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# THE EMERGENCE OF KNOWLEDGE-BASED TECHNOLOGIES IN PROMOTING KNOWLEDGE SHARING BEHAVIOR

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## ABSTRACT

*This article addresses the emergence of knowledge-based technologies and its focus is on factors that stimulate the successful of knowledge sharing behavior. People nowadays are utilizing knowledge-based and web-based technology, such as Internet, Intranet, social media and other online technology for interaction and collaboration. These are the platforms through which knowledge can be extracted, shared and distributed around the globe and people are starting to communicate and socialize using the latest media and technology. Literature on knowledge sharing and virtual mode suggest the pre-existence of shared knowledge or a shared belief system as a condition for the knowledge-based technologies to emerge. The objective of this study is to analyze the role of these knowledge-based technologies to promote the knowledge sharing behavior. This research uses quantitative methodology for the collection and analysis of data by conducting surveys from the researchers in these organizations. Self-administered questionnaire were distributed to 510 researchers from selected Malaysian Government-Linked Companies (GLCs). The theoretical model developed in this paper is empirically tested on a sample of researchers of five organizations, and significant relationships among these constructs were found. Conclusions and directions for future research are also formulated.*

**Keywords:** Knowledge-based technologies, Knowledge sharing, Behavior, Virtual platform, Government-linked companies, Researchers.

## Contribution/ Originality

The paper's primary contribution is finding that analyze gaps found in the previous literature by empirically examining how knowledge-based technologies could promote knowledge sharing behavior. The assumption is justified via the practical contribution of the study where this factor can serve as a planning tool for future knowledge sharing implementation.

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## 1. INTRODUCTION

Knowledge Management (KM) has been widely recognized and practiced in many organizations around the world. This initiative comprises a range of strategies and practices to identify, create, capture, distribute, share, collaborate and enable adoption of insights and experiences, either by individuals or organizations. This initiative has been positioned as a business strategy that advances knowledge as a critical resource and can integrate pieces of this knowledge across the organization as a distinguishing feature for market success (Grant, 1996; Davenport and Prusak, 1998). Furthermore, KM also supports the development, classification, utilization, and sharing of knowledge to assist situational understanding for decision making process in organization (Ismail and Raja Abdullah, 2011). Knowledge sharing has been widely accepted as one of the important pillars in KM. Grant (1996) has asserted that knowledge sharing as an important focus in the KM field, where knowledge is seen as the most important resource an organization can possess. Argote *et al.* (2000) stressed knowledge sharing as the process through which a unit, group, or division is influenced by the experience or skill of each other. The sharing process is undertaken when a resource is given by one party (sender) and received by another (receiver). Moreover, Fadhilah *et al.* (2011) have asserted that knowledge sharing refers to the extent to which proprietary or vital information is communicated to other parties. Therefore, knowledge sharing can diffuse relevant ideas, suggestions, and information to others (Bartol and Srivastava (2002).

The primary challenge in promoting knowledge sharing strategy for several organizations is not just technology or applications, but more on changing the employees' behavior and attitude (Gan, 2006; Lee Ai *et al.*, 2008; Yap *et al.*, 2010). This finding is supported by Ramanathan *et al.* (2003), who revealed that several Malaysian companies tend to be highly decisive or bureaucratic and have a centralized management structure with a minimum level of KM practices in place. Despite the availability of advanced KM systems and large quantities of information in knowledge-driven institutions, the behavioral factors of users in sharing knowledge remain paramount in determining the achievement or failure of KM technologies (Dyer and McDonough, 2001; Malhotra and Galleta, 2005). Hence, while the technology is vital to develop systems for utilizing the knowledge in the organization and it is important to have the necessary technology implemented correctly, the technology alone could not assist without employees' willingness to share information. Despite strong efforts to systematically define processes and technology solutions, recent studies have asserted that 70% of organizations implementing a company-wide strategy for knowledge sharing and transfer fail to realize improvement in performance or to develop core competencies, such as innovation and research development (Malhotra and Galleta, 2005). Among critical factors highlighted by the academicians, such as Holsapple and Joshi (2000) are failures to embed knowledge sharing in daily processes and failures to implement technology that could facilitates knowledge sharing. On that note, the objective of this research is to evaluate

the influence of knowledge-based technologies that could promote the knowledge sharing behavior among the individuals in the selected organizations in Malaysia.

