

# The Influence of Knowledge Worker Characteristics on Knowledge Integration Capacity among Malaysian Knowledge Workers

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## Abstract

Knowledge worker is priceless and the main assets to the organizations. However most organizations are still unable to manage their knowledge workers properly. This paper reveals the influences of knowledge worker characteristics on knowledge integration capacity based on the data collected using questionnaire from 471 knowledge workers, working in organization located in Malaysia Multimedia Super Corridor. The results suggest that knowledge worker characteristics significantly and positively influence knowledge integration capacity. It is concluded that an organization must properly manage their knowledge worker in order to achieve the maximum potential or improve the organization capacity of knowledge integration.

**Keywords:** Knowledge, Knowledge Worker, Knowledge Integration Capacity, Knowledge Integration, Multimedia Super Corridor

## Introduction

According to Syed-Ikhsan and Rowland (2004), knowledge is always considered as the most important aspect in human life. There is a clear segregation between knowledgeable persons and the un-knowledgeable persons and how others treat or give value to those with knowledge compared to those without knowledge. Those with knowledge need to use or apply them so that people can know and benefit from their knowledge. Usually, knowledgeable people have status in the community and are well respected (Henwood, M, Larkin, M. & Milne, A. (2017); McDermott, 2010; Warner & Gonzales, 2014). Within the working context, organizations always search for knowledgeable workers and maintain these workers (Ghazali, 2009).

Mooradian (2005) mentions that many people use knowledge to their advantage. Some use knowledge for the good purposes that provides benefits not only to them, but also to other people around them, whereas some have misused the knowledge they possess in the negative way, to the extent that results with the negative impact. The importance and the way people use knowledge show that it is very important to manage the knowledge and recognize the behaviors of people, so the organizations can manage properly the available knowledge in the organizations

and the resources in order to make sure that it can be accessed only by the right people at the right time for the right purpose (Noor, 2012).

Ghazali (2009) suggests that during the transition age, from information age to knowledge age, there is a need to concentrate on the knowledge aspects of the individuals. Whilst citing the knowledge age in Malaysia is from year 2011 up to year 2020, he says that the Malaysian government plans to ensure people possess enough knowledge to face the ever changing world. The attention given by the government regarding the knowledge of the people indicates the importance of knowledge and the management of knowledge during the transformation age.

Jayasingan et al. (2010), a local expert, propose that Malaysia organizations have the competitive advantage if they manage the available knowledge properly, through better knowledge management strategy and systems. They even call for the Malaysia organizations to work smarter by managing and utilizing the deposited knowledge in facing the turbulence and rapid changing information technology environment and challenges.

### Background

Savage and Vickers (2009) believe that success in integrating human specialized knowledge can generate the new source of knowledge that is useful for knowledge workers in performing their daily knowledge work. Wang, Wang and Liang (2014) quoted from Huang and Hu (2009) suggest that different kind of professional knowledge within an organization should be used based on connection or convergent, however, due to the different kinds of knowledge available in the organization, knowledge integration is required. Savage and Vickers (2009) emphasizes that knowledge integration can bring continuous and a lot of benefits to people because knowledge inside the human mind, the reason why human becomes precious assets to the organizations and society, if it is extracted and stored in the non-human memory.

Knowledge integration has been studied as the process of incorporating new knowledge into a body of existing knowledge (Grant, 1996; Koskinen, 2012; Nonaka & Takeuchi, 1995). Koskinen (2012) suggests the need for knowledge integration arises because of the increase specialization of knowledge, one of the inherent characteristics. Thus, the process of knowledge integration involves determining how new knowledge and the existing knowledge interact, how existing knowledge should be modified to accommodate the new knowledge and how the new knowledge should be modified in the light of the existing knowledge. Knowledge integration translates raw knowledge from different subsystem into actionable knowledge by means of an acute understanding of knowledge content (Koskinen, 2012).

Grant (1996), one of the earliest people who studied about knowledge integration, proposed that knowledge integration to be seen as the primary role of the organization. Different authors have been exploring and describing the issues of knowledge integration in different terms for different purpose. For example, Huang and Newell (2003) describe knowledge integration as *"An on-going collective process of constructing, articulating and refining shared beliefs through social interaction of organizational members. It is also the activities that organizations use in accessing, leveraging and maintaining knowledge for the benefits of project implementation"*. Another interesting definition of knowledge integration is suggested by Enberg (2006). She says *"Knowledge integration is the process of goal- oriented interrelating with the purpose of*

*benefiting from knowledge complementarities existing between individuals with different knowledge bases”.*

The Society for Human Resource Management (SHRM) (2005) claims that the foundation of knowledge integration is the knowledge worker, whose job functions are primarily of intellectual nature. In the realm the knowledge management, the role of knowledge worker and knowledge integration are closely intertwined and gaining increasing focus as strategic tools that offer a competitive edge to the organization in the knowledge society. Davenport (2005) suggests that knowledge workers are those who typically have high levels of expertise, education and experience and have the ability to create, distribute and apply knowledge. While other workers work with some information and knowledge, knowledge workers are different from industrial or service workers. To the greatest extent, knowledge workers define their own tasks and have the autonomy in determining what, when and how they work. Their work tends to be unstructured. Frequently, quality is more important than quantity. To be effective, knowledge workers engage in continuous learning and improvement. They need to learn in order to keep up with new knowledge and the complex challenges they face in their work.

