

International Symposium on Social Sciences, Arts and Humanities (SYSSARM)
on 29th September – 1st October 2015 at Kuta Central Park, Bali, Indonesia

Knowledge Infrastructure, Process, and the Effectiveness of Manufacturing SMEs in Selangor, Malaysia

Authors:

C. A. Malarvizhi, Senior Lecturer, Faculty of Management, Multimedia University, Cyberjaya, Malaysia

Abdullah Al Mamun, Senior Lecturer, Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, Kota Bharu, Malaysia

Muthiah Prabadevi, Assistant professor, SRM University, India

Noorshella Binti Che Nawi, Senior Lecturer, Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, Kota Bharu, Malaysia

Amin Rasti, Graduate Research Assistant, Faculty of Management, Multimedia University, Cyberjaya, Malaysia

P. Yukthamarani Permarupan, Lecturer, Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, Kota Bharu, Malaysia

Introduction



In today's competitive business environment, companies are always looking for ways to improve employees' speed and efficiency. However, the nature of knowledge work is more complex, and therefore more difficult to evaluate. Knowledge workers think and behave differently, and have different needs (Hollar et al. 2002).

Organizations whose success or failure is determined by the decisions they make are handicapped by systems that are centered on processes or functions. They face many challenges in today's business climate. As a result, these organizations struggle to improve business productivity while managing costs and find it hard to make changes in their systems quickly, despite a pressing need to do so. To succeed, these organizations need to move their thinking from processes and functions to decisions; (Andreeva and Kianto, 2012)

KNOWLEDGE INFRASTRUCTURE CAPABILITY



Knowledge Creation - There are four modes of knowledge conversion including:

- (a) *socialization* - this is the mode of knowledge conversion that enables us to convert tacit knowledge through interaction between individuals;
- (b) *combination* - this mode of knowledge conversion involves the use of social processes to combine different bodies of explicit knowledge through exchange mechanisms;
- (c) *externalization* - this conversion is critical because it is a prerequisite to the knowledge amplification process wherein knowledge becomes part of an organization's knowledge network; and
- (d) *internalization* - this mode is connected to the theories of organizational culture. It is closely related to 'learning by doing' (Nonaka et al., 2000; Nemati, and Steiger, 2001).

KNOWLEDGE INFRASTRUCTURE CAPABILITY



Knowledge Sharing - Knowledge and experiences belong to everyone, as in both the organization and the individuals in the organization. Thus, knowledge is supposed to be extracted from knowledgeable workers in order to benefit the others as well (Andreeva and Kianto, 2012). Therefore, the knowledge will be converted from tacit to explicit. There are three main techniques to extract knowledge, by the lead of an analyst or an expert or even the collaboration of both (Peng, 2013). Research has proven that psychological ownership towards ones knowledge has a positive effect on the hiding of knowledge (Peng, 2013; Forza, 2002).

KNOWLEDGE INFRASTRUCTURE CAPABILITY



Knowledge Transfer - The central challenge that organizations face is in knowing how to reduce the cost of inter- and intra-firm knowledge transfer while protecting the knowledge from imitation by the competition. Transferring knowledge while minimizing the risks of partners, the rate of knowledge dissipation, and openness of the organizational culture of the parent companies are linked to a variety of factors. These factors include the organizational resources committed to learning (Lyles, 1994) and the type of knowledge creation mechanisms institutionalized within the organizational structure of the alliance (Kogut, and Zander, 1994; Reed and DeFillipi, 1990; Ernst and Young, 1997).

KNOWLEDGE PROCESS CAPABILITY



The concept of knowledge process capabilities is developed based on the knowledge system framework that views organizations as “knowledge systems”, consisting of a series of socially enacted “knowledge processes”. The identification process prioritizes the knowledge to be captured in KM activities in support of the organizational business strategy. Identification processes include determining the experience to be ratified or converted into knowledge, the existing internal knowledge to be tapped, the external sources of knowledge that can fulfill knowledge gaps, the new sources of knowledge, and the relative importance of knowledge identified. When identified as important, knowledge must be acquired or generated within/outside an organization and subsequently be integrated with the existing knowledge (Alavi, Kayworth, and Leidner, 2005).

