

Towards Improving the Performance of STC Saudi Using Knowledge Management Strategies

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Abstract: The paper has examined the Knowledge Management – KM implementation at Saudi Telecom Communication – STC. The KM implementation was done to support the LEAD program initiated by STC. The LEAD program was created to help the firm increase its international operations, increase customer satisfaction and help STC to offer its convergence solutions to all centres across the world. The KM model was initially designed to help technical teams and sales personnel to share problems and solutions. The findings indicate that a large number of supervisors and mid-level managers accept the KM solution. KM has helped them in carrying out their functions and roles with greater efficiency and customer satisfaction. More participation is needed from the lower level of technicians and operators. The study seeks to answer the following main question: how STC are successful by using knowledge management? What are they facing?

Key words: Knowledge management • Km • Saudi telecom • Km map • Km strategy • Km implementation

INTRODUCTION

With globalisation and rapid computerisation, perhaps organisations across the world are considering a number of practices and methods that will help them to have a competitive advantage over their rivals. One of these tools is knowledge management-KM [1]. While technology and finance are very crucial for survival and growth, the manner in which the firm manages to organise what it has learnt in the past and use it for the future, helps it to gain a competitive advantage [2]. The practice of KM is used by a large number of organisations from different cross sections of industry and some of them are software, automotive, telecommunications, pharmaceutical, construction and many other sectors [3]. This paper examines the KM implementation at Saudi Telecommunication Company-STC and discusses how the problems, opportunities, implementation and benefits that the firm has gained. The paper is organised as follows. First, a general discussion is provided along with implementations and success stories in other telecommunication organisations in the world. Next, the KM implementation is discussed in detail followed by a conclusion that sums up the paper.

Definitions: Some definitions of KM are available and one of them is “the method of ‘institutionalising’ knowledge gained by the employees, archiving it and making it available for future use” [4]. On the other hand, Drucker [5] defines KM as “managing the information that changes something or somebody by becoming grounds either for actions or by making an individual or institution capable of different or more effective action”.

Problem Definition: STC faces a number of challenges that threatened its growth and profitability. These included attrition and erosion in the market share, reduction in telephony and Internet prices due to activities of rivals and increased demand from the customers for better services. There was also the challenge of technology adoption with new hand held devices and the need for convergence.

Proposed Solution: To meet the challenges, the management at STC decided to implement a KM solution. This solution was a web portal where employees could tell about the technical problems faced and people who had faced similar problems and found solutions could share their knowledge. The KM portal eventually became a resource for new recruits who could browse through the

archives in the KM portal and learn how various issues were handled. The most important findings are provided in this research.

Reason for Selecting STC: The firm was selected since it is one of the largest public sector firms in Saudi Arabia to have implemented KM. The firm also deals with modern products such as mobile phones and Internet. It was felt that by researching the KM implementation at STC, a wealth of knowledge would be made available for other researchers.

Findings from the Research: In one of the case studies used to support the research, 10 independent variables were tested to assess the impact of KM on these variables. It was seen that KM had a positive and statistically significant impact on six functional variables. The remaining four variables did not show any impact from KM and these were behavioural variables. In general, KM has improved the performance of various teams at STC. More involvement is needed from the lower level of employees.

Elements of Knowledge Management: According to Nonaka [6], there are some differences between information and knowledge and while information gives facts and data, knowledge is about beliefs, skills and insight that a person has acquired over the years. Two types of knowledge types emerge and these are tacit and explicit. Tacit knowledge is about the difficult to express, it operates at a subconscious level and it is developed by means of experience and action [7]. It cannot be easily documented but it can be taught by means of interactive storytelling and demonstration and with storytelling. Some of the tacit knowledge is the art of artists and musicians and even good management skills. Explicit knowledge deals with skills that can be documented and taught easily to customers. This kind of knowledge can be documented, written down, recorded and stored in document storage and retrieval systems. While tacit knowledge is difficult to identify and record, explicit knowledge is much more straightforward [8].

