An Analytical Study of Knowledge Management Performance in Automobile Manufacturing Industry

J. Sanjit[#1], T.R. Manoharan[2], R.Rajesh[3],

[1] *Research Scholar, Department of Manufacturing Engineering, Annamalai University, Chidambaram, Tamil Nadu, India.*
[2] *Professor, Department of Manufacturing Engineering, Annamalai University, Chidambaram, Tamil Nadu, India.*
[3] *Professor, Department of Manufacturing Engineering, Rohini College of Engineering & Technology, Kanyakumari, India.*
#- corresponding Author.

Abstract

Knowledge Management (KM) is vital for any business organization to manage knowledge resources for sustainability. This case study examined the influence of five KM enablers namely, Employees' Motivation, Learning Attitude and Behaviour, Socialization, Information Technology and the Knowledge Management Audit. The enablers have been underlined by several authors as important contributors in Knowledge Management Practice (KMP) towards Organizational Performance (OP), but not yet been confirmed through empirical means when practiced in Indian manufacturing organizations. The present authors have taken up this gap and framed and tested by empirical means. The questionnaire was tested and validated for collecting data from the perceptions of leaders in automobile manufacturing industry. The collected data were analyzed statistically. The results confirmed that the significant influence of the above five KM enablers in influencing Organizational Performance of manufacturing industry.
Key Words: Knowledge, Knowledge Management, Knowledge Management Practice, KM Enablers.

I. INTRODUCTION

Knowledge prevails with every individual. It is intangible and can be transformed into any form according to the situations warranted. Knowledge is the integration of information, ideas, experiences, intuitions, skills and lessons which can be transformed into valuable one to be utilized in an organization (Dana et al., 2005) to achieve performance because knowledge is considered as key strategic resource for organizational survival, stability, growth and improvement (Hassan and Al-Hakim, 2011). Proper management of knowledge in manufacturing industries in India may influence performance and productivity, since, the present economic situation in India needs Knowledge Management (KM) practice to be implemented in manufacturing industries in India to boost the productivity to share its major contribution in order to increase the GDP which has gone to low position. In appropriating the above, this study has considered five KM enablers - Employee Motivation (KM), Learning Attitude and Behavior (LAB), Socialization (SN), Information Technology (IT) and Knowledge Management Audit (KMA) and empirically evaluated to understand its influence over performance of manufacturing industry. Automobile manufacturing industries were taken as a case to conduct the study. The results showed that all the five KM enablers were positively and significantly related to KM practice and influenced the performance of automobile industry.

II. REVIEWS

Knowledge has been considered a key resource to the organizations (Alavi & Leidner, 2001) and is significant to increase innovative capacity and the performance of the organizations. Knowledge is the base for developing core competencies which largely help organizations to achieve performance (Halley and Beaulieu, 2005), Enhancement of cooperation and information sharing among employees, decision making, improved productivity and innovation (Bennet and Tomblin, 2006; King, 2009; Chang and Chuang, 2001; Gharkhani and Mousakhani, 2012). Systematic utilization of knowledge is imperative for organizational performance and KM can be successfully implemented by taking proper management strategies. The extensive review of literature enlightened that a number of KM researchers have developed different types of practice - models by incorporating a number of dimensions and variables. The developed models vary according to the types of organization, the environmental situation, the demography, culture, people's attitude, the structure, the climate,

the ability and competency of leaders, the training mode, the commitment and support of organization, socialization strategy, motivation of employees, and the structure of the organization. At the same time, many of the authors discussed enablers based KM practice in manufacturing industry.

The KM enablers identified and selected for this study were sparingly used in Indian manufacturing industry context. Further, the Five enablers namely, Employees' motivation, Learning Attitude and Behavior, socialization, Information Technology and Knowledge Management Audit have been proposed as KM enablers by few authors (Refer table 1.) but not yet conducted in depth study in Indian as well as abroad. It is felt that these gaps could be suitably filled up by this study. In the circumstances stated, the following objectives have been framed for this study. The first one is to study the association between control variables and the KM enablers. The second objective is to evaluate the power of influence of KM Enablers in achieving organizational performance.

