Title: "A study of unlearning IT Instruments in health organization"

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Abstract

Nothing has been that consistent as the change is for the knowledge revolution to nourish and cultivate. Different forms of changes are occurring in organizations with the aim to improve the output performances. Health organizations have been more attached to the changes and the consequences that are brought with such changes. Such consequences are primarily connected with concepts of unlearning and learning. Any form of the change if initiated in organization asks for new routines learning, tasks conductions and the organizational cultural revolution. These new routines have been occurring at individual and organizational levels. The unlearning at any level in the organizational culture can be performed through investigating a primary connection between the organizational and individual routines. At the individual level unlearning brings a number of psychological, cognitive, social and moral hurdles. These hurdles at individual level basically help the organizational unlearning to occur. All of the routines occurring at individual level encompass the necessary information that goes from lower levels to upward, strengthening and holding the organizational memory firm.

This research was about to find how the health organizations unlearn the older practices and learn the new practices in IT change. This research had two streams i) finding whether there had been any connection between the organizational and individual unlearning in the cases of IT change, ii) For unlearning what kind of hurdles had been there at the individual level. Kalmar hospital pediatric department had been chosen for the empirical investigations. The research streams were about how and what parts which helped the researcher to go for the qualitative data gathering techniques.

The Results showed there had been a very thin connectivity between the organizational and individual unlearning. The results revealed and unfolded that many of the new learning are occurring simultaneously with discarding the older ways of practices. The impression of absorbing the change with respect to the unlearning had been varied from person to person. There had been a numbers of individual hurdles observed at individual level of unlearning. Apart from them, many individual routines (performative tasks) had the primary connectivity with the organizational routines (Ostensive routines) and shaping and reshaping of the organizational memory.

It is important to understand the unlearning notions with the type of change. In this research each of the interviewee had shared his thoughts of how the things could have been done differently by revealing the consequences with new learning. Literature suggests that for a profound and successful implementation of change more formal and informal trainings, clear strategy for shuffling the older individuals in the camp, more social and cognitive meetings and fast and quick actions in the cases of technical difficulties are to be taken.
Keywords: Unlearning, Learning, Organizational Memory, Change, Episodic Change, Continuous change, Journals, Cosmic.
Executive Summary

Different kinds of changes are occurring in the organizations for enhancing the work flow performances. Some of those changes are either continuous or episodic. These changes have been noticed as a catalyst to start the processes of unlearning and new learning at any level of the organization starting from the higher levels up to the grassroots levels. In the pursuance of a continuous form of change, one will have to find an organization where such changes are occurring at a more rapid rate. The health organizations are the ones, where the people healths are to be ensured with fast and rapid ways of treatment through upgraded and prestigious IT devices. Talking about the change, the concept of the unlearning has primary connection with successful implementation of change. It has been noticeable in the health organization, where people often spend half of their lives not to welcome any new routines and demands of the connected tasks with such a change. As a result a numbers of psychological, social, cognitive and intellectual barriers and hurdles stand firm in unlearning the old ways. Interestingly, the individual routines are the one that helps the organizational routines to nourish and develop. It has been observed in health organization that any new learning practices for operating on the new IT devices will have to occur when the unlearning starts at both the organizational and individual levels. The high level of authorities who are involved in making big decisions for the better organizational performance deem to have a good control of the situations in the drastic and chaotic changes environment. Unfortunately, many such stakeholders look at the working environment from a distance without realizing the accuracy of the information that flows from the lower to the higher hierarchy within the organization context. As a result, the individual routines have been allured with the positive aspects of fast and easy going routines without deeming on the negativity or side effects of learning and unlearning the new devices. This research is about finding whether there has been any connection between organizational and individual unlearning in the continuous form of change. Further what kind of individual hurdles have been there in unlearning the older ways of routines? Kalmar hospital pediatric department has been chosen for the empirical investigation where the continuous change is occurred 6 years ago i.e. shifting from the digital journals to a COSMIC system. COSMIC is a one integrated system, which solved many underlying problems from previous systems. These changes involved, staffs to unlearn the old practices and learn the new practices of routines and tasks operations on the Cosmic. The unlearning at the individual level helps the organizational unlearning to occur as the individuals in their daily work schedules are performing many of these routines. But at the same time the difficulties and hurdles in unlearning and learning have been varied dependent on the person that how experienced and confronted is he to the IT change processes. All of the facts and observations are accumulated with a number of consequences of the new ways of working in the analysis section. The scope of this dissertation can help the future research to investigate a number of new streams of research in health organizations.
1. Introduction

The aim of this chapter is to be familiar with the research about the unlearning in small and medium scale health organizations. In this chapter, first, the background study has been discussed, followed by the problematic areas of unlearning and research questions are drafted. The objective and justification of the study are followed together with the disposition of the dissertation.

1.1 Background

By IT instrument one can mean the daily usable digital devices, which are used to perform many tasks almost in no time. Such IT instruments can be computer devices like a computer system itself, printer, Xerox machine, database management system etc. Since there have been various kind of IT instruments and it is dependent on the choice of the organizational hierarchy that, which brand and version of the IT devices they are using. It would be hard to come up with any of specific device name at this time, as many details will have to be revealed later in the empirical investigation. Additionally, any of such devices, which would be merely hardware, requires software to be run over it. E.g. a computer itself is hardware but what it needs is software in the form of an operating system to get the tasks done.

A lot of knowledge revolution has been occurring on the behalf of technological changes that are occurring in any form of organizations. Nothing is as vital and consistent as the IT change is in any form of the organization. The changes adaptability in the IT set up is concerned with how quickly the people absorb them. To be consistent with the health organizational IT change the two broad categories are learning and unlearning. The learning and unlearning are to be consistent in case of implementing the profound IT changes with the aims for which such transitions have to occur. The unlearning has been a vital phenomenon, as one needs to learn first before he unlearns (Jashapara, 2004).

A change in organizational learning is a primary cornerstone for the organizational memory (Jashapara, 2004). What it means is the organizational learning with a change in IT support. There are two different research perspectives, one is either change in health organizations as learning the practices of new implementing and using the Information Technologies, where the other area is the study concerned with the designing of the information technology tools for the sake of supporting of the organizational learning (Robey et al., 2000). It has been observed that new IT support is a broad investment in the form of installing into the health organization, which can involve a simple intranet system to a complex knowledge management computing system (Rushmer and Davies, 2004). There are a number of perspectives related to each organizational learning phenomenon, as both may involve the formal training as well as the experience in implementing the IT tools. The dichotomy is all about the organizational knowledge which primarily set the
foundations for the organization success in absorbing such changes, which could be a barrier and can be eased by the organizational unlearning (Robey et al., 2000). The unlearning is about the organizational learning and you will have to learn first for unlearning (Jashapara, 2000). According to Hedberg (1981), as revealed by Akgün et al. (2007), as the organization lacks the skill of unlearning has been a critical weakness. The unlearning is about discarding the previous learning to make a way for a new unlearning, as clearly it does not mean to forget the past learning (Akgün et al., 2007).

Organizations schedules consist of the daily routines, tasks and a number of actions that are performed through IT instruments. Once the organization goes through to learn how to use and when to use a particular IT instrument, requires a number of learning steps. The daily routines are embedded into an organizational culture (Jashapara, 2004). The mediators play the important part once the organization feels the necessary IT changes to be brought in installing the new IT instruments. From an ideal scenario, the training and coaching of how to use the new instruments for carrying the previous old tasks in rapid fashion are conducted during the installation of the new IT instruments. The unlearning has been learning as one can unlearn when he has learnt something (Akgün et al., 2007).

1.2 Problem statement

A number of factors could be responsible and they act as a catalyst for IT change to be brought in small and medium organizations. There could be economic crisis in the world, organizational political set up, replacing the old employees with the new ones or adjusting the new recruits (Akgün et al., 2007). Additionally, in the health sector where the people lives are the most important thing, the understanding of the concepts of unlearning is vital. In many organizations the reasons of IT change are justified by a number of reasons as discussed above like the global economic crisis, new political set up, feasible and fast IT data base systems, intranet systems etc. In any case the concept of unlearning is not as subtle as it should be. Unlearning is about discarding the previous learning by learning the new learning (Akgün et al., 2007). The organizational learning is a collective form of learning where the individual learning gets combine to form the daily routines by accessing the IT instruments, data base system and such learning is rewarded by having a good data base system which keeps all the records of the organizational transactions (Jashapara, 2004). When the new IT instruments have been installed, the persons who operate on such instruments previously struggle with running them until they are formally trained or have had some knowledge of the new instruments already. As a result, some employees in the organization do not welcome any of such IT change.

The organizational unlearning in health sector is very important because the way in which the hospitals or health clinics work. There always has been less time for the employees to unlearn the previous knowledge for the sake of new ones.
organizational unlearning and individual unlearning in such cases make a number of chaotic problems for the employees like anxiety, fatigue, lack of interest in new learning etc (Rushmer and Davies, 2004). One of the reasons of such chaotic problems is the lack of dichotomy between the individual unlearning and the organizational unlearning in contrasting with the organizational learning and individual learning. One can learn individually in any organizations by a number of forms like learning from the senior employees, get socialize in a launch or a coffee break, learning by self-motivations etc. In unlearning the lack of time is critical particularly in the health sector. Another obstacle in unlearning at the organizational level in health sector could be the numbers of new comers getting hired and fired. According to Westelius and Askenäs (2004), such movements complicate the situations and disturb a social system. These disturbances effect both the organizational and the individual learning in any organization because much of the knowledge has been tacit and can be lost when an older employee leaves. But in informatics, any IT instrument may also work as an actor. As a result of the new IT transitions, the new and the older employees struggle to unlearn and learn. Similarly, considering the new IT instruments operating one may think of an operator as a user because he or she may have other job titles within the organization like a nurse, a doctor etc (Westelius and Askenäs 2004). One can sense it as a problem as many such scenarios are not ideal because of the lack of important knowledge of IT instruments and thus such situations make the unlearning even more hard both at organizational and individual level. Another problem could be the reliability of the new instruments that they will increase the performance of the organization and the capacity of the users to learn it quicker (Robey et al, 2000). The research varies the effect of increasing the organizational performance from one to another. How ever the problem is how much the new fast IT instrument can increase the learning capacity of the user. The employees do go at times to a training process but in the health organization where there has been so much occupations already and with the new IT instruments installations it is much harder for a current employee to learn and unlearn. The organizations usually induce their trust in old ways to operate the systems, which eventually create an enormous emotional belief and methods that neglect the importance of the new IT instruments (Akgün et al, 2007).

1.3 Objective of the study

The aim of this explorative study is to find how important is the unlearning for adapting and sustaining the learning for new IT instruments in health organizations. The perceived strategies and policies for learning and unlearning in the literature would be compared with the applied strategies in health organization. The heavy support of literature for the unlearning strategies will be taken as the literature suggests at times the employees and organizations think out of the box and implement the strategies which work for them (Jashapara, 2004). Since the unlearning of IT change in organization is an on going research at broad level and one may sense to apply himself to reveal the new strategies
which might work for an organization at most of the time. This will give me a good insight to see the various issues and challenges, which serve as obstacles for the unlearning practices and how well their applied strategies work for them. This exploration can be helpful in knowing the importance of unlearning for implanting the new IT structure from the practical situation. How the organizations adjust themselves to the various IT changes and how hard it is to discard the previous learning on the expense of time adjustment. This study will emphasize the affectivity of new IT base systems with a change and the duration it generally takes for an average organization. The primary objective of this study is to see how the organization unlearns for the sake of new IT base systems. The change for demanding IT and its long-term relation with a vision is core related. It would be interesting to find out how the new IT base system helps increasing the learning capacities of employees if it does so. Additionally the successful implementation of the technologies enable the organizational learning to be dependent on the organizational capacities, as the organizations previous experiences of technologies will make ways for unlearning the new technologies (Robey et al, 2000).

1.4 Research Questions

This research will include the two possible questions.

1). How the organizational and individual unlearning are related?

2). What are the individual unlearning hurdles in change with respect to the new IT support tools?

1.5 Justification of the study

A lot has been forwarded on research about how to make the knowledge as a competitive advantage for the organizations and ultimately such knowledge helps the employee to learn the organizational practices and enhance the organizational performance. The unlearning part of the knowledge management is less explored because of the drastic changeability in technologies where the new ones are merely the updates. As Akgün et al (2007) found unlearning has been conceptualized as a memory elimination and investigation could go form learning to unlearning and then categorizing them into three broad areas i.e. organizational beliefs, formal and informal behaviors and organizational physical layout of tools etc. The latest form of area has been currently explored with the unlearning notions respected with the information technologies. According to Robey et al, (2000) the emerging stream of the empirical work makes the organizational learning to understand the implementation and proper use of the information technologies. The hurdles in one form could be the existing knowledge of the already installed information technologies practices.
The mentioned above form of organizational memory is stored in both codified form in data base systems and as well as in the individuals (procedural) heads that are the drivers of such devices. The result of this research will enable me to study the unlearning measurement both at organizational and individual levels. The result of this research will be useful for both the academics as well as for the future research on individual unlearning and organizational unlearning as a notion of the two distinct characters. The organizational learning and unlearning have been primarily connected, as any knowledge that has been achieved from many years has to be stored and used for the new and demanding strategies. This will clarify the unlearning at both levels and then one can claim that are they related and how. From academics point of view this will enhance my knowledge in IS as I am going to see the unlearning from the IT perspectives. The change (new IT instrument) is occurring that enforces the organizations from one age of IS/IT to another is purely because of the consistent demands in a shorter time frame. The change as a belief often corresponds to the dichotomy among the several theories, applied in the organizations (Akgün et al, 2007). This research will help me to understand the organizational theories in use by comparing them with the literature theories.