Hanvanich [9] suggested four classes of approaches for KM. These are knowledge storage approach, knowledge processes or knowledge flow approaches, organisational learning approaches and the knowledge management or knowledge asset approach. In the knowledge storage approach, the focus is on engineering

and on explicit knowledge that is dissociated from the human knowledge resource [10]. This helps tacit knowledge storage after it is converted to explicit. Knowledge process gives importance to the dynamic nature of knowledge and the fact that knowledge is formed only when someone has the knowledge [9]. Individual knowledge processes are joined to create a knowledge chain or a social network. Organisation leaning approach gives importance to group learning. The focus is on knowledge creation in organisations [11]. The fourth class refers to finding out means and methods to measure and evaluate certain intangible assets and resources.

The main issue that arises is about what is knowledge, area where it resides is and more importantly, how it can be retrieved and stored in formats accessible to others. Organisational knowledge exists in the form of products, processes, systems, facilities, documents and other artefacts. Some of these are unique and make up the intellectual capital of a firm [4]. Two aspects come into operation during the organisation processes, employees and the systems. The staff devises the processes, standards, help files and create the knowledge artefacts from their own expertise or from other sources.

According to Argote [11], to become useful for an organisation, these must be shared and a sharing culture must be developed. To enable knowledge sharing, systems are developed where mechanisms such as portals, servers, websites, e-learning applications and others are developed. These systems help in knowledge disbursement and help knowledge artefacts to be shared among employees. When the employees share knowledge, they communicate and in effect form a network and this is the social knowledge network. These social networks form the basis of the knowledge organisation. The networks can be seen as discussion forums, email mailing lists, communities of practice and organisation must encourage, nurture and monitor these networks. In the course of discussions and exchange of tips, discussion about new technology, etc., knowledge is created. This knowledge must be identified and the sources of the knowledge should be encouraged to document their learnings and comments. Suitable rewards and recognition must also be initiated to recognise and give due publicity for contributors.

KM Practice in Other Firms in KSA: The economy of KSA is mainly driven by its huge oil revenues. The oil business is well established and any developments that emerge are related to improvement in the oil extraction and

refining. However, the recent imperatives from the government to introduce non-oil business have seen the growth in industries related to telecommunication, manufacturing, chemicals, electronics and other industries. KSA is governed by Islamic tenets, Shariah and communication, contact between people of opposite gender is not allowed. Al Saggaf and Weckert [12] note that even Internet access was restricted since there were fears that users may access objectionable content. Bontis [13] speaks of the manner in which gender segregation is done and curbs placed on social networks to prevent people from opposite genders to communicate with each other. In addition, other cultural barriers in KSA prevent employees from exchanging knowledge. In spite of these barriers, a number of KM implementation have been done successfully. Some of these are discussed in this section.

Khursani *et al.* [14] have written about the KM implementation done at Aramco, one of the leading KSA firms. The KM solution was used by thousands of employees to exchange knowledge, discuss problems and provide technical solutions. Mohamed *et al.* [15] have written about the KM solution that was implemented at the Al-Bayan model school in KSA. The school used various modules from the KM solution to take up e-learning. Al Hamoudi [16] speaks of the KM solutions implemented at Institute of Public Administration - IPA in KSA. The solution helped the public sector firm to improve its performance and transform from a firm saddled with debt to a productive organisation. Al Shahrani and Elhag [17] have written about KM projects used by construction firms. The KM solution was used in the procurement and bidding process to bring transparency and efficiency in the system. Zawawi [18] has presented the KM solution implemented at Saudi Airlines. The solution helped the technical and sales teams to speed up the process of repairs and maintenance so that the turnaround time was reduced to a few hours from the more than three days it took earlier.

Study of KM Implementation at STC: The chapter examines the case study on KM implementation at STC. A brief introduction is given about STC and then the implementation at STC is examined in detail.