## 2. KNOWLEDGE SHARING TECHNOLOGIES

Knowledge-based technology can be defined as the technical system within an organization that determine how information or knowledge travels and is accessed throughout the organization (Zaied, 2012). Knowledge-based technologies, such as online systems or virtual platforms, provide a broad mode for exchanging data, sharing information, emerging organizations, and supporting globalization based on powerful computing and network technology (Liao, 2003). These virtual platforms have enabled knowledge sharing activities for collaborative decision support, organizational learning, and organizational memory that will influence organizational performance and innovation (Chen *et al.*, 2002; Hicks *et al.*, 2002; Mohd Hishamuddin, 2002; Mohd Ghazali *et al.*, 2007). In fact, this technology has allowed a business to continuously shift and diversify in the way it functions, enabling it to forecast and anticipate future trends (Raja Abdullah, 2010).

In order to implement the knowledge sharing initiative, several academicians have focused on studies of different mechanisms and platforms that could perform as facilitators for this practice. (Grant, 1996; Davenport and Prusak, 1998) have proposed mechanisms, such as Information and Communication Technology (ICT), network communities, and knowledge repositories. Sáenz *et al.* (2010) also added that online discussion forums, Intranets, Extranets, and online databases are examples of ICT-based knowledge sharing that are vital and involve virtual interaction and collaboration. It is evident that ICT is an essential medium that could facilitate knowledge storing, retrieving, and sharing. According to Preece (2001), these virtual platforms could facilitate virtual communities to interact, contribute, and develop the professionalism level of individuals by social collaboration without a high expenditure on the learning process and sharing of knowledge. Based on the viewpoint of human-computer interaction, this scholar also proposed that the quality of the virtual sites is a significant feature for forecasting the intent of members for knowledge sharing. This argument is supported by Chen (2007), who indicates that virtual platforms could support communication and collaboration among members, enabling interaction anywhere and anytime by removing the geographical barriers and allowing knowledge sharing practices.

Apparently, there are wide ranges of online platforms and technologies that can be utilized to support KM initiatives. However, the challenges are combining a variety of current and available platforms to suit the KM setting and promote knowledge sharing behavior. For the purpose of this study, the primary platform that will be discussed further is the web-based or Internet technology. According to Liao (2003), Internet platforms are used to construct a digital environment to consistently develop new knowledge, transfer the existing knowledge, and

embedded the knowledge sharing practices in the organizations. Therefore, this virtual mode or platform has simplified connectivity and creates the social interactions among the community members that will enhance knowledge creation and sharing in the organization. Moreover, there are two important attributes for related knowledge-based technologies in promoting knowledge sharing behavior, namely effort expectancy and facilitating conditions. These two vital factors will be described further in the next section.

### **2.1. Effort Expectancy Factor**

Effort expectancy is described as the level of ease associated with the systematic use (Venkatesh *et al.*, 2003). Effort expectancy is critical in the introduction of a new technology, such as the virtual platforms. The adoption process of a new technology can be constrained and even fail when factors related to effort expectancy are not taken into account by developers and the management of the organization. Through the actual use of the platforms, users could validate its design and confirm or disconfirm their expectations (Venkatesh *et al.*, 2003). Hence, effort expectancy construct can be significant in determining user acceptance of specific technology, such as the virtual platforms. Recent studies have suggested that whether the design of the system, such as virtual platforms can allow users to navigate it easily or not is one of the key success factors of accepting the technology. Ease-of-use factor determines the acceptance of the new system, and the system user interface is developed based on the user's need and justification (Davis, 1989). Furthermore, to measure the easiness of using a particular online system, this research should also measure the availability of enough skills to use the system and the capability to share the knowledge. According to Lam Chua (2005), KM platforms that suffer from poor usability are likely to discourage and frustrate potential end users. Davis (1989) also classified this variable as ease, which described the degree to which an individual believes that using the virtual platforms is free from effort.

Therefore, this research hypothesizes:

**Hypothesis 1: Effort expectancy positively influences knowledge sharing behavior**

### **2.2. Facilitating Conditions Factor**

Facilitating condition refers to user's self-efficacy of the system, which determines the ability of the user to operate and utilize the system and refers to the technology assistance that is provided by the environment, such as training, helpdesk system, manuals and documentation (Venkatesh *et al.*, 2003). Likewise, if users have access to more resources and technology assistance than expected in the production stage, they will experience positive facilitating conditions, which lead to higher satisfaction and continuance intention (Venkatesh *et al.*, 2003). Therefore, facilitating conditions are positively related to satisfaction and implies the realization of the expectations and elevates the corresponding post-usage perception (Bhattacharjee, 2001).

