

Codification Strategy for Innovation in Globalised SMEs

Prof. T. Sreenivas
Chairman, Board of Studies (PG)
Department of Business Management
Yogivemana University, Kadapa

Abstract

Knowledge is critical for business growth and business survival. Knowledge management (KM) has become an important business strategy in an era of accelerated globalization and digitalization of SME's (Small & Medium Scale Enterprises) for delivering products and services. The role of Knowledge Management Strategy wants to improve knowledge sharing and innovation capabilities in organizations. However, many SME's are encountering ambiguity and uncertainty of adopting and implementing Knowledge Management strategy. There is a general consensus in business practices and academia on the fact that SMEs are falling behind large companies in developing Knowledge Management strategies and benefits of Knowledge Management have not been fully exploited by these firms. With SME organizations, the implementation of the right knowledge management strategy is just as critical as it is with larger organizations. So this paper highlights to investigate the key Knowledge management (KM) strategies requires for SME's. Using Factor Analysis & Multiple regression, this paper finds critical factors where SME's are emphasizing on Personalisation strategy ie; Communities of Practice, On the Job Training and Learning by doing for Innovation. However, the SME's are not focusing on Codification strategy ie. Formal learning. Therefore SME's has to adopt and leverage both Knowledge management Strategies ie. Personalisation strategy & Codification strategy to have a sustainable competitive advantage.

Keywords : SME's, Knowledge Management Strategy, Factor Analysis, Multiple regression, Competitive advantage

Introduction

The prevalence of SME's in both developing, developed countries and under developed countries where they represent more than 50% of enterprises and generate over half of private sector employment. In developing countries the presence of SME's are critically important as their private economy is almost entirely comprised of them. SME's actually go about creating and sharing knowledge which has established how there are two prominent approaches to managing knowledge. The two approaches are the codification and personalization strategy (Hansen et al, 1999).

Knowledge is the only sustainable source of competitive advantage (Davenport & Prusak, 2000; Nonaka, 1994). The small business industry, by its very nature, normally has a high degree of informal sharing of tacit knowledge. Many people contribute and have expertise in more than one functional area, and there is a tendency for employees to be multi-disciplined simply to make the business succeed. In cases where knowledge is not openly shared in the enterprise, that becomes one of the primary objectives of a knowledge management strategy, David (2006). SMEs appear to have a more mechanistic view and a limited vocabulary of knowledge, less systematic approaches for embodying and sharing knowledge and their perceived benefits. Moreover, in the hospitality industry where the expectations of clients change rapidly and a competition on Knowledge management can be a powerful tool for the SMEs. Wong and Aspinwall (2005) carried a study on characterizing knowledge management in small business environment and observed that knowledge, if properly harnessed and leveraged can propel organizations to become more adaptive, innovative, intelligent and sustainable. It can increase productivity, effectiveness and efficiency in operations. Any knowledge management initiative must be oriented towards communications, information sharing and value creation. David (2006) carried out a study on knowledge management, a tool for SME's to enhance competitiveness and found out that knowledge is at the heart of any business and that it can be a powerful tool for SME's competitiveness. It can increase productivity, effectiveness and efficiency in operations.. Knowledge is a very strategic tool for contemporary organizations and the ability to use this tool determines the limits of organizations' life span. It is not enough to have the knowledge of strategic characteristic to be successful because this valuable asset at hand should be somehow managed and this is only possible through knowledge management approach. Knowledge management framework is therefore based on the premise that the focus should be placed on the way knowledge is used to build the critical capabilities so as to succeed. These capabilities include the processes and activities that enable any business to compete. According to Nonaka and Takeuchi (1995), competitive advantage is founded in the ability of companies to create new forms of knowledge and translate this knowledge into innovative action. They further affirm that the sure source of lasting competitive advantage is knowledge. Therefore, knowledge creation and use are critical if firms are to gain competitiveness (Susan et al, 2003). However, firms must come up with Knowledge Management strategies that identify the key needs and issues within the organization and provide a framework for addressing these.