About Saudi Telecommunication Company: STC is a public sector firm based in Saudi Arabia and owned by the Saudi Government. The firm was founded in 1998 and

it offers integrated services such for mobile, Internet, fixed line and broadband services to more than 160 million customers in Saudi Arabia and international locations. The 2011 revenue was more than 150 billion USD and it operates in overseas areas such as Kuwait, GCC nations, Africa, Kuwait Indonesia, South Africa, Malaysia and others [19]. Until recently, the firm had a monopoly in Saudi Arabia but the recent market liberalisation has seen the emergence of many strong rivals such as Zain Saudi, Etihad Etisalat and other telecommunication firms in other nations. While STC has a very large experience in trouble shooting, technical support and marketing, it faces problems in helping other employees to learn from the experiences. These problems are due to psychological barriers of employee behaviour, reluctance to share knowledge and deep divisions among the workforce based on nationality and language [20].

Case Study of KM at STC: Documentation of KM implementation at STC is scarce. A few studies on KM have been published. STC faced a number of challenges such as market erosion, increased competition and the management realised that the collective knowledge of its teams could be shared to handle the various challenges. The firm introduced a knowledge management system called 'Knowledge Exchange' system. The system was to be used by a large number of STC employees across its divisions. There are three wings of KM and these are KM Branch, Research and Consultation Branch and Policies and Procedures Branch. This section will therefore use the publications of Al Adaileh and Al Atawi [21], Al Zahrani [20], Al Aklabi and Al Allak [22] and Al Atawi [23].

Strategy of KM done at STC: STC had aggressive plans to expand in international markets since the local Arab markets were seeing a number of other firms such as Etisalat and Zain. These firms were newcomers and they had the advantage of using available best practices from international firms to set up their operations from the start. STC on the other hand was more than 1 decade old and it had a large number of employees, a predominantly Arab culture and the first mover advantage that was wearing off rapidly. The KM practice was built on four six key dimensions called as the LEAD strategy. The LEAD strategy was to be used to bring about an organisation wide change management and restructuring of operations [19, 21]. The six key dimensions are indicated as below.

While these were the organisation objectives, the KM initiative had to ensure that these objectives formed the focus. In other words, the KM strategy was to ensure that it helped to achieve these objectives.

Lead in Next-Gen Broadband: This dimension would help STC to become the first choice as the broadband operators for next generation connectivity. STC has plans to provide converged services for all applications and these offerings were to be made available to all its centres in the world. The role of KM in this dimension was to ensure that all networks, technicians and sales personnel in different centres had access to updated documents, instructions and trouble shooting manuals [20].

Differentiate Through Integrated Customer Experience: STC management discovered that some sales personnel were able to convince customers better than they were able to convince customers better than others were and sales in certain sectors of KSA were higher. Customer profiles and background were the same in all the sectors. Hence, it was decided that the sales techniques and customer experiences could be shared through the KM portal. KM artefacts such as videos, mp3 recordings and instructional documents, experiences and case studies were prepared and uploaded on the KM portal [20].

Consolidate International Leadership: This dimension was meant to enter internal markets and increase the investment in the international market. STC has plans to expand into MENA region and promote use of multiple services and products. There is also a need to develop supply chain technologies and develop international capabilities. The KM solution was designed to support these objectives by the process of knowledge sharing between teams from KSA and other developing nations. The KSA market is matured in terms of technology applications, handling customers and developing the new market. These would help to consolidate the activities in the new regions [22].

Invest in People Capital: While STC has a large workforce of talented people, people that are more skilled are needed to handle the new technologies and solutions for international markets. The KM implementation was designed to help the HR team to recruit more people by announcing vacancies through internal communications.

These communication programs helped to increase the awareness of KM for recruiting people, providing them with sufficient training. The goal is to empower the workers and turn them into knowledge workers [22].

Drive Financial Performance and Agility: The cost of investment in the KM initiatives would need to be justified to some extent by showing a corresponding increase in the revenues. Increase in sales are due to a number of activities but KM would help the firm to make use of the internal resources such as people skills and internal learning and knowledge. While it is difficult to calculate the benefits that KM yields, an estimate can be drawn by comparing the sales from different quarters, extent of participation of the workforce and increase in market growth [22].

