

# Integration of Knowledge Management system in Telecommunication: A case Study of Saudi Telecom

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## Abstract.

Accelerated business growth has pushed telecommunication companies to implement knowledge management systems to systematically manage knowledge created within the organization. This helps them to retain their competitive edge in the rapid changing telecom sector. This study plan to explore the emerging role of Knowledge Management (KM) system in telecommunication industry. Moreover it also encompasses KM issues related to people and technology in telecom sector. The results of this study are based on field interviews /observations and will be compared with existing body of research in the field.

**Keywords:** Saudi Telecom, Knowledge Management, Taxonomy, Knowledge Management Strategy.

## 1. Introduction

Telecommunication got immense growth in the last few years. Saudi Telecom (STC) is one of the growing telecom sectors worldwide. The rapid growth in this market makes it one of the leading businesses in Saudi Arabia. The mutual understanding of sharing expedient data steadily become the most important perspective in STC culture. KM applications deploy in telecommunications refereeing to the real case study, to identify and observe that how management tools impact the whole business process effectively by allocating resources using KM methods. The best methods of attaining vital information need comprehensive investigation through interview, conferences and analysis reviews.

Subsequently having skilled experiences from field observation, the main emphasis on different events related to KM methods within the telecommunication business. As for more analysis of strengths and weaknesses of the KM implementation is concerned, this study suggested some recommendation for improvement because future prospectus of KM development still needs improvement within the industry.

### 1.1 Role of Knowledge Management in the Telecommunication Industry

Telecommunication has taken up a protracted development history in Saudi Arabia economy. Typically it is directly liable for the expansion of the service sector within the community. With state-of-the-art IT infrastructure and excellent world network designed, telecommunication business demonstrates its true price to the Saudi Arabia society. Since 2005, telecommunication market in Saudi Arabia is open for keen competition [13]. Following STC the other 3 new firms (Mobily, Zain and Atheeb) were licensed respectively to produce telecommunication services on a competitive basis. Consequently, a high level of quality in telecommunication services is obtainable within the market at affordable prices. To maintain glorious service and to survive within the competitive market, individual organization has developed a scientific approach resulting in the achievement of final business goals [11,12].

### 1.2 Serve as important business intelligence

In [2] the author claims telecommunication industry as the "Sunset industry" due to the reason of rapid growth in technological developments and product innovations. In the competitive environment, to hold a significant position in the market, business organizations have to keep updated with the global trend and current status about telecommunications. "In view of the business structure, telecommunications are featured with hybrid science of collaborations among people, process and technology". To take more benefit business organizations are concerned to integrate these three components with a consistent and promising management system. The advantage of shared knowledge system is to exchange knowledge from individuals to the whole enterprises, in order to retain valuable information and skillful experiences within the companies. "Besides, intellectual capital from workers offers as knowledge experts for business activities and future development at different aspects. When facing business conflicts and production problems, the knowledge

intensive process works with the case by providing effective solutions for performance improvement. In addition, business intelligence enhances communications among departments so that co-operative team production can be more integrated with strong collaboration from different divisions. Having a high degree of accuracy and accessibility for information enables the organizations to respond more quickly upon market changes and decision-making"[2].

### 1.3 Keep along as good practice captured

In [2] the authors also demonstrate that now a days KM is the essential parameter for industrial growth. By employing professional experts and consultants, workers are trained with the use of KM in order to follow creative ways for the successful achievements of business targets. The interactions between workers and understanding between departments are enhanced by incorporating KM as the key production mechanism. Finding new production processes with the idea of KM, enhance the business feats. Such learning is useful which flows around in the KM cycle for creating new thinking.

### 1.4 Manage relationships with key customers

The authors argued that People are the primary core in knowledge management application in the telecommunication market, to assimilate several informative connections to form inventive business knowledge. For conventional telecommunication company, typically sales persons work at the forefront in the business fabrication and deal with consumers to provide high-quality services and in return, gets frequent business connections. By the resources of KM, data is held and kept with suitable arrangements so that it can be easily regained and transported concerning different needs urged from employees. In the past, employees had to hunt out the material in persons and such cases really tool up a long time and even a high cost for business processes [2].

The paper is organized as follows. Section 1 presents the literature review. Section 2 describes Saudi Telecom (STC) as a case study. Section 3 lists findings and results of implementing KM in STC. Finally section 4 concludes the paper.

## 2. Literature Review

The general introduction of KM is

### 2.1 What is KM?

In [6] the authors give the best and simple definition that KM is the set of processes that seeks to change the

organization's present pattern of knowledge processing to enhance it and its outcomes.