Moreover, user's training and technology assistance related to creativity, documentation skills and problem solving also identified as vital antecedents on the acceptance of the virtual system and applications (Salleh and Wee-Keat, 2002). Therefore, user training and technical assistance would deeply impact end-user skills in using the virtual platforms, thus making training and support appealing to the end-users, since they are under the control of the organization. As described by Gannon-Leary and Fontainha (2007), the participants must have access to basic Information Technology (IT) skills to become efficient in technology and usability of these virtual platforms. It is also suggested that individuals who are not technology savvy and have not been exposed to any training or documentation, it would be difficult for the individuals to share their knowledge through the virtual platforms (Sharmila *et al.*, 2011).

Hence, this research hypothesizes:

**Hypothesis 2: Facilitating condition positively influences knowledge sharing behavior.**

### **3. RESEARCH METHODOLOGY**

This study will adapt the quantitative method for the collection of data from the selected respondents. This research will use this approach for the collection and analysis of data by conducting surveys and questionnaires from related participants in the Research and Development (R&D) organization. This method will focus on related variables or factors with the purpose of formulating a theory or conceptual framework at the conclusion of this research (Sekaran, 2006). A survey provides numeric report of attitudes or behaviors through the exploration of a sample of population with the intention of generalizing the hypotheses of the study (Creswell, 2009).

#### **3.1. Population and Sampling**

The participant of this study is the researchers in these GLCs organizations which could assist in generating meaningful information and explanation to fulfill the objectives of this research. The list of respondents obtained from the respective research organizations is the basic population and Stratified Random Sampling technique will be used. This sampling design will provide the most efficient technique when differentiated information is needed regarding various strata within the population. The population of researchers will be divided into mutually exclusive groups that are relevant, appropriate and meaningful in the context of this study.

This research has distributed hardcopy of the survey to 150 respondents and uploaded the formatted electronic version of the survey to 360 researchers. The hardcopy and link of this website were distributed to a total of 510 researchers, of which 220 responded to the survey.

Table-1. Total Respondents

No	R&D Organization	Total Population	Total Respond	Percentage (%)
1	Petronas	130	60	46.1
2	Tenaga Nasional Berhad	80	34	42.5
3	SIRIM	100	39	39
4	Nuclear Malaysia	150	68	45.3
5	Green Technology Malaysia	50	19	38
	TOTAL	510	220	43.1

Based on Table 1, the target respondents are drawn from total population of 510 researchers from five organizations and 220 have responded to the circulated survey. The total response or questionnaire returns for this research was on target since more than 40 percent (%) of the targeted respondent or more than 200 users had given the feedback on the questionnaires that had been circulated. The response rate of more than 40% are also consistent and equal to sample size decision model that is proposed by Krejcie and Morgan (1970) and Sekaran (2006).

#### 4. FINDINGS

Multivariate analysis was the method for testing the research's hypotheses that includes Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). CFA and SEM are recognized to provide rigorous analysis of model power in relation to construct and content validity. CFA is a multivariate statistical procedure in research design stages that are used to test how well the measured variables represent the number of constructs.

##### 4.1. Effort Expectancy Factor

Confirmatory Factor Analysis (CFA) for Effort Expectancy variable is performed to analyze how well the measured variables represent the number of constructs as shown in Figure 3 in Appendix A. To determine the minimum loading necessary to include an item in its respective constructs, the general criteria are accepted items with loading of 0.50 or greater (Hair *et al.*, 2010). On that matter, factors loading for Effort Expectancy (EE1 to EE6) variables that are less than 0.50 is eliminated. Thus, indicator variables that are dropped in this analysis are EE1 (0.30) and EE2 (0.38). Figure 3 in Appendix A show the new model after the elimination process.