Promote Leading Brand and Reputation: When the above principles and dimensions are implemented successfully, then this leads to enhanced customer service and better product development. With the systems of marketing and customer satisfaction in place, it becomes much easier to find out the extent of customer retention, new accounts and the level of interaction with customers [22].

Technical Solution and Architecture Diagram: The KM solution was developed by an external consultant and then mapped to the STC structure. The KM solution included the customer facing staff, support staff, call centre staff, billing staff as well as the technical and sales staff. Users could upload their reports and experiences and these could be accessed by other staff using key word search. Some type of restrictions was placed on accessing customer information and customer details were only made available to customer handling department. The KM system could be accessed through desktops and through smart phones, laptops and other hand held devices [23].

Progress of KM at STC: The KM implementation at STC was researched in detail and the findings reported by Al Adaileh and Al Atawi [21]. To calculate and estimate the progress of the KM solution at STC, a survey was administered to 378 staff from STC. A number of attributes were listed and the responsiveness of the staff for these attributes was examined. The independent variables tested are listed on the left while the dependent variable is the knowledge exchange.

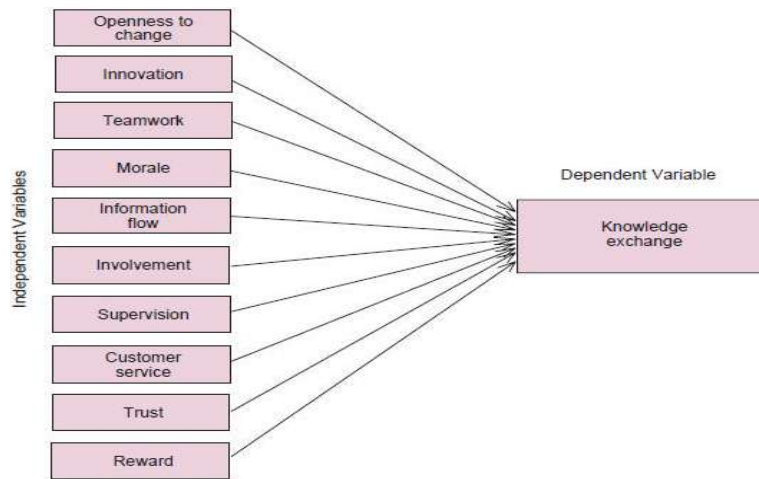


Fig. 2.1: Variables tested at STC [21]

The responses for these variables were analysed. These are presented and explained as below [21].

Openness to Change: This refers to a cultural attitude about recognising and responding the need for change. The study showed that there was no statistically significant impact on this variable. One reason is the Hofstede's uncertainty dimension is 68 and this means the people try to avoid uncertain situations.

Innovation: This variable provides an environment where ideas are generated and challenged. It produces the capability to create new solutions and products. There was a statistically significant and positive impact for innovation on the knowledge exchange solution.

Team Working: It is the extent to which the staff regards their work group as team members. Trust is high and people are treated fairly. The study showed that there was no significant impact of the KM solution on teamwork. The old government culture led to the absence of such values. Managers also give work to individuals and not for teams.

Morale: This variable considers the extent to which employees are motivated to be efficient and productive. There was no significant statistical impact on the morale of employees due to KM. This may be due to the instability in the market and the reduction in revenues and employees are not sure of their future.

Information Flow: The variable identifies if employees have sufficient information to be efficient and productive. Information can refer to updates in the work procedure, company developments and other information that helps them in their work. There was a statistically significant and positive impact on flow of information flow. Arab cultures are based on social networks and this helped in the flow of information. A high level of IT infrastructure also helped this variable.

Involvement: The variable shows if employees feel they can give suggestions for decisions that affect their work. There was no statistically significant impact for employee involvement for this variable. One reason is that STC still remains a government organisation and decisions are made by the managers and the top management.

