KNOWLEDGE MANAGEMENT AS A TURNAROUND FACTOR FOR ORGANISATIONAL LEARNING AND EMPLOYEE SATISFACTION
AN EMPIRICAL STUDY IN PHARMACEUTICAL SECTOR

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*T**HE** Rationale of this study was to provide empirical evidence regarding the role of Knowledge Management (KM) within firms. The sample included 80 respondents including Knowledge Workers, Project Managers, Team Members, Consultants, Researchers and Designers randomly drawn from Indian industry, using a detailed questionnaire survey. Hence, this study diagnoses Organisational Learning (OL) perception in Knowledge Management implementing organisations and establishing the link between Organisational Learning and KM and also finding its effects on Employee Satisfaction. Statistical analytical tools like F-test, t-test, ANOVA, coefficient of correlation, multiple regressions and other descriptive statistics scores have been used for presenting the data.*

Key Words: Knowledge Management, Organisational Learning, and Employee Satisfaction

Introduction

The transformation of organisations into knowledge intensive and knowledge-aware organisations takes place at an ever-increasing pace. The critical resource that determines competitive advantage in today's economy is knowledge. Consequently, the same kinds of tools and strategies that companies once devoted to optimizing the use of natural resources, capital and labour in the old industrial economy now must be applied to maximizing the productivity of their knowledge assets. Knowledge management refers to the collection of management practices and associated enabling technologies.

With the emergence of the *knowledge era*, it has become widely recognised that the *intangible* assets of an enterprise will be key to both its ability to create competitive advantage, and to grow at an accelerated pace. As a result, more and more organisations are showing increased attention to the creation of value through leveraging knowledge.

Economies are now moving towards a new business age where information and knowledge are to become the most important resources in organisations, leading to sustained competitive advantage (Moody and Shanks, 1999).

At the beginning of the 2000s, KM has emerged as a unifying corporate goal. Today, the intention is to create enterprise integration through a knowledge sharing culture, to recognise the value of something that is called 'Intellectual Capital' and to understand that competition depends not on the differential possession of knowledge assets, or of information, but on the ability to deploy and exploit knowledge.

Many information technology firms, business consulting majors, R&D organisations, hi-tech companies, universities, higher education institutes and transnational corporations have already recognised the

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need to manage their knowledge base effectively. Microsoft, IBM, Oracle, Xerox, Dupont, 3M, GM, Sony, GE and many other companies are well on their way to become knowledge-intensive organisations.

However, it should be clearly understood that knowledge management has to be enabled by Information Technology (IT) rather than driven by it. An IT-oriented approach to knowledge management merely offers a combination of algorithms, structures, tools and techniques. This approach misses the woods for trees. After all, organisations do not learn, only their people learn. Relevant knowledge often rests with the creative and intellectual elite of an organisation that habitually has disgust for documenting their knowledge. Therefore, the approach towards knowledge management should be more holistic and people-focused, and the behavioural dimension should not be lost sight of. Picket (2004) emphatically says while technology brings some true advances it is still just a facilitator and we need to move from the technology and information revolutions to a people revolution. Significant changes are needed in the workplace and the knowledge manager has to play a role in that. **Therefore, companies must look at people-driven knowledge management for creating value.**

Knowledge Management

Knowledge management is hard to define precisely and simply because there are multiple interpretations.

Knowledge Management is the ability to recognize and mange the system of core competencies required for knowledge- intensive businesses. It requires a well-defined framework that relates investment in expertise or internal competencies to corporate performance. This includes making explicit the relationships and interactions between all business enablers so that people can perform their jobs effectively. Knowledge such as expertise, creative ideas and skills is treated as a resource that can be captured, codified and shared (Nonaka and Takeuchi, 1995; Boisot, 1983). A key element is creating, sharing and reusing internal capabilities to maximise business opportunities or not meeting key business objectives such as stakeholder expectations.

Studies in KM

Pharmaceutical companies, like **Merck, Glaxo Wellcome, and Hoffmann-LaRoche,** are increasingly becoming aware of the potential value of KM within their organisations.