Table-2. Indexes Effort Expectancy

Fit Indices	Recommended Level**	Output Value	Summary
X <sup>2</sup>	Not significant p>0.05	0.77	Accepted
X <sup>2</sup> /df	<3.0	0.26	Accepted
GFI	≥0.80	0.99	Accepted
AGFI	≥0.80	0.99	Accepted
NFI	≥0.80	0.99	Accepted
CFI	≥0.90	1.00	Accepted
RMSEA	<0.10	0.00	Accepted

\*\*Source: Medsker *et al.* (1994), Doll *et al.* (1994), Bentler (1995)) and Hair *et al.* (2010)

A CFA was conducted for this constructs to determine whether the indicators measured the construct and were assigned adequately. Maximum likelihood estimation was employed to estimate the CFA model. Table 2 summarizes the results of these tests, after the elimination process. Empirical evidence in CFA is generally assessed using selected criteria, such as Comparative Fit Index (CFI), Normed Fit Index (NFI), Goodness-of-fit index (GFI) and Adjusted Goodness-of-Fit Index (AGFI).

- a. A CFI value greater than 0.90 indicates an acceptable fit to the data (Bentler, 1995). The CFI value (1.00) is acceptable, which suggests a good model fits.
- b. Convergent validity: The Normed Fit Index (NFI) obtained from CFA can be used to assess convergent validity. According to a rule of thumb, NFI values of 0.80 or greater indicate an adequate model fit (Bentler, 1995). Thus, the NFI value (0.99) indicates an adequate model fit for this study.
- c. GFI: The goodness of fit index, tells what proportion of the variance in the sample variance-covariance matrix the model accounts for. This should exceed 0.80 for a good model (Doll *et al.*, 1994). As a result, the GFI value (0.99) revealed in Table 2 indicates a very good model for this study.
- d. AGFI: Adjusted GFI is an alternate GFI index in which the value of the index is adjusted for the number of parameters in the model. According to Doll *et al.* (1994), AGFI values of 0.80 or greater indicate an adequate model fit. Thus, the AGFI value (0.99) as shown in Table 2 indicates an adequate model fit for this study.

In addition, to ensure that the measurement model fit and suitable for this study, the relevant indexes were examined. Hair *et al.* (2010) have suggested that if three or four (out of seven) indexes are accepted, this measurement model is recommended for further analysis. Thus, as described in summary for Table 2, the model has all accepted indexes that indicate Effort Expectancy measurement model is very suitable for this study.

#### 4.2. Facilitating Condition Factor

CFA for the next independent variable, Facilitating Condition was performed to analyze how well the measured variables represent the number of constructs, as shown in Figure 4 (in Appendix A). To determine the minimum loading necessary to include an item in its respective constructs, the general criteria are accepted items with loading of 0.50 or greater. On that matter, factors loading for Facilitating Condition (FC1 to FC6) variables that are less than 0.50 is dropped. Thus, indicator variables that are dropped in this analysis are FC5 (0.28) and FC6 (0.24). Figure 4 in Appendix A shows the new model after the elimination process.

Table-3. Indexes Facilitating Condition

Fit Indices	Recommended Level**	Output Value	Summary
X <sup>2</sup>	Not significant p>0.05	0.00	Not Accepted
X <sup>2</sup> /df	<3.0	8.76	Not Accepted
GFI	≥0.80	0.96	Accepted
AGFI	≥0.80	0.81	Accepted
NFI	≥0.80	0.94	Accepted
CFI	≥0.90	0.95	Accepted
RMSEA	<0.10	0.19	Not Accepted

\*\*Source: Medsker *et al.* (1994), Doll *et al.* (1994), Bentler (1995) and Hair *et al.* (2010)

A CFA is conducted for these constructs to determine whether the indicators measured the construct and are assigned adequately. Table 3 summarizes the results of these tests, after the elimination process.

- The CFI value (0.95) is acceptable, which suggests a good model fits.
- The NFI value (0.94) indicates an adequate model fit for this study.
- The GFI value (0.96) indicates a good model for this study.
- The AGFI value (0.81) indicates an adequate model fit for this study.
- The RMSEA value (0.19) is above the threshold and not indicates a good model for this study.

In addition, to ensure that the measurement model fit and suitable for this study, Facilitating Condition indexes are examined. Therefore, as described in summary of Table 3, the model has four accepted indexes that indicate Facilitating Condition measurement model is suitable for this study.

#### 4.3. Knowledge Sharing Behavior

CFA for the dependent variable – Virtual Sharing Behavior is performed to analyze how well the measured variables represent the number of constructs, as illustrated in Figure 5 in Appendix A. To determine the minimum loading necessary to include an item in its respective constructs, the general criteria are accepted items with loading of 0.50 or greater.