Supervision: It is the extent to which work descriptions are explained by the supervisor. The variable also indicates the ability of the supervisor to accept criticism. This variable had a statistically significant impact on the KM solution. Supervisors care of the employees, provide them with sufficient instructions, accept criticism and listen to employee problems.

Customer Orientation: It represents the extent to which the staff assert that their team tries to improve service for customers. It also explores the relation between co-workers. This variable had a statistically significant impact on the KM solution. The study showed that where possible, the staff worked to meet customer's requirements and solve their problems.

Trust: It indicates the environment where the people trust each other. It also examines the faith that employees have to achieve the corporate goals. Trust as a dimension of organizational culture had a positive and statistically significant impact on KM. People tended to trust each other and the management more.

Reward Orientation: It represents the extent to which rewards are allocated based on performance and not favouritism and nepotism. Reward orientation had a very positive and a significant statistical impact on KM. This means that employees perceived they were evaluated and rewarded fairly and honestly.

Knowledge Exchange: It represents the push and pull observed in different direction to obtain information, data and knowledge between groups and individuals for their mutual advantage.

From the above research, it can be seen that KM has a positive influence on six of the ten dimensions for improved organisational performance. The ones that did not have a statistically significant impact were due to the old structures when government fully owned the firm, the reticent and closed Arab culture and a tendency to form close social groups. However, these dimensions are behavioural in nature and not functional and it is expected that with sufficient training, there would be an improvement.

Development of KM Strategy for the Future: The KM practice is sufficiently developed at STC. Much more work and development must be done for the future. Some plans that are under way at STC are discussed as below [20].

- There is a move to introduce more of teamwork training and team building workshops among different departments of STC. Training will be given to the lower level and mid management staff as well as senior managers at the firm. Cross-functional teams will also be trained together so that people from sales will train with the technical staff and so on. Such training will help in developing and sharing knowledge better. This will also increase the cohesiveness of the team structures.
- Communities of Practice – CoPs are planned. These would involve development of communities of people who have similar work-related interests and who operate in the same functional domain groups.

This means that technical people who have expertise in convergence solutions will present their findings to the community. Sales and marketing people who have to sell these solutions will then speak of development in the market and customer demands. The CoPs can then develop solutions that will answer customer demands.

- It is expected that by involving more people from the lower levels of technicians, the KM practice will have a much greater following and use. Tips, solutions and workarounds are very much appreciated and needed by technicians. The availability of such solutions means that STC can reduce the turnaround time needed for installation and repair as well as the time taken for new product rollout.

Map of KM at STC: The map of KM strategy at STC will be based on a framework of four axes. These are briefly described as below [20, 21].

Awareness and Commitment to Knowledge Management: As seen in the previous section, the awareness and commitment to KM is increasing. More people need to be involved in the project. This can happen by increasing the involvement of cross-functional teams.

Planning and Implementation: This activity is developed to a certain extent. However, much more involvement of the lower level of employees is needed. The existing tendency is to involve the managers and supervisors in the activity. This approach should be changed and more levels of staff across different locations must be covered.

Publication and Dissemination of Knowledge: The knowledge management portal at STC helps to publish and disseminate knowledge through the organisation. However, the number of visits, number of knowledge artefacts uploaded and downloaded needs to increase. People tend to load anything they can find and this should be reduced.

Communication and its Role in the Development of Knowledge Management: Not all people are aware of what KM means, the role it can play and how the staff can use the repository to enhance their knowledge and skills. There is thus a need to develop effective communication through meetings, using posters and running advertisement campaigns to increase the awareness.

