment of the organization as a whole and not individually. This statement is supported by a survey conducted by [56] that stated environmental in organizations have an impact on an individual's performance. In the context of TVET, the success of a student is not set to one instructor, but it involves many parties both from the management and also a combination of various instructors in different areas of expertise.

VII. CONCLUSION

Overall, this study has identified factors influencing knowledge sharing among TVET instructors through literary highlights and has proposed a framework for knowledge sharing among TVET instructors using quantitative method through multiple regression analysis. The findings demonstrate the success of knowledge sharing involving non-technical approaches, namely organization, content and cooperation factors. Technical approach, on the other hand, is the technology factor. The finding from this study may help the researcher and practitioners, especially TVET institution in Malaysia to develop strategies to foster knowledge sharing in their respective institutions. The study contributes to the body of knowledge in the way the factors influence knowledge sharing in TVET institution which has been tested empirically. Further study may be focused on single factor such as technology. This could involve quantitative method in focus group to gain more understanding. This study has limitation in terms of population sampling that covered TVET institutions only in the district of Hulu Langat because of time and financial constraint. Therefore, further studies may involve more TVET institutions in Malaysia, with a bigger sample size. The study may focus on similar skill-based training institutions that cover the whole of Malaysia. More research needs to be conducted in an environment of TVET institutions in order to obtain more diversified findings on the factors affecting knowledge sharing activities in TVET institutions.

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