Critical success factors of knowledge management implementation in higher learning institutions

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Abstract: The main purpose of this study is to examine the relationship between the soft elements of critical success factors and perceived benefits of knowledge management (KM) in higher learning institutions which can lead to the development of the KM model for higher learning institutions. The outcomes of this study revealed that organisational culture and top management leadership have a positive relationship with the perceived benefits of KM. Nevertheless, education and training has a negative relationship with the perceived benefits of KM. On the other hand, the employee participation and empowerment through teamwork did not show any relationship with the perceived benefits of KM. The major findings of the study conclude that organisational culture and top management support have a positive relationship with perceived benefits of KM, while the opposite is true for employee participation and empowerment. In conclusion, organisations need to cultivate the right culture and leadership to embrace KM.

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1   Introduction

The transformation of the global economy structure has made the role of knowledge one of the important management issues in all organisations (Yip et al., 2010). Today knowledge has become a valuable asset of every organisation which requires effective and efficient management. Therefore, knowledge management (KM) has been widely adopted by many organisations as it is one of the promising strategies in the information era (Malone, 2002).

According to Mason and Pauleen (2003), there are two main approaches to KM in general; one approach focuses on the 'hard' aspects of KM while the other looks at the 'soft' aspects of it. The hard aspect of KM mainly emphasises on the deployment and use of information technologies to enable KM activities to be conducted within the organisation; whereas the soft approach views knowledge as a process composed of a complex set of dynamic skills and know-how that is constantly evolving and changing. Many studies have shown that not all KM efforts carried out by the organisations were successfully implemented even with the deployment of advanced technology (Tiwana 2000; Turban and Aronson, 2001). Nevertheless, if organisations emphasised too much on hard aspects of KM, the creativity might be restrained by the strategic directions or policies (Ng et al., 2012). Hence, practitioners have now learned that the soft aspects of KM are equally important.

In the case of higher education industry, knowledge is one of the main businesses for all the higher learning institutions, including knowledge creation and dissemination and learning (Rowley, 2000). Therefore, the practice of KM is very crucial for all the higher learning institutions. For that reason, this paper aims to examine the relationship between the soft elements of critical success factors and the perceived benefits of KM which can lead to the development of the KM Model in higher learning institutions.

1.1   Problem statement/research gap

The main reason for carrying out this study has to do with the fact that other studies within the same realm in Malaysia have not been able to look at the same kind of variables as this study. Most of their focus has been on specific KM variables, which

have in part looked at the soft element, however have mostly looked at the harder part of KM. In investigating soft factors, Mat et al. (2016), looked at the variables of management support, organisations reward and organisational culture. They were also looking at the impact on knowledge sharing rather than the perceived benefits of KM in institutions. Another study that of Panigrahi et al. (2014), looked at harder aspects as well. The study chose to look at the relationship between knowledge quality, system quality and service quality, with its impact on user satisfaction and with it KMS success. The goal of that study was entirely different as well. Hence, most of the newer studies have not chosen to look at these set of variables which provides the current impetus for the study.

1.2 *Major limitations*

The biggest limitation of the study is that it is looking at perceived benefits around KM and not whether there will be a successful implementation or not. This then leads to an open ended question around whether KM can be important for organisations, which should be an area of future study. AT the same time, there were sample limitations as well, as the current sample only focused on the Klang Valley. Further studies can look at more areas around Malaysia to make the research more robust in terms of data and its implications.

2 Critical success factors of KM from the perspective of soft element

The understanding of the critical success factors of KM acts as a basis in shaping the form of KM implementation strategies and initiatives for an organisation. The success of a KM implementation counts on many soft elements (Gan et al., 2006). Critical success factors can be categorised into five primary categories including organisational culture, top management leadership, education and training, employee participation and empowerment through teamwork.

2.1 *Organisational culture*

Organisational culture is the combination of expectations shared and social norms that influenced the behaviour of knowledge sharing in an organisation. It is one of the critical success factors for every KM implementation. Numerous studies have indicated that the importance of culture in many successful KM projects (Baskerville and Dulipovici, 2006; Husseina et al., 2016). Most knowledge-based organisations managed to nurture organisational culture that will motivate, support and encourage, capture, create, share, codify, and reuse knowledge at an individual, group and organisational level. Therefore, one of the critical criteria of Most Admired Knowledge Enterprise (MAKE) Award which organised by Teleos and the KNOW Network is included organisational culture (Chase, 2006).

Skyrme and Amidon (1997) highlighted that knowledge creating and sharing culture, and continuous learning culture must be systematically developed in order to foster the creativity and innovation within the organisation. A survey reported by Chase (1997) also confirmed that culture is the most challenging element in creating a successful

knowledge-based enterprise. Likewise, Baskerville and Dulipovici (2006) noted that promoting a knowledge culture is one of the key success factors for KM program as it values learning and creativity that allow the employees to have some time to internalise, reflect and articulate the knowledge. This kind of knowledge culture will certainly foster the creativity and innovation within the organisation. Hence, every organisation needs to emphasise all the cultural factors which will significantly affect the success of KM implementation.

2.2   Top management leadership

Many researchers (Chong, 2005; Davenport and Prusak, 1998; Greengard, 1998; Moffett et al., 2003; Salleh and Goh, 2002; Baskerville and Dulipovici, 2006; Yip et al., 2010) affirmed that top management leadership and commitment are the most critical factors for every successful KM projects, particularly in knowledge-creating and culture-sharing activities. Likewise, Basu and Sengupta (2007) also stated that senior management support related to resource allocation is essential in KM implementation. Companies need to provide adequate training to the staff and motivate the employees (at both individual and group levels) towards the process of creating and distributing knowledge in an organisation.

In addition, research has shown that knowledge sharing is a significant determinant, if the leader is committed in leading the employees towards KM implementation (Srivastava and Bartol, 2006). Top management must improve employees' morale and shape a creativity and innovation culture in the organisation (Holsapple et al., 2007).

