CHAPTER 1

BACKGROUND OF THE STUDY

1.1 Introduction:

This chapter introduces the context of the study, which examines the critical cultural attributes facilitating knowledge sharing in the organization. The chapter begins with the current business scenario, brief on the oil and gas industry and the rationale for selection of the sector. It briefly introduces the core themes - knowledge management, knowledge sharing and organization as an epistemic community. Next, an overview of the statement of the problem, research gaps and rationale for the study, assumptions, research objectives and questions, expected outcome and limitations of the research. Finally, the chapter provides the summary of the structure of dissertation.

1.2 Business Scenario

Though the classical economics considered land, capital, and labour as the important sources of wealth, the shift from traditional factors of production; that were primarily physical in nature to intangible intellectual resources implies a change in the locus of economic power. Wealth and power are now associated with the one who has knowledge. Globalization of economy was the first visible impact, but recently globalization of knowledge is modifying the operations of small organizations at a global level. Stability is a fantasy for today’s organizations in consequence of disruptive external forces continuously striving to disturb the very fabric of an organization. Internal competence and people of the firm successfully maintain the organization's cohesiveness, offering a long-term advantage.

Sharing knowledge is the foundation of the enlightenment ideal of progress and is fundamental to the human race for the advancement of society. It could be processes, stories, insights, philosophies, techniques, resources or secrets people have been sharing ever since they first banded together in prehistoric times. People are no longer polarized by geography, race or gender, and technological advancements have profoundly influenced the process of socialization, thus modifying the ways we connect, share, and interact with others. Face to face communication, the archetypal form of sharing information is still powerful but the importance of recent trends like sharing in virtual communities, social networking, and professional communities cannot be ignored.
Relationship intelligence is prime in complex business environment and organizations are restoring it through different initiatives.

In the hyper-connected world, people are well equipped to take decisions due to readily available information. Making knowledge available to the right people at the right time is critical to building an organization’s competencies (Alazmi & Zairi, 2003). Any relevant idea, generated internally or externally, but assimilated efficiently and made available to people as the strategic blend of internal and external knowledge resources will help an organization stay ahead (Anand et al., 2002). The boundaries of an organization have become blurred and it is hard to pinpoint the exact direction of flow of knowledge in the organization. All the sectors are going through a tectonic shift, and no business can afford to sit in the corner of the spectrum and watch the effect of the evolutionary change or design a strategy as a unidirectional process. The structural complexity of an organization and advancement of technology will not make communication and collaboration neatly visible, as it will be in constant flux. Organizations need to resonate with people beyond something transactional by providing a collaborative environment. While the uncertain business climate does not value real connections, nurturing and listening to others provides opportunities that if managed objectively reap long term results. Combined effect of the presence of transformative environment and work inspires people to enhance active engagement in the organization.

1.2.1 Technological Advancements:

Digital and social technologies have put human race in the upward curve of a wave and the time between our imaginations becoming a reality have decreased drastically. Dramatic changes in information and communication technologies connected the world and the nonexistent digital flow anticipated by few organizations are positively impacting GDP of every nation more than trade in goods’ (MGIReport). The inflow and outflow of information help growth since economies get exposed to new ideas, research, technologies and talents around the world. We are going through a very incongruous phase, where, on the one hand, the technological innovation has led to a democratization of knowledge and at the same time we are moving towards knowledge marginalization through the patent system. The next battle for the emerging markets is to fight and be competitive in patent regime. Start-ups and small organizations are flourishing in international markets with less capital intensive business models and large established organizations are gearing up to catch pace with changing organizational structures.

culture, products, assets, and competitors by becoming more flexible and agile. Organizations are working towards finding best ways to exchange ideas with a global community since geographical boundaries and need for human proximity are no more a barrier to pass knowledge. The understanding of how new technology impacts knowledge creation and sharing in the organization will help us analyze sharing patterns and finding what resonates with other people. Availability of technology in the organization does not guarantee knowledge sharing (Alvi & Leidner 2001; Orlikowski 1996). In an organization, any extent of innovation/automation will never replace the human component in communication. The technological advances might help us increase the efficiency of interaction but cannot ensure its effectiveness.