Literature review

Hansen et al(1999) identified two knowledge management strategies for managing knowledge in an organization ie: codification and personalization strategies. The type of knowledge management strategy used by organizations needs to best accommodate the way individuals create and transfer knowledge(Crossan et al, 1999; Roth,2003).The types of relationships or ties between individuals in the organizations, when creating and sharing knowledge, influences the types of knowledge management strategy used(Hansen et al,1999).

Davenport and Prusak(2000) highlighted the KM strategies into two types . First as Personalisation strategy and the other is Codification strategy . Personalisation strategy involves “Communities of practices” , where knowledge is created and shared informally, “On the Job training”, involves how knowledge is created and transferred with employees and “learning-by-doing” highlights learning creates knowledge on a tacit level through the internalization process.

On the other hand codification strategy which highlights the formal and explicit means of knowledge creation and transfer.Through “Formal learning”, highlights about internet, e-mail and others for employees to share knowledge.

According to Choi (2014) identified that good innovations are services or products which meet industry needs. Woodman et al., (1993) highlighted an important intermediate outcome is organizational creativity, which provides a key to the understanding of organizational effectiveness and survival.

Need for the study

The type of knowledge management strategy that should be implemented is very much dependant on the structure and makeup of the company concerned.SME’s cannot give equal emphasis to both KM strategies(Personalisation & Codification strategy), and should focus on one strategy with the other playing a supportive role(Hansen et al,1999).SME’s had implemented a single generalized strategy that was very much misplaced. However large companies are linking the two strategies together .So, there is a lack of empirical research that shows the implications of SME organizations implementation of which Knowledge Management strategy will work.

Objectives of the study

To identify the Knowledge management strategies in SME’s

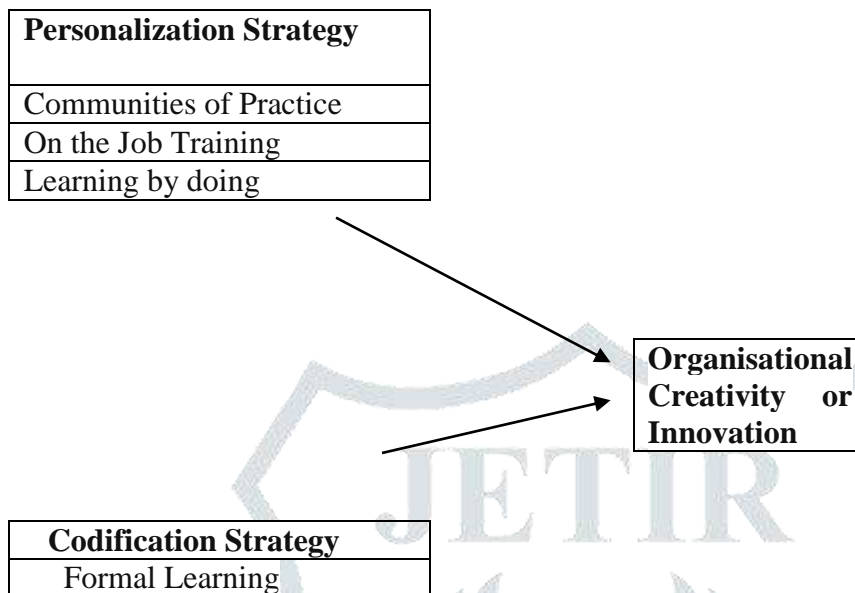
To analyze the choice of right strategy for SMEs is critical.

Research Questions

1. What is the effect of Personalisation strategy on Organisational Creativity?
2. What is the effect of Codification strategy on Organisational Creativity?

Research Model

Fig 1 : Influence of KM Strategy on Innovation



The above Fig 1 depicts that KM strategies ie; Personalisation & Codification strategies are independent variables, where as Organisational creativity or Innovation as dependent variable.

Research Methodology

Research Design

In this study, cross-sectional survey research design was used. The design was chosen because it was an efficient method of collecting data regarding characteristic of a sample of a population, current practices, conditions or needs.

Target Population

The population consisted of thirty nine (53) SME's in the Textile Industry. A census was conducted on all the 53 small and medium-sized businesses within Guntur town Municipality. A census was used because each business was unique in terms of the adoption and implementation of the knowledge management strategies depending on their specific goals, top management decisions and the surrounding environment and each individual business analysis was important in arriving at the overall research conclusion.