Davenport and Prusak (2000) trace the development of knowledge management and link it to business strategy, work processes, culture, and behaviour. Importantly, the authors demonstrate the move away from technology-driven solutions in knowledge management towards the focus on human interaction within organisations to stimulate knowledge flow.

Douglas (2002): Knowledge Manager integrates both connect and collect for effective knowledge process, i.e. (i) reinforce natural instincts to build trust and a culture of knowledge sharing; (ii) provide appropriate technology-enhanced collaboration tools; (iii) provide intuitive repositories for accumulating mission critical knowledge (iv) enrich the technology with managerial practice and business process.

Organisational Learning

We define OL as "the process by which an organisation acquires, retains and uses inputs for its development, and the process results in an enhanced capacity for continued self- learning and self-renewal."

It is widely accepted that firms, which consciously invest in the creation of new knowledge through research and development activities or through more informal learning processes tend to do better than those who ride on the cocktails of knowledge created by others (Boisot, 1998). This highlights the importance of creation of new knowledge as a critical component of an organisation's ability to learn and adapt.

Studies in OL

In western literature, a recent study has been of Gomez et al. (2004), their study has identified different dimensions within organisational learning capability as learning commitment, systems thinking, knowledge transfer and integration, openness and experimentation.

In India, Shukla (1995) defined Oganisational Learning Capabilities. On the measurement side, Pareek (1988) has conducted Indian studies on learning orientations, called the Organisational Learning Diagnostics. Ramanarayan (1996) conducted an empirical research on organisational learning capability.

Employee Satisfaction

Employee Satisfaction (ES) is being defined as "How your employees feel about their jobs, their supervisors, and many other factors have clear financial implications for your organisation's future success".

The content for an Employee Satisfaction Survey is custom-developed for each organisation, but the broad issues that contribute to employee satisfaction are known and represented in every survey. They include such topics as:

- the organisation's workplace environment,
- relationships with immediate supervisor,
- satisfaction with the work itself,
- reward/recognition systems, both formal and informal,
- opportunities for growth through training and job assignments,
- compensation/benefit programs,
- support received from co-workers and other managers

Studies in ES

It seems logical that there should be a link between Knowledge Management and worker retention as the achievement of some of the input elements found in KM can lead to increased job satisfaction. Input elements in the KM would include sharing culture, teambuilding, trust, collaboration, learning culture etc. These elements focus upon increasing employees commitment, worker empowerment, autonomy, building team work, better performance management which, we posit, will have a positive influence on employee satisfaction as indicated by various factors such as fair compensation, challenging work, autonomy, satisfaction with nature of work, supervision, organisational commitment, distributive justice, procedural justice and turnover intention in this research.

Studies in KM & OL

Senge (1990) believes that on the twin issue of organisational learning and Knowledge Management HR professional play a very useful role, because ultimately, there's the need for facilitative support (Solomon, 1994). The 'organisational learning' provides an incredible opportunity for human resource people to break past the limit of training and move further into the organisation. The Knowledge Management must necessarily be a fusion of information technology and human resource development. On one hand the development of the learning organisation, where we understand learning and teamwork much better, on the other hand, there is a group-ware and the web, the whole of its fused…you need directors of Knowledge Management who can take the holistic view as much aware of the organic knowledge base of Information Technology, but more into the interaction between the two. (James, 1998).

Ruggels (1999) emphasizes the importance of getting the approximately people/process/technology right for succeeding in knowledge management efforts.

Studies in OL & ES

According to Drucker (1998), knowledge workers are motivated more by the intrinsic challenge of the work rather than financial rewards and so learning and the utilization of knowledge could be seen as additional facets that could be added. However, learning can also be seen as a culture (Bolman and Deal, 2003; Moynnihan, 2005; Schein, 1993), which bounds all the other job satisfaction elements and which will lead to how the knowledge workers perceive the facets within their organisation. This raises the question of the extent of the relationship between traditional employee satisfaction measures and organisational learning.