Given below in this Table, the Map of KM at STC. The Framework Is Shown at the Four Axes

Awareness and commitment to knowledge management:	Planning and implementation:
<ul style="list-style-type: none"> • Awareness and commitment to KM is increasing • Need to involve lower level functional staff 	<ul style="list-style-type: none"> • Somewhat developed • Activity restricted to managers and supervisors • Involve more branches and levels of staff
Publication and dissemination of knowledge:	Communication and its role in the development of knowledge management:
<ul style="list-style-type: none"> • KM portal available • Number of visits and artefacts uploaded must increase • Need to increase use of artefacts already uploaded 	<ul style="list-style-type: none"> • Need to increase awareness of KM and its use • Must use Ads, meetings and emails to increase use

Km in Other Telecommunication Firms Across the World: Experiences and studies from KM implementations in telecommunication firms in other nations are discussed in this section. These studies will help in understanding if the implementation in STC are as per international standards. Dowell and Killaly [24] have written about the KM systems that were used by US telecommunication firms such as AT&T and Sprint to enter international markets. The problem with these firms was not technology or technical expertise [25]. The firms were faced with the problem of resource uncertainty. This means that firms invest certain resources in proportion to the expected results and revenues from a market [26]. Investments are commitments and large firms face large exit barriers since foreign nations would not allow these firms to sell their assets easily and go away. Therefore, if there is a variation in the business environment and then the firm will have either overinvested or under invested. There would be significant opportunity costs from the wrong approach used for the investment [27]. If prior knowledge and information about foreign markets is not available, then firms resort to trail and error tactics and may depend on 'luck'. Faced with such uncertainties, US telecommunication firms set up knowledge management networks that were used to derive information about foreign markets, test product acceptance and study the pattern of responses. Inputs came from several international locations such as Argentina, Brazil, African nations and Asia. The results were then used to understand and develop a common strategy for international entry. The strategy included acceptable tariffs, technology and services most likely to succeed [24].

Chong [28] has reported the findings from a study on KM done at a telecommunications firm in Malaysia. The study is important since Malaysia is an Islamic nation and an emerging economy. Many firms implemented KM solutions to increase the efficiency of some organisational business factors that were identified prior to the study. These success actors were Business

strategy, organisation structure, the KM team, K-map and K-audit. Organizational culture, Leadership support, Technological infrastructure and Performance measurement. KM Processes that were measure included Construction, Embodiment and Deployment. The impact of these indicators on the organisation performance was studied by administering a survey instrument to 800 middle level employees of the Malaysian telecommunication firms. The overall impression was that the KM initiative had improved their performance.

Akroush and Al Mohammad [29] carried out a study on KM initiatives at Jordanian telecommunication firms. Objectives were to examine the relation between KM and organisational performance. The research was conducted by administering a survey for 339 managers. The KM assets were classified into built- and invested-in marketing assets and MKM capabilities were placed into internal and external marketing capabilities. Performance of the telecommunication firm were classified in three dimensions and these were market, customer and financial. Results of the survey showed that the KM implementation had a positive effect on the organisation performance capabilities. When these KM implementations are compared with the implementation at STC, it is apparent that STC is still in the learning curve. The attitude of the management and staff towards KM is positive. However, the use of KM must be increased. Some cultural barriers related to the Arab culture also acts as a challenge. However, with adequate intervention of senior management, these barriers can be overcome.

CONCLUSIONS

In conclusion the paper has examined the KM implementation at STC. The paper also discussed several KM practices and observations from theory and implementations in different areas. It is seen that the KM implementation is directed to support the LEAD framework of STC. This framework would help the organisation to overcome the challenges of technology and activities of rival firms. The six dimensions were

examined in the KM context and the development of activities are in a direction that supports the initiatives. The progress of KM at STC was also examined. A research done at STC was used as the basis and this research measured the responses of KM practitioners for 10 independent variables. The studies showed that out of these, there was positive and statistically significant impact on six independent variables while four variables did not show any change due to the introduction of KM. The variables that showed a positive impact are considered as very important for the functional development of KM solution. The variables that did not show any changes or impact were related to team work, Arab culture of forming close social networks, involvement in the work and this was due to the government culture that was present was STC was wholly owned by the government. These variables would change to positive after some more time. It was also seen that lower level staff showed lesser activity and involvement with KM and this needs to be changed by encouraging their participation.

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