ORGANIZATIONAL EFFECTIVENESS



Organizational effectiveness is broadly defined as the ability to reach organizational goals as measured by the firm's performance, whereby performance is the optimal measure of a firm assessed by productivity, effectiveness, and employee morale (Daft, 1995). Employee morale is outside the context of this research, but productivity and effectiveness provide appropriate measures and can be used as proxies for organizational performance. External factors (consisting of economic growth, profitability, intensity of competition, and user preferences) and internal factors (consisting of cost structure, efficiency, size of the firm, and revenue) play a part in organizational effectiveness.

RESEARCH METHODOLOGY



This study employed a cross-sectional design and a quantitative approach to examine the knowledge infrastructure capacities of Malaysian manufacturing SMEs and how they affect the knowledge process capacity and organizational effectiveness. The target population for this research is mid-to-top level managers of manufacturing SMEs located in Selangor, Malaysia. As noted in the '*FMM Directory of Malaysian Industries 2014*', prepared by the Federation of Malaysian Manufacturers (FMM, 2015), there are in total, 574 manufacturing SMEs in Selangor, Malaysia. From that list, this study selected a total of 58 manufacturing SMEs, and complete data was collected from 215 mid-to-top level managers of the selected manufacturing SMEs in Selangor, Malaysia

SUMMARY OF FINDINGS



- ✦ Based on the descriptive analysis, all selected manufacturing SMEs have 0 – 200 employees, as required by the SME categorization, which states that a manufacturing SME organization should have less than 200 employees. Electronic and electrical product manufacturers have the highest percentage among the respondents (39.8%), followed by food and beverages (33.3%), plastic products (26.4%), and automobile (0.5%). In response to ways to promote knowledge management, training was the favorite (92.1%), followed by discussions (6.0%), and team building activities (1.9%). Among the respondents' firms, 97.2% do not have a formal knowledge sharing system and only 2.7% of the respondents claim to have it. On providing motivation to their employees, incentives in the form of bonus and promotion are the most famous option (92.6%) and in some organizations (5.6%), fear in the form of punishments is used as a motivational move. Achievement, which promotes recognition and social, which promotes acceptance, remain low at 0.9% as motivational aspects among employees.

TABLE 1. DESCRIPTIVE AND RELIABILITY MEASURES

	No. of Items	Descriptive		Reliability		
		Mean	S. D.	CA	CI	AVE
KC	2	4.7431	0.41758	0.864	0.936	0.880
KS	2	4.8727	0.27491	0.650	0.816	0.690
KT	5	4.9241	0.23659	0.951	0.963	0.842
KM	9	4.8727	0.24440	0.926	0.940	0.650
AC	3	2.9043	0.87698	0.874	0.924	0.803
EE	3	2.9491	0.96501	0.910	0.943	0.848

Note: KC- Knowledge Creation; KS - Knowledge Sharing; KT - Knowledge Transfer; KM - Knowledge Management; AC - Agility and Control; EE - Efficiency and Effectiveness; CA: Cronbach's Alpha; CI: Composite Reliability; AVE: Average Variance Extracted

Cronbach's Alpha for all items are more than 0.6; therefore, considered reliable

Composite reliability for all items is higher than 0.7; therefore, considered reliable.