### 2.2 KM in Telecommunications Industry

KM is crucial to all or any styles of trades which might facilitate the organizations to think about how to capture the tenant information within the organization. Mostly in telecommunication sector throughout the world, a large number of data staff have been hired to perform the schedule operation of the organization, it is vital for them to speak and share their knowledge. Therefore, telecom corporations today are willing to invest and capture the maximum amount of knowledge as attainable from their most experienced staff. Some massive telecommunications service provider begins to form a senior-level management position in their organization to make sure that KM operates effectively [7,8]. According to authors in [16], some reputable telecom corporations like British Telecom, AT & T, and Deutsche Telekom have created chief information officer positions in their organization., It demonstrates the fact that the telecommunications industry believe that intellectual assets have worth.

The following numerous factors identified in [16] which are important for an effective KM systems in telecommunication sector.

- i. IT supports needs to be adequate in both scale and communications response time.
- ii. Database should include user-friendly search capabilities.
- iii. Tools in the search engine need to pinpoint the proper information when requested.
- iv. Processes need to support the facilitation of information retrieval and must be in place to assist in the creation of new information.
- v. System performance metrics should be maintained in order to help to determine the criteria for new data to enter the system.
- vi. Type of data to be available must pass tests defined in the design phase, it should be limited to information that will increase the performance of employees or improve the customer's experience.
- vii. Effective incentives and supportive core values should be encouraged to the most expert employees to share their knowledge.

People conjointly perpetually argue that the advantages of information management systems seem to be too theoretical to measure; the subsequent is an example of returns from implementing KM in telecommunication trade [5]. Quantification of advantages is most blatant in client service sectors like sales and client support department for instance, a client service center may use a KM system to assist service representatives to spot the supply of issues by

listing troubleshooting measures that were successful within the past. Therefore, additional issues are resolved with one decision in client service centers [1]. Telecommunications service suppliers have used KM systems to extend their sales productivity. Sales representatives tend to concentrate on those services sold successfully in past. KM systems will assist to extend sales services by providing data to the sales representative in smaller amount. [9, 10, 17].

The progressive development made in ontologies to represent knowledge. The aim of developing ontologies is to provide flexibility and richness in KM. To develop semantics KM, researchers paying attention to contribute significantly in developing theoretical and practical understanding of ontologies [3,4].

The authors describe a research project to deploy knowledge networks in a high technology company. The aim of implementing this project was to make deep understanding of network setup and show to be sustained. In this paper two different projects are discussed with two

different level of maturity and some tentative modules were analyzed as follows [14, 15].

- To categorize and support knowledge activists.
- Apply strategic agenda to put knowledge networks.
- Major organizational changes may be vulnerable to formal networks.
- To build and understand that how formal networks can coincide with line organization.

### 3. STC Case Study

This section elaborates the present study and investigation on integration of KM implementation with STC.

#### 3.1 Saudi Telecom Overview

The following figure shows the years wise planning of knowledge management in STC