Since KM is a long-term strategy, top management has to play an important role not only in approving the KM initiative, but also in ensuring its sustainability (Yeh et al., 2006). Thus, top management leadership is a critical success factor of KM implementation. Top management should encourage the employees to cultivate a corporate mindset that emphasises co-operation and knowledge sharing across the organisation (Valmohammadi, 2010).

2.3   Education and training

Some management theorists (Cohen and Backer, 1999; Gordon, 1999; Greengard, 1998; Bollinger and Smith, 2001) claimed that the human resource plays a key role in successful KM programs as well. Successful knowledge creation and sharing activities and processes would not be possible without appropriate education and training. An appropriate employee education and training is one of the key success factors for KM implementation. Besides, Shockley (2000) said that training is a critical area that should not be overlooked in the planning stage for KM program. Specific training should be offered as the system comes with outline and people, and departments become ready for active involvement.

Today, knowledge and lifelong learning are key issues and the curriculum needs to be subjected to root – and – branch change, with the emphasis on developing creativity. Education may have made people think, but it does not necessarily teach them how to think, or provide thinking skills (Sallis and Jones, 2002).

2.4 Employee participation

KM must be incorporated as part of everyone's job within the organisation (Davenport and Prusak, 1998). Even though specialists are important for the success of KM implementation, the activities and attitudes of those who are engaged to perform the tasks other than imparting knowledge are far more significant. For that reason, all the employees in an organisation have to be regarded as the most important managers of knowledge and they all are expected to participate in creating, sharing, searching and applying knowledge in their daily routines (Jashapara, 2004). The involvement of all organisational members in diagnosing the problems, addressing options, finding solutions and implementing KM is an important approach to engage people and get 'buy in' for KM process as well (Sallis and Jones, 2002).

Many strategies fail due to insufficient employee involvement in KM activities (King, 2008; Davenport and Prusak, 1998). Therefore, employees need to take their own initiative to contribute their ideas and knowledge for reuse and to refine existing intellectual capital. This will automatically provide good quality service to the customers (Huang, 1997). Thus, employee participation in job design and evaluation process, problem-solving process, decision-making process, knowledge acquisition and sharing process are the key success factors in KM implementation (Davenport and Volpel, 2001; Chong, 2005).

2.5 Empowerment through teamwork

Empowerment is about trusting an individual to make decision. Authorising the employees to make quick decision is essential in every KM program as it will gain their commitment towards the organisation (Kermally, 2002). According to Moye and Henkin (2006), as people's experience in job increases, so does their level of knowledge gained from the problems, deficiencies and mistakes they encounter. But they lack the authority to take the necessary action to correct the blunders; this results in distrust, frustration and lack of improvement. Therefore, empowerment in knowledge-based economy is essential in solving the above problems. Many researchers (Anahotu, 1998; Bhatt, 2001; Choi, 2000; Martinez, 1998; Senge, 1991; Verespej, 1999; Moffett et al., 2003) have regarded employee empowerment as one of the critical factors for a successful KM implementation.

According to Sydanmaanlakka (2002), team work is one of the preconditions for KM implementation. Team is often the basic unit of learning and distributing knowledge. If knowledge transfer works well in a team, it will also succeed in an organisation. Thus, the team member need to work not only in their own division, but also across functions and divisions involving members from different departments. According to Nonaka and Takuechi (1995), if the knowledge cannot be shared with others or is not amplified at the team level, then knowledge does not spiral itself organisationally. Thus, in order to amplify knowledge effectively, a special team in knowledge-based economy named communities of practices (COP) is playing an important role in the KM organisation. COP is a flexible group of professionals informally bound by common interests who interact to share and discuss topics related to their interests.
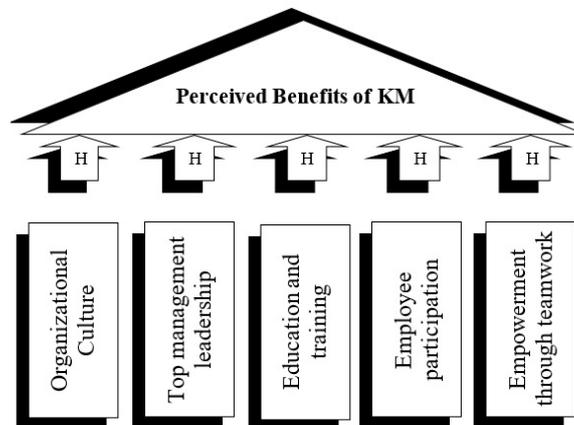
2.6   Perceived benefits of KM

According to a survey done by McAdam and Reid (2001), KM has improved the quality, efficiency, management learning and reduced costs within the organisations. Most firms have also recognised that the key benefits of KM are related to increased efficiency and quality (Battersby, 2004). They realised that the work will be carried out faster and more cheaply due to the re-use of knowledge by appropriate methods. Therefore, time saving and quality are regarded as the most critical factors in the successful delivery of services. Recently Edvardsson and Durst (2013) found that SMEs can benefit from KM activities with regard to employee development, innovation, customer satisfaction and organisational success as well.

This study aims to examine the relationship between the soft elements of critical success factors and perceived benefits of KM in higher learning institutions.

3   Research hypotheses and conceptual model

The literature suggested that there is positive relationship between the soft elements of critical success factors, namely organisational culture, top management leadership, education and training, employee participation, empowerment through teamwork and the perceived benefits of KM which can lead to the development of the KM model for higher learning institutions.

Figure 1   Conceptual model

The hypotheses are listed below and the conceptual model is presented in Figure 1:

H1   There is a positive correlation between organisational culture and the perceived benefits of KM.

H2   There is a positive correlation between top management leadership and the perceived benefits of KM.

H3   There is a positive correlation between education and training and the perceived benefits of KM.

H4   There is a positive correlation between employee participation and the perceived benefits of KM.

H5   There is a positive correlation between empowerment through teamwork and the perceived benefits of KM.

4   Research methodology

The model for critical success factors (soft element) of KM was created and it will be tested in the higher learning institutions within the Klang Valley.