According to Kidd (1994), knowledge workers solve problems and generate output largely by resort to structures internal to themselves rather than by resort to external rules or procedures. In other words, each knowledge worker develops a different internal 'configuration' based on changes in their thinking and outlook by the situations they encountered, the information they absorbed and the particular way they make sense. She also identifies three distinguish characteristics of knowledge workers, (i) the knowledge workers are valued for diversity rather than consistency between their individual responses, (ii) knowledge workers do not rely heavily on information once it has been filed and (iii) they do not rely heavily on using their desks and floor as a spatial holding pattern for paper-based inputs and ideas. She mentions that the knowledge workers do not carry much written information with them when they travel and they rarely consult their field information when working in their offices. Their desks are cluttered and seeming function as a spatial holding pattern for current input and ideas.

Dragunov (2005) identify two characteristics of knowledge workers, (i) their work is cognitively intensive and requires focus, concentration and memory and (ii) they have to process considerable quantities of information in order to get their job done. The fact that knowledge workers can work with full access to communication, data and computing from any location at any time (Davis, 2002), makes them access data, use knowledge, employ data models, and apply significant concentration and attention to their works easily. They are efficient in terms of time and energy. They have value because of their knowledge and their abilities to apply it in work activities.

Brinkley et al. (2009), Kluth (2008) and Cross (2007) suggests that most knowledge workers prefer informal learning approaches. This means they prefer to interact with experts, seeking information (self-study, readings and internet resources) and social interactions (conferences, networks and association memberships). Furthermore, informal learning occurs on-the-job and just-in-time as workers address immediate situations. Accordingly, Brinkley et al. (2009) claim that knowledge workers are more likely to work for an organization that they think is innovative or achievement oriented and they would open up new forms of flexibility, for example, through various forms of teleworking so that they would no longer be bound by the traditional nine-five office routine. Instead, they can work wherever an internet connection is available, either individually or in remote clusters.

Within the context knowledge integration capacity, Enberg (2007) and Celadon (2014) noted that successful knowledge integration is a matter of achieving a certain degree of similarity between specialized knowledge worker and the efficient organization structures. Meanwhile, Steenbergen and Brinkkemper (2009) define knowledge integration capacity as *“the kind of knowledge integration that an organization is capable of achieving”*. They note that capacity should be partly dependent on organizational characteristics.

To this end, it is suggested that knowledge is very important to individuals and organizations, thus, makes knowledge workers as the prime assets of the organizations. The management needs the available information to make decisions and with information at the finger-tips from the knowledge integration capacity, good decisions are highly potential. However, getting the knowledge from this type of workers is not easy and thus makes the characteristics of the knowledge workers that allow the knowledge integration capacity to be studies.

### Methodology

This study employs the quantitative approach conducted the field study, data collection, at the Malaysia Multimedia Super Corridor (MSC), an area where there are a lot of companies full of knowledge workers. The instrument for the data collection of this study is adopted from the study that have been conducted by Noor (2012). From the 600 distributed questionnaires, 496 respondents replied as shown in Table 1. This is a 82.67% response rate, which is extremely a good response rate (William, 2003) suggests that the response rate of 75% for face to face meeting is already extremely well.

**Table 1:** The Survey's Details

Zones	Distributed	Expected	Retained	Response Rate (%)
Kuala Lumpur	300	75	249	83
Cyberjaya	150	38	126	84
Putrajaya	100	25	89	89
Sepang (KL International Airport)	50	12	32	64
Total	600	150	496	82.67

For data cleaning and cleansing, the collected data undergoes the screening process for the unusual patterns and outliers, following the data screening methods by Tabachnick and Fidell (2007) and Pallant (2011). As a result, 471 from 496 sets of data are used for analysis. Factor analysis is used to identify factors that statistically explain the dependent variable, specifically the 'data reduction' technique. As the research design is based on different sets of measures that reflecting the different dimension of the broader concepts of knowledge worker characteristics and knowledge integration capacity, the factor analysis is expected to yield factors that represent the identified dimensions.

There are two steps of validation processes being conducted in this study. The first step is by checking the KMO and Bartlett's Test table, whereas the second step is by inspecting the component matrix table. Following Pallant (2011), the data is suitable for factor analysis if the KMO value is 0.6 and above and Bartlett's Test of Sphericity significant value should be 0.05 or smaller. The value of the correlation in component matrix is 0.3 or greater. Thus, if a value less than 0.3 is realized, and then such item is deleted. The next two tables show the

value of KMO (set to be above 6.0) and then the next table is the summary of the reliability test.