Data Analysis

The data was collected using the structured questionnaire. The questionnaire was administered to the relevant senior managers in each of the targeted business. Data collected on various firms was analyzed quantitatively. Data was analyzed using statistical package for social sciences (SPSS). Descriptive statistics was used to

describe the respondents profile, Factor analysis technique was used to identify the critical knowledge management strategies and Multiple regression analysis technique was used which knowledge management strategy is creating innovation or organizational creativity.

Table 1 : Demographic Profile of the respondents

Demographic Criteria	Items	Percent	Frequency of Respondents
Manager's Age	Upto 25 Years	10.60%	6
	26-40 Years	36.10%	19
	41-55 Years	53.30%	28
Gender	Male	62.1%	33
	Female	37.9%	20
Manager's Experience	1-5 Years	39.40%	21
	6-10 Years	33.20%	18
	>10 Years	27.40%	14
No of Subordinates directly report to Manager	1-10	62.6%	33
	11-20	37.40%	20
Working Position	Line Manager	73.4%	39
	Junior Manager	26.6%	14
Manager's Highest level of Education	S.S.C.	4.4%	2
	ITI	32.8%	18
	Diploma	36.2%	19
	Intermediate	6.1%	3
	Bachelor	11.2%	6
	Degree	9.3%	5

Table 2 : Descriptive Statistics

Items	Mean	Std. Deviation	Analysis N
Our Company uses informal knowledge creation within the organizational workforce (COP1)	3.28	1.277	53
In our company, the co-workers have complimentary knowledge will form groups and share common work practices, interests or aims (COP2)	3.42	.989	53
In our company, the groups formation were intentional(COP3)	3.40	.793	53
In our company, the value of talk with constant chatting and deliberations to conduct tasks, solve problems and discuss various product usages etc.(COP4)	3.45	1.170	53
In our company, the majority of the learning and knowledge creation identified through the use of formal means and methods(FML1)	3.40	.716	53
In our company we use the IT tools for knowledge creation(FML2)	3.40	.599	53
In our company, employees intentionally share ideas to solve problems and new initiatives that affect everyone within the organization(FML3)	3.40	.716	53
In our company, there is an open forum, to share ideas, network and meet new employees within the industry(FML4)	3.36	.736	53
Our company uses on-the job training for knowledge creation and transfer with co-workers(OJT1)	3.57	.866	53
In our company the on the job training will be initiated with workers at the start of and throughout the course of their employment, with a minimal amount of official and explicitly formal directives(OJT2)	3.72	.690	53
In our company, the training is a contionus process(OJT3)	3.55	.798	53
In our company, the informal training covers all functional aspects of the roles and positions within the workforce(OJT4)	3.55	.822	53
In our company the employees will learn mostly through the actual performing and repetition of the task(LBD1)	3.42	.969	53
In our company the constant repetition of tasks that allow for others to adequately perform tasks more quickly and confidently(LBD2)	3.43	.971	53
In our company the employee believes that learning creates knowledge on a tacit level through the internalization process(LBD3)	3.53	1.067	53
In our company, the employees will store the knowledgethat was newly created (LBD4)	3.40	0.9	53

The above **Table 2** indicates the Descriptive statistics of Communities of Practice, Formal learning, On the Job training and Learning by Doing. The above table shows means of Communities of Practice means ranges from 3.28-3.45, Formal learning varies from 3.36-3.40, On the Job training ranges from 3.55-3.57, Learning by Doing ranges from 3.40-3.53.