4.1   Research strategy

For the study, a positivist framework has been chosen as the method, which then consists of a sampling technique applied, with the results being used as a way of determining the relationship between the variables. The advantages of using a positivist framework is that it allows for objective understanding as well as extrapolation. For this study, the research design of using a quantitative framework was suitable given the requirements and goals of the research design.

4.2   Sampling techniques

The main sampling technique which was used was that of cluster sampling. Since the higher education institutions are similar to each other, it presented the opportunity to select the respondents directly from these clusters, making it easier to obtain the information and allowing for almost 400 responses in return.

4.3   Validity of survey

Validity of the survey had been conducted by consultation with the target group. Both face and content validity tests were applied through the feedback which was given to the respondents. This helped change the language to make it more suitable for the respondents to understand what is being asked.

4.4   The population and sample

The reason for choosing the Klang Valley is because the majority of higher learning institutions are located in this area. The higher learning institutions were selected through the main list from the Ministry of Education in Malaysia. A total of 400 questionnaires were distributed to the respondents in all the higher learning institutions within the Klang Valley. There were 99 samples with 25% response rate, 20 sets of questionnaires failed to reach the targeted respondents and the rest did not respond. The respondents came from different departments, which included business management, engineering, information technology, etc.

4.5 Data collection and analysis

The method used for gathering data was a portal survey. The method was chosen due to the fact that the designed questionnaires could be sent to a large number of higher learning institutions within a short time. The questionnaires were completed by the principals, chief executive officers (CEO), heads of faculties, and heads of divisions of the higher learning institutions.

The survey data was analysed using a SPSS statistical analysis package. Descriptive statistics (mean values and standard deviation) were employed by checking the central tendency and the dispersion that will in turn provide an idea on how well the terms were developed. Factors analysis was used to identify the underlying factors. Additionally, a reliability analysis was conducted on the factors to test the internal consistency of the measuring instruments. Pearson's product moment correlation is used as a measure of association to explore the patterns that exist in the relationship between the variables. A multiple regression analysis (MRA) was conducted to determine the relationship between the KM success factors and benefits of KM.

5 Results and discussion

5.1 Factor analysis

Based on the Table 1, the factor loadings for all the five variables were satisfactory as they were loaded on the expected number of components. The cut off point for this study uses the criteria of a minimum loading of 0.51 for a sample of 100 (Sekaran, 2000). Although the sample size of this study was short of one (i.e., 99), this study's minimum factor loading is significantly above the requirement stated by Stevens, which was 0.59. Table 1 summarises the CSFs of KM. Indeed, factor analyses revealed that there were altogether five underlying dimensions of KM CSFs, each with the ability to explain factor loadings 18.24, 16.21, 16.18, 11.78 and 10.40% respectively.

Employee empowerment and teamwork are grouped in the same category to become empowerment through team because the factors analysis had identified the underlying factors that are present among the items for these two groups, and they should be measured under the same category as shown in Table 1. Therefore, there is a positive relationship between employee empowerment through teamwork and the perceived benefits of KM.

Table 1   Factor analysis for CSFs of KM

CSFs of knowledge management	Factors loadings				
	1	*2*	*3*	*4*	*5*
Organisational culture					
1 The culture is characterised by openness and flexibility.	*0.74*	0.06	0.28	0.28	0.18
2 Knowledge-sharing culture exists to enhance knowledge for decision-making.	*0.73*	0.20	0.08	−0.07	0.38
3 Knowledge-sharing culture will bring to the creation of new knowledge and competence.	*0.74*	0.19	0.05	0.12	0.33

Table 1 Factor analysis for CSFs of KM (continued)

CSFs of knowledge management	Factors loadings				
	1	*2*	*3*	*4*	*5*
Organisational culture					
4 Knowledge-creating culture exists to leverage knowledge for innovation.	*0.80*	0.15	0.14	0.31	0.05
5 Lifelong learning culture will lead employees to enhance their knowledge and skills	*0.71*	0.17	0.18	0.06	0.25
Top management leadership					
1 Top management develops and facilitates the KM vision, mission, objectives and goals for the organisation.	0.22	*0.71*	0.29	–0.02	0.12
2 Top management encourages continuous improvement based on sharing ideas.	0.21	*0.86*	0.01	0.08	0.20
3 Top management encourages employees to give feedback to improve KM performances.	0.17	*0.83*	0.10	0.17	0.23
4 Top management provides adequate funds for KM implementation.	–0.02	*0.65*	0.30	0.36	0.12
5 Top management encourages formal/informal communication.	0.19	*0.68*	0.21	0.41	0.12
Education and training					
1 The education and training system emphasises creativity in order to enhance the knowledge of the employees.	0.20	0.23	*0.65*	0.13	0.37
2 Education and training solves the problem of lacking of employee involvement in KM implementation.	0.11	0.11	*0.74*	0.32	0.19
3 Organisation educates and trains the employees to use KM technology in order to have effective communication.	0.22	0.45	*0.74*	0.12	0.22
4 Formal and informal, on-the-job, as well as off-the-job training is to increase the knowledge, skills and competence of the employees.	0.30	0.44	*0.59*	0.09	0.33
Employee participation					
1 Employees participate in their own job design and evaluation.	0.20	0.18	0.22	*0.71*	0.18
2 Employees participate in problem-solving and decision-making process.	0.25	0.32	0.10	*0.73*	0.37
3 Employees participate in knowledge capturing activities such as training, discussion, etc.	0.13	0.16	0.38	*0.63*	0.42
Empowerment through teamwork					
1 Team works across functions and divisions involving members from different departments.	0.38	0.26	0.11	0.04	*0.68*
2 Team educates people on how to use knowledge to improve their work.	0.34	0.26	0.16	0.29	*0.72*

Table 1   Factor analysis for CSFs of KM (continued)