Table 1. KM Enablers

Enablers	Authors
Employees' Motivation (EM)	Santosus and Surmacz, (2002); Kumar et al. (2014)
Learning Attitude and Behaviour (LAB)	Colquitt et al., (2000).
Socialization (SN)	Stoner et al., (2004)
Information Technology (IT)	Wilson, (2010); Migdadi, (2009); Ngoc, (2005); Song et al., (2001); Davenport and Prusak, (1998)
Knowledge Management Audit (KMA)	Dante G.P, (2008); Chong (2005); Choy et al., (2004); Hylton (2002)

▪ **Organizational Performance**

KM is a significant factor for organization to make sound decisions about how and when to come up with new knowledge and utilize it in its activities (Frey, 2001) and deals with any international set of practices and processes designed to optimize the use of knowledge, in other wards to increase allocative efficiency in the area of knowledge production, distribution and use" (Young, 2013), increases flexibility, output and effectiveness (Wang et al., 2012) significant resource for gaining competitive advantage and excellence performance (Spender, 1996; Grant, 1996; Gold and Malhotra, 2001). KM enhances profitability of an organization (Tsai, et al., 2012), enables organizations to be proactive (Yusuf et al, 1999), help improve quality (Mukherjee, et al., 1998), improves performance (O'Dell and Grayson, 1998), enables innovation (Nonaka and Takeuchi, 1995) and optimize production processes (Maria et al., 2008). Accordingly, the role played by knowledge management through operations and practice achieve great results in the regulatory area as being the factors which enrich and enhance productivity (Shannak et al., 2012).

III. RESEARCH METHODS

This being a case study, a case of automobile manufacturing industries in Tamilnadu, India were identified and considered. This study employed survey data collected in the case industry. The leaders (Senior Managers, Middle Managers, Junior Managers and Supervisors) in the industry were considered as sample for collection of data. 150 numbers of leaders were identified and to whom the questionnaire was distributed. Only 56 fully qualified responses were received with the response rate of 37.90 percent which is more than for this study.

3.1 Measures

The instrument includes five enablers and each enabler consists of 10 statements. Therefore, the respondents were asked to give their responses for the 50 statements under five enablers of KM and 9 statements under Organizational Performance. Five point Likert scales was prescribed for the responses. The scale '5' indicates the higher degree of their perception and '1' indicates the lowest. Scale '3' stands as intermediary between highest and the lowest scales. The questionnaire was constructed by including the five enablers, and the statements under each enabler were drawn from review of various studies conducted by several authors. The questionnaire was subjected to standardization procedure by evolving various types of validities as prescribed. For which a pilot study was conducted with a nearby automobile manufacturing industry with the responses received from 25 leaders and the responses were transformed to data.

3.1 Validation of Questionnaire

Reliability is the degree to which the observed variable measures the "true" value and is "error free", even if the measure is repeated (Hair et al., 2017). Internal consistency analysis was performed on the variables

under each dimension, in order to measure the reliability by calculating Cronbach's alpha co-efficient. The calculated alpha coefficients of the five dimensions were in the range of 0.769 – 0.908 which is within prescribed parameter that is to be greater than 0.7 (Hair et al., 2017). Hence the instrument was considered reliable to be administered for collecting data. The content validity was confirmed by inviting suggestions from senior subject experts and executives having more than 10 years of experience regarding the variables (statements) and their suggestions were incorporated.