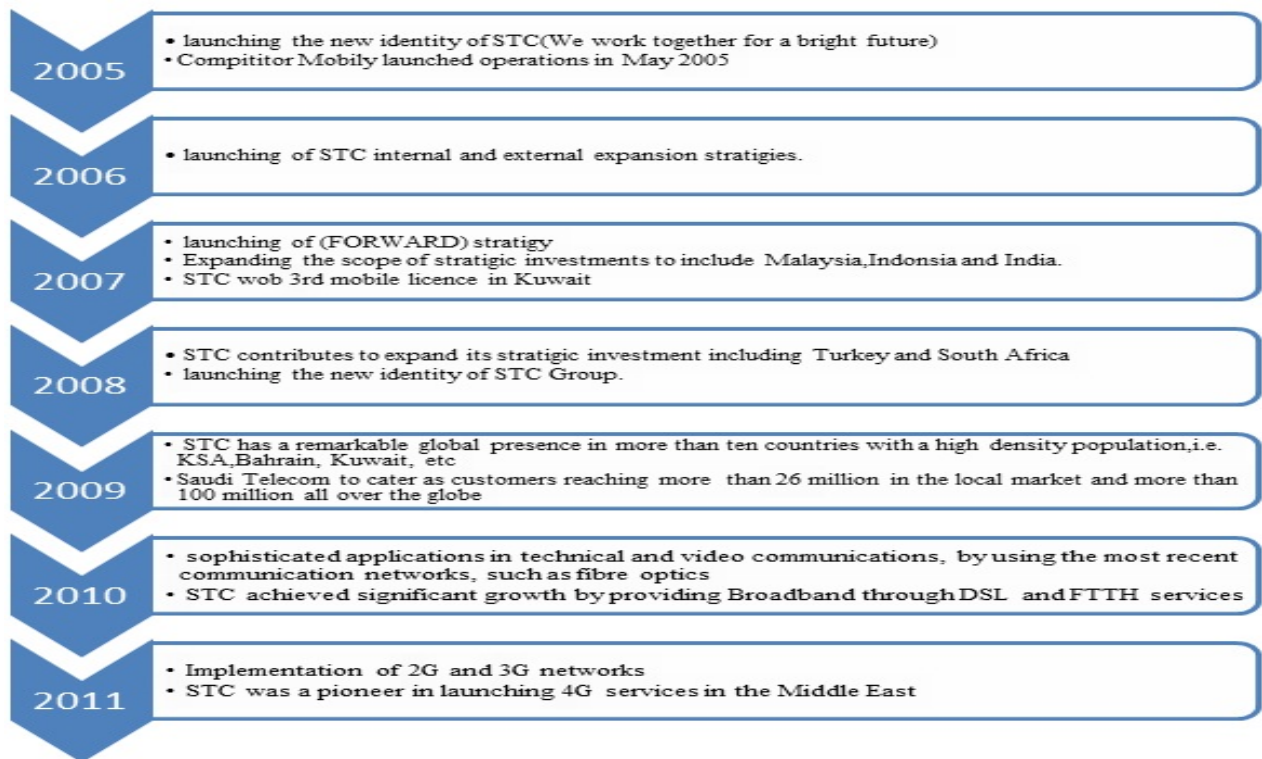


Fig 1: Important historical events [18]

#### 3.2 STC Mission

To be a leader in world of constant change, STC strives to exceed our customer's expectations to reach new horizons

##### 3.2.1 STC Values

- Loyalty Honesty
- Commitment
- Cooperation
- Respect
- Initiative

### 3.3 Saudi Telecom Company Strategy:



Fig 2. Main STC Strategy [18] (Adopted from STC)

**F (Fulfil Mobile Potential)** Shift voice traffic to mobile and deploy mass 3.5G

**O (Offer Wholesale Services)** Grow wholesale business through broadening service offering to capture revenue opportunity from national and international customers

**R<sub>1</sub> (Re-invent Home Communication)** Accelerate retail broadband adoption in the kingdom supported by Multi-Play offering

**W (Win Enterprise Customers)** Address untapped potential in the enterprise customer segment and optimize STC cost to serve

**A (Achieve External Growth)** Pursue non-organic growth aiming at generating 10% of STC revenues from external sources by 2010.

**R<sub>2</sub> (Re-organize Internal Structure)** Adopt customer facing organizational model supported by strategic and transactional support functions

**D (Derive Operational Efficiencies)** Implement "True Shared Services" and pursue manpower optimization

1. Maintain the leading role at market and bolster STC competitiveness in the Saudi market
2. Upgrade STC operational efficiency
3. Achieve further expansions abroad

### 3.4. Saudi Telecom Organization Structure:

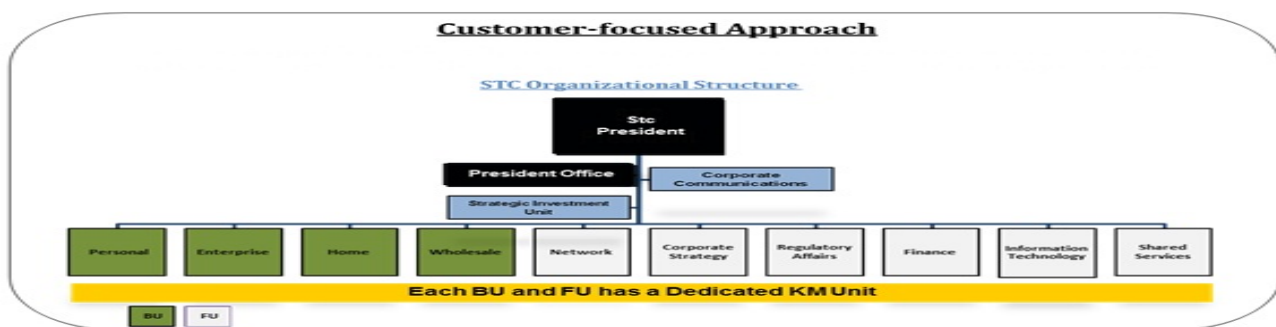


Fig 3 KM position in STC hierarchy [18] (Adopted from STC)

### 3.5 Project Work Plan

The project work flow having four phases summarized in the following Figure 4:

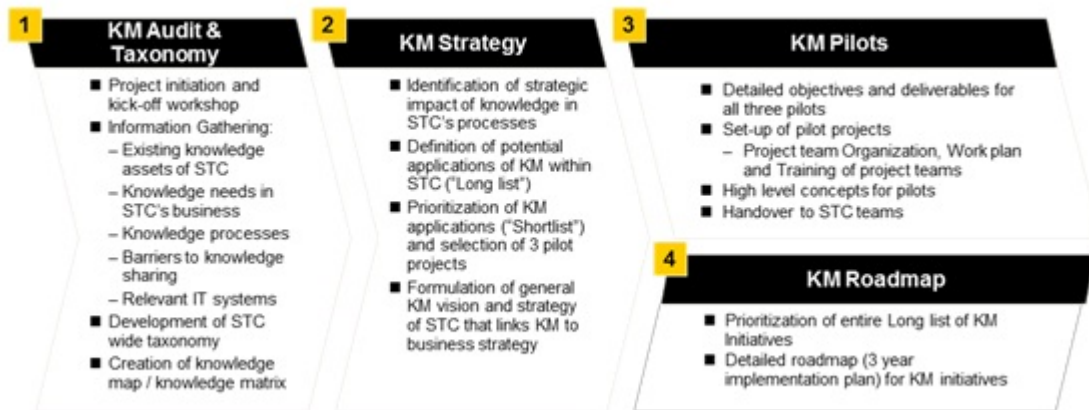


Figure 4 Project Work Plan[18](Adopted from STC)

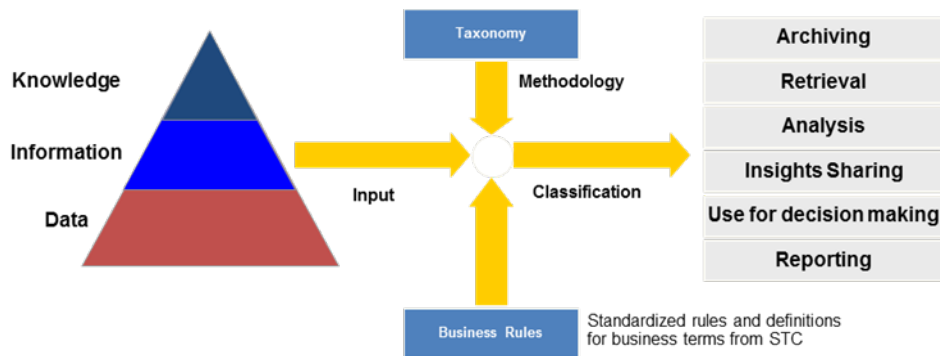


Fig 5 Audit & Taxonomy [18](Adopted from STC)

#### 3.5.1 KM Audit & Taxonomy

The different characteristics of KM Audit and Taxonomy are as under

##### 3.5.1.1. Basic Characteristics of Taxonomy:

Taxonomy is the systematic methodology used to classify data, information & knowledge into a standard hierarchy of ordered groups based on certain natural similarities and relationships

The below are two basic characteristics of Taxonomy:

- Taxonomy is purely a methodology for classification
- It is independent of the company's corporate strategy, and is an enabler which depends on the industry and characteristics of the specific firm under consideration.

#### 3.5.1.2. Knowledge Management and Taxonomy

Effective knowledge sharing is possible only if a common terminology and classification of concepts exists to create a common ground for sharing in the entire organization

This visual representation gives a view of all the data, information and knowledge – internal and external – required by STC to create and capture value common to all stakeholders, this representation of the business concepts will easily enable everyone in STC to interact and therefore will be used to create a Knowledge Base.

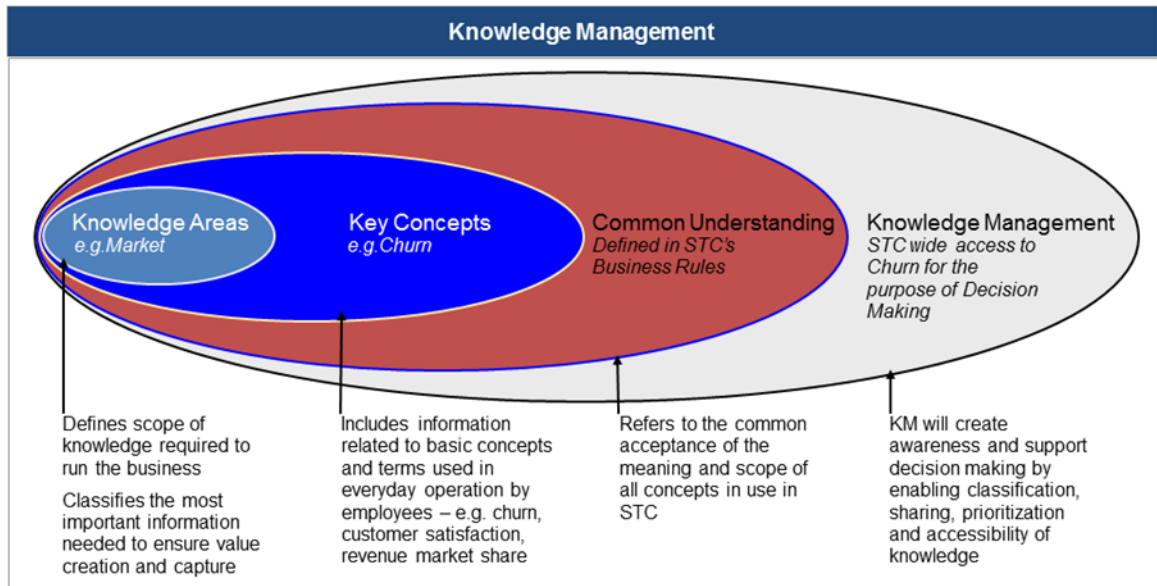


Fig 6 KM &amp; Taxonomy[18](Adopted from STC)

