A STUDY ON A KNOWLEDGE MANAGEMENT AS A SUSTAINABLE COMPETITIVE ADVANTAGE IN SALEM STEEL PLANT

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Abstract—*Knowledge Management can be seen from various perspectives: Human Resource Management helps us to encourage people to share their knowledge. Form Artificial Intelligence we can learn how knowledge can be presented in a formal way as a basis for knowledge processing. Information Technology in general has provided several approaches to support and improve a successful knowledge management in an organization. The paper argues that knowledge management should be an integrated part of any engineering or business degree program. Graduates should not only be able to use knowledge management systems but should be the driving force in implementing such systems. It will be shown that knowledge and the management of knowledge is discussed in various lectures in our degree programme Business Informatics. Moreover, knowledge management is not a theoretical issue only, applied knowledge management is used for co-operative learning.*

Keywords—*Business Informatics, Information Technology, Knowledge Management, Knowledge Processing, Learning*

INTRODUCTION

Knowledge management is growing as an important part of corporate strategy and organization learning to take advantage of the competitive environment. This growing importance is further increased by several developments in past decade in the field of information technologies and communications networks. Growing numbers of corporations are tending towards networked organizations centralizing all the services. The exponential growth of knowledge management can also be seen is all areas of businesses. Knowledge management market is growing rapidly and it is observed expanding in the future.

REVIEW OF LITERATURE

Knowledge management (KM) includes capturing, creating, sharing and using knowhow. That know-how includes explicit and tacit knowledge. It is not about books of wisdom and best practices, it's more about the communities that keep know-how of a topic alive by sharing what they know, building on it and adapting it to their own use. KM can be defined as 'performance through learning', 'shared knowledge', or simply 'working smarter' (IFAD report, 2007:4).

Several mini-dissertations have been done on the effective use of KM and OL concepts (De Robillard, 2007:85; Van Beek, 2008:92; Lupton, 2009:82). The focus of this literature study is on how knowledge and learning concepts can be used to create sustainable competitive advantage and growth which will increase the wealth of all stakeholders. The intent of the literature study is thus to focus on how knowledge and learning principles need to be applied to gain a sustainable competitive advantage in the South African Steel industry based on literature and case studies of companies which have successfully used knowledge to improve competitiveness.

Shareholders invest their equity to become wealthy now and in the future, which means that they are also interested in the sustainability of wealth creation. The primary objective of companies should be shareholder wealth maximization which translates to maximizing the stock price of a company. The potential to create wealth and value for shareholders of any business depends to a large extent on the ability of the business to respond to changes and expected changes in its business environment. The result of this is that companies must continuously adapt to remain competitive. Companies must improve their agility and must continuously learn and adapt to these changes (Nel, 2005:93).

Nel developed a conceptual model which explains the different factors that must be proactively managed to maximize wealth creation. Although Nel's model was developed from a shareholder wealth creation perspective it is a good model to explain the different factors that must be managed to ensure wealth creation. An adapted model as developed by Nel

indicating that a business operates in a dynamic environment which consists of controllable and uncontrollable factors that must be managed (Nel, 2005:94).

The model also indicates that investors want to understand risk prior to investments. According to the model developed by Nel, the higher the risk the higher the required return from investors. These risks as perceived by the investors are impacted by internal performance of the company as well as by the macro environments which are in constant flux (Nel, 2005:94). The model of Nel can be applied to the Steel industry where different production factors are applied including information and knowledge to transform raw materials such as Iron Ore and alloys into final steel products. The products are sold which result in a return that can be paid to shareholders in the form of dividends (cash) or it will result in a higher stock price, referred to as capital gains or value. The Steel industry is a capital-intensive industry and low production cost is a key differentiating factor for sustainable competitive advantage.

The creation of sustainable growth is typically measured using different financial measures such as Return on Investment (ROI), Economic Value added (EVA) or Return on Invested Capital (ROIC) (Megginson *et al.,* 2007:773). The financial EVA model of value or wealth creation is perceived to be one of the best methods to express and quantify shareholder wealth creation. Source: Hall (2002:29)

The competitiveness of a company within the steel industry is frequently measured by the economic value which is added or the rate of return on investment. During 2008, ArcelorMittal (AM) added R4.9B to shareholder value and a NOPAT of R9.5B was achieved. The past actual mean return of ACL was 35.8% over the period (2003 to 2008) and hence the investors received more than the required return of 24.6% (ArcelorMittal, 2008).