Table 3 : Correlation Matrix^a

	COP1	COP2	COP3	COP4	FML1	FML2	FML3	FML4	OJT1	OJT2	OJT3	OJT4	LBD1	LBD2	LBD3	LBD4
COP1	1.000	.819	.666	.672	.001	-.175	-.167	-.151	-.339	.071	-.136	-.205	-.143	-.210	-.084	.133
COP2	.819	1.000	.743	.632	.008	-.121	-.182	-.103	-.257	.091	-.074	-.143	-.344	-.271	-.266	-.033
COP3	.666	.743	1.000	.715	-.248	-.175	-.316	-.413	-.333	-.143	-.228	-.398	-.318	-.228	-.161	.063
COP4	.672	.632	.715	1.000	-.241	-.179	-.195	-.304	-.391	-.100	-.126	-.243	-.254	-.210	-.149	-.088
FML1	.001	.008	-.248	-.241	1.000	.299	.400	.601	.189	.153	.286	.180	.119	.107	-.028	-.008
FML2	-.175	-.121	-.175	-.179	.299	1.000	.344	.413	.115	-.049	-.100	.098	-.057	-.136	-.153	-.198
FML3	-.167	-.182	-.316	-.195	.400	.344	1.000	.418	.035	-.119	-.017	.115	.146	.163	-.254	-.035
FML4	-.151	-.103	-.413	-.304	.601	.413	.418	1.000	.430	.204	.314	.305	.003	.020	-.148	-.064
OJT1	-.339	-.257	-.333	-.391	.189	.115	.035	.430	1.000	.498	.628	.664	.013	.182	.066	.111
OJT2	.071	.091	-.143	-.100	.153	-.049	-.119	.204	.498	1.000	.426	.583	.064	-.014	.076	.107
OJT3	-.136	-.074	-.228	-.126	.286	-.100	-.017	.314	.628	.426	1.000	.473	.297	.209	.196	.082
OJT4	-.205	-.143	-.398	-.243	.180	.098	.115	.305	.664	.583	.473	1.000	.096	.130	-.007	.126
LBD1	-.143	-.344	-.318	-.254	.119	-.057	.146	.003	.013	.064	.297	.096	1.000	.561	.583	.489
LBD2	-.210	-.271	-.228	-.210	.107	-.136	.163	.020	.182	-.014	.209	.130	.561	1.000	.665	.655
LBD3	-.084	-.266	-.161	-.149	-.028	-.153	-.254	-.148	.066	.076	.196	-.007	.583	.665	1.000	.666
LBD4	.133	-.033	.063	-.088	-.008	-.198	-.035	-.064	.111	.107	.082	.126	.489	.655	.666	1.000

The above **Table 3** highlights the correlation matrix. The values are are >0.2 , therefore the statements of Communities of Practice(COP1-COP4) which highlights the correlations between 0.6-0.9. Formal Learning(FML1-FML4) highlights the correlations between 0.2-0.7. On the Job Training(OJT1-OJT4) highlights the correlations between 0.2-0.7. Learning by Doing(LBD1-LBD4) highlights the correlations between 0.5-0.7. since all the correlations values are positive, therefore we can accept all correlational values.

Table 4 : KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.611
Bartlett's Test of Sphericity	Approx. Chi-Square
	480.185
	Df
	120
	Sig.
	.000

The above Table 4 indicates KMO measure of sampling adequacy >0.6 which indicates that sufficient enough to proceed for Factor analysis.

Table 5 : Communalities

	Initial	Extraction
COP1	1.000	.855
COP2	1.000	.874
COP3	1.000	.798
COP4	1.000	.694
FML1	1.000	.674
FML2	1.000	.455
FML3	1.000	.627
FML4	1.000	.731
OJT1	1.000	.767
OJT2	1.000	.663
OJT3	1.000	.614
OJT4	1.000	.682
LBD1	1.000	.650
LBD2	1.000	.756
LBD3	1.000	.781
LBD4	1.000	.741

Extraction Method: Principal Component Analysis.

The above Table 5 indicates the importance of communalities among variables. Communalities for Communities of practice ranges from 0.694-0.855, Formal learning ranges from 0.455-0.731, On the Job Training ranges from 0.614-0.767 and Learning by Doing ranges from 0.650-0.781.