### 3.5.1.3. Development of Taxonomy – Knowledge Required by STC

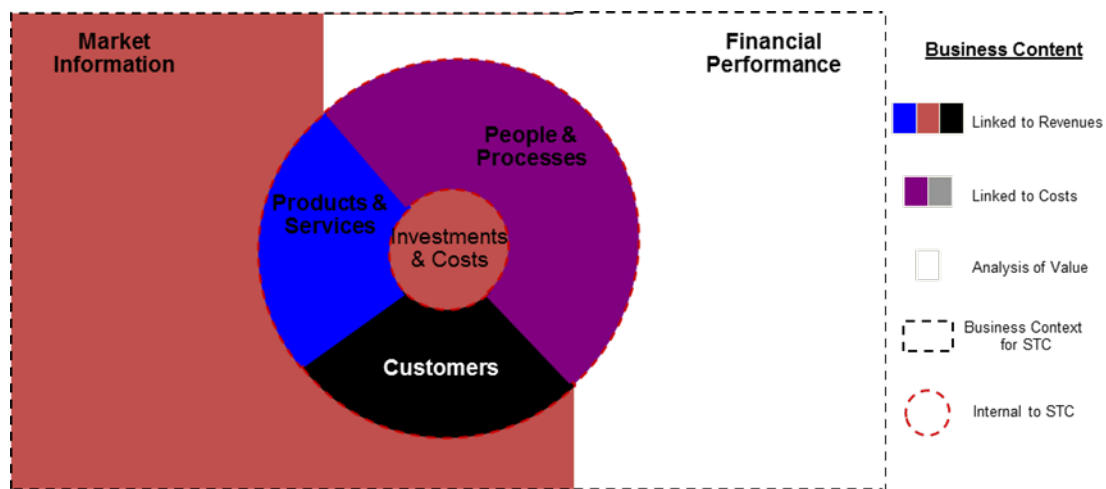


Fig 7 Development of Taxonomy[18](Adopted from STC)

### 3.5.1.4. Taxonomy- Knowledge Areas

In this taxonomy, all content of STC categorized into the following seven broad knowledge areas as shown in Fig 9.



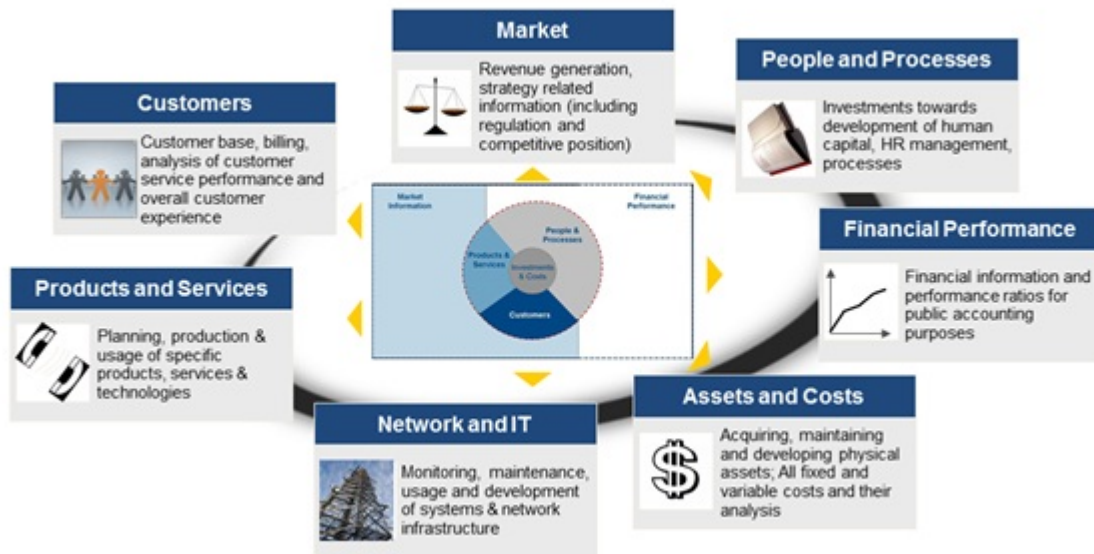


Fig 8 Knowledge areas [18] (Adopted from STC)