CSFs of knowledge management	Factors loadings				
	1	*2*	*3*	*4*	*5*
Empowerment through teamwork					
3 Team ensures the effectiveness of the KM implementation by measuring and monitoring.	0.15	0.18	0.30	0.31	*0.74*
4 Team meets regularly to share knowledge and experiences.	0.39	0.22	–0.03	0.31	*0.61*
5 Team works together to form a strong network for effective knowledge transfer.	0.38	0.29	0.22	0.27	*0.62*
6 Teamwork empowers employees to improve KM performance by sharing their knowledge.	0.25	0.04	0.42	0.18	*0.69*
7 Teamwork empowers employees to use the facilities and tools such as internet, intranet, etc.	0.09	0.12	0.42	0.11	*0.68*
Variance (72.81%)	18.24	16.21	16.18	11.78	10.40
Eigenvalue	*4.38*	*3.89*	*3.88*	*2.83*	*2.50*
MSA			0.91		
$\chi^2, p < 0.01$			1,762.437		

Factor analysis was also run for the perceived benefit construct, and to substantiate convergent validity. As anticipated, all items were well loaded into a single component, with a minimum of 0.75 for each loading. The items that have been developed to reflect the perceived benefits were gathered mainly from aspects of operational efficiency and perception branding, which is shown in Table 2. All anti-image correlations for the factors generated are sufficiently high (>0.5) and MSA 0.89 implies that the components can be used for subsequent analyses (e.g., MRA) (Hair et al., 1995). The total variances explained by all factors in Table 2 are 65.91 and eigenvalue 4.61 were greater than 1 and were used as a priori for the extraction method while Varimax rotation was used to ease the identification of the factors as it allowed the unique separation between components (Hair et al., 1995).

Table 2   Factor analysis of perceived benefits

Perceived benefits	Factor loadings
Cost reduction	0.75
Creativity and innovation	0.82
Efficiency	0.80
Research	0.80
Quality performance	0.86
Staff competencies	0.84
Reputation	0.81
Total variance extracted	65.91
Eigenvalue	4.61
MSA	0.89
$\chi^2, p < 0.01$	423.68

5.2 Reliability analysis

After having employed factor analyses, calculation of reliability was conducted (by using Cronbach alpha) on each dimension that had been extracted. The general rule of thumb is >0.70 (Nunnally, 1978) and the minimum value for this study is 0.85 for employee participation. Table 3 shows the reliability results.

Table 3 Reliability analyses of the variables extracted

CSFs of KM	*No. of items*	*α*
Organisational culture	5	0.86
Top management leadership	5	0.86
Education and training	4	0.84
Employee participation	3	0.85
Empowerment through teamwork	7	0.91
Perceived benefits	7	0.91

A mean as a measure of location or central of tendency of the distribution of the observable variables is presented in Table 4. All the mean values over the midpoints of their respective scales, indicating KM CSFs are practised in the institutions of higher learning in Malaysia. Similarly, perceived benefits of KM were seen as somewhat moderate (M = 3.68), with the highest variability (SD = 0.75) as compared to other variables.

Table 4 Descriptive statistics for each variable

Variables	*Min.*	*Max.*	*Mean*	*Std. deviation*	*Skewness*		*Kurtosis*	
					Statistics	*Std. error*	*Statistics*	*Std. error*
Knowledge management CSFs								
Organisational culture	3.00	5.00	4.26	0.57	−0.29	0.24	−0.75	0.48
Top management leadership	1.80	5.00	4.20	0.64	−0.74	0.24	1.01	0.48
Education and training	2.50	5.00	4.19	0.61	−0.39	0.24	−0.23	0.48
Employee participation	2.33	5.00	4.15	0.63	−0.27	0.24	−0.02	0.48
Empowerment through teamwork	3.00	5.00	4.23	0.57	−0.17	0.24	−0.57	0.48
Perceived benefits	1.00	5.00	3.68	0.75	−0.68	0.24	0.97	0.48

A positive value of kurtosis indicates a relatively peaked distribution while a negative value shows a relatively flat distribution. Top management leadership and perceived benefits registered acceptable 'peakness' while culture, education and training, employee

participation, empowerment through teamwork indicated acceptable flatness. All constructs were below 5.50 for the division of kurtosis and skewness with their respective standard errors, in turn indicating that the characteristics of the distribution are acceptable (Hair et al., 1995).

In addition, the Friedman test (see Table 5) is employed to ascertain whether the rank of the mean values are based by chance or they are indeed the result of significant differences on the ratings of the five KM CSFs. Nonetheless, there was no conclusive evidence of any KM CSFs being more practiced than the other.

A subsequent consideration, however, would be the investigation of multi-collinearity prior to assessing the entire KM model. Considering the fact that independent variables are not truly independent in nature, an assessment has to be made to find the relative occupancy of one independent variable on another.

Table 5   Descriptive statistics for each variable

Knowledge management CSFs	Mean rank
Organisational culture	3.10
Top management leadership	3.11
Education and training	2.94
Employee participation	2.80
Empowerment through teamwork	3.06

5.3   Multi-collinearity analysis

The Pearson's product moment correlation is used as a measure of association to explore the patterns that exist in the relationship between the variables (Hair et al., 1995). However, it does not tell us about one variable's influence on another. Hence, Person's r coefficient only identifies the extent of one variable's position that occupies the same relative position on another variable.

The Pearson product moment correlation was employed for the above stated intention. It can be observed from Table 6 that there is no substantial evidence to presuppose the existence of strong multi-collinearity effects in this study.

All independent variables were significantly correlated, yet accounting for less than 50% of variation regardless of any pair of combination between 2 predictor variables. The highest correlated pair is between empowerment through teamwork and employee participation, with approximately 69% of variation among the two. Therefore, it would not be presumptuous to claim that discriminant validity is verified from this exercise.

Nonetheless, predictive validity is still lacking from the matrix (Table 6), given that none of the independent variables are correlated with the perceived benefits. It should be reckoned that Pearson correlation is an assessment of a bivariate nature, which assumes ceteris paribus for all other influences.

In reality, independent variables share some collinearity between them and they are modelled as an act which collectively influences the perceived benefits. Therefore, the influence of the set of predictors on the dependent variable of the perceived benefits is interpreted only after a parsimonious model is identified and the variates are formed.