Table 6 : Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.521	28.258	28.258	4.521	28.258	28.258	3.267	20.418	20.418
2	2.839	17.744	46.002	2.839	17.744	46.002	2.905	18.156	38.575
3	2.312	14.452	60.454	2.312	14.452	60.454	2.831	17.697	56.271
4	1.689	10.554	71.009	1.689	10.554	71.009	2.358	14.738	71.009
5	.788	4.925	75.934						
6	.739	4.620	80.553						
7	.653	4.084	84.637						
8	.615	3.845	88.483						
9	.371	2.317	90.799						
10	.370	2.314	93.113						
11	.320	2.001	95.115						
12	.241	1.507	96.622						
13	.206	1.287	97.909						
14	.164	1.024	98.933						
15	.109	.683	99.616						
16	.061	.384	100.000						

Extraction Method: Principal Component Analysis.

The above Table 6 indicates the importance of Total variance explained above 71% explained by the four factors. Factor 1, "Communities of Practice" explains 20.418% of variance, Factor 2 " Learning by Doing" explains 18.156% of variance, Factor 3 "On the Job training" explains 17.697% of variance, Factor 4 "Formal learning", explains 14.738% of variance.

Table 7 : Scree Plot



The above Table 7 indicates that Scree plot which highlights the four factors according to the elbow rule.

Table 8 : Rotated Component Matrix^a

	Component			
	1	2	3	4
COP1	.922			
COP2	.917			
COP3	.811			
COP4	.778			
LBD2		.848		
LBD3		.845		
LBD4		.842		
LBD1		.772		
OJT1			.820	
OJT2			.807	
OJT4			.796	
OJT3			.749	
FML1				.780
FML3				.761
FML4				.757
FML2				.616

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations

The above Table 8 indicates all the factors ranges between 0.616-0.922, the Communities of Practice (COP1,COP2,COP3,COP4) ranges from 0.922-0.778, Learning by Doing(LBD2,LBD3,LBD4,LBD1) ranges from 0.848-0.772, On the Job Training (OJT1,OJT2,OJT4,OJT3) ranges from 0.820-0.749, Formal learning (FML1,FML3,FML4,FML2) ranges from 0.780-0.616.

Dependent variable : Organisational creativity or Innovation

Table 9 : Descriptive Statistics

	Mean	Std. Deviation	Analysis N
OC1	3.42	.770	53
OC2	3.53	.723	53
OC3	3.57	.694	53
OC4	3.51	.669	53

The above Table 9 indicates the Descriptive statistics of dependent variable.

Table 10 : Correlation Matrix^a

Correlation	OC1	OC2	OC3	OC4
OC1	1.000	.496	.523	.403
OC2	.496	1.000	.504	.387
OC3	.523	.504	1.000	.279
OC4	.403	.387	.279	1.000

The above Table 10 indicates the importance of Correlation Matrix among variables between 0.2 -0.6.

Table 11 : Communalities

	Initial	Extraction
OC1	1.000	.657
OC2	1.000	.635
OC3	1.000	.593
OC4	1.000	.422

Extraction Method: Principal Component Analysis.

The above Table 11 indicates communalities among the various components .

Multiple Regression Analysis :**Table 12.1 : R Square value**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.528	.279	.219	.88362097

- a. Predictors: Communities of Practice, Learning by Doing, On the Job training as the independent variables
 b. Formal learning will be treated as dependent variable.

Table 12.2 ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	14.522	4	3.631	4.650	.003
Residual	37.478	48	.781		
Total	52.000	52			

- a. Predictors: Communities of Practice, Learning by Doing, On the Job training as the independent variables
 b. Formal learning will be treated as dependent variable.

Table 12.3 : Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1.903E-16	.121		.000	1.000		
COP	.364	.123	.364	2.971	.005	1.000	1.000
OJT	.285	.123	.285	2.328	.024	1.000	1.000
LBD	.250	.123	.250	2.044	.046	1.000	1.000
FML	.051	.123	.051	.417	.678	1.000	1.000

The above Table 12.1 indicates the R square of 27.9% which explains the variance among the factors of Communities of Practice(COP), On the Job training(OJT), Learning by Doing(LBD) and Formal learning(FML). Since the significance in the ANOVA Table 12.2, where ($p < 0.05$) at 95% confidence level we can accept the model. The above Table 12.3 indicates that Communities of Practice (COP) was directly support to the Organisational Creativity (OC) at a significance of ($p < 0.05$), On the Job Training (OJT) was significant at ($p < 0.05$) and Learning by Doing(LBD) ($p < 0.05$) is significant. **Finally Formal Learning was not significant since ($p > 0.1$) .**