### 3.5.1.5. Deployment of STC Taxonomy-Process for Completion of Concepts

The concepts lists will be completed by STC across knowledge areas to obtain a version 1 of the lists as addition is possible after periodic intervals

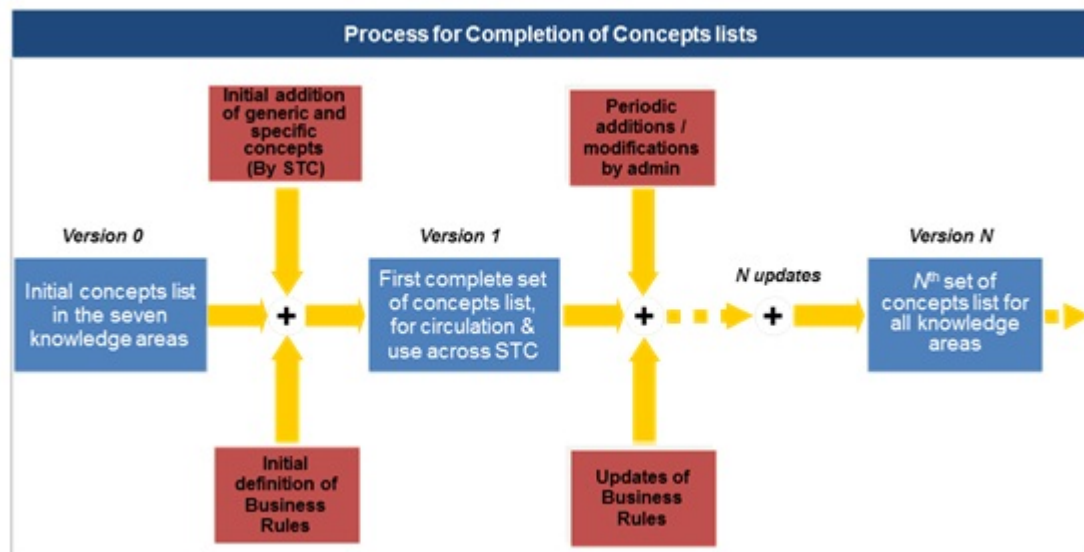


Fig 5 Deployment of Taxonomy[18](Adopted from STC)

### 3.5.1.6. Deployment of STC Taxonomy – Roles & Responsibilities of the Administrator

The administrators of the taxonomy will make these additions to the taxonomy, circulate it, train users, and support their needs as explained below:  
Administration

- Monitoring, suggesting and managing the periodic addition of new concepts to the taxonomy long lists

#### Training

- Training of KM, user support within each sector to support and propagate taxonomy usage within sectors

- Training of employees towards using the taxonomy effectively

#### Taxonomy Support

- Ensure compatibility and integration of business rules in the taxonomy
- Manage email for all queries and taxonomy-support taxonomy@stc.com.sa

#### Circulation and Usage

- Circulation of taxonomy concepts list across STC

- Fostering use of taxonomy by all STC employees through targeted initiatives

#### 3.5.2 KM Strategy

The KM strategy features described below in detail :

##### 3.5.2.1 KM Strategy Directions

STC has identified three work streams for the KM strategy to focus on, after analyzing the results of the KM audit and the collaboration requirements to implement FORWARD



Fig 60 KM Strategy Direction[18](Adopted from STC)

##### 3.5.2.2. KM Strategy – Summary

The KM Strategy is aimed at aligning KM in STC so as to support the execution of FORWARD, with priority on inter-sector collaboration

##### i. KM Strategy Objectives

Completion of 3 KM initiatives in 3 months, 20 initiatives in 18 months and 40 initiatives in 36 months

##### ii. Content

STC identified over 200 telecom concepts & divided them into 3 levels of conceptualization (data, information and knowledge) across **7 knowledge areas**.

##### iii. Targeted Groups

STC has defined the content targets in accordance with the **clusters** arising from FORWARD.

##### iv. Organization / Process

Based on the 4 clusters, STC has created a functional organization structure that enables increased access to content, process efficiencies and superior collaboration, in line with the FORWARD strategy priorities

##### v. KM Roles and Responsibilities

STC increased the complementarities of the KM resources by specializing them either on STC-wide activities, or on specific work streams (**Content Sourcing, User Support and KM initiatives leader**) that benefit all internal clients of each cluster

##### vi. Infrastructure / Media

STC has emphasized the fact that the priority should be **utilizing current infrastructure** to its full potential &



increasing the opportunities for knowledge sharing in specific contexts according to FORWARD requirements

supports FORWARD and prioritizes inter-sector collaboration

#### vii. Culture

STC specified the role of Change Management and drew guidelines to deliver clear messages to employees in order to influence their practices of knowledge sharing