1.6 Scope and Limitations of the study

This study has been about to see how the unlearning helps the organizations to adapt quickly to the new IT base systems. Since this research contributes to the relation of the organizational and individual learning for unlearning the previous experimentations that can involve the notion of change as a catalyst. The change can be considered into a broad sense in scenarios like a culture revolution, the daily practices, the knowledge management policies and strategies related with vision are commenced. In this research change will only be noticed in the unlearning practices for learning the new IT based systems for the organizational better performance. The organizational unlearning needs to be institutionalized into the organizational context as a step for absorbing and setting the new practices in the context of IT change (Akgün et al, 2007). The organizational unlearning has been a factor, which is stored in codified form as being a collective summation of the individual and organizational unlearning. In this research first the individual unlearning notions will be studied for the new IT base systems. These individual learning curves for unlearning, the past learning experiences will be combined together to see how the organizational memory shapes and reshapes during the organizational unlearning processes.

Since this research has a limited time and due to the time constraint the researcher would not be able to interview employees from many health organizations. Additionally face to face interview consisting of both open and closed ended questions would also take a lot of times for people who are involved in different departments of health sector. This research empirical study would be taken and applied according to the feasibilities of the
employees in the health sectors. Since the notion of unlearning is huge even in the small and medium scale health organizations and also due to the limited time the unlearning will only be limited in IT change scenarios.

1.7 Disposition of the study

This research will contain 6 Chapters. Starting with chapter 1 encompasses the background of the research, problematic sides and why it is important to perform this research, research questions, justification and objectives of the study and time constraints ingredients of the research. Chapter 2 will cover the literature review of the unlearning from IT perspectives. Followed by chapter 3, which will explain the choice of methodology is preferred for this research. Chapter 4 will contain the introduction and review for the chosen organization for the empirical findings. Chapter 5 will contain the analyses and discussion of the data, gathered through the empirical study actions (interviews, observations) with contrasting consequences. Chapter 6 will contain the conclusions of this research.
2. Literature Review and Theoretical Framework

The literature related to unlearning could not be found in the e-health section. Since it has been the research in process that lacks much of the empirical data due to less exploration. Therefore the researcher tends to turn towards the theories and concepts related with the organizational unlearning and change in the knowledge management organizations, the hi-tech IT related organizations and the case studies of IT change processes in the medical health organizations. The literature has been persuaded of the small and medical scale organization of the above mentioned areas. Further all the areas from which the concepts and theories have been taken are properly referenced throughout the report.

In this chapter the literature review about unlearning will be discussed. The aim of this chapter is to understand how the literature encompasses the individual unlearning and organizational unlearning in the small and medium scale organizations. How do they help employees to unlearn for the sake of new learning? There has been a little research on the dichotomy of the individual and organizational unlearning. There are two different themes of organizational research linked with the learning and unlearning perspectives. According to Robey et al (2000), from the IT perspective the two streams of organizational learning are the IT installation and design. This research is about the IT installation and usage during an IT change. The organizational learning capacity and the information technology have been noticed related, with the factors of facilities for such a change adaptation and previous know-how of IT usage experience which increases the individual as well as the organizational capacity (Robey et al, 2000). The aim of this research is to find the organization that has already some experience in the usage of IT tools, where a demand of new IT age is on horizon to replace the older ones. During this transformation how the individuals unlearn the previous knowledge of IT support for knowing the ways of using the new ones will be monitored.

2.1 What is unlearning?

As stated above in the preamble of section 2 literature review and theoretical framework, the unavailability of the literature related to unlearning and change in the e-health helped the researcher to take the theories and concepts from the different case studies of how to bring a profound IT change in the small and medium scale organizations, the knowledge management theories and the successful implementation of IT change in small and medium scale health organizations. Further different case studies of the consequences of IT change in medical health organizations are also taken, as a cover to explore the performance of the new IT instruments.

The concept of unlearning has been there from more than 40 years where many researchers stress on the individual cognitive and psychological learning (Akgün et al, 2003 and 2007). The interest about the unlearning emerged from the various fields. Many
researchers believe it is a phenomenon to help the organization to discard their old methods, routines, and policies and bring the subtle change in those notions (Jashapara, 2004). There is a mental shift to the intentional unlearning and forgetting the old streams of routines, which normally occur in the organizations. According to Greeno et al (1971) the unlearning is to demolish the previous memory of the system (organizational and individual). The concept of unlearning has been further emerged into the two broad categories i.e. the individual and organizational unlearning.

2.1.1 Organizational unlearning

The organizational learning and unlearning is shaped through the individual learning and unlearning. According to Blackler et al, (1999) the organizational unlearning is well to be seen by observing the disturbance in the infrastructure routines. Sticking to this point in any form of organization the disturbance most likely to occur is by bringing the subtle changes into the organization infrastructure. Those changes can be political, individual, physical etc. To understand how the organizational unlearning is achieved, one needs to see how the organizations eliminate their preserved memory by first understanding how this memory has been developed (Akgü n et al, 2007). The organizational memory is formed by three ways, i) organizational beliefs, norms ii) formal and informal routines involving the information sharing, access to the documentary system mechanisms iii) organizational physical lay out of tools, programming (Moorman and Miner, 1997). The organizational learning is about the observation of their own actions, experimenting to explore the new ways of dynamic practices for good value of business and the organizational performance (Robey et al, 2000). Organizational improvement or performance has been directly related with the organizational memory revision, a memory that has been stored and gathered in the form of cognitive maps and mutual understanding on a number of factors including the IT supportive tools, the knowledge based practices and the actions and the behaviors in many diverse situations (past experimentation) (Robey et al, 2000). However just to bring a change in the organizational memory by replacing it with the new IT tools is not going to increase the organizational performance rather it will complex the situation as any change has been up for an unlearning process and the organizational memory is not rigid (individual level), as it can be web of the external and internal connection relating human with the technologies (Robey et al, 2000).

The organizational learning and unlearning are related and do not contain a very big difference. In organizational unlearning the procedures and routines are replaced by the new ones with an intention to perform the same task with better efficiency (Tsang and Zahra, 2008). Thus learning and unlearning occurs at the same time. However how often a replacement of the old routines work well for the organization has is to be seen. According to Tsang and Zahra (2008), there are often cases when the replacement of the
old routine is not ideal to the situation in result it causes a chaotic and non-linear anxiety in the organization. Taking an organization as a social system the new IT instruments may have first got the better of older ones to be replaced. The individuals who will work on such instruments have to be adjusting themselves to operate on them in a new fashion to get the better of it and at the same time they will have to maintain the efficiency rate, which they were achieving from the older ones. Additionally in organizations like health there are two forms of routines i.e. the schematic and performative. The schematic form of routines are the ones, which normally take place according to a pre planned schedule like checking the entry of new patients, letting the patients know about their appointments etc. Performative tasks are about performing the necessary actions at the right time or specific time (Tsang and Zahra, 2008). This can include the medical tests through medical instruments.

The facts of IT tools enhancing the organizational performance have been deviating from one research to another. There has been no uniformity either the IT tools (advance and new ones) increase the organizational capacity for the organizational learning in order to improve the performance or not. According to Robey et al (2000), such failures have been noticed mainly in different organizations using the same IT technological tools. The same nature of technology has been influenced by the social technology theory use in organizations (Jashapara, 2004). The nature of human intellectuality to machine learning may involve a number of past experiences and the new IT tools may come on the expense of some complex hurdles in order to unlearn the previous knowledge. From learning perspectives the research from IT tools for the organizational performance enhancements include the previous experimentation factors into an account (Robey et al, 2000). According to Robey et al (2000), that is why how the organizations learn to employ IT effectively. This research streams of Robey et al (2000), has been an evidence of a number of case studies of the well prestigious organizations. The other factor is to overcome over the knowledge barriers, which can be influenced by a formal training, an incorporate intelligence (learning from others), the social context and the dynamics of learning (Robey et al, 2000). All of these parameters of the new learning will help both the individuals and the organizations to unlearn the previous knowledge of IT support.

### 2.1.2 Individual Unlearning

Unlike the organizational unlearning the individual unlearning is about the beliefs, mental maps, the know-how knowledge and ultimately the new learning acquisition by discarding the older know-how in such a manner that the new learning does support the older activities (Jashapara, 2004 and Tsang and Zahra, 2008). The individual unlearning is more related with the social system that exists within the organization. The unlearning and the know-how of an IT instrument are related to each other because that is how the new learning emerges from these processes. According to Westelius and Askenäš (2004),
the information system know-how acts itself as a separate and distinct identity in a group. There are different know-how knowledge exists in a group with the number of the individuals involved. The interactions among such group of people may combine together to shape the organizational memory and unlearning for the sake of new learning.

In relation to the individual unlearning and new learning in a group of people, the new employees often come up with the new sets of implicit knowledge. The persons who get into the organization having a past experience may look at the things and operation on the IT instruments differently than the ones who are already operating on such IT instruments (Tsang and Zahra, 2008). However to get into the group of people he or she may have to adjust to the working environment by adapting to the new ways of dealing and working. Those changes are to be embedded into the daily routines of work. In any case these movements may complicate the situation for unlearning and new learning. Whenever the older ones leave, they carry the explicit and implicit knowledge with themselves and as a result the group may find it difficult to adjust with such vacuum that has been created. Additionally, the new comers with the past experience find it difficult to fill such a gap because of their older individual and the organizational routines may be different than the new ones (Westelius and Askenäs, 2004). The organization-installed instruments for the new comers may be different with the one he or she experienced in previous organizations. Those differences may differ from specific accounting software to a huge intranet system.

The individual unlearning has necessarily to occur with the correspondence to the new learning. The unlearning is about to discard the previous learning or utilize the previous learning in such a way that it enforces the status quo along with the new learning. The differentiation about discarding the previous learning and using the existence knowledge is to carry the same mental maps, cognitive and know-how knowledge to carry out the same routine activities with faster results (Jashapara, 2004). On individual level the unlearning involves the personal power to overcome the unusable knowledge in a way it makes a way for the new learning. However by unusable, one does not mean useless, in fact it involves the interrelationship of the new ways of interaction with the same frames of mental maps to carry out the different activities through the new IT instruments. The individual unlearning is more about the implicit knowledge or know-how reshaping with accordance to the situation. In IT/IS the new IT instrument may involve the data base system, which includes the new columns and rows along with the new queries to be made. By having such version of database one will use the previous learning and experiences in order to learn how to make the new queries and data fill in. These activities involve a formal and informal training and the personal interests.
2.2 Interrelationship of Organizational and individual unlearning

The organizational and individual unlearning involves both ostensive and performative tasks and routines. The ostensive routines are the one, which occur according to a more or less daily schedule where the performative are related with a preferred time and situation. The ostensive routines include daily tasks like a nurse emailing doctors about their appointments, a patient admission, and a patient's medications and so on. The performative routines are related with the performance and thus it will have to occur at a specific time. The performative routines in the health organizations can include the prescriptions of the patients by referring them to the surgical department in case of emergencies, a patient's medical tests and that eventually increasing the performance of the daily routines/work flow through a new IT system. The dichotomy between those two routines is related to unlearning and new learning at the organizational and individual level. For instance, daily routines are based on the daily schedules which involve the individuals to perform such tasks and hence enriching the organizational memory (Organizational learning and unlearning). Similarly, on the other hand the same tasks are also increasing the know-how of a person for IT instrument on an individual level (Individual learning and unlearning). By relating these two sets of routines i.e. the ostensive and performative, one will have to understand how the individual tasks helping the organizational memory to grow. The differentiation between these two sets of routines is that the performative routines enable the ostensive routines to occur, as any routine involves an individual (performative) to perform. One can claim that the performative routines are backbones for the ostensive routines. As stated above, any routines performed by an individual qualify for a performative routine, which may be ostensive in nature like looking at the patient’s health record through a new system. According to Tsang and Zahra (2008), for unlearning to occur one must discard both of these forms of routines at the organizational and individual level. These two forms of routines are the primary ingredients for the new learning and ultimately the routines. The ostensive and performative routines may help the individuals and organizations to check in whether they are adapting to the new change. An individual performs the previous routines can get a strong hint that the organizational policies, the procedures for the new change are not adapted with full affect on individual level. According to Tsang and Zahra (2008), the performative routines are hard to discard, as they are the ones, which make the organizational memory and learning practices.