Findings

Personalization strategy refers to personal development of tacit knowledge that is based on insights, intuition and personal skills for solving complex problems. In personalization strategy, knowledge is mainly shared through direct person-to-person contacts. The stress of personalization strategy is on flexibility, investment in learning and the creation of new capabilities. The codification strategy intent to codify knowledge and its goal is transforming tacit knowledge to explicit knowledge. This strategy transforms knowledge to formal format that can be stored in database to be accessible and useable for everyone in company. Such companies invest heavily in IT for projects like intranets, data warehousing and data mining, knowledge mapping (identifying where the knowledge is located in the firm) and electronic libraries.

Therefore the Textile SMEs are supporting personalisational strategy ie : Communities of Practice, On the Job training and Learning by Doing, Codification strategy was ignored. If SME's focuses on how implementing the wrong strategy(only personalization strategy) can result in wasted efforts, underutilization of organizational resources, the loss of potential gains in performance and ultimately the missed opportunity for a realized and sustainable source of competitive advantage.

Suggestions

In an SME While adopting a KM strategy, the KM strategy needs to fit with the make-up of the business, such as the way the employees interact, how customer relationships are formed, how IT intensive the organization is in terms of information/data(codified knowledge)storage and access requirements.

Codification is closely related to exploitative learning. Exploitative learning tends to refine existing capabilities and technologies, forcing through standardization and reutilization, and is risk-averse. Personalisation highlights about Explorative learning is associated with complex search, basic research, innovation, risk-taking and more relaxed controls.

Therefore SME's need Both KM strategies ie ; Personalisation & Codification Strategy for sustainable competitive advantage.

Conclusion

The choice of the right strategy for SME's is critical. Where social ties are weak and there is little social interaction between individuals, technology is the most utilized form of information creation and transfer and ultimately the use of codification strategy would be the most appropriate. In SME's due to Financial constraints they will not invest in IT related platforms ie ; Codification strategy. But for long run survival of SME's the companies has to adopt both Personalisation & Codification strategy which creates innovation among the products and services.

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Questionnaire:

1 Personalization Strategy: Independent Variable

a) Communities of practice (COP)

COP1: Our Company uses informal knowledge creation within the organizational workforce.

COP2: In our company, the co-workers have complimentary knowledge will form groups and share common work practices, interests or aims

COP3: In our company, the groups formation were intentional

COP4: In our company, the value of talk with constant chatting and deliberations to conduct tasks, solve problems and discuss various product usages etc.

b) On – the job training

OJT1: Our company uses on-the job training for knowledge creation and transfer with co-workers.

OJT2: In our company the on the job training will be initiated with workers at the start of and throughout the course of their employment, with a minimal amount of official and explicitly formal directives.

OJT3: In our company, the training is a continuous process.

OJT4: In our company, the informal training covers all functional aspects of the roles and positions within the workforce.

c) Learning by doing:

LBD1: In our company the employees will learn mostly through the actual performing and repetition of the task.

LBD2: In our company the constant repetition of tasks that allow for others to adequately perform tasks more quickly and confidently.

LBD3: In our company the employee believes that learning creates knowledge on a tacit level through the internalization process,

LBD4: In our company, the employees will store the knowledge that was newly created.

2) Codification strategy : Independent Variable

a) Formal learning:

FL1: In our company, the majority of the learning and knowledge creation identified through the use of formal means and methods.

FL2: In our company we use the IT tools for knowledge creation.

FL3: In our company, employees intentionally share ideas to solve problems and new initiatives that affect everyone within the organization.

FL4: In our company, there is an open forum, to share ideas, network and meet new employees within the industry.

Organizational creativity or Innovation : Dependent Variable

OC1: Compared with key competitors, our company has a greater market share

OC2: Compared with key competitors, our company is growing faster

OC3: Compared with key competitors, our company is more profitable

OC4: Compared with key competitors, our company is more innovative