#### 3.5.2.4. KM Strategy Directions- KM Support to FORWARD:

The specific KM initiatives to support FORWARD, the pilot projects and KM Roadmap will be determined through the following three steps in next phase as shown in following Fig. 13

#### 3.5.2.3. KM Strategy & Objectives

KM needs to achieve specific short, medium and long term objectives, in accordance with the KM Strategy which

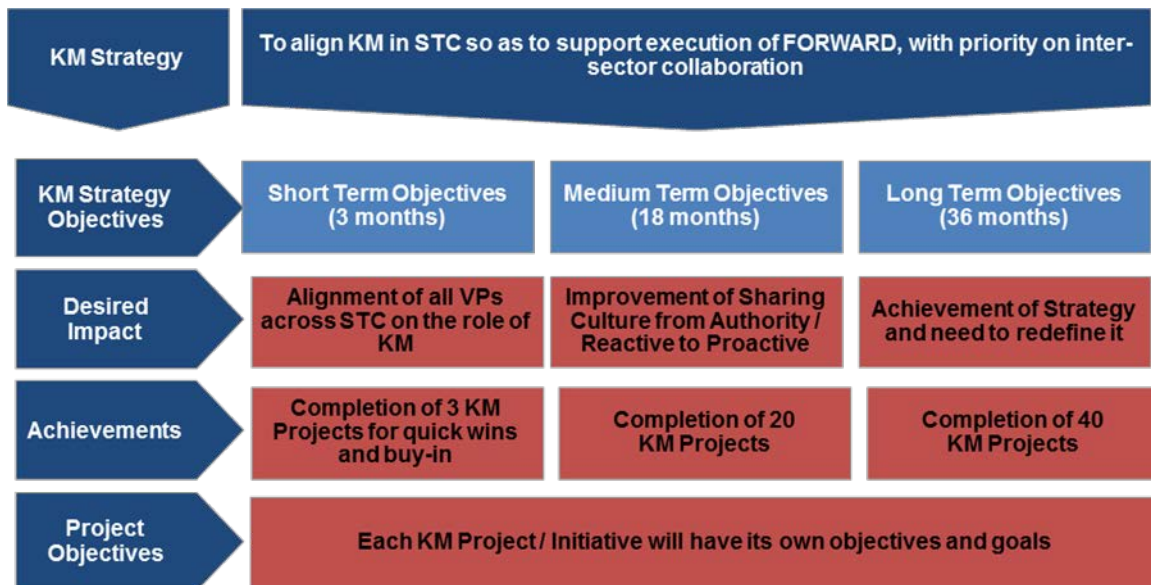


Fig 71 KM Strategy Objectives[18](Adopted from STC)

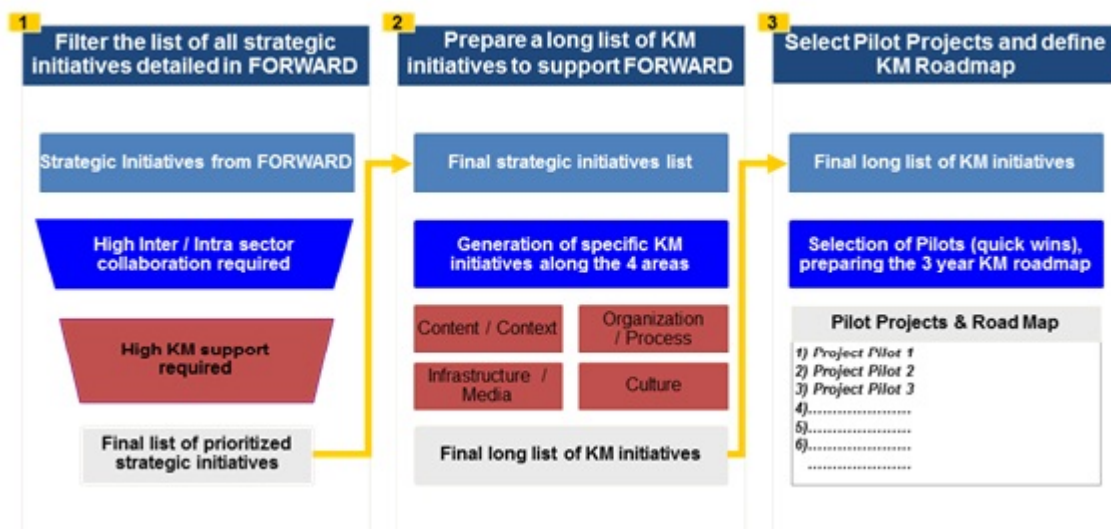


Fig 82 KM Support to FORWARD[18](Adopted from STC)

### 3.5.3. KM Potential Pilot Projects

The objectives of the prospective pilot projects fall into two categories – to support FORWARD and to put in place the fundamentals required for KM in STC

#### Potential Pilot Projects

#### 3.5.3.1. FORWARD

##### Objective

Specific KM Initiatives identified to support the FORWARD strategy implementation

##### Codification used

F1, F2...; O1, O2,...; R1 1, R1 2, ...

