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An Assessment of the Role of Leadership in Adopting Advanced Technological Systems in an Organization

August 2021

Submitted to the National College of Ireland

Abstract

The objective of this thesis is to assess the leadership role in an organization which is introducing technological advancements. In recent years, there has been a rise in addressing digital transformation and different technological advances at the organizational level. However, leadership and technological advancement studies together are moderated. Digital transformation is bringing new challenges every day. This research investigates the necessary leadership skills needed at an organizational level during digital transformation. When an organization introduces new technologies, it brings in changes at various levels. These changes can be operational, organizational strategy, process and people management and changes to the leadership etc.

This paper uses qualitative, thematic analysis to map the existing literature of leadership skills, digital transformation, and to address the change model introduced along with necessary leadership skills needed. The research also explores how a leader can effectively handle resistance to such technological changes and how he/she can motivate employees for smooth implementation of new technological system in an organization.

Declaration

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Acknowledgements

The success of this thesis would not have been possible without the help of so many people during this time of pandemic.

First, I wish to thank my supervisor Dr. Claire Harnett for helping me with her insightful comments all along the journey. Her immense knowledge, patience, enthusiasm, kindness, and guidance helped me in structuring this thesis.

I'm eternally thankful for my family especially for my mother who motivates me and supports me to keep learning and growing.

I acknowledge the contribution of people who gave me their valuable time for the interviews. Their personal experience, knowledge, and ideas have helped me in learning and assisted me in this dissertation.

Lastly, I would like to thank National College of Ireland and all the professors, lecturers, staff members for being in this beautiful journey.

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1.0 Introduction

Leadership, a leader and leading are terms that are common among people. When talking about performance of any institution or organization, you will never fail to mention the term leadership (Seger and Bergsten, 2013). The terms are directly related to each other. A leader will always possess leadership skills. Leading is the act of leaders expressing their leadership skills (Bennis, 2021). However, who is a leader? When asked to any person, the answer will always be attached to subjects. Meaning a leader can only be effective in the presence of subjects who are the people you lead. In our current world, we always talk about leadership, but we have failed to correctly define the term leadership. Although the term sounds easy, it is very difficult to define leadership. However, the knowledge and correct definition of leadership is very important to the coming generation who are tipped to become the future leaders. The correct definition is so vital that it will create a cohesion by building a culture that understands the importance of leadership in the society (Dickson et al., 2003). The leaders who take the mantle to provide direction to their subjects when asked about the description of leadership they may fail to know. Suppose you obtain 100 leaders and ask them to define the term leadership. You will not be surprised to obtain 100 different answers, as some of the leaders will be struggling to obtain the correct words to use (Nextgeneration.ie. 2021). Based on the definition of leadership on different aspects. Some people will define leadership based on the office someone holds. Some will define it based on the importance of the position. Many will define it in relation to human traits. Some leaders are strict, and others have empathy. All the definitions will be correct as the people view leadership in different perspectives (R Hirshorn, 2019).

The different perspective is influenced by the type of leadership experienced in their society (Reiter-Palmon & Illies, 2004). Over the decade, leadership has changed significantly due to many factors. One such factor is technological advancement. Due to the revolution in

the digital platform, current leaders are facing new challenges constantly. To absorb, understand the technical advances and to wisely use them has become a major challenge. Earlier, change was happening at a slower pace with a reasonably stable environment. But nowadays, the future is unpredictable, and the present situation exists for a shorter time (Green, 2011). People's perceptions are changing about work and life at a comparable rate with respect to the industrial revolution in this modern world. Digitization process has caused changes to people's professional and personal space. The same effect can be seen in an organization's functioning. The way of working, managing teams, collaboration, delegating tasks or transmitting data all have an impact by such advancements (Mihai and Crețu, 2017). However, in recent years, scholarly research in digital advancements or information systems is on the rise within itself. Different technologies, organizational change, leadership have become popular topics for research and are only at a strategic or business level. But only a limited number of research related to leadership-and-digital transformation together is incorporated (Nadkarni and Prügl, 2020). Given this growth, it is the right time to reflect the map between existing literature and terrain of digital transformation and leadership.

In this study, researchers are trying to explore the leadership skills needed in the current complex business environment during digital transformation. A thematic study of the subject is carried out, along with a critical review of many facets of the leadership role in digital transformation. There are seven chapters in this study which covers literature review of different leadership theories, technological changes, and its impact on leadership skills, famous Kotter's change model, followed by research aim & objectives, research methodology, findings & analysis, and discussions and lastly conclusion & limitations.