Objectives of the Study

The study includes three important variables, viz., Knowledge Management, Organisational Learning, and Employee satisfaction in the context of Pharmaceutical sector in India. The main objectives of this study are:

1. To study the relationship between Knowledge Management and Organisational Learning.

2. To study the relationship between Organisational Learning and Employee satisfaction.

3. To make suggestions for improvements.

Research Methodology

a) Scope of study: The Indian Pharmaceutical Industry today is in the front rank of India's science-based industries with wide ranging capabilities in the complex field of drug manufacture and technology. A highly organised sector, the Indian Pharma Industry is estimated to be worth $ 4.5 billion, growing at about 8 to 9 percent annually. It ranks very high in the third world, in terms of technology, quality and range of medicines manufactured. From simple headache pills to sophisticated antibiotics and complex cardiac compounds, almost every type of medicine is now made indigenously.

b) Sample for the study: The selection criterion was based on the Market Share and Sales of all the companies in the selected industries on the basis of 2002-2003 (31st March) audited financial figures. The survey was conducted during 2003-2006. After evaluating the entire list of organisation of this industry. An introductory mail about - Knowledge Management and a list of KM Methods employed within their company and which methods they were intending to implement was sent to all companies in the three industries. The total number of KM methods employed by a company is used as one of the discriminating variable. Companies using three or less techniques were referred to as KM – non-implementing companies and those applying four or more techniques described as KM implementing companies. An equivalent proportion for the study of Knowledge Management in that industry was selected.

Total Sample Size of Study: Two companies from each specified industry where the Knowledge Management was being implemented and two companies where the Knowledge Management was not being implemented as on the specified date.

In the drugs and pharmaceutical sector, Ranbaxy and Cipla are the best pick for analysis of Knowledge Management. But it does not mean other companies are not having it, Dr Reddy is also having KM, but the study is limited to two companies who have implemented Knowledge Management. And on the other hand, Matrix Lab and Torrent, where KM has not been implemented yet.

Sample Distribution used in the study is as given on the next page.

Drugs/Pharmaceuticals

Implementing KM IT techniques		Not Implementing KM IT techniques	
1	2	3	4
20	20	20	20
Total = 4* 20 = 80			

This study begins with a hypothesis and research questions and involves precise procedure and data source specifications.

Discussions with academicians and managers of various knowledge intensive organisations led to the classification of the objectives of the study and the selection of variables important to the people enabled KM.

● H1a: There is a positive correlation between Knowledge Management and Organisational Learning.

● H1b: Organisational Learning enhances Employee Satisfaction in Non-KM implementing industries.

c) Questionnaires: For measuring Knowledge Management, Organisational Learning and Employee Satisfaction information, data was collected through standardised questionnaires. All the sections are based on a five-point Likert scale.

1) KM Questionnaire: Darroch (2003) developed three scales to measure behaviours and practices for each component of knowledge management: knowledge acquisition, knowledge dissemination, and responsiveness to knowledge.

2) OL Questionnaire: Organisational –Learning Diagnostic Survey (Pareek, 1988) consisting of 23 items.

3) ES Questionnaire: comprised of following factors: Satisfaction with Nature of Work: (Minnesota Satisfaction Questionnaire; Weiss et al., 1967); Satisfaction with Supervision: (Index of Organisational Reactions Questionnaire; Smith, 1976); Organisational Commitment (Porter et al., 1974); Distributive Justice (Magner et al., 1994); Procedural Justice (Magner et al., 1994); Turnover Intention: (Cammann et al, 1979); Perceived Alternative Employment Opportunities (Mowday et al., 1984).

d) Procedure for data collection: A detailed questionnaire for the respondents covering various facets of operations was prepared and circulated among the selected companies of each industry.

e) Statistical Tools: The presentation format of the recommended framework involves computation of *Descriptive statistics* - Mean and Standard Deviation. P*arametric*: F-test, t-test, and Correlation Technique, ANOVA and Regression.

Analysis & Interpretations

● H1a: There is a positive correlation between Knowledge Management and Organisational Learning.

$\mu 1 = \mu 2,$

Where, $\mu 1$ = Knowledge Management

$\mu 2$ = Organisational Learning

On the basis of grand total of 40 Respondents in KM implemented companies, the mean & standard deviation have been calculated for the two parameters that are Knowledge Management and Organisational Learning. It was found that mean value of organisational learning is higher in KM implemented companies in Telecom sector.