Table-4. Indexes Virtual Sharing Behavior

Fit Indices	Recommended Level**	Output Value	Summary
X <sup>2</sup>	Not significant p>0.05	0.00	Not Accepted
X <sup>2</sup> /df	<3.0	0.00	Accepted
GFI	≥0.80	1.00	Accepted
AGFI	≥0.80	0.00	Not Accepted
NFI	≥0.80	1.00	Accepted
CFI	≥0.90	1.00	Accepted
RMSEA	<0.10	0.36	Not Accepted

\*\*Source: Medsker *et al.* (1994), Doll *et al.* (1994), Bentler (1995) and Hair *et al.* (2010)



On that matter, factors loading for Virtual Sharing Behavior (VSB1 to VSB6) variables that are less than 0.50 is dropped. Thus, two indicator variables that are dropped in this analysis are VSB3 (0.37) and VSB4. Figure 5 (in Appendix A) shows the new model after the elimination process.

A CFA is conducted for these constructs to determine whether the indicators measured the construct and are assigned adequately. Table 4 summarizes the results of these tests, after the elimination process.

- The CFI value (1.00) is acceptable, which suggests a good model fits.
- The NFI value (1.00) indicates an adequate model fit for this study.
- The GFI value (1.00) indicates a good model for this study.
- The AGFI value (0.00) is below the recommended level and not adequate as model fit
- The RMSEA value (0.36) is above the threshold and not indicates a good model.

Furthermore, to ensure that the measurement model fit and suitable for this study, Virtual Sharing Behavior indexes are examined. Therefore, as described in summary of Table 4, the model has four accepted indexes that indicate Virtual Sharing behavior measurement model is reliable and valid for this study.

## 5. HYPOTHESES TESTING

### 5.1. Structural Equation Modeling (SEM)

After all independent and dependent variables were examined using CFA, the next step is to analyze the model using Structural Equation Modeling (SEM). SEM analysis was performed to test the hypotheses of this research and to examine the possibility of achieving goodness-of-fit for the proposed research model. Furthermore, this analysis should assist both confirming the possibility of the proposed model where all main variables are inter-related thus proposing significant research on the model (Zikmund (2003)). Since this research used a comprehensive statistical approach to test hypotheses about relations between dependent and independent variables, SEM was conducted using Analysis of Moment Structures (AMOS) statistical software (version 19.0). The following figure is the analysis result of SEM for this model:

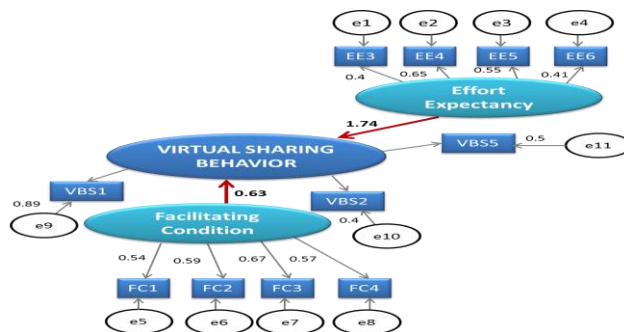


Figure-2. Analysis for SEM Model

**5.2. Model Maximum Likelihood Estimates**

Maximum Likelihood assumes that the underlying variables are normally distributed. Through CFA, a model is identified if all of the unknown parameters can be rewritten in terms of the variances and covariance of the x variables (Schumacker and Lomax, 2004). The maximum likelihood estimates result as described in Table 5 shows that the standardized residuals are technically fit index, and provide information about how closely the estimated matrix corresponds to the observed matrix and described how well the data fits the model.

**Table-5.** Maximum Likelihood Estimates Result

	Estimate	P
Knowledge Sharing Behavior <-- Effort Expectancy	1.74	***
Knowledge Sharing Behavior <-- Facilitating Condition	0.63	**

Note: Significant levels: \*\* p < .01, \*\*\* p < .001

To determine the minimum loading necessary to include an item in its respective constructs, the general criteria were accepted items with loading of 0.50 or greater (Hair et al., 2010). As shown in Figure 2 and Table 5, this model confirmed that Effort Expectancy (with path coefficient of 1.74) and Facilitating Condition (with path coefficient of 0.63) have a significant direct relationship with Knowledge Sharing Behavior.