**Table 2: KMO and Bartlett's Test Table for Knowledge Worker Characteristics**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.819
Bartlett's Test of Sphericity	Approx. Chi-Square	1219.116
df		66
Sig.		0.000

**Table 3: KMO and Bartlett's Test Table for Knowledge Integration Capacity**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.817
Bartlett's Test of Sphericity	Approx. Chi-Square	1163.021
df		28
Sig.		0.000

**Table 4: Summary of Reliability Testing**

Construct	Cronbach's Alpha	Alpha Based on Standardized Items	N of Items	Comments
Knowledge Worker Characteristics	0.793	0.792	14	Satisfactory
Knowledge Integration Capacity	0.824	0.825	8	Satisfactory

## Results and Discussion

### Measurement of Knowledge Worker Characteristics

Table 5 presents the components matrix table for knowledge worker characteristics. Only one component obtained from the rotated component matrix and being organized in its order.

**Table 5: Component Matrix Table for Knowledge Worker Characteristics**

Component		
•	I makes a living out of creating, manipulating or disseminating knowledge	0.702
•	I act like the sensor of the company to bring closer the boundaries between the levels of strategic planning and operational work within the organization	0.671
•	I gathers data or information from any sources; add values to the information; and distributes value-added products and services to others	0.667
•	I am working in virtual environment	0.656
•	I act as bounding agents to the different taskmasters in a common quest to produce better and higher standards of global product and service	0.589
•	I use the software to enhance team and organization performance	0.554

• I help to economize re-adjustment periods through synthesizing and creating knowledge for critical problems and high priority situations	0.553 0.494
• I need to have superior cognitive and psychological resiliency to cope with the rapid and continuous changes in the team structures, its membership and agenda	
• I play an important role in modeling added value solution to product and services that are relevant to my context but which also remain in consonance to the overall identity of the parent company	0.494 0.440
• I communicate and disseminate knowledge in real time to take advantage of front line application elsewhere in another part of the world	
• I am working in information rich environment	0.407
• I need to rely on each other credibility and integrity in the knowledge produced	0.401

### Measurement of Knowledge Integration Capacity

Table 6 presents the components matrix table for knowledge integration capacity. Similarly, only one component for this data and it is organized in the descending order, according to the value of the component.

**Table 6:** Component Matrix Table for Knowledge Integration Capacity

Component	
• Knowledge integration within the organization allows for the increase capability of the organization	0.752
• Knowledge integration is the best available evidence with expertise of individuals and customer values	0.722
• Knowledge integration process in my organization involves in determining how the new information and the existing knowledge interact	0.717
• Knowledge integration process in my organization involves how existing knowledge should be modified to accommodate the new knowledge	0.681
• Knowledge integration process in my organization refers to the capabilities to bring together and combine knowledge elements to perform innovative activities	0.661
• Knowledge integration process in my organization involves on how new information should be modified in light of existing knowledge	0.657
• Knowledge integration process in my organization is the process of incorporating new information into a body of existing knowledge	0.637
• In knowledge integration process, I combine different types of data and	0.524

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knowledge available in various forms in the organization

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To test on the hypothesis regarding knowledge worker characteristics have some effect on the knowledge integration capacity. The test results are shown in next tables.

**Table 7: Model Summary of Knowledge Worker Characteristics Variable**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.548 <sup>a</sup>	0.300	0.299	0.36448

**Table 8: ANOVA for Knowledge Worker Characteristics Variable**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.725	1	26.725	201.171	0.000 <sup>a</sup>
	Residual	62.305	469	0.133		
	Total	89.029	470			

The above results show that the correlation is strong ( $R=0.548$ ), positive and linear relationship. The model explains 30.0% of the variance in knowledge worker characteristics for the knowledge integration capacity. The model is statistically significant ( $\text{sig} = 0.000$ ;  $p < 0.001$ ). With the Beta value, under the standardize coefficients, is 0.548, this indicates that the knowledge worker characteristics as an independent variable makes a unique contribution to explain the knowledge integration capacity. At  $p\text{-value} < 0.001$ , it is suggested that the knowledge worker characteristics significantly influence the knowledge integration capacity.

The test conducted has yielded a supporting result proving the relationship between knowledge worker characteristics and knowledge integration capacity. It is a significant relationship and, in terms of model fit, it fits well the model. It demonstrates that knowledge worker characteristics have a significant positive impact on knowledge integration capacity. This means that the knowledge worker characteristics can be used to measure knowledge integration capacity. Knowledge workers characteristics are the important criteria in determining the knowledge integration capacity.

## Conclusion

It is concluded that in enhancing the understanding of the knowledge integration capacity of the organization, the organization needs to embrace into the knowledge integration activity among the workers, in particular the knowledge workers. Whilst it is evidenced that the integration of the knowledge of the knowledge workers is an important part of the decision making process for maximizing the performance, the task of identifying new and prior knowledge interacts remains difficult. However, when an individual share the same views, beliefs, or reconstruct a base of knowledge, it will result in an increase organizational knowledge capacity.

Such findings are unique and have significant value as this study focusses knowledge worker, different from previous researches that focus on all worker, for example, Hsi (1997) focusses on a group of students while Alavi and Tiwana (2002) study knowledge integration based on specialized group of workers, not knowledge workers. For future research, there is a need to look

into other dimensions that also contribute to the knowledge integration capacity, together with the knowledge worker characteristics.

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