Competitive advantage is a result of optimal decisions which are made through the application of knowledge and skills. Figure 2.3 represents a high-level process model to explain how information, knowledge and skills are used to create competitive advantage. These decisions are made daily based on the application of explicit and tacit knowledge (De Robillard, 2007:36). In general, tacit knowledge is the knowledge that, when applied result into competitive advantage as it is not easy to be copied by competitors. Tacit knowledge is a key success factor to ensure competitive advantage (Van Beek, 2008:25).

OBJECTIVES OF THE STUDY

The objectives of the study are split into primary and secondary objectives.

Primary objective

The primary objective of the research was to establish whether the Steel industry in Salem effectively using KM as a sustainable competitive advantage. The level of maturity of the application of KM principles implemented within the Salem Steel industry was assessed and compared to the maturity level.

Secondary objectives

To achieve this primary objective of the study, the secondary objectives to berealized were as follows:

- Perform a literature study to research the different aspects of knowledge and KM with emphasis on the relationships between OL, culture, sustainable growth and competitiveness.
- To determine the definition of wealth creation in financial, social and environmental measurements and to assess the relationship of these to KM
- Provide an overview of KM implementation frameworks or models found in literature with emphasis on the improvement of competitiveness and sustainable growth
- Identify how other Steel and non-Steel companies are using KM and OL concepts to improve competitiveness and develop a list of lessons learned

SCOPE OF THE STUDY

This study focused on KM, culture and OL concepts to assess the maturity level of OL and KM within the Steel industry of Salem. The study confirmed how KM can be used to improve competitiveness to ensure sustainable growth and wealth creation within the Steel industry. The study was limited to primary sources of information gained from the Steel industry in South Africa, with specific reference to Salem. Secondary sources of information were limited to those generally available on the Internet, in the form of English language documents, and generally available literature sources.

LIMITATIONS OF THE STUDY

Time is the major constraint in collecting the data from the employees. The data collection is conducted only in Salem. Hence, utmost care is to be taken while generalizing the result. This study is confined to the few employees and recruitment details only.

Due to personnel biases and other reasons, the employees have expressed other views, which can affect the analysis and other facts

- Less availability of time and money for the research work.
- Less expertise or skills in the researcher.
- Lack of Scientific training in the methodology of researcher.
- Difficulty of timely and adequate secretarial assistance.
- Difficulty of timely published data.

HYPOTHESIS

- A hypothesis is a specific statement of prediction. It describes in concrete (rather than theoretical) terms what you expect will happen in your study. Not all studies have hypotheses. Sometimes a study is designed to be exploratory (see inductive research). There is no formal hypothesis, and perhaps the purpose of the study is to explore some area more thoroughly in order to develop some specific hypothesis or prediction that can be tested in future research. A single study may have one or many hypotheses. The null hypothesis for this study is: for example
- H_0: As a result of the company employee training program, there will either be no significant difference in employee absenteeism or there will be a significant increase.
- which is tested against the alternative hypothesis:
- H_1: As a result of the company employee training program, there will be a significant decrease in employee absenteeism.

RESEARCH METHODOLOGY

Descriptive Research Design

To make the research systemized the researcher has to adopted certain method. The method adopted by the researcher for completing the project is called research methodology. The research has been defined as "A careful investigation or enquire especially through search for new facts in any branch of knowledge". To give more additional to the old research new ones are conducted.

Sampling Techniques

Convenience sampling techniques has been used in sampling due to the following reasons:

- It provides information about parts of the all the area of Salem.
- It provides help in gaining precision through satisfaction

Sampling Size

A sample size of 50 consumers was chosen, but due to incompletely filled questionnaires and unwilling and carelessness on the part of the respondents, we were forced to reduce the sample size to 50. This sample size was based upon time and affordability approach.

Data Collection

The following techniques were adopted for data collection.

Primary data

Primary data was collected through face to face interviews while filling up questionnaires.

Secondary data

The information was gathered from magazines, newspapers that formed the secondary data.

TOOLS AND TECHNIQUES

Percentage Analysis

In case multiple-choice question the workers were categorized based on the nature and percentage is calculated for each category. The percentage analysis is the analysis of ratio of a current value either the result multiplied by 100.

$$\text{Percentage analysis} = \frac{\text{Actual Respondents}}{\text{Total No. of Respondents}} \times 100$$

DATA ANALYSIS AND INTERPRETATION

Table 1: Gender of the Respondents

Gender	No. of respondents	Percentage (%)
Male	38	76.0
Female	12	24.0
Total	50	100.0

The above the table shows that gender of the respondents, 76% of the respondents are said male remaining 24% of the respondents are said female.