The performative and ostensive routines lead to the individual and organizational learning. In comparison to unlearning, the performative unlearning is the one that helps the organizational unlearning to occur. The research carried out by Tsang and Zahra (2008) on organizational unlearning found that, the organizational unlearning requires unlearning at the individual level where the reverse is not going to work. The organizational learning involves the procedures, the policies and the daily routines that
are embedded into the organizational memory. These routines at an organizational level are constituted by the individual activities that are carried out by different individuals. At organizational level if an employee realizes he or she is not using a certain routine according to the organizational written procedures he or she may correct such errs by going to the performative unlearning because the ostensive routines are the ones that always exist intact and not subject to change (Tsang and Zahra, 2008).

According to the Becker and Delahaye (2006), both form of unlearning require pursuing an unlearning model, as individual unlearning has the parameters of the individual tangible and intangible factors (mental maps, previous know-how) and the organizational unlearning has its own tangible and intangible factors (procedures, organizational memory). The tangible factors are the overall subset of the organizational assets and it can include, the IT support systems for supply chain processes, the customers record books and the organizational documented format systems etc (Jashapara, 2004).

According to Akgün et al (2007), for unlearning change is a catalyst and it is not purely for improving the per se. The research from Akgün et al (2007), on organizational unlearning relates the environmental factors with a 4 different types of unlearning to occur in organizations. These environmental factors are related with the IT supports tools to distribute the information under the scrutiny of information sensitivity, the interpretation of information and the time frame of information to lose its effect in certain periods (Akgün et al, 2007). Based on these environmental factors the organization needs to unlearn on a 4 different levels dependent on the type of change that is brought into the organizations. These types of unlearning are the reinventive unlearning (high stress on to bring the changes on beliefs and routines), the formative unlearning (where more stress is on change to be made on beliefs and little on routines), the adjusting unlearning (low stress of change on beliefs and high on routines) and the operative unlearning (low stress of change on beliefs and routines) (Akgün et al, 2007). The change in the organization from IT perspective has been related with an operative unlearning type, where the strategies remain intact and change in beliefs and routines occurs as the new IT equipments installations are on the demand. This has been an incremental form of change, where the changes in IT support tools are made on a small level in a continuous way to not disturb the everyday routines to a larger extent (Akgün et al, 2007).

Additionally, this is been suited for the small firms. The unlearning has been an important sub-process of organizational learning processes and it may have a great contribution towards the organizational learning literature (Akgün et al, 2003). One of the critical roles of unlearning is an interlocking the organizational learning processes with an organizational change (Akgün et al, 2007). The knowledge in the form of tacit and explicit in both form of learning and unlearning are boosted by the way these two forms of knowledge influence each other in different organizational change processes (Jashapara, 2004).
2.3 Organizational Memory and Unlearning

Organizational memory is the collection of the decision-making information, the information interpretations, an organization history and the individual's job titles and roles (Walsh and Ungson, 1991). For any organization to learn, during unlearning the organizational memory distribution, the precise value of the memory, and under which circumstances the memory is shaping and reshaping are the primary characteristics for it (Tsang and Zahra, 2008). For the learning to be achieved the lessons learned must be embodied into the organization memory while unlearning those routines are to be removed from the organizational memory (Tsang and Zahra, 2008). The lessons are about how the organization takes different decisions corresponding to the organizational interest, which instruments are in use and for what purposes, how the information flows into the organization hierarchy etc are the routines that occur in any firm on daily basis. The information interpretations in an organization social group do help the organization memory to be strengthened in scenarios such as when one individual retires or leaves (Walsh and Ungson, 1991). In IT instrument unlearning the group may share their experiences of a specific software and hardware and how it is effective under different circumstances give the organizational individual an opportunity to invest their interest with their mental maps (Jashapara, 2004). The individuals do not precisely carry the know-how of one person rather they interpret according to their own mental maps which ultimately makes the organizational memory more enrich.

Based on the facts, one can categorize the two important aspects of an organizational memory i.e. human and non-human storage bins. The word storage bins identify the location where a memory can be stored. In organizational context both the organizational and individual memory are two different notions. At individual level one embodied the personal experience of using the IT instruments, the relationships with the group members (staff), the personal reflections, the observations and direct or indirect information sharing into his mind. Additionally, the information they carry from the past experiences in other organizations is implicit by nature and they take them with themselves. This form of memory is subjected to be ever lasting as long as one remains in same field of entitled job. On the other hand the organizational memory is to be constituted and stored in the organization record books through the performative routines of individuals. Recruiting the new individuals enriches this kind of memory or the one who comes into the organization with some experience. The locus of such memory remains on same place where the new recruits and experience recruits are differentiated by the skills and experience they have. In many organizations the new recruits do have the skills but their skills in practical scenario are nurtured by going through the formal and informal training. E.g. the new and even the old individuals can learn more about the new IT instruments while the installation is been launched. This process can further be explored by introducing the primarily roles of IT mediators who are responsible for the
successful IT instruments installation. In unlearning the new learning are achieved and that is how the mediators or the personal know-how of IT instruments play their respective parts (Jashapara, 2004). The non-human memory is explicit by nature and it is stored in the organizational files, the policies and organizational charts, the memos and computer software and hardware. Today in almost every organization these procedures of storing the organization information are computerized and digital. The data warehouses, databases, intranet systems and many more data instruments have been used in the organizations to serve multiple purposes (Jashapara, 2004).

The human and non-human storage bins have the characteristics of the ostensive and performative routines (Tsang and Zahra, 2008). The ostensive routines have the locus of memory in both i.e. human and non-human, as many characteristics of the ostensive routines come through the individual performative routines. The performative routines are implicit and have the memory locus of an individual mind. According to Tsang and Zahra (2008), the accounting system is to be used for writing the procedures requires an employee’s skill and software that runs this hardware. The first two activities are explicit and have to be ostensive but the ability to run a software in order to perform the above two tasks is performative and could only be stored in the human storage bins. According to Feldman and Pentland (2003), the performative routines are subject to the improvisation because of the nature of the performative routines, as there is no as such specific time to carry out any such activity. In organizations the IT instruments can give the traces of performative routines. Feldman and Pentland (2003) found in their research of organizational memory, that the organization logos and other artifacts such as databases can pursue the performative routines.

At individual level the habits, skills, experiences, procedural and non-procedural knowledge are the primary ingredients for constituting the organizational memory (Feldman and Pentland, 2003). When an unlearning to be initiated, one has to look at these aspects by identifying the personal experience of using a particular IT instrument or the job title he/she carries, how effective the individual is in adapting to the different circumstances to carry out their respective tasks and the personal know-how and the source through which such know-how is shaped. According to Pentland and Feldman (2003), the challenge in the unlearning is always the discarding or erasing of individual storage bins. One of the all time obstacles in unlearning at the organizational and individual level is the age factor (Tsang and Zahra, 2008). The time by which an organization is conducting the uniform or the continuous processes of production or a person continues to carry same job titles makes it hard for the organizational and personal storage bins to be erased. It would be significantly easy to feel the profound effect of unlearning with the amount of time it takes in the young and new organization rather than in older ones. These processes at both the individual and organizational levels are subjected to the routine habits and whoever at the individual level replaces will be having
a tough time to forget or erase the habits as habits are hard to be changed or abandoned (Tsang and Zahra, 2008). One way maybe to achieve such tasks is to remove the individual or shift or give him/her another job title. Individual unlearning is an energy taking phenomenon as suggested by Hedberg (1981, p. 18),” the individual unlearning is cumbersome and energy-consuming process”. However the personal stress and job survival fear along with the personal interests are the keys, which enforce an individual to stick around and learn something new for his survival (Coutu, 2002).

2.4 Processes of Unlearning and change

Numerous researches showed the unlearning is because of a change (Jashapara, 2004). To understand what is the unlearning both at the individual and organizational level, the comprehending of a change and it types are important. In every case behind unlearning there has been a change, which works as a catalyst and initiates the process of unlearning at grassroots level. The learning and unlearning are occurred during the change occurrence into the organization.

2.4.1 Continuous change

The type of organizational change that involves evolutions and is ongoing with a consistent pace is continuous change (Weick and Quinn, 1999). This type of change is continuous by nature as it involves the changes to be occurred on the small scales but on the consistent basis. These changes are small which affect the every day routines subtly in a small stature and creates the environment of gradual learning (Tsang and Zahra, 2008). The unlearning in this context of gradual change is about the new learning. Since these changes are small in stature which basically do not affect the everyday routines to a large extent and that give enough time to the individuals to perform the new performative tasks and introduce themselves to the new practices by not effecting the affectivity of the work rate of previous practices (Tsang and Zahra, 2008). The continuous change, in relation to IT/IS instruments is suited for the small and medium scale organizations. The continuous form of IT/IS changes, regarding the IT instruments are based on a small but continuous form of changes that can include new version of an accounting software, which can be handy in going through the multiple queries at the same time with better performance. Reflecting on the continuous changes and unlearning the process of learning is nurtured, as one does not need to go through a lot into the performative tasks changes. This type of change is best suited when the organizations are having limited resources in the form of employees and finances (Jashapara, 2004). The organizational memory does not need to be reshaped or changed a lot, as a continuous form of change does not ask for the daily habits or routines to be totally changed. As a result, the process of unlearning is not that difficult in comparing with the other forms of changes such as the episodic or the discontinuous form of changes.
2.4.2 Episodic Change

Episodic change is a discontinuous change, which is often a response to a technological discontinuous emergence as a result, such change normally occurs under the rapid and extreme pressure from high authorities in the organization (Weick and Quinn, 1999). The episodic change has to be brought into episodes and with sudden implementation. In comparison with the continuous change the episodic change is a demand of quick response, greater in scope, more deliberate and formal (Tsang and Zahra, 2008). This form of change normally starts at the higher level of hierarchy (Top management personnel change or new technological horizon), which demands to make changes into the ostensive routines prior to the performative routines (Tsang and Zahra, 2008). Episodic change demands for the rapid actions that normally create a tension in the organization and as a result it may generate inertia. According to Nystrom and Starbuck (1984), inertia is basically the inability of the organization to adapt a change in correspondence with its environment.

In episodic change unlearning requires the profound strategies to be pursued. Since this type of change encompasses the orders of a high level of authority which makes it harder to unlearn the ostensive form of routines in comparison with the performative ones. In IS/IT aspects this type of change is occurred in the huge organizations, where the organization either join a venture with the other similar caliber organizations or try to replace the current IT/IS instrument bands with another. In unlearning during the episodic change the organization go through a long and nervy process as no one can anticipate such sudden change. The process of unlearning is done through a formal training at the individual levels. The relationship between the organizational and individual unlearning under the pressure of an episodic change is very complex (Tsang and Zahra, 2008). As stated above, the episodic change may occur when an organization joins a venture or group of other organization. Today the world is like a global village and the episodic change is a huge type of change. In the join ventures the employee of one country may go to work with the other country organization. The personal know-how, past experiences, habits and performative routines of an individual in such scenario would experience a totally different environment (Nystrom and Starbuck, 1984). At personal level, such change at an individual unlearning level creates a great amount of anxiety that originates lack of interests and number of hard obstacles.

This research has been about the unlearning in small and medium organizations and due to the limited time and less resources to reach to the huge firms, the researcher would not include the postmortem of the individual unlearning obstacles and the relationship between the individual and organizational unlearning from episodic change perspective. The continuous type of change is suited best for this research to understand the unlearning and learning of the new IT instruments practices.
2.5 Demarcation between Learning and unlearning

The demarcation between the learning and unlearning is based on the learning new routines and discarding the existing routines. During learning, the new knowledge is acquired by implementing the new practices, while in unlearning the existing knowledge based on or it comes through from the old practices and routines is discarded (Tsang and Zahra, 2008). One can observe both of these notions involve the change processes within the organization, the acquisition of the new routines and erasing the previous routines (Tsang and Zahra, 2008).

Both of these two concepts are related to each other because the new learning is always achieved when unlearning occurs. However there is an exceptional, learning can be achieved without unlearning (Tsang and Zahra, 2008). The new organization with a new IT set up does not need to unlearn the old IT/IS practices at the individual and organizational level because they have not had any old routines in existence (Jashapara, 2004). Similarly, the old firms always want to replace the older individuals with the ones who have got some experience in the same field. However it is not necessarily valid to say the new recruits will not have to unlearn something. According to Tsang and Zahra (2008), when the new individuals with some experience replaces the retiring ones have the difficulty to adapt to the new working environment, because at times they do not feel the same liabilities with the new working environment and past work/job experience. In such scenarios where the new recruits have to learn the new routines may need to unlearn first the past learning of the older work practices. In large organization, such kind of unlearning is not easy and many famous organizations try to train the fresh graduates to replace the older ones rather to try to give a chance to the new recruits to avoid the daunting tasks of unlearning (Hong et al, 2006). The unlearning at an individual level is often a difficult task in large organizations because of the past experiences and the job know-how make the daily routines like the habits and which are always hard to be abandoned (Tsang and Zahra, 2008). Often the organizations try to avoid such hectic routines of unlearning processes and they switch to either train the fresh graduates or implement the continuous form change in the organization. Some research shows that in the continuous form of change, the new recruits work with the ones who are retiring after sometime to get the know-how of the job (Jashapara, 2004).