Average Variance Extracted value for all items is more than 0.5, which indicates sufficient convergent validity

TABLE 2. OUTER MODEL LOADING AND CROSS LOADING

	KC	KS	KT	KM	AC	EE
KC – 1	0.937	0.496	0.419	0.614	0.431	0.309
KC – 2	0.939	0.456	0.456	0.626	0.476	0.347
KS – 1	0.307	0.830	0.724	0.740	0.317	0.260
KS – 2	0.535	0.831	0.635	0.743	0.415	0.311
KT – 1	0.381	0.745	0.938	0.884	0.205	0.190
KT – 2	0.431	0.751	0.959	0.910	0.224	0.208
KT – 3	0.438	0.789	0.965	0.924	0.235	0.219
KT – 4	0.475	0.717	0.942	0.902	0.214	0.199
AC – 1	0.413	0.753	0.767	0.784	0.324	0.256
AC – 2	0.390	0.371	0.221	0.324	0.929	0.731
AC – 3	0.401	0.376	0.226	0.331	0.953	0.766
EE – 1	0.507	0.437	0.250	0.386	0.799	0.702
EE – 2	0.345	0.323	0.191	0.283	0.850	0.982
EE – 3	0.346	0.324	0.192	0.284	0.856	0.984
Fornell-Larcker Criterium						
KC	0.938					
KS	0.507	0.831				
KT	0.466	0.818	0.917			
KM	0.661	0.893	0.962	0.800		
AC	0.483	0.441	0.260	0.388	0.896	
EE	0.349	0.344	0.232	0.316	0.820	0.921
Heterotrait-Monotrait Ratio (HTMT)						
KC	-					
KS	0.735	-				
KT	0.516	1.135	-			
KM	0.762	1.251	1.018	-		
AC	0.557	0.636	0.289	0.443	-	
EE	0.391	0.495	0.274	0.366	0.883	-

The cross-loading values are below the outer loadings, which suggest good discriminant validity.

The Fornell–Larcker criterion in Table 2 is largely unable to detect a lack of discriminant validity.

Heterotrait-Monotrait Ratio (HTMT) - Using a value of 0.9 as the threshold, this study concluded that there is no evidence of a lack of discriminant validity.

TABLE 3. PATH COEFFICIENTS

	Path Coefficient	t	p	r ²
KC ← KM	0.661	15.335	0.000	0.437
KS ← KM	0.893	29.479	0.000	0.797
KT ← KM	0.962	152.76	0.000	0.926
KM → AC	0.338	14.337	0.000	0.150
AC → EE	0.820	38.224	0.000	0.672

Note: KC- Knowledge Creation; KS - Knowledge Sharing; KT - Knowledge Transfer; KM - Knowledge Management; AC - Agility and Control; EE - Efficiency and Effectiveness

Findings of the hierarchical knowledge management model noted that the degree of explained variance of this hierarchical construct is reflected in its components, i.e., knowledge creation, knowledge sharing, and knowledge transfer. The coefficient of determination (r^2) of two endogenous latent variables, i.e., agility and control, and efficiency and effectiveness, as shown in Table 3 are considered moderate.

The path coefficient between knowledge management and agility and control shows a significant positive effect.

In addition, agility and control has a significant positive effect on the efficiency and effectiveness of the manufacturing SMEs in Malaysia.

CONCLUSION



Findings of this study indicated that '*Knowledge Infrastructure Capability*', which was measured based on the manufacturing SMEs' capability in 'knowledge creation', 'knowledge sharing', 'knowledge transfer', has a significant role in the organizations' ability to process knowledge for better business decisions. Moreover, the SMEs' capacity to process knowledge, which was measured by 'agility and control', has a significant positive effect on organizational effectiveness. As discussed, decision-centric organizations gain operational advantages and a competitive edge through a systematic focus on decision-making throughout the organization. The manufacturing SMEs in Malaysia cannot afford to remain only knowledge-centric and should move towards becoming decision-centric organizations. In order for that to occur, manufacturing SMEs must develop an infrastructure to acquire knowledge, and then to process this knowledge for organizational effectiveness.

The background features a collage of various postage stamps and postmarks. Visible elements include a red circular postmark from 'COSTA RICA', a rectangular postmark from 'MADRID', and several other stamps with text like 'PART AVION', 'PETERSEN', '100.00', and 'POSTAGE'. There are also some numbers and symbols scattered throughout the collage.

Thank you

A decorative horizontal line with diamond-shaped ornaments at both ends, positioned below the 'Thank you' text.