Table 1: Depicts Means Standard Deviations of Differences between Knowledge Management and Organisational Learning in KM Implemented Companies in Drugs/Pharmaceuticals Sector

Descriptive Statistics

	Mean	Std. Deviation	N
Knowledge Management	47.5750	4.5959	40
Organisational Learning	70.2250	15.254	40

Correlation matrix obtained by Pearson's Correlation coefficient method indicates that Organisational Learning *is positively correlated with the dependent variable i.e. Knowledge Management (0.74).* It demonstrates that if an employee is involved in knowledge creating and distributing activities, the culture of learning will also be perceived favourable by him.

Table 2 Showing Co-efficient of Correlation between Knowledge Management & Organisational Learning in KM Implemented Companies in Drugs/Pharmaceuticals sector

	Knowledge Management
Organisational Learning	0.74
N	40

- H1b: Organisational Learning enhances Employee Satisfaction in Non-KM implementing industries.

$$H1a: \quad \uparrow\mu1 = \uparrow\mu2$$

Where, $\mu1$ = Organisational Learning

$\mu2$ = Employee Satisfaction

$\uparrow$ = Higher Rate

On the basis of grand total the mean & standard deviation have been calculated for the two parameters that is Organisational Learning and Employee Satisfaction. It was found that mean of employee satisfaction is highest.

Table 3: Showing Means, Standard Deviations of Organisational Learning, & Employee Satisfaction of Non-KM implementing companies in Drugs/Pharmaceuticals Sector

Descriptive Statistics

	Mean	Std. Deviation	N
Employee Satisfaction	154.8000	22.1906	40
Organisational Learning	51.7250	5.8265	40

To test hypothesis H1b, regression analysis was carried out, a form of general linear modeling, which is a statistical technique used to examine the relationship between a dependent variable, (*Employee Satisfaction)* and an independent variable *(Organisational Learning).* Regressions also provided a means of objectively assessing the degree and character of the relationship between dependent and independent variable.

Correlation matrix obtained by Pearson's Correlation coefficient method indicates that *Organisational Learning is closely correlated with the dependent variable i.e. Employee Satisfaction (0.808).* For testing the significance of relationship, t-test has been used. These values when compared with table value at 5 % level of significance indicate that table value is less than calculated values, showing a significant relationship between *Organisational Learning and Employee Satisfaction.*

**Table 4: Showing Coefficients of Correlation between Organisational Learning &
Employee Satisfaction in Non-KM Implemented Companies in
Drugs/Pharmaceuticals Sector**

Correlations

		Employee Satisfaction	Organisati-onal Learning
Pearson Correlation	Employee Satisfaction	1.000	.808
	Organisational Learning	**.808**	1.000
Sig. (1-tailed)	Employee Satisfaction	.	.000
	Organisational Learning	.000	.
N	Employee Satisfaction	40	40
	Organisational Learning	40	40

The Regression analysis for dependent variable employee satisfaction and Organisational Learning indicates the following results:

R^2 = 0.652 F= 71.317.

**Table 5: Showing Summary of Regression Model in Non-KM implemented companies in
Drugs/Pharmaceuticals sector**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.808[a]	.652	.643	13.2543	.652	71.317	1	38	.000

a. Predictors: (Constant), Organisational Learning

b. Dependent Variable: Employee Satisfaction

In the above Table 5, R is the correlation coefficient for the simple regression of independent variable and the dependent variable, which came out to be 0.808 in this study. It has no plus or minus sign because in regression the signs of the individual variables may vary, so this coefficients reflects only the degree of association.

R square is the correlation coefficient squared also referred to as the coefficient of determination. This value indicates the percentage of total variation of dependent variable explained by the independent or predictor variable. It came out to be 0.652, which means 65% of total variation in employee satisfaction caused by Organisational Learning.

Standard Error of Estimate: It is a measure of the variation or scatteredness about the line of regression. It is another measure of the accuracy of our predictions. It represents an estimate of the standard deviation of the actual dependent values around the regression line that is; it is a measure of variation around the regression line, which came out to be 13.2543.