1.3 Oil and Gas Sector

The Organization of the Petroleum Exporting Countries (OPEC) is a cartel made up of countries such as— Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela that hold about two-thirds of the world's oil reserves. In 2014, OPEC accounted for 81 percent of the world's crude oil reserves.

The oil and gas sector is one of the six core industries which plays a pivotal role in influencing decisions across other important spheres of the economy and thus has a strategic importance. India's oil and gas sector contributes approximately 15 percent of contribution by manufacturing industries to overall GDP of the country. As the fourth largest energy consumer\(^2\) (2015) of oil & gas in the world, India accounts for 34 percent of total energy consumption. India is the sixth largest consumer of oil in the world with an estimated oil consumption of four million barrels per day (MBPD) by 2016. Due to a huge demand-supply gap, India imports more than 60 percent of its crude oil requirement. The government has taken many initiatives to boost investment in this sector like 100 percent FDI is allowed for Indian companies in refineries. The Government of India has abolished the administrated pricing policy for petroleum products, pipeline industry, natural gas and infrastructure related to petroleum product marketing.

India has 20 and three refineries in the public and the private sectors, respectively. In Financial Year 2015, public sector refineries accounted for 53.4 percent of total refinery

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\(^2\) Data retrieved from Indian Brand Equity Foundation (www.ibef.org) on 27th March 2016.
crude throughput. India has 9,460 km of crude oil pipelines and 14,083 km of product pipelines.

The oil industry can be divided into three major components: upstream, midstream and downstream. The upstream segment comprises Exploration and Production (E&P) activities, the midstream segment is involved in storage and transportation of crude oil and natural gas and the downstream segment is engaged in refining and production of petroleum products, and processing, storage, marketing and transportation of commodities such as crude oil and natural gas. In India, crude oil is produced onshore and offshore. These three operations might be found in some organizations that are also known as integrated operations. Public sector corporations dominate the Indian exploration and production sector wherein ONGC (Oil and Natural Gas Commission) claims the highest share. The key players in the Oil and Gas industry in India are as such— Oil and Natural Gas Commission, Indian Oil Corporation, Hindustan Petroleum Corporation Ltd., Bharat Petroleum Corporation Ltd., Gas Authority of India Ltd., Reliance Industries Ltd., Essar Oil, Adani Gas, Petronet LNG, CairnEnergy, Shell, British Gas and British Petroleum. India has a significant potential to discover new oil and gas basins since 78 percent of the country’s sedimentary area still remains unexplored. The country’s gas pipeline coverage has increased substantially which also has significant potential for further expansion.

There are a few agencies that play significant roles in making critical decisions for oil and gas companies in India:

- Ministry of Petroleum & Natural Gas
- Oil Industry Development Board
- Petroleum Conservation Research Association
- Directorate General of Hydrocarbons
- Petroleum Planning & Analysis Cell

For several years, the oil and gas sector enjoyed benefits of being in an closed economy. The lack of competition made them more inward looking by focusing more on processes/systems and people. The organizations needed to accelerate growth by shifting from current government-led economic model to a more market-based approach. The faster productivity growth requires better business regulations and more openness to competition. The companies which entered the market after globalization had no option but to—balance between setting up strong internal systems, focus on the competition in the market by parallelly working on short term and long term strategies and, be agile from the start. Many older organizations are neutralizing or trying to tone down the
bureaucratic ways to remain competitive. Relatively, there are still less private players in this sector, and the Government still partially protects public sector organizations.

![Oil Value Chain Diagram]

**Fig 1: Oil Value Chain**

1.3.1 Upstream Sector: Exploration and Production:

Upstream sector, the first part of the oil and gas industry, deals with exploration and production of oil and gas. Oil exploration takes place at oil wells which could be onshore or offshore. There are more than 40,000 oil and gas fields of all sizes in the world.