Table 2: Age of the Respondents

Age	No. of respondents	Percentage (%)
Below25 yrs	5	10.0
25 yrs-35 yrs	13	26.0
35 yrs-45 yrs	14	28.0
45 yrs-55 yrs	10	20.0
Above 55 yrs	8	16.0
Total	50	100.0

The above table shows that age of the respondents, 10% of the respondents are age wise below 25 years, 26% of the respondents are age wise 25-35years, 28% of the respondents are age wise 35-45 years, remaining 16% of the respondents are age wise above 55 years.

Table 3: Marital Status of The Respondents

Marital status	No. of respondents	Percentage (%)
Married	38	76.0
Unmarried	12	24.0
Total	50	100.0

The above table shows that marital status of the respondents, 76% of the respondents are said married remaining 24% of the respondents are said unmarried.

Table 4: Education Qualification of the Respondents

Education Qualification	No. of respondents	Percentage (%)
Diploma	6	12.0
U.G	32	64.0
P.G	7	14.0
Others	5	10.0
Total	50	100.0

The above table shows that educational qualification, 12% of the respondents are said diploma, 64% of the respondents are said U.G qualification, 14% of the respondents are said P.G qualification remaining 10% of the respondents are said others.

Table 5: Level Within Plant of The Respondents

Level within plant	No. of respondents	Percentage (%)
Executive	23	46.0
Non-executive	27	54.0
Total	50	100.0

The above table shows that level within plant, 46% of the respondents are said executive level remaining 54% of the respondents are said non-executive level.

Table 6: Year of Experience of The Respondents

Year of experience	No. of respondents	Percentage (%)
Less than 10 yrs	11	22.0
10yrs-15yrs	10	20.0
15yrs-20yrs	7	14.0

20yrs-25yrs	12	24.0
Above 25yrs	10	20.0
Total	50	100.0

The above table shows that year of experience, 22% of the respondents are said less than 10 years, 20% of the respondents are said 10-15 years, 14% of the respondents are said 15-20 years, 24% of the respondents are said 20-25 years remaining 20% of the respondents are said above 25 years.

Table 7: Area of Responsibility of The Respondents

Area of responsibility	*No. of respondents*	*Percentage (%)*
HRM	15	30.0
CRM	19	38.0
SMS	7	14.0
AP-LINE	9	18.0
Total	50	100.0

The above table shows area of responsibility, 30% of the respondents are said HRM, 38% of the respondents are said CRM, 14% of the respondents are said SMS remaining 18% of the respondents are said AP-LINE.

Table 8: Salary of The Respondents

Salary	*No. of respondents*	*Percentage (%)*
Below 25000	9	18.0
25000-35000	7	14.0
35000-45000	14	28.0
45000-50000	10	20.0
Above 50000	10	20.0
Total	50	100.0

The above table shows that salary, 18% of the respondents are said below 25000, 14% of the respondents are said 25000-35000, 28% of the respondents are said 45000-50000 remaining 20% of the respondents are said above 50000.

Table 9: Trusted to Make Decision

Trusted to make decision	*No. of respondents*	*Percentage (%)*
Agree	40	80.0
Strongly agree	3	6.0
Neither disagree nor agree	5	10.0
Disagree	1	2.0
Strongly disagree	1	2.0
Total	50	100.0

The above table shows that trusted to make decision, 80% of the respondents are said agree, 6% of the respondents are said strongly agree, 10% of the respondents are said neither disagree nor agree, 2% of the respondents are said disagree remaining 2% of the respondents are said strongly agree.

Table 10: Responsible Business Area

Responsible Business Area	*No. of respondents*	*Percentage (%)*
Agree	17	34.0
Strongly agree	18	36.0
Neither disagree nor agree	13	26.0
Disagree	2	4.0
Total	50	100.0

The above table shows that responsible business area, 34% of the respondents are said agree, 36% of the respondents are said strongly agree, 26% of the respondents are said neither disagree nor agree remaining 4% of the respondents are said disagree.