**Table-6.** Indexes Knowledge Sharing Behavior

Fit Indices	Recommended Level	Output Value	Summary
X <sup>2</sup>	Not significant p>0.05	0.00	Not Accepted
X <sup>2</sup> /df	<3.0	4.19	Not Accepted
GFI	≥0.80	0.86	Accepted
AGFI	≥0.80	0.80	Accepted
NFI	≥0.80	0.82	Accepted
CFI	≥0.90	0.86	Not Accepted
RMSEA	<0.10	0.13	Not Accepted

As revealed in Table 6, the value of Goodness of Fit Index (GFI) and Adjusted GFI (AGFI) – proves to be a good-fit model (Hair et al., 2010). Moreover, the NFI value (0.82) shown in Table 11 indicates an adequate model-fit for this study. In addition, to ensure that the measurement model fit and suitable for this study, Knowledge Sharing Behavior indexes as described in Table 11 are examined. Hair et al. (2010) have suggested that if three or four indexes are accepted, this measurement model is recommended and significant. Therefore, as described in summary of Table 11, the model has three out of seven accepted indexes that indicate Knowledge Sharing Behavior measurement model is suitable for empirical data of this study. The value of SEM lies in its ability in showing both the direct and indirect effects between the variables. In light of this, the best-fit model appears to indicate that Effort Expectancy and Facilitating Condition factors have direct

influences for Knowledge Sharing Behavior. In summary, the overall analysis of SEM as highlighted earlier is significant to support the hypotheses of this research, as follows:

**Table-12.** Research Hypotheses Result

Code	Hypothesis Statement	Result
H1	Effort expectancy positively influence on knowledge sharing behavior	Supported
H2	Facilitating condition positively influence on knowledge sharing behavior	Supported

## 6. CONCLUSION

### 6.1. Effort Expectancy Factor

As hypothesized, the results of this study indicate a significant association between effort expectancies and knowledge sharing behavior. As mentioned earlier, effort expectancy indicates the extent to which an individual believes and predicts that using the system is effortless (Davis, 1989). Thus, the virtual platform providers and developers should improve the user-friendliness and ease-of-use of these platforms in order to attract more users to share their knowledge. For instance, virtual system designers should provide easier user interfaces, hide the complexity and details of the hardware and software involved, and include natural language and programming processing and other relevant features and users' preferences. This finding is in line with previous literature on KM and knowledge sharing, such as Kim and Lee (2006), Prümper (1993), Lam Chua (2005), Davis (1989), Jennex and Olfman (2003), Starbuck and Webster (1991), Morris and Dillon (1997), and Vallerand *et al.* (1997). These scholars have acknowledged effort expectancy as an important factor that can promote knowledge sharing behavior through the utilization of newly adopted technology, such as the virtual platforms. In addition, this finding has suggested that the perceived ease-of-use factor facilitates system usage and task accomplishment.

### 6.2. Facilitating Condition Factor

The result of this study has recommended a positive relationship between facilitating condition and knowledge sharing behavior; in line with previous knowledge sharing studies by Gannon-Leary and Fontainha (2007), Kankanhalli *et al.* (2005), Aldea *et al.* (2012), Kerber and Buono (2004), Jennex and Olfman (2003), Davis (1989), and Tannenbaum (1990). These scholars have proposed that several common features of competent team members in the virtual communities are technical skills and abilities, desire to contribute, capability of collaborating effectively, and a high level of knowledge that includes comfort with relevant technology. Similarly, the finding of this study also suggested that users' self-efficacy to a system in general determines the ability of users to operate and utilize the system. Previous literature also acknowledges the presence of an invisible team that is also a unique component of a virtual team, which includes excellence external supports that intersect in the virtual team with the

encouragement and support from all levels of the organization (Davis, 1989; Jennex and Olfman, 2003). Furthermore, the main features and functionalities created by the actual communication tools are always supported in a virtual environment in order to facilitate virtual members' collaboration, mainly for their communication and knowledge sharing activities (Kanawattanachai and Yoo, 2002; Aldea *et al.*, 2012). In addition, training and technical support has been identified as important attributes in the technology acceptance factor (Davis, 1989; Tannenbaum, 1990). These scholars have also proposed that a training environment will create a favorable short-term impact in user acceptance and utilization. Thus, the organization should focus on pre-training intervention to demonstrate an immediate and ongoing impact on the acceptance and utilization of a specific technology, such as virtual platforms.

## 7. IMPLICATION AND LIMITATIONS OF THE STUDY

This research focused on identifying gaps that would assist in effectively guide government sectors, such as Government-Linked Companies (GLCs) to be more competitive and innovative. This research has both academic and practical implications, such as identifying knowledge sharing holistic initiatives as a vehicle for success in creating valuable organizational development practices. As a result, the formulation of knowledge platform policies and practices would assist towards promoting the knowledge sharing behavior in Government agencies in Malaysia.