Table 6   Pearson product moment correlation matrix

	Organisational culture	Top management leadership	Education and training	Employee participation	Empowerment through teamwork	Perceived benefits of KM
Organisational culture	1					
Top management leadership	0.48	1				
Education and training	0.55	0.64	1			
Employee participation	0.49	0.53	0.54	1		
Empowerment through teamwork	0.64	0.53	0.66	0.69	1	
Perceived benefits of KM	0.19	0.12	0.01	0.08	0.10	1

5.4 Multiple regression analysis

MRA were performed to determine the following sets of independent variables and their contribution towards the variation of the dependent variables. There is one dependent variable identified through the factor analysis which is the perceived benefits of KM (which includes cost reduction, quality performance, creativity and innovation, efficiency, reputation, research and staff competencies). Independent variables, on the other hand, are organisational culture, top management leadership, education and training, employee participation and empowerment through teamwork.

Table 7   MRA

Independent variables (X)	Beta standardised (β)
Organisational culture (X_1)	0.36*
Top management leadership (X_2)	0.29**
Education and training (X_3)	–0.25***
Employee participation (X_4)	–0.07
Empowerment through teamwork (X_5)	0.19
Model summary statistics	
Adjusted R^2	0.26

Notes: *sig. at $p < 0.01$; **sig. at $p < 0.05$; ***sig. at $p < 0.10$; dependent variable = perceived benefits.

The results of the multiple regression model which is shown in Table 7 and Figure 2 (significant at 99.9% confidence level) revealed that three exogenous variables (i.e., organisational culture, top management leadership and education and training) accounted for 26% of the variation in the perceived benefits of KM.

The strongest predictor is organisational culture ($\beta_1 = 0.36$, $p < 0.01$), followed by top management leadership ($\beta_2 = 0.29$, $p < 0.05$), while the weakest predictor is education and training ($\beta_3 = -0.25$, $p < 0.10$). R^2 indicates that the entire set of causal variables explain the outcome. In determining how large the correlation is Hair et al. (1995) suggest a correlation coefficient of 0.26 to 0.50 be considered large for non-experimental data such as the data in this research.

Figure 2   Results of MRA
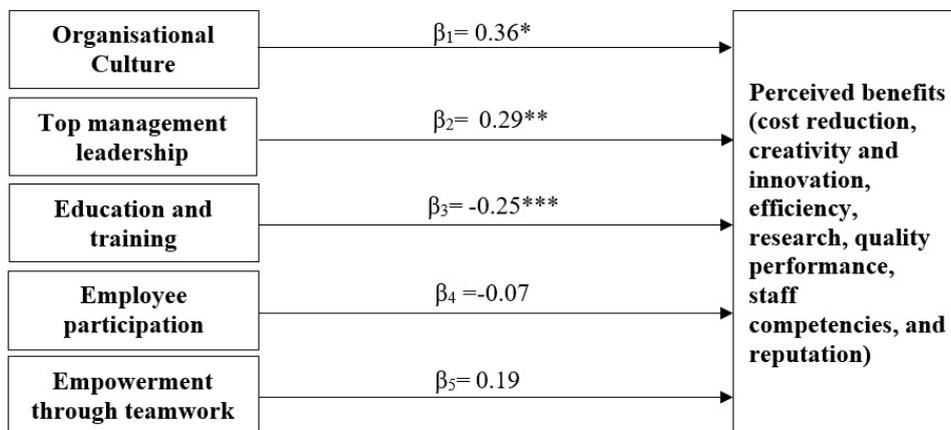
5.5   Organisational culture and the perceived benefits

Organisational culture was found to positively influence the perceived benefits of KM. The results of the multiple regression model revealed that the strongest predictor is organisational culture ($\beta = 0.36$, $p < 0.01$) shown in Table 7. In other words, it means that the strongest predictor is organisational culture. More specifically, organisational culture plays a greater role in implementing KM in order to gain the perceived benefits. This is supported by many researchers such as Skyrme and Amidon (1997), Greengard (1998), Kermally (2002), Ow et al. (2001), Davenport and Prusak (1998) and Yip et al. (2010).

The study found that in an open and flexible organisational culture, the employees can freely exchange and share their working experiences, best practices and learning experiences. These knowledge-sharing activities contribute to creativity and innovation. For instance, many new ideas, teaching approaches, research, and new programs are developed. This is in agreement with Tippins (2003) and Jilinda et al. (2000), who mentioned that an open and flexible organisational culture is important because this culture will lead to better decision-making capabilities, reduce 'co-curriculum' development time and maximise efficiency.

This study also found that the implementation of a knowledge-creating culture brings benefits to an organisation. For example, efficiency has improved (faster and better decision-making, higher quality and productivity) and competencies have increased

(better skills, shorter learning cycle and better quality of work). This statement was supported by Davenport and Prusak (1998). A lifelong learning culture leads employees to enhance their knowledge and skills. This culture is essential in all higher educational institutions for it will increase students' quality of performance. This finding was supported by Ow et al. (2001). They said that the employees should always unlearn and relearn new concepts for new knowledge and skills will increase the competencies of the staff. Similarly, this culture will enhance the quality of students' performance.

5.6 Top management leadership and the perceived benefits

Another CSF of KM implementation is top management leadership which was found to have positively influenced the perceived benefits of KM. The results of the multiple regression model revealed that top management leadership is the second strongest predictor ($\beta = 0.29$, $p <$). This finding is consistent with the previous and current KM researchers and most organisations considered top management leadership as the most critical success factor of KM implementation (Davenport and Prusak, 1998; Skyrme and Amidon, 1997; Choi, 2000; Yip et al., 2010).

This study found that top management develops and facilitates the KM vision, mission objectives and goals of the organisation. With this clear objective, employees will be able to work to achieve it. This will significantly bring benefits such as creativity and innovation to an organisation. This is in agreement with Pickering and Matson (1992). Goh (1998) also pointed out that creative and innovative knowledge is not possible unless top management develops clear objectives and empowers employees and shows a strong commitment to the organisation. This study also found that top management emphasises continuous improvement through sharing ideas. This will bring benefits to the organisation. From the research done by Wong (2005) and Bhatt (2001), it is found that sharing knowledge will generate continuous improvement and quality performance.