1.3.2 Downstream: Refining and Marketing

Refining, the stage after exploration and production, deals with manufacturing petroleum products by separating crude oil into its major components and blend or convert these components into a wide range of finished goods, such as gasoline or Aviation Turbine Fuel. In the new age of decreasing oil production, refining capacity must have a complementary technology, which meets increasingly stringent environmental standards. Refinery throughput is computed as the number of refined barrels of oil processed by the actual number of days the refinery was in operation. There is underutilization of capability of processing crude oil in the existing refineries due to technological upgradations.

1.3.3 Knowledge Management in Oil and Gas sector

Currently, the oil and gas industry is facing many changes due to downfall in crude oil prices. Since this industry is marked by enormous costs of operation, even a momentary downtime can have a far-reaching impact. The oil and gas sector is known as knowledge-
intensive business services (KIBS). It is known as a process industry with the highest knowledge ratio (MGI Report, Feb. 2016) and also a capital-intensive industry with commoditized products. Distinctiveness of knowledge in this sector makes knowledge management more critical:

1. Rapid technological advancements make knowledge obsolete and irrelevant quickly, thus, knowledge has a limited shelf life.

2. Specifying knowledge requirements before time is difficult due to radical uncertainty which demands organizations to be proactive and flexible in technological development.

3. Knowledge Dispersion: knowledge is not collocated at a single place or person (Hayek 1945) making it complicated to identify and retrieve it in an organization.

4. Interactivity: knowledge in this sector cannot be produced in parts and consumed later due to the continuous process, and the possibility of customization of products is less in this industry.

British Petroleum (BP) was pioneer in designing and implementing formal KMS and the case study is still a benchmark for many organizations employing knowledge workers (Davenport & Prusak 1998). The term “knowledge worker” refers to people who have the knowledge and are a powerful resource for the owner of such knowledge. Knowledge work can be defined as a mental activity which involves knowledge creation and analysis. Thomas Davenport defined the term as—“knowledge workers have high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution or application of knowledge.” In his book Management Challenges for 21st Century (2001), Peter Drucker notes the importance of the productivity of KW and the guidelines to manage knowledge with the help of formal KMS.

1.3.4 Rationale for the Selection of Oil and Gas Sector:

The oil and gas sector demands people with critical skills due to the high complexity of operations. Therefore, 80 percent of the workforces in the firms are knowledge workers.

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3 KIBS is a term referred to the industries where the business operations are heavily reliant on professional knowledge; this term is used in European Commission report, 1995.

4 Knowledge ratio is calculated as no of people involved in knowledge task in the organization to the total number of people employed in the organization.

5 Commoditized products refers to goods that have economic value distinguishable in terms of attributes (brand) end up becoming simple commodities in the eyes of the market or consumers.
The workforce in this industry is ageing fast and in next five years, half of the workforce is retiring, and 70 percent of the workforce is above 50 years making knowledge of senior people in this sector very critical. In spite of the high level of automation, few critical operations cannot be completely automated and need human attention. This industry maintains zero intolerance policy towards health, safety, and environment issues. Also, timely fault detection and diagnosis are critical matters for modern refineries having complex systems that are difficult to maintain.

The oil and gas sector in India enjoyed monopoly in the past and designed robust organizational systems with a wide demographic spread. This industry had relatively less turnover compared to other industries but it struggled to attract talent as the sector never tried to position itself as a knowledge sector with a high learning curve to attract potential talent. The potential loss of knowledge due to 'Big Crew Change'\(^6\) whereby, half of the oil and gas engineers and scientists are expected to retire in the next five years makes it imperative to capture tacit knowledge of current employees, retirees, partners, vendors and other experts who could contribute to the collective knowledge base. Exploration and drilling are far more geographically diverse than in the past. The industry is struggling with the automation at various levels in spite of technological advancement making knowledge management as a critical initiative. Less management and engineering graduates choose oil and gas career, and it takes years to bring new engineers up to speed.