2.0 Literature Review

Many people associate leadership to a leader. Being a leader is not all about leading people. It has something more than just leading. According to my sense of understanding, being a leader entails more than mere influence. Leaders have goals to fulfil but the people's safety and well-being should be given priority (Shamir & Eilam, 2005). Leaders should be driven by a good motive that will create a positive influence on the subjects. The nature of leadership in an organization will depend on the objective and culture of the organization (House et al., 2004). A company may require a leader that is humble and focuses more on the employee rather than the objectives of the company (Iqbal et al., 2015). Another company may require a leader that puts the company's objective before anything no matter what.

Furthermore, due to the technological advances happening at a fast pace, organizations are constantly being pushed to adapt to the changing environment because of globalization. Organizations are compelled to be cautious while choosing the proper leadership models (Chima and Gutman, 2021). There are many leadership theories or styles available to follow. However, it is important to be conscious about the style and effectiveness of the leading role in an organization. In this section, discussion about the various leadership theories, change models and the challenges about the resistance to change in an organization with respect to advancement in technology are discussed.

2.1 Leadership Theories

Being a leader is being able to direct a certain group of people or an organization in decision making or coming up with ideas that can boost the work to be achieved (Kotter, Sagepub, 2021). For one to be an effective leader, one should have some skills and personalities that will help him or her in leading an organization or a group of people. We have theories that help us in knowing the different kinds of leaders we have and how certain people become leaders. These theories

help us know the characteristics of a good leader and how a good leader should behave. Other theories help us know how one can adopt some behaviours to be an effective leader or improve the skills of leadership in handling different cases (Ejimabo, 2015).

In management, leadership is the most studied topic, but at the same time it is the most ignored, understood and overlooked also. Though the history and background of leadership is old and rich, it is often ignored as well as overlooked in academics and in organizations. Leadership has become a multidisciplinary subject in both business and academic study. Both organizations and humans are emphasized by leadership. The origin of leadership is from various fields like history, philosophy, social sciences, psychology, sociology and from educational fields like management (Kanji, 2008).

There are various historical theories on leadership that have emerged because of empirical contributions. These theories emerged over time. Examples are, The Great Man Theory, Trait Theories, Behavioural Theories, Contingency Theories, Situational Theory. In the contemporary business era, many scholars have been fascinated by leadership theories since 1980's. Organizations need to adapt at a rapid pace to survive in the current strategic realities. To achieve the firm's goals, companies must consider the ever-increasing competition while also transforming corporate environments, engaging employees, and innovating. Entrepreneurial practices within companies must be promoted by top management. Therefore integrative leadership theory focuses on the leader as a tool for meeting organizational needs (Price & Weiss, 2013; Junker and van Dick, 2014).

Organizational management and leadership are closely and strongly related. With the passage of time, various definitions for leadership have arisen. According to leadership definition by Yukl, it is "influencing others to understand and to agree about what needs to be done and how it can be done effectively, and the process of facilitating individuals and

collective efforts to accomplish a shared objective” (Margulies and Yukl, 1982). In another definition, leadership is a firm’s transformation from its current state to its peak by a leader to which he wishes to take it (Dess, Lumpkin and Eisner, 2011). According to executive management gurus, leadership means “today’s leaders are those who produce the leaders” (Deluga, 1988, Raelin, 2017). According to Burns (1978), leadership in a competitive environment is the art of using individuals for various reasons to define approaches to resources, specific goals, standards, and there may be disagreements when trying to chase the goals. Along with Burns theory, Bass, Avolio have extended their work to introduce leadership theories in full range. There are two types of political leadership theories according to the book by J M Burns (1978). They are Transformational and Transactional.

2.1.1 Transformational Leadership

Transformational leadership was introduced by Burns in the year 1978, in his book of Leadership. According to his definition it is the process where "leaders and their followers raise one another to higher levels of morality and motivation" (Burns,1978). Transformative leaders have a strong understanding of people with a clear purpose. The main difference in both leadership theories according to Burns is in the offer made between leaders and followers. Through Transformational leadership, one can surpass the short-term goals and can focus on the intrinsic needs which are of higher order. In contrast, Transactional leadership focuses on the proper resource exchange. Leader’s need is identified by the followers in Transformational whereas in Transactional leadership, followers are rewarded for giving what their leaders want. Burns, states that the most common leadership existed is Transactional than Transformational, which is also considered to be less dramatic (Ficcolo, 2004). Through the following dimensions, we can analyse the Transformational Leadership, they are Inspirational

motivation, Idealized influence, intellectual stimulation, and lastly individual consideration. Let us understand each in detail below.

Idealized influence: Another term for idealized influence is **Charismatic Leadership**. This theory describes the capability of the leaders to become role models for their followers. The extent of displaying ethical principles and solid morals of leaders is another attribute of this type of leadership. The main two attributes of this type of leadership are behavioural and attributed. Behavioural means what a person does, or a leader does. And Attributed means, a leader is assigned with what traits? The responses received by such leaders are positive and they state as “*I instil pride in others for being associated with me*” and “*I emphasize the importance of having a collective sense of mission*” according to (Alvolio, Bass, 1995) (Serrat, 2020).

