An Examination Of The Use Of Knowledge Management Systems In Achieving And Sustaining Competitive Advantage In Higher Education Institutes: A Case Study Of Asia Pacific University, Malaysia

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Abstract: Knowledge management is contributing to the success of organizations all around the world. Malaysian government aims for its nation to be a knowledge driven nation. The competition in the private education sector in Malaysia is fierce. The paper then discusses about knowledge management already being used by the higher education institutes all around the world. There are some success factors that knowledge management depends upon. Five identified success factors are support from leadership, organization culture, processes and activities within the organization, use of technology and people. The paper then discuss three knowledge management models Nonaka’s model, Sveiby’s framework of intangible assets and Michael Zack’s framework for knowledge management. Michael Zack’s framework is than applied to the selected company which was Asia Pacific University and this was done because Zack’s model was more appropriate in discussing knowledge management with respect to the creation and the sustenance of competitive advantages.

Index Terms: Competitive advantage, Higher education institutes, Knowledge Management, Knowledge Management System (KMS), Michael Zack’s Framework, Nonaka’s Framework, Syeiby’s Framework

1 INTRODUCTION

The twenty-first century is driven by knowledge and it is the key driver in creating opportunities [1]. Knowledge management (KM) is identified as one of the critical factors for the success and performance of an organization [1]; [2]. KM is defined as the process of discovering, selecting, organizing and presenting information to provide useful insights for making organizational decisions [3]. KM activities help organizations to use knowledge for solving problems, strategic planning, dynamic learning and decision making [4]. KM deals with the development of ways to effectively manage knowledge, which helps to maximize innovation processes and results in attaining a competitive advantage [5]. There are 47 private universities in Malaysia [6], to compete in this fiercely competitive space a university must use knowledge to make their operations more efficient and effective in order to compete with others [7]. In addition to creating effective and efficient processes, knowledge will also help universities to create better long-term strategic plans [8]. It is also described that knowledge is the most important resource and the one and only source for sustaining competitive advantage [9]. There are three levels where knowledge has to be managed individual level, organizational level and team level [10]. People, process, organizational culture and technology, all carry equal signification in the management of knowledge [11].

Michael Zack’s framework for knowledge management argues that knowledge can be used to create and maintain a competitive advantage. There are Knowledge management system (KMS) tools which aid the process of knowledge sharing. Groupware is one category of KMS tools, which provide a rich experience for users to interact and share knowledge despite being dispersed at different locations [12]. So, there is no doubt that technology is one of the key factors to implement KMS [13] & [14]. Malaysia’s aim to fulfill its vision of becoming a knowledge-based nation relies heavily on its organizations using KM [15]. Current competitive strategies are proving to be less useful as compared to before [16] because there are universities which are outperforming others by integrating knowledge management while designing their competitive strategies. Knowledge processes are a part of KM and are considered as pre-requisites for success in all kind of organizations [17]; [18]. According to the Malaysian ministry of human resources, all the universities are working towards increasing the number of students in their universities [19]. Efforts to increase the number of students, to serve current students better than before and improving organizational performance will require Knowledge Management (KM). According to the Malaysian ministry of higher education, Knowledge Management Systems can be the source of new ideas which would result in the creation of competitive advantage for higher education institutes [20]. The need for KM in higher education institutes is necessary to achieve and sustain competitive advantage, and also to achieve the goal of becoming a knowledge-driven nation as portrayed by the Malaysian government [21].

2 LITERATURE REVIEW

Knowledge can be specified in two different dimensions: tacit and explicit as specified by Nonaka [22]. Tacit knowledge is perceived as a kind of knowledge which does not have words. Polanyi described tacit knowledge as something which is...
more than what we can tell in words. An example of tacit knowledge can be that of riding a bicycle. Sources of tacit knowledge are usually local and cannot be found in books, databases or manuals [23]. Explicit knowledge, in contrast, can be written down, be coded or articulated [24].