In episodic form of change the organizations always try to learn without the unlearning. This is their first solution to avoid the unlearning previous routines processes, but at the same time they try to learn both at the organizational and individual levels. It is valid and showed by many researchers that the opportunities to learn without unlearning in an episodic type of transformation can be achieved (Tsang and Zahra, 2008). However in continuous change, the organization is more or less struggling with the resources thus it tries to unlearn and learn at the same times at both the individual and organizational level.
Additionally, some research suggests for learning and unlearning to occur at the same time, the organization needs to first identify the inadequacies and then try to unlearn or discard the routines related to those inadequacies (Nystrom and Starbuck, 1984). There is always a huge amount of anxiety, a fear and job survival threats when an organization tries to unlearn at the organizational higher level (Ostensive unlearning). What it means is the one way to discard the routines is to try to shift the top management from their posts, but in a social community any of such a change may cause a great sense of anxiety (Klein, 1989).

The relationship of the learning and unlearning is quite complex as it is dependent on a numbers of things like, what type of change i.e. an individual change (manager transformation), a physical architectural change, a cultural barriers (global join ventures) etc.

2.6 Unlearning and relearning

Relearning is about learning the previous routines again. E.g. an organization wants to try new routines but it did not find the new routines as effective as the older ones. In such scenarios, they hold the new routine on a trial basis for sometime until they are sure it did not work out as expected. The previous routine are then called and used again. This process of reusing the unlearning routines again is known as a relearning (Tsang and Zahra, 2008). Humans do have the capabilities to go back to the older habits and routines with the slight reflections (Tsang and Zahra, 2008).

2.7 Summary of Literature Review

In above sections different characteristics have been discussed with accordance to the unlearning and new learning in the health organizations. Since this research is about unlearning in the small and medium health organizations which will only encompass the continuous form of change characteristics. The unlearning and new learning are occurring at the same time. The organizational unlearning and individual unlearning are the two broad notions of unlearning as described in the above sections. This research is about to find how the unlearning at these two levels is related, as well as, the individual unlearning hurdles. In pursuing the first part, the literature suggests that an organizational unlearning will only occur through an individual unlearning. The individuals involve in unlearning will perform their daily routines, which will make a way for the organizational unlearning to be achieved. Additionally, for an organizational unlearning a good understanding of the organizational memory is important. The organizational memory is achieved mainly through the performative routines i.e. individual routines. On the same time, the organizational routines include only ostensive routines. As observed in literature theoretical frame work that the ostensive routines are basically performative routines in a broad sense, as the individuals perform it. The difference is just of the notion and term
used differently on the organizational and individual levels. Many of the ostensive routines on a new system will involve the better and fast performance of the same routines that will drag the unlearning and learning into considerations. Organizational memory has been there for the organizational decisions to make. It contains all the necessary information for an organization to see their workflow, the daily routines and so on. Two forms of storage bins are the accumulators for organizational memory i.e. human and non human bins.

The second research question has not had the good backing of literatures perhaps unlearning has not only been restricted to the IT. The common hurdles like an anxiety, the non-linear performance and be habitual are noticeable for individual unlearning. However as stated, it can be further explored once a researcher observe the particular IT change process in a health organization.

The literature review gives the basic understandings of what is unlearning and new learning, organizational and individual unlearning and how are they related. These facts for interrelationships of organizational and individual unlearning will be considered for preparing the interview questions. Further all the necessary knowledge of how they have been related through the performative and ostensive routines will be monitored in the empirical investigations. For the individual unlearning hurdles a more direct, observing, reflecting and interpretations of the empirical data approach will be made.
3. Methodology

In this chapter the methodology of the research, the choice of methods, the purpose, the research approaches, it strategies and finally data collection methods for the empirical study will be discussed.

3.1 Research Methods

In order to explore what is knowledge and based on ones assessments to add some knowledge to the existing one is research (Myers and Avison, 2004). Research often leads to the new dimensions to analyze the facts and figures by applying the different research methods (Kumar, 2005). Based on the analysis, researcher needs the proper research methods, the approach and strategy. Research method is strategically an inquiry that is based on the philosophical assumptions, own assessments, data collection and its analysis and eventually a good research design (Myers and Avison, 2004). The selection of a research method has been influenced by the way data is being gathered.

According to Yin (1994), many researchers categorize their research methodology based on the two popular types of research methods i.e. qualitative and quantitative. However it is dependent on the research problems, as these methods are used for the solutions of the research problems (questions). Both of these research methods are described in the following sections.

3.2 Purpose of the Research

Any research needs to be conducted is a question of research purpose. According to Yin (1994), a research purpose describes the aim of the research and solution of research problems. There are three different types of research purposes.

3.2.1 Exploratory Research

The exploratory research often demands for some informal investigation, as this approach is suited for the type of research purpose where the problematic areas or points are not straightforward (Yin, 1994). This type of research allows a researcher or researchers to dig in with more details to provide the hypothetical details for the unclear points. Exploratory research has been used to fresh up the research by emphasizing on the unclear points. The choice of an exploratory research purpose leads towards the new information addition to a previous research that has been conducted (Hart, 2005). This research approach is followed with the formal data collection methods such as interviews, direct observations and some reflections.
3.2.2 Descriptive Research

The purpose of a descriptive form of research is to make the links between different research problems (Yin, 1994). Unlike exploratory research, the descriptive research purpose has not been used to provide or justify the need of the sufficient hypothetical details over the unclear research problems. In this approach, often the research problems are clearly stated. This research provides the investigator why the research had been failed, as it is descriptive and takes a good analysis of all the portions of the research by linking them up (Hart, 2005).

3.2.3 Explanatory Research

The purpose of this research is to find the internal validity of the events. According to Yin (1994), the different kind of patterns in the research is often dependent on the dependent or independent variables and some times at both. Explanatory researcher is not like exploratory research, where a researcher digs into the research to find the relationships of events to see how they are dependent and independent on each other. Explanatory research is explanatory by nature, which helps the research to focus on the internal validity of the events.

3.3 Why Exploratory research

Since the research questions are emphasizing on “How” and “What” parts after knowing the relationships of the organizational and individual unlearning and how the unlearning of previous learning will be achieved by knowing the hurdles in unlearning processes. The type of knowledge is based on pragmatism with a value of realism. This is real life practical scenario by exploring the knowledge for the sake of better and enhanced organizational performance. Additionally, this can be linked with the problem-centered research, as there are social, technical, political, cultural and managerial obstacles in unlearning the organizational and individual practices. The knowledge claim (Pragmatism) will help the researcher to identify the problems intensely rather than solely concentrating on the methods to be applied for understanding the problems that are in the form of obstacles. The exploratory research is suitable for this research because the problems here are not straightforward. At this point, a researcher may have to consider what are the problems likely to be in the organizational and individual unlearning. In the explanatory research the causes and effects are to be monitored in order to see what causes what or effects what. Additionally, the descriptive research is more of a linkage use research among the many research works in same field. It is also useful in the scenarios to provide the follow up investigation of an already done research to find out the research failure causes.
3.4 Research Approach

The choice of a research approach is a critical decision (Creswell, 2003). The research approach helps not only the research design but it also helps a researcher to critically analyze how each of the available approaches will limit, contribute and satisfy the accumulated objectives and helping him/her to design an approach that may suit best for his/her research (Kumar, 2005). The research approach basically satisfies the inductive vs. deductive and qualitative vs. quantitative approaches (Creswell, 2003).

3.4.1 Qualitative Approach

Qualitative research approach will be followed in this research. This approach is mainly used to strengthen the depth of the research questions. It is suited for case studies and has the intention to strengthen the arguments, exploring the linked issues with research questions and eventually grasp the understanding of the research enriched phenomenon and solutions of the questions (Creswell, 2003 and Yin, 1994). Qualitative approach stresses on “How and what” type of question rather than on “why”. However this type of research does not rely on statistics and figures gathered normally in quantitative research (Kumar, 2005). The interviews, emails, video and audio conferencing, recordings and taking note are the popular methods employed in a qualitative research. The unlearning is about studying the individual behaviors through different IT instruments operations in this research. By sticking with qualitative approach, the researcher can get insight into the individual’s attitudes, their behaviors, concerns and motivations (Myers and Avison, 2004). It has been a method of research preferred for analyzing the unstructured information in the situations where most often the points are not clear.

This research follows up investigation in a practical scenario through the interviews (see appendix p.57). Since the qualitative research provides the sufficient methods in the form of reflection, observations and more open ended questions which will help the research to get more sufficient amount of data. Further this research is about the unlearning where a researcher may need many data points to strengthen the arguments which will answer many why and what questions (follow up questions).

The research questions are based on “how and what” parts, which make the research to be qualitative. In this research at least 5 persons were interviewed face to face, elaborating the different angles of IT unlearning (see appendix p.57). The choice of selecting the health sector for studying the unlearning is based on the way of IT/IS instruments is updated over there. Further this research is about small and medium organizations, which are following and implementing the continuous form of change. It would be rather easier to stick with a specific department of health to unfold the complexities of unlearning. Clearly this has been a deductive phenomenon of quantitative research, as the researcher
has gone from being general to specific. Each interview lasted for at least one hour (dependent on the feasibility and availability of time of the interviewees, more or less time had taken for the discussion).

However this has been an ongoing research and no profound amount of research towards collecting and gathering the empirical or practical evidence has been found in the literature. This makes the research interpretive, as some of the improvisations are done due to less practical facts from the past in the literature. Significantly, every organization has its own working environment, daily routines and a culture. The social interactions among them will reflect on their mind setup for unfolding the obstacles or lack of motivation to unlearning IT/IS instruments. Specifically being social in a hospital environment is a necessary element as they interact with people, who may need such care.

3.4.2 Quantitative Approach

Quantitative approach is a scientific investigation to link properties and highlight their mutual relationships. This approach is best suited for the situations, where a hypothesis is to be tested that involve the inclusion of different theories, statistics, figures and mathematical models (Hart, 2005). The key aspect of the quantitative approach is the measurement that basically connects the empirical findings with the mathematical expressions (Myers and Avison, 2004). The common known quantitative methods are surveys, laboratory experiments, figures and formal methods.

This research relies on sufficient gathered data to be filtered in order to unfold the many underlying problems occurring in unlearning and new learning in the health organizations. For such purposes, quantitative data is not suitable as it involves the direct measurement of the arguments through graphs, statistics and facts data.

3.5 Research Strategy

According to Yin (1994), there are five different research strategies within the social sciences namely as, experiments, surveys, case studies, archival analysis and histories. A researcher may choose either all strategies or one dependent on the types of research questions, research study and control over the behavior (Myers and Avison, 2004). Since the research is qualitative by nature that helps the researcher to pursue the qualitative research methods namely, interviews, direct observations and reflections.

This research contains the two research questions to pursue i.e. relating the organizational and individual unlearning and what are the obstacles they experienced or facing in the later one. Based on the research questions, for the organizational unlearning the dean of
the medical head department was interviewed (see appendix p. 57). The interview had not had only the open and closed ended questions. It also encompassed the different reflections and follow up questions that were observed during the interview. For individual unlearning the nurses, doctors and medical staff (who have been working as IT instrument operators or casual operators) were interviewed. The entire concerned individuals had been informed and requested for interviews through email. For the feasibility of the interviewees, the informal interviews questions draft had been sent through emails prior to a few days of interview. Additionally, on the request of medical people (who were involved in this research empirical work), their names, identities and specific job title will not be disclosed.

The information gathered after interviews were unstructured and required the necessary filtrations. Comparing it with the literatures theories had performed the analysis of the empirical study. In analysis sections each question had been interpreted according to the research paradigm. Further, it had to be assured either such interpretation was according to the literature. Many new notions of unlearning were discussed with arguments to find the bridge between the organizational and individual unlearning. The arguments had been based on the empirical findings. After the analysis of the empirical findings, the conclusion had been drawn based on the literature backings in the form of theories and principles.

3.6 Date Collection methods

There are different numbers of methods for collecting data and each one is dependent on the type of research carried out. In my research the following qualitative data collection methods are used.

3.6.1 Interviews

Interview (see appendix p. 57) has been regarded as a primary data collection method in qualitative research. During the interview both open and closed ended questions were asked face to face. In first part, dean had been interviewed for the organizational unlearning. The reason to go first for the organizational unlearning interview is to be more reflective in the later interviews of individual unlearning. A dean himself has been representing a high hierarchy as well as a doctor and it enabled the researcher to argue in more freedom. After the first interview much information about unlearning at the organizational level had been gathered. This interview helped me to focus on more of the points that how particularly the change and unlearning had been occurring in this particular health organization. In individual unlearning interviews the researcher tried to be a bit more reflective on the points after the information revealed through the organizational unlearning interview. By having the necessary know-how of how the
hospital ward is conducting their daily routines helped the researcher to grasp the understanding of the workflow by interviewing the participants for the individual unlearning. Doctors were more tend to open to the questions regarding the new and previous system in comparison to nurses. The reason could be a doctor has more direct and instant connection with the new tools in order to perform the daily routines. A number of problems had been observed which are discussed in the follow section of limitation of the study.