The degree of freedom measures, how restricted the data is to reach a certain level of prediction. It is measured as total observation minus the number of estimated parameters.

Table 6: Showing ANOVA (Regression) in Non-KM Implemented Companies in Drugs/Pharmaceuticals Sector

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12528.711	1	12528.711	71.317	.000[a]
	Residual	6675.689	38	175.676		
	Total	19204.400	39			

a. Predictors: (Constant), Organisational Learning

b. Dependent Variable: Employee Satisfaction

Table 6 shows the ANOVA F is significant, signaling that it is justifiable to use a straight-line relationship to model the variable in this case. High value of F clearly points out that, there is significant positive correlation with dependent variable. The ANOVA table tests the acceptability of the model from a statistical perspective. The *Regression* row displays information about the variation accounted for in this model. The *Residual* row displays information about the variation that is not accounted for this model. The regression and residual sums of squares are approximately equal, which indicates that the model explains about 65.2% of the variation in this variable. The significance value of the F statistic is less than 0.05, which means that the variation explained by the model is not due to chance. While the ANOVA table is a useful test of the model's ability to explain any variation in the dependent variable, it does not directly address the strength of that relationship. The model summary table reports the strength of the relationship between the model and the dependent variable. *R*, the correlation coefficient, is the linear correlation between the observed and model-predicted values of the dependent variable. *R Square*, the coefficient of determination, is the squared value of the correlation coefficients. It shows that about 50% the variation in *time* is explained by the model. As a further measure of the strength of the model fit, compare the standard error of the estimate (13.25) in the model summary table to the standard deviation (22.19) of *time* reported in the descriptive statistics table. We found both the values are closer, indicating the strength of the linear relationship between Organisational Learning and Employee satisfaction.

**Table 7 Showing Regressions between Employee Satisfaction and Organisational
Learning in Non-KM Implemented Companies in Drugs/Pharmaceuticals Sector**

Coefficients [a]

Model		Unstandardised		Standardized Coefficient			Correlations			Collinearity Statistics	
		B	Std Erro	Beta	t	Sig	Zero order	Partial	Part	Tolerance	VIF
1	(Constant)	-	18.95		-.23	.82					
	Organisational Learning	3.07	.36	.80	8.4	.00	.80	.80	.80	1.00	1.00

a. Dependent Variable: Employee Satisfaction

The standardized regression coefficient, or beta value (0.80), is the value calculated from standardized data. The beta value allows us to compare the effect of independent variable on dependent variable to the effect on dependent variable of other independent variable at each stage, because this value reduces the regression coefficient to a comparable unit, the number of standard deviations.

A smaller standard error implies more reliable prediction. Thus I, would like to have small standard error and small confidence intervals. This standard error is also referred to as the standard error of the regression coefficient. It is an estimate of how much the regression coefficient will vary between samples of the sample size taken from the same population.

Further to test the statistical significance of b, we examine the t's. Also the significant value of t further means that regression, as a whole is significant between these selected variables.
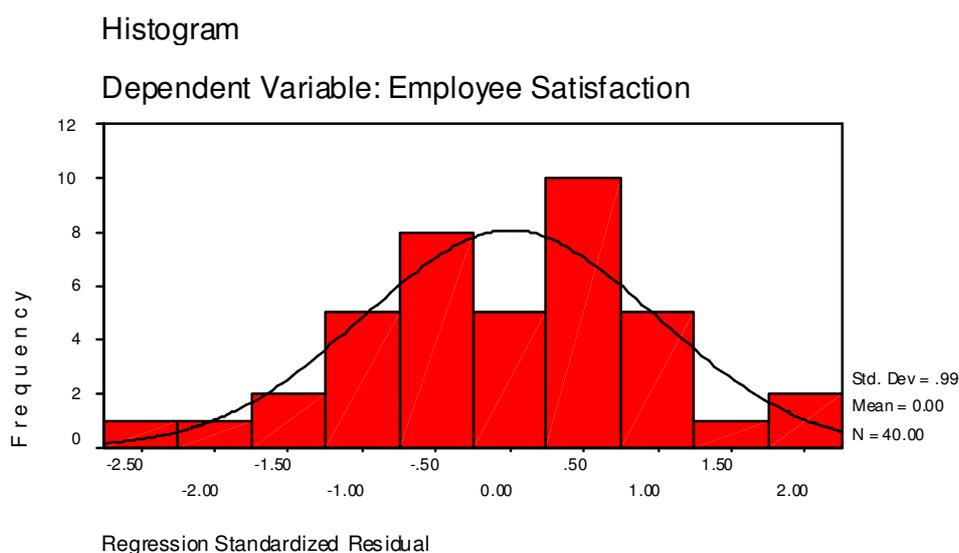
Histogram