2.1 Knowledge Management in Higher Education Institutions

More and more organizations around the world are investing in knowledge management systems (KMS). In a survey conducted in the US, 90% of the firms have indicated that they are using KMS and it is already up and running. Knowledge Management (KM) was also identified as a key success factor by these organizations for their business. Ernst & young which identified KM as a driver for their business has spent around $500 million on building knowledge centers and there have been similar quotes by other companies as well. The huge spending on KMS is justified by companies, by demonstrating that they grow globally while saving cost and making more efficient decisions. Making better decisions is done by retaining and studying knowledge and learning from it to enhance your future decisions even more. The knowledge retained is specific to a particular organization and hence whichever organization maintains their previous knowledge efficiently holds a significant competitive advantage [25]. The relationship between KM and the sustained competitive advantage is figured to be positive. Technical KM of a firm is essential for a firm to maintain a long-term competitive advantage [26]. Provision of knowledge to the employees within an organization is considered as the primary source from which competitive advantages can be generated. Enhancement of this knowledge enables the organization to sustain this advantage for longer periods of time. [27] emphasize that the culture in the university and motivation to share knowledge play an important role for teachers in a university to share knowledge. The researchers, [28] also agree that the culture of an organization dictates how efficiently knowledge will be shared within an organization. Sharing of knowledge does not depend on the technology itself. Staff in a university which includes administrators at all levels needs to be trained to share knowledge. Once the knowledge is shared efficiently within the university using whatever medium it needs to be managed using technology so better decisions can be made using this knowledge. Better decisions result in the creation and sustenance of competitive advantage. The author [29] conducted a research for application of knowledge management in Malaysian universities and concluded that knowledge is considered to be the most important asset for a university at all levels for various reasons. The ability of a university to manage knowledge in academic and non-academic departments is crucial for performance and improvement of the university as a whole. Knowledge management in a higher education institute needs to be well defined at every level, the process of creating knowledge, storing the created knowledge and then further retrieval of that knowledge for use in making upcoming decisions. Author [30] emphasizes on the fact that knowledge in an organization is its most important asset. When KM is applied at every level in a university, the author further elaborates the benefits of KM, the first benefit is the better use of experiences of the employees for better organizational decisions, and the second benefit is that of the lecturers who can use existing knowledge for teaching more effectively and efficiently. The employees in a university using knowledge from a KMS are also responsible for adding new knowledge to the KMS that they have acquired during their experience. Researchers [31] conducted a pilot study on the universities in China and the USA on how knowledge management is perceived and used in their universities. Chinese universities are already using KMS tools to help them grow exponentially. They use tools such as messaging systems to ensure a smooth transfer of knowledge within a particular university. Such tools and share of knowledge have led to improved customer service and has made it more efficient than ever before. Messaging tools has helped for quick transfer of knowledge resulting in decisions being made quicker than before. American universities look at KM to assist them in creating best practices in organizations, create a more stable environment for smooth operations within an organization. The KMS tools in American universities are working towards identifying which knowledge to analyze and reflect upon even further. The administrative support for KM is dependent on the goals and objectives of a specific organization. Author [32] conducted a research and concluded that universities are taking initiatives towards knowledge management. Chinese universities work towards a more structured and centralized support system while the American universities believe in empowering knowledge leaders rather than empowering the organizational leaders. Both countries have extracted advantages from the use of KMS, Chinese universities are satisfying their customers more than ever and using best practices to do it while the American universities are creating best practices in organizations which are helping them transform their organizational cultures resulting in easier expansion geographically. A research was conducted by authors [33] on the importance of knowledge sharing and management in the business schools in KLANG valley. The uses of knowledge proved to be beneficial for everyone involved and play an important role in achieving and maintaining competitiveness. The goal was to create knowledge that was useful to the organizations. The authors, [34] emphasize the importance of knowledge sharing. This can only be done if the knowledge from the individuals is shared amongst each other than transformed to organizational knowledge. The strategies for sharing knowledge varies from organization to organization. The major finding was the added benefits that individuals receive for contributing to the knowledge pool and worked as an extra motivation for individuals to share acquired knowledge. The barriers that still exist are the lack of top management support and illiteracy of individuals regarding the benefits that knowledge brings. Researchers [35] conducted a research on the practices of knowledge management and its benefits in higher education institutes of Malaysia. The processes identified were knowledge creation, knowledge capture, organizing captured knowledge, storing knowledge, dissemination of knowledge and application of knowledge. Malaysian universities are aware of the processes of KM but some of them are unaware of the benefits it brings. Implementation of KM significantly improves the quality of the curriculum and the courses taught at a university. New faculty members would hugely benefit from existing knowledge base by looking at how the curriculum has been designed and what are the best ways to monitor student activities. All these improved practices have enhanced the business schools of KLANG valley and they are able to compete with universities internationally. A study [36]
further emphasized on the use of knowledge as it brings along long-term benefits to an organization.

2.2 Critical Success Factors of Knowledge Management
There are a lot of factors that can affect KM. The first CSF of KM is support from leadership [37]. If the leadership of an organization is supportive than KM is easier to spread within the organization. The second CSF of KM is the organization culture [4]. Organization culture is necessary so it is easier for employees to trust each other for sharing knowledge, collaborating and learning. The third CSF of KM is the processes and activities within the organization [38]. There needs to be sufficient processes and activities within an organization to make sure that KM activities are being carried out by employees at every level. The fourth CSF of KM is technology [39]. The importance of technology for KM is very significant. KMS and knowledge sharing is built using technology and these are the core activities of KM. The fifth CSF of KM is people [40]. People are the core creator of knowledge in an organization. Organizations which provide incentives to people have better KM resources [41].