Since the research is about relating the individual and organizational unlearning and individual unlearning obstacles in health sector that included the concern people who deal with the IT instruments both casually and formally. Doctors and nurses had been interviewed in this process. By doing this, a lot of information had been collected. Such data had been used to match with the notion of change and unlearning in literature review. The interpretations of the questions were made in order to be more reflective in discussions when there had been no direct connection of the same theories being implied in the organizations and literature. In that scenario, the proposed system consequences yielded many points that have been used to find the connectivity between the organizational and individual unlearning. Many of the facts gathered in the empirical work were not exactly as the literature revealed. Additionally, as stated, in above section there has been a little research towards the unlearning IT instruments. The necessary improvisations have been made with according to the literature.

The interviews give a more direct approach to dig into the research questions. Unlike other qualitative methods such as ethnographic studies, video and teleconferencing, where there has been a slight chance that one may miss out on number of important points. The interviews give an edge over the other qualitative methods because one can debate on some points by follow up questions along with the direct observations. Since all the interviewee of the interviews had been already the witness of change, which helped the researcher to be more consistent on the change notions by comparing the previous systems to the new systems. This enabled me to know more precisely the unlearning notions and new learning from a new system perspective. The empirical findings through interviews helped me to analyze the learnability ratio among the camp. As noted, some of the staff members are coping with this change, as they do not have much of the know-how of the new technological devices. However in the interviews one can observe more and shuffle the questions across by sensing the situation.

All the interviews questions had been noted simultaneously in a laptop. It would have been much easier to have an audio tap recorder, as at some points it was hard to write all the necessary information instantly. Each interview was conducted separately.
3.6.2 Direct Observations

Observation had been an ideal data collection method for this research because there have been less practical findings in the literature about unlearning. Since each community has its own social bindings and this can be reflecting in learning and unlearning organizational notions. During the interviews I observed how they usually perform their routines on the new system called COSMIC. Later I studied their manuals, which they used for learning the new system, as well as, in troubleshooting. All the doctors and nurses had been noticed to be very time punctual. Observations helped the researcher to understand what the primary cornerstones are that help the individuals and organization to socialize often to get a hold of the unlearning obstacles. There are number of other ways to observe like the sidewalk activities, the level of communication among each other in organization and classroom environment etc (Silverman, 2002).

The all staff in ward were observed busy and all over the place. It took me a while to let the receptionist know about my appointment with the respected staff member because of the parent’s queue who was there for their child/children appointment and vice versa. During the interviews I observed that the nurses have got more of workload comparing to the doctors. They complained about the technical difficulties, troubleshooting problems, and new accessories installations and so on.

3.6.3 Reflection

Being reflective during the interview can help the researcher to find out the answers of many why’s and what’s. This process normally occurs during the interviews. In order to fully understand this process, the different situations and circumstances in which a specific task or tasks are done need to be seen. In unlearning there would be situations, where an individual gets over previous learning by his own psyche and mental maps. The know-how of new IT tool and how he/she came to know about it can help the process more interesting.

There had been a few reflections, which came through in the form of follow up questions. The new learning through the new system helped me to understand what were the basic unlearning difficulties that were/are basically standing in the form of obstacles. Further the know-how and mental map of a specific interviewee helped me to come up with more technical questions. This has been well observed with one nurse and two doctors. They seemed to have a good understanding of the new system, as they already had been working on similar devices in their diplomas and house jobs. They diverted my attention to the technical difficulties and the direct consequences it may have. Further their intellectuality spoke about some of the general suggestions of how the things could have
been done slightly better like for instance, they informed me that it would have been good to have our team members to be involved in the COSMIC programming.

3.7 Limitation of the study

A number of problems limited the study of this research. Since this research is limited to 15 credit points which did not allow me to capture all the underlying facts and data concerning the unlearning notions. Further in interviews at times it was hard to convey the questions, as language seemed to be a little barrier for some old staff members. At times, I had to make the questions into chunks and rather used more easy and feasible words that were more consistent with their daily routines. The literature terms and technology often sounded to them alien as they were not quite clear of what it meant but they had implied the same terminology differently in their working environment. Further a number of cultural aspects could also be added in revealing and unfolding the unlearning notions but the scope of this study did not allow me to add them.

This could have been more interesting if I had more interviews to make. However it was not easy because they all have been working in an intense environment where their time is extremely precious and important. Further I could have gone for more than one hour in interviews but again the time factor was crucial which stopped me to go beyond the decided time.

3.8 Validity and Reliability

There have been four primary ingredients to monitor the quality of the research methods applied, namely as, internal validity, construct validity, external validity and reliability. Validity is about the truthfulness of the research design (Silverman, 2002).

Internal validity has been seen as an alternative way to monitor the integrity level of the facts and truthfulness of the research design (Yin, 1994). It measures the casual relationships among the different aspects covered in the research design. It helps a researcher to eliminate the necessary contradictions and possessions of the other aspects that might be confounded and bounded to the relationships under study (Churchill, 1999). In this research there have been a number of casual relationships monitored with respect to unlearning. Since this research has been about how the unlearning is achieved, particularly in the IT change process which can involve a number of other unlearning phenomenon and terminologies into considerations like an organizational architecture, the cultural aspects, the social bindings and so on. These have been used into this research throughout to reveal the unlearning relationships at both the organizational and individual levels. But however, there are some notions that were neglected as well, like architectural notions and logos of the hospital organizations.
Construct validity monitors the real implications of the concepts that are used in the research design (Churchill, 1999). Its aim is to connect the operational measures of what has been monitored and observed and what has been done so far (Myers and Avison, 2004). The significant illustration of the construct validity has been covered into the analysis and conclusion chapters. The emphasis is on the unlearning because of the limited empirical facts, how the researcher tried to find the previous unlearning and learning and ultimately new learning. Throughout the research the literature does not give enough evidence of particular IT change process for unlearning, which allows and gives the researcher a chance to improvise.

External validity is about the generalization, taking the facts of a research to see what degree they are generalized by analytically rather statistically (Hart, 2005). There have been arguments about the validity being applied, either internally or externally, as some researchers argue that facts of the qualitative methods and laboratory experiments are internally valid, where the survey and the ethnographic statistics and observations are externally valid (Churchill, 1999). A number of previously and lately done case studies have been considered to find out how generable their results are with each other. These studies helped me to come up with interesting consequences of the new IT change that was found in the interviewing processes. However this research is qualitative so any method that can be categorized into quantitative approach had been neglected.

Reliability is about the measurement of the quality of the research design by going with the same research paradigm, as one researcher already did so. The aim is to see how many the previous results and findings are generalized to the new research in same field (Myers and Avison, 2004 and Yin, 1999). This has been an investigative measurement to highlight the inconsistency in generating the outcomes from the previous similar research. By going through the different previously done studies in same paradigm of unlearning helped the researcher to come up with the individual unlearning hurdles. The reliability factors are adequately sufficient to compare the results of one study to another for strengthening the arguments in the situations like finding a bridge between the organizational and individual unlearning.

The data has been gathered from the literature of the prestigious organizations and known researchers and practitioners to ensure the necessary validity and reliability of the research. In addition, for data integrity measurements the language used in the interviews is easy to be understood. Help from the people with having the experience in such field is taken. A lot of time has been spent with the supervisor to check the quality of the concerned questions, the integrity of the data and the message they convey.
4. Data collection

In this chapter, prior to the collection of data through face-to-face interviews, introduction of the hospital set up will be presented. In this introduction, the hospital IT instruments, the staff and every day routines will be introduced. Further the introduction of the old IT instruments prior to the new IT instrument will be highlighted. There were five persons involved in the interviews. Among those five persons, one was primarily for organizational unlearning who serves as head of the ward, while rests were for the individual unlearning in the hospital pediatric ward. The basic aim of this chapter is to get familiarized with the working environment in the hospital ward, how the different routines help the staff to learn and unlearn and what kind of problems in the shape of hurdles they faced/face in unlearning situations of the IT change process. Further the data gathered are monitored and interpreted with according to the literature frame works. The debate among the practical findings and the literature backing will ultimately shape up the conclusions and results.

4.1 Introduction to the hospital

Sweden’s Kalmar main hospital had been chosen for the interviews. It has been served for almost any kind of minor and serious health treatment. Hospital has been located in Kalmar län, Länssjukhuset. Apparently, it has been the main hospital of the Kalmar County. It has been having more than 20 different departments with the 24 hours services. All the small-scale hospital clinics within the Kalmar County have been connected with the main hospital. All the necessary referrals are made to the hospital immediately particularly in emergency situations.

The pediatric department has been involved in the interviewing processes. It serves the necessary treatment of the children from the age 0 to 18. There had been five members of this department participating in the empirical investigations, including two doctors and three nurses. All of the selected participants had been involved in the IT change processes and had the ideal experience to go through this change successfully.

4.2 Participants for Interviews

The head of the organization was responsible for providing the researcher the links of the interviewees, as he had been involved in the interviewing process as well. All of the participants have either casually or professionally been working on the new IT instruments called COSMIC. Additionally, all of the interviewees had been involved during the IT instrument change and unlearning processes. Each participant represented a different character by his or her job experience and his/her respective involvement in one or more IT change processes during his/her professional carriers. The interviews are based on questions and some observations along with the reflections. Each interview
lasted for approximately an hour. The head of the pediatric department was interviewed solely for the organizational unlearning. The rest of the staff, including a doctor and three nurses had been interviewed for individual unlearning.

4.3 Regime before COSMIC

Before the IT change process the pediatric department had the regime of journals. Those journals had been served for almost every activity within and outside the hospital, including, the doctor prescriptions, the patients illness history, the referral to the pharmacy for medications and to the surgical department if needed, the secretary and nurses every day routines about the patient dischargement and admission along with the admitted patients medications and doctors appointment for new patients and so on. Unluckily, those journals had to be accessed only by a single person at a time. Additionally, it was quite hard for the doctors particularly on the weekends or when they were off duty to have access to those journals, as someone at hospital staff had to keep that journal with himself. Similarly, the journals had to be at the transition state and it had been very hard to trace the journals location with a patient arrival. Those journals were stored within the hospital on computers as well as on papers. Among many were, one of the problem was the systematic analysis, as at times, the system were reluctant to read the journals. The warehouse of the journals was limited and various problems had been seen particularly when a person from outside the Kalmar County had to be sent the hospital bills. The system did not have the capability and stature to show those records. All of such routines had to be done manually and subtly had been consuming a lot of the time.

The emergence of new, fast and compatible IT instrument was on the cards. They were pursuing somewhat a faster system, in dealing the every day routines occurring in the hospital, should be accessed by more than one person at a time and ultimately to eliminate all the necessary problems they had faced with journals. During the interviews the researcher found one of the key elements of the emergence was to get used to the new technology and create an optimal level of satisfaction. Arguably, before the change the level of satisfaction with journals were pretty mixed, but they all had been agreed mutually to introduce a new IT system to eliminate the problems.

4.4 Current Regime of IT instruments

COSMIC is the tool that has been successfully launched in the whole hospital departments. Interestingly, each department of the hospital has slightly different software of the COSMIC. Each County has its own application rather with a different name. It has been using to serve for almost any activity within and outside the hospital. Each of the staff members in the pediatric department is satisfied with its functions somewhat by insisting, that with each financial year they are getting better of it. According to the head of the pediatric department, the successful implementation of COSMIC almost eliminated
the entire problems they had with journals. However such a change occurred with mutual interaction on a high level, where the lower staffs were kept aware of the change to be brought. With some ways, it is always nice to have a change in IT instruments because it gives you a chance to monitor what you had been observing previously by comparing it with what you have installed now. According to the head of department, we thought and discussed in our meetings that what are we looking for, but unfortunately, you cannot see how it works in real until the staff members get their hands on it. In the early days, the staff members find it difficult to work on COSMIC, as during the installation they did not have the necessary freedom to work on it along with not having a sufficient time because of their tight job schedules.

When everything looks good on course for the organization to have a change in the IT instruments, the change has been brought. However the amount of time spent on the risk analysis was not much. The department still has to cope with a lot of technical difficulties, particularly in a rush hour when they are having the emergency situations. One of the hardest things for the department was, to learn and unlearn at the same time and according to Tsang and Zahra (2008), learning comes on the expense of unlearning. During the interviews the researcher found through practical investigation that one could not learn a new IT instrument instantly along with unlearning the previous one. Sticking to this point, the hospital had a good policy of gradually bringing the change in IT instrument. By doing this, they had a deadline to meet for the introduction of the new IT instrument (COSMIC) that allowed them to have the necessary individual and organizational difficulties of learning and unlearning to overcome.

### 4.5 Reviewing the interview questions with accordance to Literature

In this section, the most related questions along with answers will be highlighted. The basic representation of the questions and answers is solely for analysis chapter through which the interpretation will be made with accordance to the literature guidelines. The notions of unlearning for IT change are enormous and interesting, but due to limited time scale the researcher cannot include all the materials. The interpretation will be made in next chapter with accordance to the literature. A number of direct and indirect consequences will be taken into the consideration to solve the research questions. The argumentations and discussions will help the researcher to make the conclusions and results of this research. Additionally, this research has not got many empirical investigations stats and facts that will take the necessary interpretational improvisations into an account for the next chapter. Following are two broad sections with questions and answers of the organizational and individual unlearning.
4.5.1 Reviewing Organizational Unlearning Interview

The head of the department has been selected for the organizational unlearning interview. He has had enough experience of the IT change processes in his medical career. Following are some of the questions asked during the interviews. All of the answers have been written below as noted in interview. The questions marked with * are the follow up questions.