5.7 Education and training and the perceived benefits

Structured interviews were carried out by the authors because it was found that many higher learning institutions do not really know the concept of KM as KM is new. They perceived that education and training will bring a negative impact on the benefits of KM. This might be because the employers and employees do not understand that education and training will give positive impact on the employees. They think that because consultants want business, hence, they have come out with a new concept called KM. Employers feel that KM is about culture, and it is very difficult to change the employees' mindset as KM is the philosophy of an organisation and will take some time to develop. In addition, some employers are not committed to education and training. They are not willing to send the employees for training because such training requires time and money. The employers are worried that the company's time will be wasted especially if the training is conducted during working hours. Field (1997) agreed that learning is not necessarily beneficial to the enterprise. In some organisations, employees 'learn' a great deal about avoiding responsibility and minimising effort, and little is done to enrich their knowledge.

5.8   Employee participation and the perceived benefits

The findings of this study do not support the direct influence of employee participation on the perceived benefits of KM. The findings of this study marked a surprise about employee participation. Many researchers such as King (2001), Banks (1999), Cook (1999), Huang (1997) and Sallis and Jones (2002) actively supported the notion that employee participation would contribute to the success of KM implementation.

However, the results of this study cannot dismiss the fact that of employee participation has little influence over the success of KM implementation; they merely show the non-existence of a direct or linear relationship. This is probably because employee participation might have differing patterns of impact on the perceived benefits across different levels of employee participation, which when tested together, nullify the effect of a linear relationship. It is suspected that the relationship between employee participation and the perceived benefits is a quadratic function, meaning inverse U-shaped. This means employee participation may impact the perceived benefits at moderate levels, but not for low and high levels of employee participation.

For instance, employee participation at low levels might not increase the perceived benefits of KM. This can be explained that at low levels of employee participation, employees are not fully involved in KM implementation because of weak team cohesion. The employees are not willing to convert the tacit knowledge of the work process into continuous process improvement and innovation. This will not help in generating creative and new ideas, and innovative solutions for problem and decision-making. Hence, low employee participation may not bring any perceived benefits of KM.

As we know, many higher learning institutions in Malaysia still position themselves in a production-based economy (Ow et al., 2001). In a production-based economy, most of the employees are not self-driven nor self-motivated; very often the employers or superiors have to use a people-directed approach such as motivating, monitoring, following-up, etc. (Ow et al., 2001) to check on the employees who are trying to avoid extra work or participate in meetings or discussions. They have this mindset: if they know more, they have to do more. Therefore, they do not like to involve themselves in KM implementation. Low level employee involvement in KM will not bring any benefits to the organisation.

A second reason for low participation might come from the lack of trust in an organisation. If employees' contribution is not recognised by the organisation; they will not be willing to get involved in KM implementation. The team members must trust one another in order to make a real contribution. Thus, KM implementation may be most productive at a moderate level, but not at a high level. At high levels of KM participation, many participants would be making decisions. Hence, at this stage, uniformity of decisions and actions are necessary to achieve the organisation's goals. Thus a law of diminishing return for KM may be indicated here.

5.9   Empowerment through teamwork

Many researchers such as Guay (2001), Soliman and Spooner (2000), Dutrenit (2000), Kermally (2002), O'Dell et al. (1999), Greengard (1998), Anahotu (1998), Appelbaum et al. (1999), Wendi and Ruth (1999) and Davenport and Prusak (1998) supported the belief that empowerment through teamwork would contribute to the success of KM implementation. However, the results of this study cannot dismiss the fact that there

seems to be no influence of employee empowerment through teamwork on the success of KM implementation, but merely the non-existence of a direct or linear relationship. This is because employee empowerment through teamwork might have differing patterns of impact on the perceived benefits across the different levels of empowerment through teamwork, which when tested together, nullify the effect of a linear relationship. It is suspected that the relationship between empowerment through teamwork and the perceived benefits is a quadratic function, i.e., inverse U-shaped, meaning, empowerment through teamwork may impact on the perceived benefits at moderate levels, but not for low and high levels of employee empowerment.

5.10 Findings in light of the current literature

There are some fundamental aspects of this study which related to others within the literature. The link between the soft elements had been confirmed by other studies within the same sample set, with most concluding that soft elements such as organisational culture are key for successful KM operations. This has been identified with other literature in other parts of the world, confirming the impact of soft elements on KM operations. In view of the literature in Malaysia, there have been some distinct findings. It is clear that the support for soft elements is well documented. However, the focus on perceived benefits has not been fully explored in other studies. For example, Mat et al. (2016) found the support for organisational culture but did not look at perceived benefits. There can be many reasons why perceived benefits have not been looked at within a higher education perspective. Some of that, according to our research, can relate to the low levels of understanding around how KM can be implemented within a higher educational framework. This is why top management support has been positively linked with KM perceived benefits, which is one of the pivotal findings of the study.

5.11 Academic and practical implications

Academically, this study has confirmed some of the existing assumptions around how KM can be successful or perceived to be beneficial within a higher learning institution. It has also expanded on the current literature by looking at perceived benefits, which has not been studied within a Malaysian context before within a higher learning institution framework. This then allows future researchers to use the finding of this study to develop other factors which can influence perceived benefits. From a managerial point of view, the study helps in furthering understanding how KM systems can be sold to upper management. For any system to become effective, it has be viewed within the construct of the benefits it can accrue, which is why the current study is helpful in management. It tells them for any KM measure to be viewed successfully, the company first has to change the way it operates.

6 Conclusions

In this study, organisation culture and top management leadership were positively correlated with the perceived benefits of KM. However, education and training was negatively correlated on the perceived benefits of KM. Employee participation and

empowerment through teamwork did not show any relationship on the perceived benefits of KM. However, the results of this study cannot dismiss the fact that there seems to be no relationship between employee participation and employee empowerment through teamwork on the success of KM implementation, but merely the non-existence of a direct or linear relationship. It is suspected that the relationship between employee participation, empowerment through teamwork and the perceived benefits is a quadratic function, i.e., an inverse U-shape which means employee participation and empowerment through teamwork may impact on the perceived benefits at moderate levels, but not for low and high levels of employee participation and empowerment. This result is recommended for further testing by using a qualitative research.