The Principle Component factor analysis was performed on the variables under the dimensions using SPSS package version 16 in order to test the construct validity. The Eigen values should be greater than 1for each components. The variance is a value that represents the total amount of dispersion of values for a single variable about its mean. This variance explains how much of a variables' variance is shared with other variables in that factor (Hair et al., 2017). It was observed that one component was extracted against three constructs namely, SN, KMA and OP its Eigen values are greater than 1. The percentage of variance with regard to those three factors explains that 55.16 percent of dimension SN, 62.43 of KMA and 61.92 of Organizational Performance (OP) shared with other variables of the dimensions. More than 1 components were extracted from the remaining three dimensions namely EM, LAB and IT, and the Eigen values of those three components were found to be more than 1. The percentage of variance of those three dimensions explained that 54.23 percent of IT, 60.08 percent of LAB and 61.32 percent of EM shared with the variables of the dimensions shown in Table.2. The 50 percent of variance can be considered for the study (Hair et al., 2017) and hence the unidimensionality of all the dimensions could be confirmed. Further KMO values of all the dimensions were found to be in the range of 0.862 - 0.923 and those were more than 0.5 and hence construct validity of the instrument also confirmed. Since the alpha values were within the threshold of values that is above 0.7 (Nunnally, 1978), the reliability of the instrument was also confirmed.

Table 2. Summary of Factor Analysis and Reliability Test (*a*)

Sl. No.	Enablers	Statements	No.of Components Extracted	Loadings	Eigen Value	% of Variance explained	KMO	Cronbach Alpha
1	EM	10	2	0.582-0.823 0.596-0.875	4.733 1.899	61.32	0.863	0.769
2	LAB	10	2	0.642-0.798 0.693-0.806	4.845 1.532	60.08	0.862	0.892
3	SN	10	1	0.632-0.842	5.003	59.16	0.871	0.803
4	IT	10	2	0.643-825 0.596-794	4.424	58.98	0.813	0.872
5	KMA	10	2	0.673-0.892 0.625-0.798	5.932	58.78	0.846	0.884
6	OP	09	1	0.711-0.883	6.035	61.92	0.923	0.908

The data obtained from the perceptions of the four groups of leaders were fitted to One Way ANOVA test and the result has been presented in Table 3. According to the values of 'F' ratio, all the six dimensions were found to be statistically significant and hence have close association with KM in influencing towards organizational performance.

Table 3. Association of Dimensions with KM as Perceived by Four Groups of Leaders

Enablers	N=56	Degree of freedom	Mean squares	F-ratio	Significance
EM	BG=3 WG=53 TOTAL=56	3 53 56	0.902 0.134	6.840[*]	0.000
LAB	BG=3 WG=53 TOTAL=56	3 53 56	1.872 0.190	9.706[*]	0.000
SN	BG=3 WG=53 TOTAL=56	3 53 56	6.344 0.273	23.162[*]	0.000
IT	BG=3 WG=53 TOTAL=56	3 53 56	1.547 0.181	8.457[*]	0.000
KMA	BG=3 WG=53 TOTAL=56	3 53 56	5.574 0.178	31.126[*]	0.000
OP	BG=3 WG=53 TOTAL=56	3 53 56	5.612 0.220	25.337[*]	0.000

Note:*Significant at 5 percent level in two tailed test

Estimation of the influencing power of the five KM enablers were done using regression model. The five KM enablers/Dimensions were taken as independent variable and the organizational performance was taken as dependent variable. It is ascertained from the above Table 4 the value of multiple regression coefficients R between the independent variables and the dependent variable was 0.417. The R^2 for the model was 0.173, thus showing that about 24.30 % of the variability in the outcome is accounted for by the predictors (independent variables). The adjusted R^2 for the model is 0.157. It can be seen that the difference between the values of R^2 and adjusted R^2 (0.173-0.156 = 0.17 or 17.0%) is not very high. This implies that if the model was derived from the population instead of the sample, it would have accounted for approximately 17.0 % or less variance in the outcome. The f statistic obtained is 10.34006 (p value = 0.000), thus indicating that the independent variables have a significant influence on the dependent variable at 5% level of significance., and that the model is effective. The significant estimated potentiality of the dimensions to contribute towards organizational performance as, Employee Motivation - EM (42.18%), Learning Attitude and Behaviour LAB - (30.76%), Socialization – SN (26.41%),   and Information Technology-IT (36.04%) and Knowledge Management Audit-KMA (36.04).