#### 3.5.3.2. KM Fundamentals

##### Objective

Basic KM Initiatives to support the KM strategy

##### Codification used

KM Fund 1, KM Fund 2, KM Fund 3, ...

The list of prospective pilots will contain both KM Initiatives to support FORWARD, & initiatives to set up KM Fundamentals in STC, which will be later used to select the top 2 pilot projects for quick wins.

#### 3.5.3.3. Two main pilot projects

STC has shortlisted number of potential pilot projects after prioritizing the entire KM long list in terms of quick wins (ease of implementation and business impact). Below are the first two:

#### i. Retention Best Practices.

Initiative Name: Share best practices for retention and win back strategy between Personal and Home

##### Project Description

- Within STC, the Personal BU has been in a competitive market for a few years while Home is now starting to face competition. In this context, Home needs a strong retention program to avoid churn.
- The project will bring together retention teams from Home and Personal and leverage their experience in customer retention, through
  - Identification of existing best practices for retention in both BUs, and analyzing the potential synergies between them
  - Creation of new retention best practices resulting from the knowledge sharing between sectors
- The implementation will require some joint efforts between the marketing teams and additional support from Customer care, Human Capital and IT

##### Objectives

- Support the FORWARD strategy in its customer retention objectives
- Create new common programs between the two Sectors, based on current Best Practices

##### Deliverables

- Personal and Home presentations of Best Practices
- New Best Practices presentations and implementation plans
- Training materials

#### ii. Business Rules

Initiative Name: Finance to develop and share business rules for STC-specific concepts (from the taxonomy) across all sectors

##### Project Description

- STC specific concepts may be defined in different ways, and need to be explicitly defined & commonly agreed upon across STC
- Business Rules will define them so as to be generally accepted across the entire organization
- Examples of STC specific concepts
  - Revenue (defined for STC based on revenue recognition)
  - Churn (defined for STC based on when a customer is designated as churning)
- Concepts defined by Business Rules need to be tagged (marked out) in Systems and Media. Users will then be able to refer to the definitions of these concepts and reaffirm their understanding of the term

##### Objectives

Provide a common definition for key business concepts used across STC, so as to

- Have a common understanding of STC-specific concepts
- Ensure that these concepts are used systematically for all content across the organization

##### Deliverables

- List of Business Rules (definition and specification)
- Business rules creation, storage, sharing and update processes
- Systems to support storage and sharing of Business Rules
- Committee for definition and maintenance of Business Rules

### 3.5.4. KM Roadmap

The following are the two main characteristics of KM road map. The specific KM objectives for Saudi Telecom using a proven KM approach shown in Fig. 14.

- Prioritization of entire Long list of KM Initiatives
- Detailed roadmap (3 year implementation plan) for KM initiatives



Fig 13 STC KM approach [18](Adopted from STC)

## 4. Findings and Analysis of the Case Study

KM integration in Telecom sector helps to improve monitoring, assessing, etc., STC has also implemented various policies to improve some functional units of customer services and attain satisfactory result up to some extent. But still exist a little resistance from functional unit's staff. The following areas in customer services have been improved.

- The ability of front line to solve customer complaint.
- Realizing of needs of customer service center and marketing department.
- The functional units level of communication.

In result of achieving such e benefits, management has considered some changes in the future, such as:

- Dedicated functional unit to track the quality of service (QoS).
- Improve marketing environment and tools, e.g. online marketing, marketing through games and competition, to improve the self-service motivation.

- Giving more authority to the outstanding performing employees.
- Staff has given incentives and awards on their performance to motivate him for future.

## 5. Conclusion

Learning from the real case study, literature and KM text books, maintaining the sustainability of KM is a long term task. It concludes that success of KM project in an organization depends on the involvement and contribution of all the parties, especially strong initiative and passionate Top Management. The inter-related characteristics of KM create the complexity on real world practice. In order to develop an Enterprise-wide KM, an integrated view must be adopted. The courtesy should not be only given to theoretical and technology aspects, but also the cultural adoption and education among the participants needs to be given more attention.

This study helps in implementing different policies to improve various functional units and achieve satisfactory results. Customer services also improved like ability of front line to solve customer complaints, to realize needs of customer service and marketing departments.

This study also gives clue to management for future change such as to track quality of service (QoS), Improve marketing environment using various tools i.e. online marketing, marketing through games and competition. In this study, the paper outlined the role of KM in the telecommunication industry. On the basis of Literature review, KM integration and implementation is analyzed in Saudi Telecom (STC) as a case study and finally some finding and result are highlighted.

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