1.4 Knowledge Management:

Knowledge Management (KM) is an overt activity in corporations dating back to late 1990's. Yet, there are very few best practices in KM as most of them remain experimental and diffused since organizations mostly invest in making knowledge visible to the users(Davenport and Prusak,1997). Knowledge management involves panoply of systems and techniques to deal with tacit and explicit knowledge (Teece, 2000) and is defined as, 'how organizations create, retain and share knowledge (Argote& Ingram 2000; Huber 1991). The dependency on technology in developing KMS substantiates the orthodoxy of management field and inability to get into the issue head-on. Without superior design, even the best of the technology will not serve the purpose. Thus, in order to gain credible and consistent long-term benefits, organizations should start with utility and not technology. Most of the organizations feel that they can solve all knowledge

\(^6\)A phenomenon known as the Big Crew Change is under way in the oil and gas industry as the baby boomer generation reaches retirement age, and the industry works to bring young people up-to-speed to fill the shoes left behind.
related problems in the organization just by having a KMS with the best technology. However, it is an un compelling offering to a much deeper problem, as ideally KMS should cater to the needs of people as well as the purpose of the organization.

1.5 Knowledge Sharing

Organizational knowledge is a product of interaction and collaboration of people (Gold, Malhotra, & Segars 2001), intensity as well as the quality of interaction indirectly influence the manner in which firms are organized, structured and the way people behave. At an individual level, the interaction activities vary depending on the type and the nature of work thatat max is 80 percent for the managers and 20 percent for those who are primarily involved in physical labour (Butler et al. 1997). People do not do enough to ensure meaningful exchange and institutional learning while organizations do not want people to innovate alone as creativity should be a collective activity to enhance overall organizational effectiveness. Organizational knowledge primarily resides with people who cannot be forced to share it but can only be encouraged (Gilbert and Krause, 2002). By sharing knowledge, people exercise the power to influence individuals and organizations must consciously identify and cultivate influencers in the organization. Changing the behaviour of individuals is relatively difficult than dealing with the culture that creates a common context for people in the organization. If organizations want to have an edge over their competitors, they must embrace the momentum of a social and digital wave to align and influence the human experience by converging physical and digital world. Thus, sharing is the new buying (Ouyang, J 2014).

Technology and human perspective of knowledge sharing is a strategic yin yang (Nonaka & Takeuchi 1995) that cannot be separated but makes a complete whole by a combination of two parts. Technology cannot replace relationships build through face-to-face communication. The blending of personal touch and communications using latest technology proves to be more efficient.

1.6 Organization as an Epistemic Community:

Brass et al. (2004, 801) explain, “when two individuals interact, they not only represent an interpersonal tie, but they also represent the groups of which they are members....” The principle of coordination and differentiation guides synergetic efforts of people coming from a variety of backgrounds to accomplish the organizational goal. These professionals share certain common beliefs and values to operate in the social set up. The level of engagement of people in the organization is a result of intersubjective understanding, defined criterion of validating knowledge within the community, and standard practices
associated with a way of tackling problems. Members of an organization achieve professional competence by learning new skills and enhancing knowledge level, which consequently elevates organizational capability. Each member is not a part of the community by membership but by his contribution to the epistemic community. People collaborate through socialization process to contribute towards knowledge building and assimilation activity.

1.7 Statement of Problem:

Justin Berg’s study shows that the best predictor of creativity is the number as well as a variety of ideas. Sometimes, we might not judge our ideas, but we are good at forecasting the success of others’ ideas. We could rely on peer feedback on the idea when we do not trust our judgement. This makes a strong argument in the favour of knowledge sharing that people work together and create a novel idea. In an organization, apart from knowledge production, efficient knowledge sharing and offering conditions that foster knowledge sharing are equally important. New knowledge can be assimilated in the organization if there is internal cohesiveness concerning knowledge base. The ability to absorb internal and external knowledge efficiently is often considered as one of the competitive advantages (Grant, 1996; Kogut & Zander, 1993; Spender, 1996a). The issue related to knowledge sharing has received significant attention from academia as well as corporate practice. It has been investigated from the lens of Social Network Theory, Social Capital Theory and organizational knowledge research. Knowledge-based view (KBV) suggests that the primary reason for the existence of a firm is its ability to merge various knowledge streams, perspectives, and apply it to the task (Grant, 1996). Knowledge at the organizational level is not just a sum total of the knowledge which resides at the individual level. Knowledge sharing activity helps in assimilating diverse perspectives, and human beings are the principal actors to escalate success of this event hence knowledge sharing was considered to be a natural and innate function at a workplace (Chakravarthy, Zaheer, & Zaheer, 1999).