Table 4. Estimated Regression Result Showing Potentiality of KM Enablers towards Organizational Performance
(Dependent Variable: Organizational Performance & Predictor Variable: Five dimensions)

Enablers of KM	Un-standardized Coefficients		Standardized Coefficients	't' value	Significance
	B	Std.Error	Beta		
(Constant)	3.582510	0432410		8.285*	0.0000
EM	-0.421820	0.121681	-0.388421	-4.042*	0.0001
LAB	0307650	0.120352	0.240371	2.722*	0.0067
SN	0.264175	0.117918	0.239688	2.325*	0.0205
IT	-0.360432	0.093918	-0.267215	-3.982*	0.0001
KMA	-0.360432	0.093918	-0.267215	-3.982*	0.0001
R^2	0.173				
Adjusted R^2	0.156				
R	0.417				
F Value	10.34006*				0.0000

* Significant at 0.05 level

IV.   DISCUSSION AND CONCLUSION

The survey instrument was developed and incorporated five KM enablers (EM, LAB, SN, IT, KMA) with achievement factor organizational performance (OP). The five enablers were taken as predictors and the organizational performance was taken as dependent one. All the validity conditions were satisfied and hence the instrument was standardized to collect data on KM implementation. It was ascertained that the five dimensions have very close and significant relationship with KM implementation to influence performance of the automobile manufacturing industry. The regression analysis clearly showed that the five dimensions namely, EM, LAB, SN, IT, KMA have significant power of contribution to achieve organizational performance.

Several authors have underlined the importance of the above five KM enablers; however studies on empirical confirmation of the importance and its contribution have not yet been brought out in Indian manufacturing environment. The KM enablers, EM, SN, LAB and KMA have been considered as sub-enabler by few authors in their earlier studies. Further, the KM enablers; EM, SN, LAB, and KMA were also not given much important in international studies in manufacturing industry. Cong and Pandya (2003) have suggested reward system (incentive) to develop KM leaders. Hence, 'Employee Motivation' was considered as an important KM enabler in this study [(Kumar, et al., (2014): Husinki, et.al, (2017); Tikakul Thanee (2018)]. However, Susanty, et al., (2018), had different findings that rewards would not pay more to performance. Though, Socialization was not talked extensively, however, Nonaka and Takeuchi (1995) have underlined the importance of the enabler that it helps organization to utilize the knowledge in three ways; tacit to tacit, tacit to explicit and explicit to tacit. Studies on empirical validation of this enabler are not available. Colquitt et al., (2000) have viewed that the enabler LAB playing a role between training process and the individuals in motivating the learning process. However, this study confirms the thought of the authors through empirical validation. The significant importance of 'Information Technology' in KM practice was felt in this study and

could be confirmed with the earlier studies (Ndiege, 2019; Susanty et al., 2018). Several authors like Hilton (2002), Choi et al.,(2004), Chong (2005)and Dante, (2008) have considered the 'Knowledge Management Audit' as an important KM Enabler which helps KM Practice. The authors of this study took up this gap and confirmed the contribution of the above five KM enablers in influencing performance of manufacturing industry. The results of this empirical analysis clearly showed its significant relations and power of influence with KM implementation. Further the authors conclude that all the five KM enablers are important and enhancing the performance of automobile manufacturing industry. A research work like this may further be extended incorporating some more KM enablers which are in practice in Indian manufacturing industry.

4.1 Limitations and Scope for further research
This work is subjected to few limitations. The area of the study is limited to state of Tamil Nadu, India due to operational constraints. The wider coverage of respondents helped the researcher to get variety of results. This study is confined to the Leaders i.e., Senior Managers, Middle Managers, Junior Managers and Supervisors of manufacturing organizations. This study is mainly based on primary data obtained from the perceptions of the above said Leaders. Therefore, there is possibility of bias in the perception due to various organizational and other social reasons.

There is an ample scope to extend the research further. A comparative study can be conducted between private and government manufacturing organizations using KM enablers in KMP. A comparative study can be conducted between various sectors of organizations. Cross-national studies on the KMP in various sectors of organizations can be conducted.

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