2.3 Nonaka's Framework of Knowledge Conversion
Tacit and explicit knowledge complement each other and both forms are necessary to create knowledge which can be of value to an organization [42]. Knowledge can be created through the conversion of tacit to explicit knowledge which gives us four type of ways to create knowledge. The first type of knowledge conversion is tacit to tacit knowledge, the second type of knowledge conversion is explicit to explicit knowledge, and the third type is from tacit to explicit knowledge while the fourth type is from explicit to tacit knowledge [43]. The four types can be classified into further four terminologies. Socialization deals with the creation of tacit knowledge acquired through shared experiences. Combination consists of the creation of explicit knowledge from existing explicit knowledge. Externalization, consists of the conversion of existing tacit knowledge to explicit knowledge. Internalization, consists of the conversion of existing explicit knowledge to tacit knowledge. Externalization and internalization are both based on the philosophy that tacit and explicit knowledge can be further enhanced and expanded over a period of time through the process of mutual interaction [44].

2.4 Michael Zack's Framework for Knowledge Management
Michael Zack’s framework talks about linking KM to strategic advantage. The approach of the organizations to first implement a KMS and then identify what benefits it brings does not really work, the correct approach should be to formulate a strategy in combination with knowledge management and then implement a KMS based on the combined strategy [45]. The major problem is the lack of interaction between teams developing strategies and KM within an organization. Knowledge can be used for competitive advantage in a number of ways. [46]. Acquiring knowledge before your competitors is an advantage, acquiring assets which are valuable and limited in quantity can be used to sustain an advantage because it provides an opportunity to learn more [47].

Sveiby’s Framework of Intangible Assets
Managing of intangible assets deals with capturing of knowledge from various resources and converting that knowledge for profit within an enterprise or an organization [48]. The economic value of a customer is now recognized by business organizations. Every organization does not yet measure it effectively due to the unavailability of a measurement standard [49]. Sveiby defined three steps in order to measure the value of the intangible assets of an organization. The first step is the employee competence, which includes the capacity of employees to act and react in various situations. People generate two kinds of intangible assets which are either internal or external. The second step is the internal structure, which includes concepts, models, patents and computer programs. These assets are created by employees but are owned by the organization. The third step is the external structure, which includes relationships with various customers and suppliers, trademarks and brand names. External intangible assets are dependent on how well an organization solves the problems of its customers [50].

Next section will discuss the case study of Asia Pacific university Malaysia in the context of knowledge management application through Michael Zack’s framework.

3 CASE STUDY: ASIA PACIFIC UNIVERSITY, MALAYSIA
In this paper, the selected company for applying KM framework is Asia Pacific University (APU). In an article published by UniDigest, APU is ranked as the number one private university in Malaysia [51]. APU has been expanding the pool of international students and attracting students from over 120 countries, the university is famous for providing up to date technology facilities to lecturers and students for research purposes [52]. The number of students in private higher education institutes is increasing rapidly [53]; [54]. Catering the growing demands of international students APU needs to use its organizational knowledge for making better decisions. KM in APU is required so it can compete with other universities in Malaysia by not only making better decisions but also making decisions faster than any other competitors out there. KM will also help APU recognize which regions to target for students, the current shortcomings in their organizational processes and how to improve their methods in transforming and providing quality education [55].