A majority of the literature in knowledge sharing domain explored individual perceptions and characteristics. There are few studies conducted at an organizational level (Malhotra, Gosain & Savy, 2005) examining organizational factors in general.
Talent and knowledge are most celebrated and compensated in the organizations if they contribute spectacularly to the top line and other crucial metrics of an organization. Anyone with critical talent gets valued since he adds powerfully to the bottom line and compels organizations to do away with conventional ways. These new changes in the business world also illustrate irrelevance of economic determinism explained through Marxism.

1.8 Research Gap and Rationale for the study:

The phenomenon under investigation is KS in the Indian oil and gas sector. The conceptualization of the study is grounded in KBV (knowledge-based view) and social dimensions (sociability and solidarity) of organizational culture. It further posits five critical attributes affecting KS in the organization. Knowledge sharing is a significant activity in the organization. Lillicore and Hansen (2011: 54) argue that “knowledge sharing can positively influence organizational performance through sharing both tacit and explicit knowledge.” Thus, active and purposeful exchange of knowledge accelerates organizational learning and innovation capacity. Riedge (2005, 2007) categorized knowledge sharing barriers into—(i) Individual barriers, (ii) Organizational barriers, and (iii) Technological barriers. Extant literature on knowledge sharing is dominated by the analysis of individual traits and personalities while culture emerged as one of the necessary drivers for knowledge sharing. Very few studies tried to analyse organizational culture and knowledge sharing at an individual level. The cultural context of an organization binds people together from different personalities, attitude, knowledge, and helps them operate seamlessly to achieve a common goal. The basic premise guiding the research is that each individual perceives the importance of knowledge sharing differently that could be encouraged by providing a cultural-conducive context, which is shared by people. Allen (1977) argued that individuals are the efficient carriers of information as they can restructure information which applies to new contexts. Knowledge sharing behavior is likely to be shaped by personal motivations but most importantly by contextual factors (Yoo and Torrey, 2002). Garvin (2003) claims that ideas create maximum impact when shared than hoarding and hence, their value grows. It is imperative for organizations to build a cultural context where people understand the significance of sharing knowledge for their development as well as for the organization. The study aims to identify the critical cultural attributes which facilitate the knowledge sharing at the workplace.

7In 2014, Tim Cook (CEO, Apple) was not highest paid. 22 out of 200 BSE listed companies do not have CEO as a highest paid employee. This deviation from corporate conventional wisdom across the globe is worth attention.
1.9 Assumptions:

The study has certain underlying conceptual assumptions about knowledge, culture, and knowledge sharing in the organization. These assumptions are:

Knowledge is conceptualized as "the ideas or understandings which an entity possesses that are used to take effective action to achieve the entity's goal" (Steven Denning 1999). This conceptualisation assumes that knowledge is action oriented, of which, effectiveness is a sole purpose, but without differentiating knowledge at an individual, team or organizational knowledge so that it could be applied to any entity. Reference to 'effective actions to accomplish goals' implies that the knowledge is highly contextualized to that entity. Hence, this study considers a complementary pluralistic view of knowledge as a process in the organization rather than considering it as an object as done in the majority of the research in this domain.

Knowledge-based view of the firm (Grant 1996, Spender 1996b, Kogut & Zander 1993), considers knowledge as one of the critical strategic assets of an organization, and effective deployment of idiosyncratic knowledge enhances the competitive advantage of the firm. Organization is conceptualized as an epistemic social community where members contribute and add value by way of expertise. Members of this community who are principle carriers of information create, share and integrate knowledge as per the context (Allen 1977).

This study relates itself with the synchronic view of culture. Culture promotes cohesive corporate values by acting as a common point of reference for everyone and shapes interactions and behaviour of people in the organization. In this study, an organization is examined by describing it through attributes of culture. The research on the attributes of organizational culture has validated that all organizations might have more or less similar attributes, or the intensity of attributes might differ.