1. What is your Job title?

   *Head of the Pediatric department*

2. How long have you been working on this particular post?

   *Nearly 6 Years*

3. Do you have previous experience of working on some other place?

   *Yes.*

   *Where and for how long?*

   *In small-scale health clinics for nearly 4 years.*

4. Why do you need to bring a change?

   *Frankly there had been a number of problems with the older system we had. The satisfaction level was very satisfactory by comparing it with the new system. The statistical analysis had been one major problem along with the economical parts, as at times we had to send bills to the patients from outside the County. The system did not help us to read the journal and in many cases, when an old patient arrived we had to take the print of his/her older journal and add the comments manually.*

5. Why is it important for the organization?

   *We believe we need to be more hi-tech sort of individuals in health organization. It was important because we had enough problems with the older digital journals and as a health organization, the first thing you need is to ensure the people life with fast and efficient hi-tech devices.*

6. How do you go through into these changes in IT instruments (have you talked about it to your employees before)?

   *Of course. There had been many productive discussions throughout the change process. We had a multi educational environment and importantly the teamwork was the key.*
7. During the installation how did you manage the previous learning?

We had a definite deadline to make for the new system. We had a few staff members who visited the other County clinics to see how the new system has been successfully installed there. Those persons were then involved into the training processes.

* How many were those persons in exact numbers and did it help the training process?

I cannot exactly recall how many they were but must be 3 to 4. Yes especially to the older nurses it helped a lot.

8. Did you use the older systems for some time with new ones?

No. We had a deadline to make.

9. How long did it take you to gradually avoid using the older ones?

A year. With each financial year we are improving a lot. We have definite discussions throughout each year to discuss many bugs and problems with the new system. We make a summary of such problems and then send to the technical department to remove such bugs from the system in the new version.

10. Being an organizational member what kind of strategies do you have for unlearning and learning?

   i. New Recruits?

     I am personally not interested in such a strategy. All must get the necessary know how of IT devices.

   ii. Formal and informal training?

     Yes both. The younger ones are more used to the computers and they like to have fast and feasible working devices to work on. The older ones had been hesitant to work on the new system.

     * Have you observed any obvious hurdles to new learning?

     Yes. Fatigue and lack of interest.

   iii. Replacing with older members with experienced ones?

     They have to learn themselves. If they are struggling then they will have to make the ways of learning themselves.
11. Being in top hierarchy how often an employee talks about their job tiredness or difficulties with operating on the new IT instrument?

*In earlier days, it happened many times during a day. Even at times, the older staff members threatened to resign from the job but as the time went on they started to improve day by day.*

*Was there some other issues or problems as well?*

*It depends whom you ask. Older ones never liked the change and even we still have some, who are learning the new system. The younger ones brought my and other senior staff members attention to a number of technical difficulties like no hyperlink options, where to click single and double etc. But older ones found it hard to learn. Similarly, the older ones are good at medical parts where the younger ones are good at computers.*

*How did they help then?*

*They had the staff members and during the social interactions and meetings we shared many tactics and tricks to solve out some problems.*

12. Does this change work?

*Yes it worked but it could have been done better. There are still some logistic problems and more than 600 people work in this organization, so if a system breaks down it can be a disastrous situation. We should have had a clear strategy to such issues and solved them before implementing this system. In short, it should have been done more professionally.*

13. I would like to discuss the IT change regarding tools like COSMIC?

i. Does it help you to work faster on it?

*Yes.*

ii. How did you first work on it?

*I personally worked on it before the change process initiation. I had a formal prototype to work on it to just get used to it.*

iii. Did you get any trouble working on it?

*No. I always try to learn by myself so I learnt by exploring myself most of it.*
14. Have you been monitoring the other organizational processes for these kinds of IT changes?

Yes we did. We sent a few of our staff members there to see how these new instruments are working there.

15. Do you feel that your organization have changed the way you work now with patients? Why – Can you give some example?

*It is a pretty much same work. But there have been a number of tasks that are now carried out with much more ease and comfort. The system became integrated into one, where a doctor can find all the necessary related things of patients in one file like the x-rays, now it is easier to add comments, see the patients previous record and so on. But with new system, we had to make slight changes into the architecture of the hospital. We had to remove the physical warehouse, which has been replaced by COSMIC now.*

16. Have any of your team member involved during the development of the COSMIC?

*No. This has been one issue we are discussing, because we want them to be aware of what and where we want the improvements in the new version of the system.*

4.5.2 Reviewing Individual Unlearning Interviews

There had been four exclusive individual unlearning interviews, involving one doctor and three nurses. All of these interviews had same questions but different follow up questions dependent on the response of a specific question. All of the answers have been integrated into one section with questions.

17. How long have you been working in this hospital set up?

All the participants have been working from some time in this department (nearly 4 to 8 years for all the participants involved in these interviews).

18. Have you worked in other hospitals before working here?

*Doctor: yes but as a student*

*Nurses: Yes, some worked in other health clinics and some as a secretary.*

19. How do you feel about IT change here?

They all agreed that it is good to have a change. They pointed out the ease and comfort now with this new system by mentioning the problems with the older system. The doctor mentioned that he has previously worked on similar devices during his
student life so it is not quite new to him. The nurses echoed that they previously had been working a lot with computers, as being a computer assistant and a nurse in other clinics.

20. Have you had previous experience in IT change processes? If yes how do you see this change with the one you already had experienced?

Yes. The doctor mentioned he witnessed such a change in his study period in other health department. This process helped me to understand the system, when I had a chance to work on it. The nurses mentioned different experiences like, they talked about the small scale IT change processes to this one. They discussed, in earlier days before journals they had dv4 work processor and then highlighted a number of problems with it for instance, too much page consumptions.

21. I would like to discuss the IT change regarding tools like COSMIC?

i. Does it help you to work faster on it?

Yes. They all echoed that the doctors are the ones who were/are more benefited with this change. A nurse had slightly new thoughts about it. She mentioned, by going back to the first year of the system implementation, it took me a while to get used to it. It was a time consuming task because what I was expecting it did not work out for me like that.

* What kind of expectations you had? Can you give me any examples please?

There has been a lot of work and we still do it according to the older systems like, the medication processes through drips did not help us to get the right readings from the system. We all nurses are doing it manually that is by going there to take the readings. It is a time consuming task because we have to let the doctors know about it later.

ii. How did you first work on it?

Doctor mentioned that during his study in other health department, he had a chance to work on it. Nurses mentioned they all learnt during the trainings. A couple of these involved nurses had been a part of the rest of the team who went to other clinics to see how they had installed such systems and how they are working on them.

* As you were trainers so what kinds of problems were more obvious to new learning?
It was different to person to person. Especially the older ones had more difficulties to understand the system design, where to click and how to work on it.

* Was there any clear evidence of lack of learning?

Yes some of them did not have even computers at home and to start on such hi-tech devices it was very hard for them to learn. They often complained about the complexity to work on a new system. They were taking little interest during the training. A few of them were/are very careful with the system, because they did not want to experiment a lot, because they thought by doing so they may damage or break the system.

iii. What is so good about COSMIC comparing it with the older one you had?

It is better to have one integrated system in general. They all agreed that this system allows them to work faster by comparing and bringing the problems with previous digital system. They can have now one journal, where they can locate it easily, it is easier to read the doctors comments and at the same time the doctors can see the medications, which the nurses are giving to the patients.

22. Tell me about your job? Did it change with the new tool?

i. Did you need to rethink how you conducted your work previously? If yes please what kind of rethinking are you doing?

The doctor said it is not a lot to do, as, I already have the sufficient computer skills. But I think at times I am a half medical person and half a technician. It has been an isolated part along with the medical work.

The nurses mentioned they have to login now in one place as all the system are connected to each other, like, they mentioned about the laboratory system, where they had to log in again there. But for them it is easier now to login in on one place. One nurse mentioned that during the training, it was very hard to focus because we were not off from the work there. We had to manage our daily job through older system along with learning the new ones. At times, when we were practicing the similar things there and then seeing the same thing here in real situation, we had to stop and rethink. But we nurses are spending more time with patients and that help us to better understand the system.

ii. With change in job title what is different now and then (Previously)?
There has been no job title change occurred with the new system implementation. However with the nurses, there have been a few new tasks to be done, like, they mentioned job easiness as, they are electronically filling in the patient admitting form and so on. One nurse pointed out that previously they had to write a sort of application to a schoolteacher manually, which they are doing now with this system.

iii. What was the hardest thing for you to learn?

The answer varies from person to person, dependent on how technical he or she is, according to the doctor. He mentioned that command lines of COSMIC are not specific to medicine and at times we look for some aid from the system to give us to save some important time. He further stressed, that a computer program should be as easy as one can get. With each team meetings, we listen to many similar problems and if we agreed then we send the recommendations to the technical department.

A couple of nurses pointed out, we lack the cognitive element to know, where to click single and double as the system is not helping us in this regard. Similarly, the other problem is, the system inability to give us the correct reading of medicines when it has been injecting to the patients blood through drips. As a result, we manually take such readings.

23. Do you feel that your organization have changed the way you work now with patients? Why – Can you give some example?

For the doctors it is slightly different now, as, the system has been integrated and I can find everything about a patient in one journal. For instance if a patient had been operated in a surgical department before and so on, I can have all his previous history in one file. Previously we had to contact the surgical department to get his/her surgical records.

For the nurses it has been the same but the only obvious difference is the faster work routines.

24. How did you learn the new tool? Have you had any training provided by the County council?

i. Did you learn by asking and probing your colleagues?

Of course. In daytime we have one or two social meetings, where we discuss many things and problems. We share what we can do to help solving a problem.
ii. Did you learn by using manuals?

*For the doctors, they tend to take a little help from such systems. On the other hand, the nurses are still finding it best learning tool, as they can go back and trace the problem in manuals and rectify themselves.*

iii. Did you learn by trial and error-testing ways?

*The doctor said yes, I had almost learnt all by myself by experimenting and it was quite helpful.*

*The nurses agreed with this method of learning. However they mentioned, it is good for us because we already had the good enough computer knowledge. The older ones or the ones who do not have the sufficient know-how could not use such method. They think they could damage the system by experimenting too much.*

25. How did you experience the learning – or how do you think you and others could have learnt differently?

i. In case of problems whom do/did you speak to?

*They all echoed to take help from the technical department. In serious problems, they call the technicians and in minor problems they tend to go for emails to notify them about the system failure.*

*They mentioned, in cases when they upgrade or solve some system problem, they get the emails from the technicians so they clearly know during which time the system will not be functioning. In same situations, we note our important tasks and take a print of them.*

ii. How long did it take you to get on top of operating the new instruments?

*For a doctor, it took a month to fully operate comprehensively on a new system. The nurses mentioned it took them a while. They went back to some previous problems like the technical difficulties, the system inability to read the readings and so on. As a result, they had to adjust themselves to the new system, which ultimately took them some time to learn properly.*

iii. Have you had a chance to operate on the new instruments while being installed?

*Yes they all had a chance to work on this system during the training. They had a prototype that they could also access from home in order to practice on it.*
5. Data Analysis and Discussions

Data gathered through interviews, reflections and observations would be analyzed in this chapter with accordance to the theoretical framework parameters. Since the research questions are about finding a linkage between the organizational and individual unlearning and individual unlearning obstacles, the data has been assembled from higher hierarchy to lower hierarchy staff. The analysis here has been drawn into a number of sections to enlighten the research questions comprehensively. Additionally, a numbers of consequences are taken into consideration to analyze the gathered data.

5.1 Organizational unlearning

The Kalmar's hospital starts to bring an IT change through COSMIC with a number of problems with the digital journals. The head of the department had been interviewed precisely for the organizational unlearning. As being the head of the department from last six years and having the necessary experience from different hospitals, the dean analyzes the decision of bringing the COSMIC after a number of productive discussion sessions within the camp, as well as, along with the high hierarchy like the County council members, the other departments deans and some local and political members of the Kalmar’s County. Those meetings usually have to cover the backing for both the ostensive and performative routines, which are carried out in the pediatric department of the hospital. The organizational decisions at the high level of hierarchy correspond to a number of managerial problems that enhancing the communication channels among the staff and shaping of the new culture under development through such an IT change (Cho et al., 2007). During the interview the dean stressed about how difficult it is to just move in, when such IT changes are already brought in. Following are some important ingredients for the organizational unlearning analysis.

5.1.1 Preservation of Organizational memory

The older system in the hospital is still the back up system in case of system failure. However the non-involvement of any of the hospital staff into the technical team for programming COSMIC, corresponds to a numbers of technical problems. The older memory of organization is preserved and brought in to the hospital IT change process through COSMIC. By doing so the most ostensive routines like a doctor appointment with a patient, knowing a known patient history and so on are performed digitally with more ease. The patient's records, bills to pharmacy, X-rays results, admitting the new patients are now performed through COSMIC. Those routines at the organizational level are accumulated through the individual tasks. The individuals from the pediatric department react to such tasks by simply logging on to the system with their unique user names and passwords. The COSMIC system enhances the affectivity of communication
channels, by emailing, adding comments to a patient's history, prescriptions of the patients medications for nurses and so on.