4 SELECTED FRAMEWORK AND ITS APPLICATION
For the application of KM, Michael Zack’s framework will be used because it specifically talks about maintaining and sustaining competitive advantage by aligning the knowledge and organizational strategy. The competition in between private higher education institutes in Malaysia is fierce [56] and Michael Zack’s framework supports the fact that generation of a KM strategy cannot be made without referring to competitors [57]. A connection between competition and a KM strategy is effectively made by using Zack’s framework [58]. Another important aspect in Zack’s framework is the discussion of storing knowledge and converting that knowledge to more useful knowledge objects for future use which will help an organization to sustain its competitive advantage [59]. Zack’s framework emphasizes on aligning business strategy with knowledge strategy to extract
maximum use of knowledge within an organization [60]. The first aspect is to understand the business strategy of APU. The current business strategy of APU lies in cost competitiveness and product differentiation. Lowering cost than your competitors grants an organization a competitive advantage, but what if the cost of all the competitors is almost not differentiable? Differentiating courses from other universities is another solution to attract new students and create a competitive advantage. For example, APU has recently introduced a new degree under the branch of data science and this is something that is needed in the industry at this very moment and APU is one of the first to act on this strategy, hence it has created an option for future students to select a course which majority of other private organizations are not offering. Differentiations like these can be imitation by other competitors [61] and that will soon be the case, this will significantly diminish the differentiation of APU to others and will erase the competitive advantage that APU had. Creation of knowledge strategy using knowledge residing within APU can help gain back the competitive advantage. People in APU have specific knowledge and this contributes to the knowledge pool of APU. To make full use of people’s knowledge the culture in an organization plays a significant role. Some aspects of culture that need to be established within APU should be to motivate and reward employees who are contributing to the knowledge pool of APU. A culture that rewards employees for bringing success to an organization works more efficiently as compared to a culture which does not reward employees for contributing to the success of an organization [62]. Hiring the right people with the right skills is another aspect that will increase or decrease the quality of knowledge that APU possesses. More skillful people bring more value [63]. For example, a hiring of a skilled manager in APU can help APU to create and manage an improved value chain model as compared to the hiring of a less skillful manager. Establishing a shared culture within APU is also very important. Once the culture of an organization is assisting employees to share knowledge it then depends on APU how it converts the people’s knowledge from tacit to an explicit form. The introduction and use of collaborative platforms enforce people to communicate and this can be used to convert the communicated tacit knowledge into an explicit knowledge. Implementing a strategy that resembles the phrase “work out loud” [64] is another factor that can help in converting tacit knowledge to explicit knowledge. Enforcement of processes such as lessons learned obliges the employees within an organization to record an audio, record a video or document experiences which contribute significantly to the knowledge of an organization. On top of that, the availability of lessons learned repository to all employees within an organization establishes the crucial aspect of knowledge sharing. Implementation and improvement of the discussed techniques above will make sure that APU is extracting all kinds of tacit knowledge from their employees into explicit form and this knowledge will be unique to APU and will assist in the creation of competitive advantages. Sustaining competitive advantages using knowledge heavily depends on APU and its performance in managing its knowledge resources. The factors that need to be concentrated on with respect to an organization are its capabilities to learn and handle change [65]. The success will finally be dependent on factors such as the speed of an organization by which it creates, captures and spreads knowledge. The use of unique knowledge residing within APU will create capabilities for APU which cannot be easily imitated by its competitors and this will result in sustaining an established competitive advantage. The key aspect to developing a knowledge strategy is to use the knowledge that is private to an organization. The use of public knowledge can be used for business-critical activities but it is the unique knowledge that assists an organization to develop unique processes resulting in the creation of competitive advantages that are sustainable [66]. For example, the improvement of existing data science program or creation of a new degree on trending technologies such as block-chain using knowledge of existing professors within APU is something that will be unique to APU and it will help APU to be a nod ahead of its competitors in the near future. Transforming APU into an organization that is driven by knowledge to create and sustain competitive advantage requires the development of certain characteristics. The company first needs to identify its knowledge gap. It is important for APU to identify what it already knows and what it really needs to know. To assist the question what knowledge APU needs to know, it must define a clear strategy. Once the gaps in knowledge and strategy are identified it needs to improve on its management of knowledge within the organization. Creation and sustaining of competitive advantage will depend upon the speed with which APU creates, organizes and manages its knowledge. The factor of managing with speed can be assisted by technology with the creation of a Knowledge Management System (KMS). Finally, the type of knowledge that needs to be used for creating competitive advantages needs to be identified. The internal environment of APU will provide unique knowledge for sustaining the competitive advantage, however, the study of the external environment is critical as well. The study of the external environment will provide knowledge and direct what a company’s business strategy should be. To make sure that the competitive advantage is sustained, APU needs to be improving its knowledge resources continuously.

5 CONCLUSIONS AND FUTURE RECOMMENDATIONS

Knowledge is creating opportunities and contributing to success for organizations of all kinds. Organizations around the world are using knowledge to solve problems and create strategies. The use of knowledge, when incorporated with the creation of strategies, results in the creation of unique and effective strategies. The strategies created, assist the organizations to create and sustain competitive advantages. The competitiveness in the Malaysian private higher education industry is very fierce and it requires the introduction of KM to survive and succeed. There are a handful of KM frameworks and models available, however, Michael Zack’s model was most suitable for discussing the use of knowledge for creation and sustenance of competitive advantages. Zack’s model is applied to APU and it discusses the importance of aligning knowledge and business strategy. The introduction of KM in APU requires the establishment of a cooperative and knowledge sharing culture. APU needs to identify the knowledge and business gaps in order to create a more effective knowledge strategy. It also requires APU to manage its knowledge with speed and also be flexible for change. This paper defines the process of how Zack’s framework can help introduce KM for creating and sustaining competitive advantage, however, the limitation is that this needs to be implemented and tested for its effectiveness. Implementation
of this on an entire organization will require a significant amount of time so it would be suggested, to begin with an organization that is limited in size and then tested for results. Once the implementation is done on a small sized company, it can be done for a bigger company and then gradually increase the number of companies in future researches.

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REFERENCES
[31] Q. Geng, C. Townley, K. Huang, and J. Zhang,