Dependent Variable: Employee Satisfaction

Std. Dev = .99
Mean = 0.00
N = 40.00

Regression Standardized Residual

**Figure 1 Showing Histogram bar in Non-KM implemented companies in Drugs/
Pharmaceuticals sector**

A residual is the difference between the observed and model-predicted values of the dependent variable. The residual for a given product is the observed value of the error term for that product. A histogram or P-P plot of the residuals will help to check the assumption of normality of the error term. The shape of the histogram should approximately follow the shape of the normal curve. This histogram is acceptably close to the normal curve.
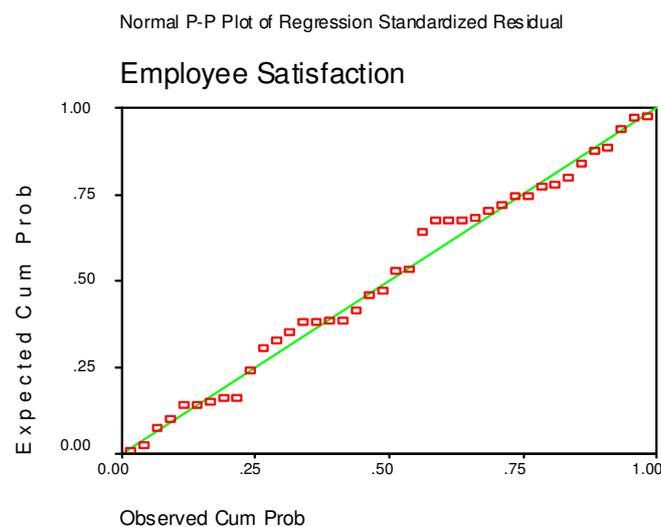
Normal P-P Plot of Regression Standardized Residual

Figure 2 Showing Normal P-P Plot of Regression in Non-KM implemented companies in Drugs/Pharmaceuticals sector

The P-P plotted residuals should follow the 45-degree line. Neither the histogram nor the P-P plot indicates that the normality assumption is violated.

A Managerial Overview of the Results

Drugs/Pharmaceutical sector has shown that the mentioned two variables are strongly correlated and resulting in the statement that – The employee satisfaction increases with an increase in the organisational learning in this sector where knowledge management is not being implemented or ever has been implemented.

Recommendations

- Knowledge Management programme should be supported from the top. As the mean values for KM behaviours came out to be 47.5 in KM implemented companies, which means that KM dissemination, acquisition is low in the surveyed companies.

- Organisational learning is found to be strongly correlated (0.74) with KM. Therefore, KM should not only be technology enabled rather people focused in order to make it successful. Hence, a key responsibility and challenge for corporate executives lies in cultivating and nurturing such smart minds that provide perhaps the only sustainable competitive edge.

- In order to develop learning culture, foster an environment where employees trust that their knowledge is valuable and ensures that the culture grows at the right pace, with the right people, and in the right mix. Allows employees to do a better job of aggregating useful information, and make it available to others who need it when then need it.

- Finally, the hypothesis that Organisational Learning enhances Employee Satisfaction in Non-KM implementing industries found support from the data and the strength of relationship ($R^2 = 0.652$) was stronger.

- From this analysis, it is clear that Attracting, developing, and retaining a knowledgeable work force is a major issue for senior management teams, but many are not yet aware of the scope of the problem or potential solutions such as knowledge management.

Research limitations/implications

The research paper does not test the possibility of employee satisfaction affecting Organisational Learning, which may be true, and the author acknowledges it as a limitation of the research study. Future studies may investigate this further.

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