5.1.2 Staff training

The staff of the pediatric department took a necessary three months training classes for operating on the COSMIC system. Initially, the high hierarchy of the organization sent some senior staff members to the other clinics, where they had successively launched the new IT systems. Those visiting faculty then combined with the technicians to deliver the joint lectures to the rest of the department staff. According to the dean, the strategy was to make the new learning happen on the expense of previous learning. The organization had a schedule for when to start launching the new system and when the staff would go for the necessary trainings. Those classes were followed by same learning techniques such as the trial and error and manuals.

5.2 Individual unlearning

The individual unlearning interview part involved four staff members of the pediatric department including, three nurses and one doctor. The emphasis was more on how did one help himself/herself to unlearn the previous system and learn the new ones. Individual unlearning involves more of the performative routines to be unlearned. The doctors now have more of the control of the system, as they can go through the patient's records with more ease by comparing it with the older digital journals, where they had to ask precisely for access and at the same time make sure no one is using it at that specific time. Similarly, the older routines involved much of manual tasks like, adding comments to the patients history, nurses to write the medications readings giving to the patients, taking the prints off the journals and pass it to the doctors when needed, making the formal amendments to the record of the system by going through it again and again and so on. The older routines had been installed for a number of good years before they were replaced by COSMIC.

The performative routines basically make ways for the organizational learning and unlearning respectively. For some staff members, it is quite easier to get on top of the new system by having already the know-how of IT systems. The new learning is more profound to the younger ones, as it is less time consuming because they did not have to go through a long period of time for unlearning the older routines. They were not altering much of their previous routines, as the same tasks are now performed through COSMIC. But at the same time, the performative routines correspond to some technical problems because of someone having the knowledge and know-how of some technical configuration. For instance, by going through the system it shows a few command lines, which are in the system but the staff do not have any idea what functions they deliver. It can be linked with a numbers of intentional, unintentional, direct and indirect
consequences; dependent on how technical that specific performative or ostensive routines are (Ash et al, 2007).

5.3 Unlearning and learning

The replacing of organizational memory in the case of a new IT regime brings a number of difficulties to cope with unlearning hurdles and learning frameworks (Tsang and Zahra, 2008). Through interviews and observations, the strategy for unlearning the previous routines was to go through a series of practical and intended exercises on the systems in order to unlearn the older routines. Those routines were like direct communication with the doctor about the patient medications, phone calls to the pharmacy for medications, emergency meeting calls for intense care unit child/children, secretary notes for doctor appointments and daily schedules for meetings and so on. On an organizational level, such routines are ostensive and performative, but however by replacing such routines with digital performing routines bring a number of difficulties for the new learning. The new learning occurs when the unlearning starts over. During the interviews, the nurses stressed on a number of points, like the nurses and particularly the doctors find it hard with the new system to know how much percentage of specific medicines has been injected into the patients blood through drips and later the doctors inability to find it on the system and so on. As a result of such system inability to enable the nurses to get the medicines reading from the systems correspond to the older ways of routines i.e. taking the manual reading by visiting the patients wards and then in case of a doctor's inquiry providing him/her those readings. The consequences it creates tend to be harder to learn as instantly as it should be. According to the Ash et al (2007), such undesirable consequences are quite hard to be dealt with in case of emergencies, as stated above it may be very time consuming tasks.

Another contrasting unlearning at the organizational level is, perhaps the ability to work adequately good on computers. In interview the dean stressed, some of the nurses are still struggling with the COSMIC system operations. The web of social systems in the hospital is a good learning curve for staff to share some tricks and tactics to get the maximum out of the system in a little time. The older ones and with less or non-computer operating experience find it extremely hard to learn and unlearn the new systems. According to Jashapara (2004), the mental maps and intentional ways of ostensive and performative routines become unavoidable routines to be replaced with time to time. Interestingly, these cases are quite visible in the hospital regime with this new IT system of COSMIC, but yet the hospital has no clear strategy of either replacing them with the new younger recruits or shifting them to somewhat less computerized or IT usage areas. According to the dean they have/had to cope and learn and unlearn the new system and routines. He confronted, as the younger ones are more prone to learning, as a result they can bring an extra energy to the camp by already being more familiar to the IT tools to a
larger extent. One way to minimize such cases could be by having a productive social system. By having such social awareness can help the older nurses or secretaries to learn or share some of their experiences of difficulties with the younger ones.

5.4 Relationship between Organizational and Individual Unlearning Analysis

In order to analyze the first research question of the thesis i.e. relationships between the organizational and individual unlearning one may have to take the consequences into an account with accordance to the way the ostensive and performative routines are performed. The consequences are basic changes and alterations that occurred into the environment of an organization through innovations such as COSMIC (Rogers, 1995). The theoretical framework stressed on the performative routines to act as a catalyst for the new organizational routines and unlearning. The consequences could be desirable, undesirable, direct, indirect, anticipated and unanticipated (Rogers, 1995). Desirable consequences are connected with a goal orientation i.e. performative routines, the anticipated consequences are sometimes unintended as one knows the effect of such efforts but often it comes up with a little surprise in how it surrounds the situation (Ash et al, 2007). Such routines can be, the shifting of the tasks from digital manuals to COSMIC manuals, where the doctors and nurses can have more easy access to the patients’ records and so on. The surprise it may bring could be unintended, as it allows the respected staff members to tradeoff and share their mental maps with less ease by already having the necessary know-how of the older routines. The new routines have to be performative but as they involve some basic understanding and experiences of the older ones. As a result, one cannot fully discard the older routines in order to make a way for more profound new routines. The new routines are performed through COSMIC, which can be accessed by all the staff members in the pediatric ward, as they all use one centralized system. These routines help the organizational memory to shuffle around for the better information sharing, bridging the gap between communication channels, increasing the interactivity in a social system and ultimately giving a more control of the situation. Indirect consequences are less measurable and direct consequences are measurable. By measurable one means the processes one would like to improve, where the indirect consequences are outcomes that come up with the direct results through the direct consequences. Sticking with the point, the organizational unlearning has to be a direct consequence as they know the need of installing the new processes, as a result, it brings some subtle unwanted situations like the technical difficulties when operating on the new systems. At the organizational level, it is inevitable for the staff to be involved with the technical team to discuss their possible risk analysis of the systems (Ash et al, 2007). Undesirable consequences are similar to the unintentional, as a high level of hierarchy stresses to avoid such consequences.
By taking these above consequences with respective performative and ostensive routines, one would have to analyze the practical scenarios in an organization. Decision makers, who work on the high hierarchy levels, are directly linked with the direct and desirable consequences. They are the ones who plan, make strategies and policies and have the important vision of the organization. The COSMIC system has been brought after the involved authorities had found it hard to cope with the number of problems they faced with the older systems. The problems, which directly qualify for the direct and desirable consequences could be the data redundancy, the inaccurate drug names and the unavailability of journals when needed at times which can be very stressful and time consuming. The problem to have some help from the system in case of writing the medicine names was pointed out by a doctor in the individual unlearning interview. One can stress on such routines to be the intentional consequences. These undesirable consequences may also be time consuming for a doctor to go into the system again and try to add some more medicines into the list. The direct consequence of such performative routine can be stressful for the respected doctor, as it brings the unanticipated time period, as it was deemed to be (Ash et al., 2007). The doctors have the tightest of time schedule, where they have to manage many things in no time.

Another consequence could be the unintended error reduction (Ash et al., 2004). One of the problems at a high level of hierarchy for installing the COSMIC was, to remove the number of errors that had been found in the previous routines. As stated, the individual’s routines are the ones that enforce the organizational unlearning and learning to occur. Since the individuals might have the difficulties with the older system to let them know about the corrections, in case of writing the drug name, retrieving and sharing the information, the secretaries writing or sending letters to the patients about their appointments and the wrong entry of medicines for patients (Ash et al., 2004). Clearly such routines are ostensive and performative by nature. In order to avoid such errors, as the consequences of unintended ways, the new systems had to be programmed with a lot of care. These routines used to be carried out on a daily basis, where the margin of error was lethal. The dichotomy between the individual and organizational unlearning occurred almost on the same line of control. The individual has to get the necessary new learning from the COSMIC, dependent on his previous know-how, where at the same time such transactions have to be accessed by all over the places in the hospital ward. The organizational unlearning will then have to be enforced in a way it stresses the need of correcting the performative routines. The unlearning and learning at both the organizational and individual levels are occurring at the same time.

The new learning often requires a good risk analysis for a proposed system i.e. COSMIC. There are some technical difficulties occurring with the unintended consequences. The most common is the system failure, especially in the rush hours, as a result, they have to rush and switch back to the older system (Sittig et al., 2007). During the interviews, the
dean and staff members stressed on the technical difficulties of COSMIC, such as system failure, hardware and software updating and compatibility issues of some computer accessories. Since the IT technical staff office is located into the hospital surrounding, but the time at which such events occur often halting many necessary processes. By discarding the older routines somewhat cannot help an individual to recall the previous know-how for the older systems. By having such callings for a back up system, will slightly push the routines to be corresponding with the older times. These events could be even more time consuming especially for the ones, who never worked out on such systems before. These kinds of scenarios are the clear evident for the younger doctors and nurses. As, they did not witness any of the older routines and from day one they are working on a new system, which would make it hard for them to perform as highly as they were performing on the new system. These kinds of events are the anticipated ones. It may bring other factors into the considerations like, the graphical appearance of the system, the pull down menu, the radio buttons and so on (Sharda et al, 2006). Some of the interviewee (Individual unlearning interviewee) talked about such difficulties, when they often try to share it with their colleagues in a coffee or a launch break, as well as, in the team meetings. The recommendations are then made to the technical staff to avoid such errors in the next version of the COSMIC.

The importance of a new system has been relaying heavily on the socio-technical frameworks. There are clear intentional consequences of avoiding such frameworks. The cultural aspects and the level of socio-technical modes have to be understood by the team who wants to have a successful implementation of the new system (Harrison et al, 2007). Any change to be brought into an organization, the level of social interaction among the team and with technology has to be kept on a consistent level (Harrison et al, 2007). The most performative routines carried out in the system often demand to treat the technology, as a node of socio-technical framework (Jashapara, 2004). For any organization, to learn and unlearn it is important to already have a good understanding of the systems. Before COSMIC implementation, the training classes were the part of socio-technical models to be understood well by the staff members. Similarly, a good understanding of the system can ease to have the better control of emotions, having more fun at work, staying cool and calm in troubleshooting and ultimately avoiding panics (Wentzer et al, 2007). The older members in the ward tend to be more panacea, as the dean pointed out, when asked about whom they talk in case of having problems. These situations will be stayed put until they get on top of their difficulties. There have been regular meetings in the ward, where such and many other difficulties are addressed properly. But yet the department has no clear strategy for the struggling ones, to be adjusted in the hospital set up else where they cannot go through the unlearning and new learning hurdles.
The effects of the consequences described above are deemed to be positive but at the same time it brings some negative effects as well. The system COSMIC makes the doctors and nurses direct interaction asynchronous from synchronous. Such consequences are deemed negative in the context of organizational learning (Pirnejad \textit{et al}, 2008). All the staffs including nurses to doctors, as well as, secretaries are now heavily relying on the technology. There are a few situations, where verbal communications or messages conveying processes have to be direct and in person or by a phone. Additionally, the other possible negative consequence would be the time factor for learning the new systems. E.g. they will have to cope with difficulties of learning and unlearning and at the same time carrying on with their respective job titles simultaneously. The organizational decisions are like orders to be obeyed, as the employees never welcome any change into their daily work routines. However such consequences are the result of proper meetings and discussions that give a sufficient time to the workers to get ready for a new activity to be commencing soon, as the deadline has been already set.

5.5 Analysis of Individual unlearning hurdles

The second research question of the dissertations is about the kind of hurdles the employees went through with unlearning and learning the new system i.e. COSMIC. Following are the some key hurdles gathered through interviews and observations.

5.5.1 Anxiety and Fatigue

It is noticeable that in many organizations the idea of a change is not welcomed (Jashapara, 2004). The amount of struggle required for the unlearning and learning is dependent on a person involvement and interest with IT. It has been noticed that in early days of COSMIC, the nurses were more stressful and according to the dean, there are still a few in the department who are not wholly on top over their everyday job performing procedures through COSMIC. The anxiety and fatigue factors increased the frustration for some persons, as they threatened to resign from their jobs. Some parts of such anxiety factors were perceptible in the individual unlearning interviews, when they were involved in training classes. Additionally, the anxiety and fatigue correspond to some bad emotions that can disturb the job routines.

5.5.2 Technical adjustments

The older system called journals had been installed for a number of years until the COSMIC installation was performed. All of the persons, involved in the interviewing processes have been the witnesses of this change. Additionally, there have been some nurses, secretaries and doctors who are working in the hospital for more than a decade. The technical difficulties are quite of a numbers, like some pointed out, they still do not know where to click single and double, no hyperlinks options and so on. Interestingly, the
employees contain a mix up knowledge of the computer tools. The younger ones are keener to experiment and try to learn by recalling their already existing know-how of computer knowledge. The older ones struggle a lot up to date and have been observed, as they scare of experimenting because of having the thought of damaging the tools. Precisely, the technical difficulties with learning the new systems are dependent on who is working on the system. As noticed, in interviews the doctors came up with more direct connection with COSMIC, perhaps that is why the younger doctors believe the programming of COSMIC is yet to be configured properly by making the small adjustments. They believe there are some command lines that are noticeable on the screen but still they need to find out the proper functions.