References

Anahotu, N.D. (1998) 'Empowerment and production workers: a knowledge-based perspective', *Empowerment in Organizations*, Vol. 6, No. 7, pp.177–186.

Appelbaum, S.H., Hebert, D. and Leroux, S. (1999) 'Empowerment: power culture and leadership – a strategy or fad for the millennium', *Journal of Workplace Learning*, Vol. 11, No. 7, pp.233–254.

Banks, E. (1999) 'Creating a knowledge culture', *Work Study*, Vol. 48, No. 1, pp.18–20.

Baskerville, R. and Dulipovici, A. (2006) 'The theoretical foundations of knowledge management', *Knowledge Management Research and Practice*, Vol. 4, No. 2, pp.83–105.

Basu, B. and Sengupta, B. (2007) 'Assessing success factors of knowledge management initiatives of academic institutions – a case of an Indian Business School', *Electronic Journal of Knowledge Management*, Vol. 5, No. 3, pp.273–282.

Battersby, K. (2004) 'The important of knowledge management', *The ICFAI Journal of Knowledge Management*, Vol. 2, No. 3, pp.43–47.

Bhatt, G. (2001) 'Knowledge management in organizations: examining the interaction between technologies, techniques and people', *Journal of Knowledge Management*, Vol. 5, No. 1, pp.68–75.

Bollinger, A.S. and Smith, R.D. (2001) 'Managing organizational knowledge as a strategic asset', *Journal of Knowledge Management*, Vol. 5, No. 1, pp.8–18.

Chase, R.L. (1997) 'The knowledge based organization: an international survey', *Journal of Knowledge Management*, Vol. 1, No. 1, pp.38–49.

Chase, R.L. (2006) *Global Make Report*, Teleos, UK.

Choi, Y.S. (2000) *An Empirical Study of Factors Affecting Successful Implementation of Knowledge Management*, PhD thesis, University of Nebraska.

Chong, S.C. (2005) *Implementation of Knowledge Management among Malaysian ICT Companies: An Empirical Study of Success Factors and Organizational Performance*, Unpublished, Multimedia University, Malaysia.

Cohen, S.G. and Backer, N. (1999) 'Making and mining intellectual capital: method or madness?', *Training and Development*, Vol. 53, No. 9, pp.46–50.

Cook, P. (1999) 'I heard it through the grapevine: making knowledge management work by learning to share knowledge, skills and experience', *Industrial and Commercial Training*, Vol. 31, No. 3, pp.101–105.

Davenport, T.H. and Prusak, L. (1998) *Working Knowledge: How Organisations Manage What They Know*, Harvard Business School Press, Boston, Massachusetts.

Davenport, T.H. and Volpel, S.C. (2001) 'The rise of knowledge towards attention management', *Journal of Knowledge Management*, Vol. 5, No. 3, pp.212–222.

Dutrenit, G. (2000) *Learning and Knowledge Management in the Firm*, Edward Elgar Publishing Limited, Cheltenham.

Edvardsson, I.R. and Durst, S. (2013) 'The benefits of knowledge management in small and medium-sized enterprises', *Procedia-Social and Behavioral Sciences*, Vol. 81, pp.351–335.

Field, L. (1997) 'Impediments to empowerment and learning within organization', *The Learning Organisation*, Vol. 4, No. 4, pp.149–158.

Gan, G.G.G., Ryan, C. and Gururajan, R. (2006) 'Soft enablers of knowledge management in Malaysian companies-a qualitative study', in *17th Australasian Conference on Information Systems*, University of Southern Queensland, pp.1–12.

Goh, S.C. (1998) 'Toward a learning organization: the strategic building block', *Advanced Management Journal*, Vol. 63, No. 2, pp.15–18.

Gordon, J. (1999) 'Intellectual capital and you', *Training*, Vol. 36, No. 9, pp.18–22.

Greengard, S. (1998) 'Will your culture support KM?', *Workforce*, Vol. 77, No. 10, pp.93–94.

Guay, B. (2001) 'Knowledge management is a team sport', *Computing Canada*, Vol. 27, No. 15, p.23.

Hair, J., Anderson, R.E., Tatham, R.L. and Black, W.C. (1995) *Multivariate Data Analysis*, 4th ed., Prentice-Hall Inc., New Jersey.

Holsapple, C., Jones, K. and Singh, M. (2007) 'Linking knowledge to competitiveness: knowledge chain evidence and extensions', in Jennex, M.E. (Ed.): *Knowledge Management in Modern Organisation*, Idea Group Publishing, PA.

Huang, K.T. (1997) 'Capitalizing collective knowledge for winning, execution and teamwork', *Journal of Knowledge Management*, Vol. 1, No. 2, pp.149–156.

Husseina, N., Omar, S. and Noordin, F. (2016) 'Learning organization culture, organizational performance and organizational innovativeness in a public institution of higher education in Malaysia: a preliminary study', *Procedia*, Vol. 37, No. 1, pp.512–519.

Jashapara, A. (2004) *Knowledge Management: An Integrated Approach*, Prentice Hall, Harlow.

Jilinda, J.K., Karen, M., Vander, L. and Snadra, L.J. (2000) 'Applying corporate knowledge management practices in higher education', *EDUCAUSE*, Vol. 23, No. 4, pp.28–33.

Kermally, S. (2002) *Effective Knowledge Management: A Best Practice Blue Print*, John Willey & Sons Ltd, West Sussex.

King, J.M. (2001) *Employee Participation in Organizationally Maintained Knowledge Sharing Activities*, Master thesis, University of Toronto.

King, W.R. (2008) 'Questioning the conventional wisdom: culture-knowledge management relationships', *Journal of Knowledge Management*, Vol. 12, No. 3, pp.35–47.