The analysis approach used in this research suits the formative and exploratory subjects addressed in the objective of this study. However, several limitations are worth mentioning in this study. For instance, the use of 510 participants from five Research and Development (R&D) organizations are only meant for sampling and does not described the whole population of research organization in Malaysia. Furthermore, the sizes of samples from the five GLCs agencies in one country (Malaysia) limited the possibility of this research claim and maybe these participants would perceive the knowledge platform utilization differently from other researchers in different sectors or in other countries. Although there are several limitations, but this research has successfully executed and achieved the proposed objectives. As recommendation for future research, it would be necessary to conduct study with similar objectives within companies of different sectors, develop more respondents and eventually use other methods for data collection and sampling. In addition, it is recommended that this research is repeated in other contexts or in different countries and other kinds of knowledge platform which could complement other recent knowledge sharing studies that are related to the objective of this research.

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## APPENDIX-A.

### Confirmatory Factor Analysis (CFA)

#### 1. CFA Effort Expectancy

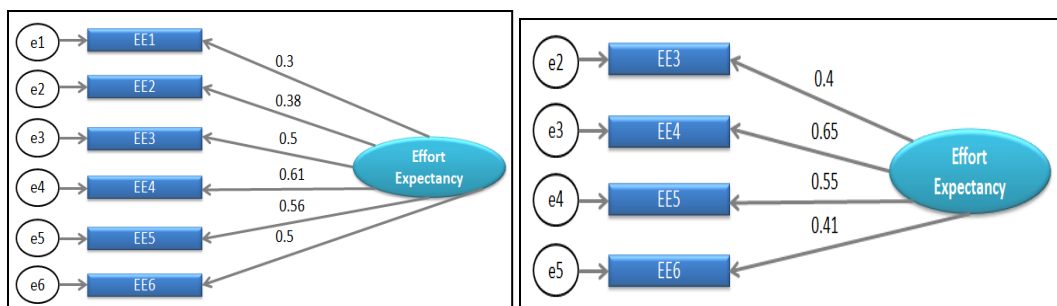


Figure-3. Effort Expectancy (Before and after)

## 2. CFA Facilitating Condition

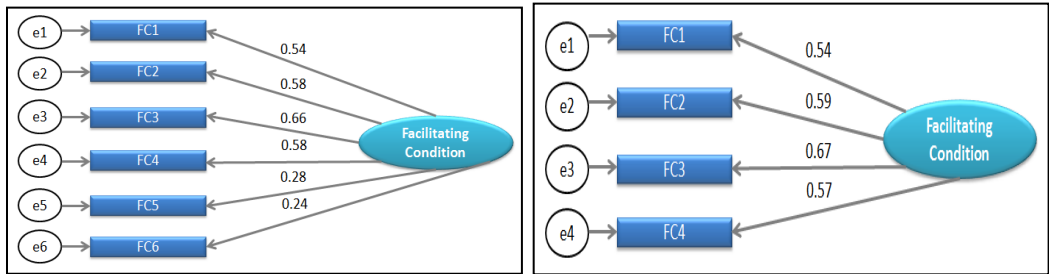


Figure-4. Facilitating Condition (Before and after)

## 3. CFA Virtual Sharing Behavior

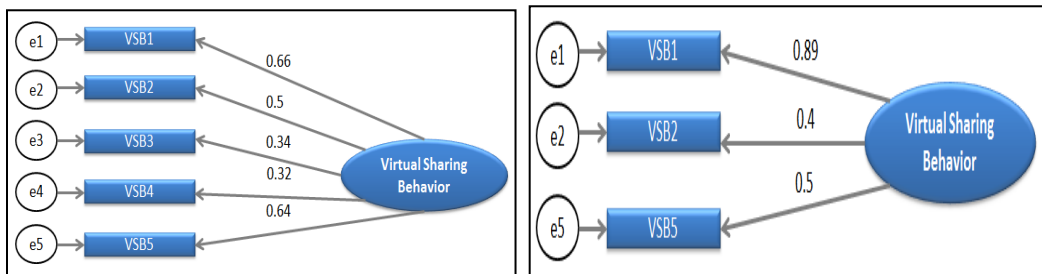


Figure-7. CFA Virtual Sharing Behavior (Before and after)

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