5.5.3 Recalling Journals

The COSMIC system has the only back up as an alternative and that is the digital journals. In case of system failures, where the IT team will have to be informed about the chaotic technical difficulties, the organization switches back to the previous ways of working. When asked, as a follow up inquiry about, how difficult it is to go back and work again on the older system, the answer was "it is very painful and time consuming". The problem is, they already have discarded the previous learning so in that scenario, the environment and the tools like archives, older computer systems containing the older digital journals, infrastructure and architecture of the ward have been altered and removed (physical archives of digital journals). They have to go back to search the digital journals, scan them again and take the print of them. Clearly, this has to be a very time consuming task.

5.5.4 Slight changes in job activities

The concept of change brings a lot of small adjustments to be made into the work environment. In order to learn, one will have to unlearn the previous activities. E.g. a nurse said that with COSMIC the most difficult thing for her was to get used to the new emailing system in order to write the emails to the school's teachers of the admitted kids. She stressed, previously we had to do that manually i.e. just to post an application letter. She had to unlearn that way of working and learn the new learning by operating on the COSMIC. She iterated further, that COSMIC brings a lot of ease to her work. E.g. the secretary used to write the daily schedule of the doctors and other daily hospital routines manually but now with COSMIC her work has been much easier, as it is performed electronically. The most difficult thing for her at the moment is, that she does not have much of the direct contact with doctors or other colleagues, which makes it hard to be acknowledged that a specific work is either done by another nurse or another nurse is relying on her. A lot of performative routines are only noticeable to the persons who perform it.
5.5.5 Cognitive and Social Unlearning

The unlearning always starts with routines unlearning. During the interviews, the researcher tried to find out how the cognitive and social ways help the individuals to unlearn their previous routines and ultimately assist them to learn the new ways of working. Cognitive is a more healthy activity comparing to a socially learning or unlearning and that only happens when you have a good atmosphere during a lunch or a coffee break. By cognition, one means to learn and unlearn from your own understanding and thinking. The older ones at the pediatric ward are the ones who are suffering from learning the new system i.e. COSMIC. To be cognitive, one needs to have a sufficient knowledge of the IT instruments, how it works and how often you work on such devices. It has been noticed that, one of the hardest thing for most of the older nurses were/are the cognitive unlearning.

They are simply not used to any of such systems before as COSMIC. Further, some even do not have any clue how to work on a computer system properly. Another hurdle in unlearning was/is the social liveliness. It has been evident that the older nurses are quite shy to confront their problems of unlearning and learning in a camp, where the most people are good at computers and are relatively young (Rushmer and Davies, 2004). During the interviews, the researcher found some of the nurses spoke about it, further they stressed, the most senior/older ones are more comfortable with the older colleagues in turn to seek help, provided they are good at computers. However the social and cognitive way of learning and unlearning requires a good level of intellectuality (Rushmer and Davies, 2004). The learning has been learnt through the formal training, the trial and error and manuals. The younger ones have more tendency of trial and error method to learn comparing to the older persons. The older ones are heavily relying on the manuals. It contains enough troubleshooting examples of the system COSMIC. All of the ways for learning and unlearning require the cognitive and social interactions to maintain a consistent form of accelerating the new routines of working and understanding the system.

5.5.6 Fear of never experienced

Arguably, it is the hardest hurdle to be found in health clinics for employees (Rushmer and Davies, 2004). The unlearning itself is uncontrolled, direct and a sudden curve to occur simultaneously with control and intentional learning. By having a fear of heavily relying on the system i.e. COSMIC, in cases of emergencies one will have to make sure the system works as one desires. For instance, often the children are admitted in intense care unit, where the nurses are to make sure the system are giving them the right readings of the medicines they are injecting through drips. During the interviews, the researcher found that almost every nurse and doctor are reluctant to rely on system readings, actually they manually do such processes by the older ways of working i.e. going and
fixing the drips, mixing the medicines as prescribed up to a certain level and take the more controlled readings. By this way, they are certain to be in a more direct contact with the medicines. Eventually they want to try what has already been tried and tested.

5.5.7 Be Habitual and Secured

This hurdle of individual unlearning is nearly same as the above one. Many of the employees are working in the hospital for more than ten years, as found during the interviews. The past ways of working and carrying out different routines on a daily basis helped them to always go for tested and experimented ways of working. In that sense, it gives them a strong clue to be more secure and accurate in achieving the right results from a task. According to Rushmer and Davies (2004 p.12), repeated tasks with time to time become easier and it shifts into one comfortable zone. To be confronted to a new system in the presence of a continuous change, as COSMIC is, it will be harder for the individuals to escape comfortably (Unlearn) from their conserved comfortable zones.

5.5.8 Stereotypes and mind sets

Stereotypes are achieved by consistently working on similar routines for a good period of time (Rushmer and Davies, 2004). The stereotypes facilitate the employees to create a mindset about a number of things, like, having an idea where about the things one can find, how can one accelerate a specific process, how can one learn the short cuts of performing a task etc. In order to unlearn such mindsets, one would require a plenty of self-efficacy and enough time (Rushmer and Davies, 2004). Due to the stereotypes and mindsets, some of the older nurses are coping intensely with unlearning.
6. Conclusions

This chapter will cover the conclusions based on the literature review of theoretical frameworks and empirical investigations. Shedding light on what the literature suggests and how the routines are performed in the practical scenarios, as discussed in previous chapter has drawn the results. During the analysis, the emergence of consequences was taken into the consideration to link up the literature theories and empirical work findings. By doing so, it helped this research to have the following results and conclusions. After conclusions the future research streams will be followed.

6.1 Results and Conclusions

The research of this dissertation was to find out the linkage of the organizational and individual unlearning and hurdles in the health organizations. The aim was to find the bridge between the organizational and individual unlearning by digging in the literature and at the same time comparing it with the empirical explorations. Qualitative research methods have been applied, where Kalmar's pediatric department had been chosen for the empirical investigation, where five persons had been solely interviewed for organizational and individual unlearning. Change itself has been a very broad terminology in the context of transition from manually performing routines to machine based performing tasks and routines. The empirical findings are well backed up by literature frameworks to find the results and solutions of the research questions.

It has been observed that for any type of learning and unlearning it is up to the individuals who provide the backbone for such activities to occur. For organizational unlearning, it has been because of the individual unlearning, as no organization can perform unlearning itself. The main focus of organizational unlearning has to be on its memory that contains the knowledge sharing devices, such as databases, information sharing through social and cognitive meetings and daily routines that are performed on these devices, such as Journals and COSMIC. The social interaction of persons is the cornerstone for the organizational learning and unlearning. It is the social interaction that migrates from the individuals unlearning and learning to the organizational learning and unlearning. Similarly, the organizational routines are normally based on the daily schedules and are performed by the employees i.e. performative. This gives a proper understanding to hold a rigid connectivity between the organizational and individual unlearning. Most of the daily schedules in heath organizations are about creating the organizational memory. However it has been observed that, the way the information flows from higher hierarchy to lower is a difficult task for estimating the effort and strength required to unlearn. The organizational respective plans and policies are based on the information that goes from down to up, which makes it extremely hard to judge the accuracy of the information. Another empirical observation in that scenario is the technical difficulties for some or large portion of people involved in the hospital ward.
has been a subject of a really nice risk analysis to be performed, as pointed and confessed by the dean of the department. Additionally, as observed there has been no clear strategy for the employees, who struggle with such activities and as stated in analysis section, all the persons have to perform it, there will be no such excuses made. The risk analyses are always important to be conducted with an enormous amount of care because of the direct and indirect consequences it brings.

The first research question has been based on the analysis of the link between the organizational and individual unlearning. What is interesting to find is how difficult it is at each different level to unlearn. As noticed, several of the decisions on lower staffs are applied from a distance, which is hard for the employees, as they are the ones who work closely with the system.

The second research question investigates the individual unlearning hurdles with respect to a change. The consequences of IT change has to do a lot with individual unlearning hurdles because it gives a good understanding of how profoundly the change has been applied. Importantly, the exposures to such changes are key elements for the individuals to be comfortable with any of those hurdles, as they might have already gone through such changes in their illustrious careers. As noticed, in empirical investigation the younger ones are in a more comfortable zone comparing to the older ones. They tend to be more relaxed to cope with the difficulties and challenges and demands of the new systems because of their know-how of IT based systems. Such experiences help them to grasp a good mental maps and models when confronted to the real time applications. But on the same time, there are number of hurdles that are hard to be avoided if someone stays in the streams of learning and unlearning in medical health. Like, relying too much on new instruments particularly in emergencies may be risky. Similarly, for older employees the lack of IT usage experience bring a number of psychological hurdles to their unlearning, such as damaging the new devices, hardware and software troubleshooting and be habitual of previous working routines. The social and cognitive routines along with good formal training can assist them to minimize the hurdles. Unlearning comes up as a sudden and direct situation. One just cannot be precisely ready to when and how to unlearn. It is up to their mental strength and exposures that facilitate them to replace the older routines with the new ones.

6.2 Future research streams

Unlearning can be a broad phenomenon in comparison with the type of change. This research just tried to explore the unlearning from IT perspectives both at the organizational and individual unlearning. It has been quite a new research, as it does not have sufficient practical findings from the health organizations. It will be interesting to find out the strength required of unlearning at both different levels i.e. organizational and individual unlearning and learning. Additionally, the bond between the higher and lower
hierarchy in health organizations for information sharing needs to be pursued for the accuracy of the decision making information. For instance, in the situations such as, when the decisions are imposed by the higher hierarchy particularly the stakeholders who witness the work from a distance. The channels of communications between the different levels of lower staff to higher levels are to be looked at. Thirdly it can also be a very good research stream to find out the ways by which previous empirical investigations (generalize) are synthesized to lend a hand to someone for minimizing or easing the individual hurdles to a great extent.
References


Harrison et al. (2007) Unintended Consequences of Information Technologies in Health Care- An Interactive Sociotechnical Analysis, American Medical Informatics Association, 14, pp. 542-549.


Appendix

Following are the questions of interviews.

1. Organizational Unlearning interview questions

1. What is your Job title?

2. How long have you been working on this particular post?

3. Do you have previous experience of working on some other place?

4. What were the older instruments you worked on before?

5. Why do you need to bring a change?

6. Why is it important for the organization?

7. How do you go through into these changes in IT instruments (have you talked about it to your employees before)?

8. During the installation how did you manage the previous learning?

9. Did you use the older systems for some time with new ones?

10. How long did it take you to gradually avoid using the older ones?

11. Did you see any thing different in individual’s interactions? Do they talk more about their job difficulties with you?

12. Being an organizational member what kind of strategies do you have for unlearning and learning?
   
   i. New Recruits?

   ii. Formal and informal training?

   iii. Replacing with older members with experienced ones?

13. Being in top hierarchy how often an employee talks about their job tiredness or difficulties with operating on new IT instrument?

14. Does this change work?

15. I would like to discuss the IT change regarding tools like COSMIC?
   
   i. Does it help you to work faster on it?
ii. How did you first work on it?

iii. Did you get any trouble in working on it?

16. What are the daily routines performed on these instruments?

17. Have you been monitoring the other organizational processes for these kinds of IT changes?

18. Do you collaborate more or less now within your working group and with other clinics? Why – Can you give some example?

19. Do you feel that your organization have changed the way you work now with patients? Why – Can you give some example?

20. Have any of your team member involved during the development of the COSMIC?

2. Individual unlearning Interview Questions

1. What is your Job title and what do you work with?

2. How long have you been working in this hospital set up?

3. Have you worked in other hospitals before working here?

4. How do you feel about IT change here?

5. Have you had previous experience in IT change processes? If yes how do you see this change with the one you already had experienced?

6. I would like to discuss the IT change regarding tools like COSMIC?

   i. Does it help you to work faster on it?

   ii. How did you first work on it?

   iii. What is so good about COSMIC comparing it with the older one you had?

7. Tell me about your job? Did it change with the new tool?

   i. Did you need to rethink how you conducted your work previously? If yes please what kind of rethinking are you doing?

   ii. With change in job title what is different now and then (Previously)?

   iii. Did you have any knowledge and experience of using the new instrument with new job title?
iv. What was the hardest thing for you to learn?

8. Do you collaborate more or less now within your working group and with other clinics? Why – Can you give some example?

9. Do you feel that your organization have changed the way you work with patients? Why – Can you give some example?

10. How did you learn the new tool? Have you had any training provided by the County council?
   
   i. Did you learn by asking and probing your colleagues?
   
   ii. Did you learn by using manuals?
   
   iii. Did you learn by trail and error-testing different ways?

11. What problems have you faced in unlearning the previous system?

12. How did you experience the learning – or how do you think you and others could have done differently?
   
   i. In case of problems whom do/did you speak to?
   
   ii. How long did it take you to get on top of operating the new instruments?
   
   iii. Have you had a chance to operate on the new instruments while being installed?