The knowledge-based theory fits as a cusp between rational ideology theory, like scientific management; and humanist ideology theory, like human relations (Barley and Kunda 1992). Abrahamsen (1997) shows that the rationalist theories tend to gain importance during the economic contraction while humanist theories emerge at the beginning of an expansion cycle. The underlying logics and theories will govern the type of organizational processes. If we consider the knowledge processes in the organizations, they fall between two ideologies making economies through socializations of people.

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8 Synchronic view refers to analyzing culture at a specific point in time and space without taking cognizance of how it is evolved.
Knowledge, as a research topic is explored widely in various research fields (Choo & Bontis, 2002) and there are many different contradicting definitions and conceptualization of knowledge as per the context of the study. I have detailed the conceptualization of 'knowledge' as well as 'culture' in chapter two. Philosophical debate on knowledge is not in the scope of this thesis and thus not discussed. While reviewing knowledge in the organizational context, the focus is on work-related knowledge, which is idiosyncratic to each organization, and helps enhance peoples’ effectiveness at work. There are other types of knowledge that people share while at work, which is not discussed since it does not fall within the scope of the study.

There are few other concepts like— trust, team orientation, and rewards which are covered in the organizational studies literature but while reviewing and conceptualizing the same for this study, it is discussed and operationalized as one of the attributes impacting knowledge sharing in the organization.

1.10 Objective of the Study:

1. To study knowledge sharing and various factors that affect knowledge sharing in the organization.
2. To investigate the modes and goals of knowledge sharing in an organization.
3. To identify critical attributes of organizational culture which enhance knowledge sharing behavior of employees.
4. To suggest organizational interventions for effective knowledge sharing.

1.11 Research Questions:
The study investigates three broad questions which are further divided into sub-questions.

1. What is knowledge sharing in the organization and what are its modes and purposes?
2. Which organizational factors impact knowledge sharing at the workplace and what is their significance?
3. Which cultural attributes affect knowledge sharing at the workplace?

1.12 Expected Outcome of the Research:
The existing research in the domain of knowledge management field has contributed to academia and praxis. However, there exists a gap for micro-level analysis of the cultural context in an organization. This study intends to plug the gap by contributing to the
knowledge base by identifying significant attributes of organizational culture that could facilitate knowledge sharing in the organization.

The study also expects to generate a framework or guidelines for knowledge sharing in the organization. The findings will assist in designing knowledge sharing initiative in the organization as valued by employees than just imitating some best practices relevant to other firms. Customization and working on a single attribute of culture is much easier than randomly struggling to find a starting point.

1.13 The Thesis Layout:

Following this introductory chapter, the remaining chapters are:

Chapter 2: Conceptualization of the Study

This chapter illustrates the association between two major constructs for this study—'Knowledge' and 'Culture'. It also introduces KBV and KM in the organization. The chapter further details exploratory stage and conceptualization of the study.

Chapter 3: Literature Review and Hypothesis Generation

This chapter briefs focused review of the literature on knowledge management, knowledge sharing, and five critical attributes of organizational culture—Flexibility, Team Orientation, Openness, Trust and Rewards. It also explains how the hypothesis are generated for this study.

Chapter 4: Research Methodology

This chapter describes the methodological nuances adopted for this study, and it includes research paradigm, research process and design, data collection source, sampling, ethical consideration and limitations of this study.

Chapter 5: Knowledge Sharing Process in the Organization

This chapter details knowledge sharing process in the organization, challenges faced by the organizations, and various strategies adopted by the organizations keeping in mind the purpose of knowledge sharing.
Chapter 6: Analysis and Discussion

The chapter proffers an analysis of the data related to demographic, functional, and five critical attributes and KS in the organization. It also discusses the findings of the research by explaining it from business and HR perspective and includes post-hoc analysis.

Chapter 7: Insights and Business Implications

Insights and business implications are critical for research in organizational studies. This chapter discusses the applicability of the research.