Table 11: Decision Making

Decision Making	*No. of respondents*	*Percentage (%)*
Agree	24	48.0
Strongly agree	17	34.0
Neither disagree nor agree	6	12.0
Disagree	2	4.0
Strongly disagree	1	2.0
Total	50	100.0

The above table shows that decision making, 48% of the respondents are said agree, 34% of the respondents are said strongly agree, 12% of the respondents are said neither disagree nor agree, 4% of the respondents are said disagree remaining 2% of the respondents are said strongly disagree.

Table 12: Resolve Problem

Resolve problem	*No. of respondents*	*Percentage (%)*
Agree	18	36.0
Strongly agree	12	24.0
Neither disagree nor agree	14	28.0
Disagree	4	8.0
Strongly disagree	2	4.0
Total	50	100.0

The above table shows that resolve problem, 36% of the respondents are said agree, 24% of the respondents are said strongly agree, 28% of the respondents are said neither disagree nor agree, 8% of the respondents are said disagree remaining 4% of the respondents are said strongly disagree.

Table 13: Section Mission Statement

Section Mission Statement	*No. of respondents*	*Percentage (%)*
Agree	18	36.0
Strongly agree	13	26.0
Neither disagree nor agree	12	24.0
Disagree	4	8.0
Strongly disagree	3	6.0
Total	50	100.0

The above table shows that section mission statement, 36% of the respondents are said agree, 26% of the respondents are said strongly agree, 24% of the respondents are said neither disagree nor agree, 8% of the respondents are said disagree remaining 6% of the respondents are said strongly disagree.

Table 14: Section Strategy

Section Strategy	*No. of respondents*	*Percentage (%)*
Agree	16	32.0
Strongly agree	8	16.0
Neither disagree nor agree	14	28.0
Disagree	8	16.0
Strongly disagree	4	8.0
Total	50	100.0

The above table shows that section strategy, 32% of the respondents are said agree, 16% of the respondents are said strongly agree, 28% of the respondents are said neither disagree nor agree, 16% of the respondents are said disagree remaining 8% of the respondents are said strongly disagree.

Table 16: Increase Profits

Increase profits	*No. of respondents*	*Percentage (%)*
Agree	12	24.0
Strongly agree	18	36.0
Neither disagree nor agree	11	22.0
Disagree	6	12.0
Strongly disagree	3	6.0
Total	50	100.0

The above table shows that increase profits, 24% of the respondents are said agree, 36% of the respondents are said strongly agree, 22% of the respondents are said neither disagree nor agree, 12% of the respondents are said disagree remaining 6% of the respondents are said strongly disagree.

Table 17: Competitiveness Organization

Competitiveness Organisation	No. of respondents	Percentage (%)
Agree	9	18.0
Strongly agree	16	32.0
Neither disagree nor agree	13	26.0
Disagree	8	16.0
Strongly disagree	4	8.0
Total	50	100.0

The above table shows that competitive organization, 18% of the respondents are said agree, 32% of the respondents are said strongly agree, 26% of the respondents are said neither disagree nor agree, 16% of the respondents are said disagree remaining 8% of the respondents are said strongly disagree.

Table 18: Competency & Skills

Competency & Skills	No. of respondents	Percentage (%)
Agree	15	30.0
Strongly agree	12	24.0
Neither disagree nor agree	12	24.0
Disagree	4	8.0
Strongly disagree	7	14.0
Total	50	100.0

The above table shows that competency & skills, 30% of the respondents are said agree, 24% of the respondents are said strongly agree, 24% of the respondents are said neither disagree nor agree, 8% of the respondents are said disagree remaining 14% of the respondents are said strongly disagree.

CONCLUSION

The aim of this study was to assess whether knowledge management is effectively being used as a sustainable competitive advantage in the Steel industry in Salem. The level of maturity of the application of knowledge and learning principles implemented within the Salem Steel industry was assessed and compared to the maturity level.

The findings of the survey confirmed that the maturity level of both knowledge management and organisational learning of the superior to that of the Salem steel industry.

Knowledge management can be used as a sustainable competitive advantage in the Salem steel industry if specific principles are applied during the design and execution of a formal knowledge management programme. The application of the proposed knowledge management programme framework will ensure that the problem areas as identified during the empirical research are addressed. This will ensure that knowledge management is used as a sustainable competitive advantage in the Salem Steel industry.

A knowledge management programme will only be successful if this is managed as a formal transformational change programme sponsored by the CEO and driven by a senior executive member of the top management team. It can further be concluded that the research objectives were satisfactorily met.

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