Malone, D. (2002) 'Knowledge management: a model for organisational learning', *International Journal of Accounting Information Systems*, Vol. 3, No. 2, pp.111–123.

Martinez, M. (1998) 'The collective power of employee knowledge', *HR Magazine*, Vol. 43, No. 2, pp.88–94.

Mason, D. and Pauleen, D.J. (2003) 'Perceptions of knowledge management: a qualitative analysis', *Journal of Knowledge Management*, Vol. 7, No. 4, pp.38–48.

Mat, N., Alias, J. and Muslim, N. (2016) 'The impacts of organizational factors on knowledge sharing in higher learning institutions (HLIs): case at Universiti Kebangsaan Malaysia (UKM)', *Mediterranean Journal of Social Sciences*, Vol. 7, No. 6, pp.181–200.

McAdam, R. and Reid, R. (2001) 'SMEs and large organisation perceptions of knowledge management: comparisons and contrasts', *Journal of Knowledge Management*, Vol. 5, No. 3, pp.231–241.

Moffett, S., McAdam, R. and Parkinson, S. (2003) 'An empirical analysis of knowledge management applications', *Journal of Knowledge Management*, Vol. 7, No. 3, pp.6–26.

Moye, M.J. and Henkin, A.B. (2006) 'Exploring associations between employee empowerment and interpersonal trust in managers', *Journal of Management Development*, Vol. 25, No. 2, pp.101–117.

Ng, A.H.H., Yip, W.M., Din, S.B. and Abu-Bakar, N. (2012) 'Integrated knowledge management strategy: a preliminary literature review', *Procedia – Social and Behavioral Sciences*, Vol. 57, pp.209–214.

Nonaka, I. and Takuechi, H. (1995) *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York, NY.

Nunnally, J.C. (1978) *Psychometric Theory*, 2nd ed., McGraw-Hill, New York, NY.

O'Dell, C., Wiig, K. and Odem, P. (1999) 'Benchmarking unveils emerging knowledge management strategies', *Benchmarking: An International Journal*, Vol. 6, No. 3, pp.202–211.

Ow, C.K., Willett, R.J. and Yap, K.L. (2001) 'Building a knowledge-based business school', *Education & Training*, Vol. 43, Nos. 4/5, pp.268–274.

Pan, L.S. and Scarbrough, H. (1998) 'A socio-technical view of knowledge sharing at Buckman Laboratory', *Journal of Knowledge Management*, Vol. 2, No. 1, pp.55–66.

Panigrahi, S., Zainuddin, Y.B. and Azizan, N.A.B. (2014) 'Investigating key determinants for the success of knowledge management system (KMS) in Higher Learning Institutions of Malaysia using Structural equation modeling', *The International Journal of Humanities & Social Studies*, Vol. 2, No. 6, pp.202–220.

Pickering, J. and Matson, R. (1992) 'Why executive development program (alone) don't work', *Training and Development*, Vol. 46, No. 5, pp.91–95.

Rowley, J. (2000) 'Is higher education ready for knowledge management?', *International Journal of Educational Management*, Vol. 14, No. 7, pp.325–333.

Salleh, Y. and Goh, W.K. (2002) 'Managing human resources toward achieving knowledge management', *Journal of Knowledge Management*, Vol. 6, No. 5, pp.457–468.

Sallis, E. and Jones, G. (2002) *Knowledge Management in Education: Enhancing Learning and Education*, Kogan Page, London.

Sekaran, U. (2000) *Research Method for business: A Skill Building Approach*, John Wiley and Sons, Inc.

Senge, P. (1991) 'The learning organisation made plan', *Training and Development*, Vol. 45, No. 10, pp.37–44.

Shockley III, W. (2000) 'Planning for knowledge management', *Quality Progress*, Vol. 33, No. 3, pp.57–62.

Skyrme, D. and Amidon, D. (1997) 'The knowledge agenda', *Journal of Knowledge Management*, Vol. 1, No. 1, pp.27–37.

Soliman, F. and Spooner, K. (2000) 'Strategies for implementing knowledge management: role of human resources management', *Journal of Knowledge Management*, Vol. 4, No. 4, pp.337–345.

Srivastava, A. and Bartol, K.M. (2006) 'Empowering leadership in management team: effect on knowledge sharing efficacy and performance', *Academy of Management Journal*, Vol. 59, No. 6, pp.1239–1251.

Sydanmaanlakka, P. (2002) *An Intelligent Organization: Integrating Performance, Competence and KM*, A Wiley Company, Capstone Limited, West Sussex.

Tippins, M. (2003) 'Implementing knowledge management in academia: teaching the teachers', *The International Journal of Educational Management*, Vol. 17, No. 7, pp.339–345.

Tiwana, A. (2000) *The Knowledge Management Toolkit – Practical Techniques for Building a Knowledge Management System*, Prentice Hall, USA.

Turban, E. and Aronson, J.E. (2001) *Decision Support Systems and Intelligent Systems*, 6th ed., Prentice Hall, USA.

Valmohammadi, C. (2010) 'Identification and prioritization of critical success factors off knowledge management in Iranian SMEs: an experts' view', *African Journal of Business Management*, Vol. 4, No. 6, pp.915–924.

Verespej, M. (1999) 'Knowledge management: system or culture?', *Industry Week*, Vol. 248, No. 15, pp.20–23.

Wendi, R.B. and Ruth, L.W. (1999) *The Knowledge Management Field Book*, Prentice Hall, New Jersey.

Wong, K.Y. (2005) 'Critical success factors for implementing knowledge management in small and medium enterprises', *Industrial Management & Data Systems*, Vol. 105, No. 3, pp.261–279.

Yeh, Y.J., Lai, S.Q. and Ho, C.T. (2006) 'Knowledge management enables', *Industrial Management & Data Systems*, Vol. 106, No. 6, pp.793–810.

Yip, M.W., Lau, H.C. and Songip, A.R. (2010) 'Influence of soft elements on KM implementation in Malaysian higher learning institution', *Journal of Knowledge Management Practice*, Vol. 11, No. 3, pp.1–9.