Inspirational motivation: In inspirational motivation, the leader’s ability to cheer on his or her supporters is reflected. Whether he can speak for his followers is known. Leaders show their commitment towards a common goal. They are very optimistic and enthusiastic. They also encourage their followers to work towards the common goal.

Intellectual stimulation: In this type of Transformational leadership skills, the importance is given to innovation or creativity. Motivation is given to followers to find new ways in solving problems. The statements given by these types of leaders are “I suggest new ways of looking at how to complete assignments” and “I re-examine critical assumptions to question whether they are appropriate” (Alvolio, Bass, 1995).

Individual consideration: These leaders mainly focus on their follower’s development, they invest to make sure their followers are getting coached, are mentored according to their needs or among the group. In this dimension two-way communication between both the followers and leaders plays an important role.

Overall Transformational leader always tries to go beyond limits to achieve results which are extraordinary. He/she is responsible to inspire and encourage their followers to do so. In achieving group goals, transformational leaders help their followers to think in a new way for the existing problems by inspiring, arousing and exciting them. They always create awareness among their followers by paying attention to their development needs and issues. These leaders show skills of self-replicating and sustainable leadership skills. They also aim to change their followers to become the same. They not only use their bargaining or charismatic force but also use their expertise, knowledge. In such cases followers become profoundly rooted in the environment created by their leader even in their absence (Ficcolo, 2004).

Due to many characteristics of transformational leadership such as follower's transformation in the process of self-development, place, or room to change or even to become individual contributors, they become the most valued. When the people are given such importance to develop, such leadership brings the organization's success and becomes the best leadership skill. Even the followers learn such types of leadership skills. This makes the followers lead and perform more than the expectation set. That is why such leadership is helping to raise the subordinates, colleagues, clients, followers, or constituencies to get awareness at a higher level. Even if a person exists from such a leadership position, it creates sustainable change which lasts forever. Examples of such a type of leadership can be seen in Microsoft corporation by Bill Gates. Microsoft was founded by him as an owner/manager, but it is now run by his employees who are also part of their research and development (Moses J.B., 2020).

2.1.2 Transactional Leadership

Transactional management or leadership is another leadership style which focuses on performance, supervision, and organization. It "occurs when one person takes the initiative in making contact with others for the purpose of an exchange of valued things" (Burns, 1978).

Transactional leadership is defined through various elements. First one is contingent reward, which refers to how well a leader and his or her supporters can conduct successful transactions and exchanges. The statements given by leaders who follow this type of leadership are as follows, "I express satisfaction when others meet expectations" and "I provide others with assistance in exchange for their efforts". The second element in this type of leadership is management-by-exception. In this, leaders tend to resolve the problems when they arrive and can act proactively to prevent it. The statements by leaders who try to resolve when the problem comes states as "I fail to interfere until problems become serious". And statements by leaders who stick to management-by-exception states that "I concentrate my full attention on dealing with mistakes, complaints, and failures". Finally, in "Laissez-faire" leadership, a leader does not take any leadership behaviours either by avoiding it or by not possessing it (Ficcolo, 2004).

In transactional leadership, followers are always rewarded with something by their leaders. The reward might include a promotion, a good review, a rise, new changes at work as desired or new responsibilities etc. This type of leadership focuses on group performance, supervision role, or organization and is called managerial leadership. Leaders who follow Transactional leadership can sometimes show behaviours of motivational players which is a characteristic of charismatic leadership. This can be quite effective in creating such players. An organization can be benefitted from such a type of leadership due to making deals which are motivational, but the issue can be of sustainability nature (Moses J.B., 2020).

To conclude transactional leadership, leaders accept organizations existing culture, goals, and structure and to attract the followers they use rewards. To attain the organizational objectives, such leaders are willing to compromise in the existing structure. The thinking is limited to the box where they work and problem-solving capabilities also lie inside it. Transactional leadership can be passive in nature primarily to maintain status that existed. To solve a problem, it becomes rare for such leaders to think outside the box or be creative or even find new solutions or strategies. Everyone operates within the specified objectives and goals (Dartey-Baah, 2015). Example of such a leader is Jack Ma, who is Alibaba 's chairman. His original name is Ma Yun and he is a philanthropist, business magnate or an investor. He is famous as one of the richest men in the world. Though Alibaba's Group is a multinational company, they lag in terms of R & D. They have very little to show in strategic changes and innovation. This can be due to their nature of business which is linking buyers and sellers. They capitalize on growing demands of existing issues in linking these suppliers and consumers. Therefore, Alibaba can be considered as Transactional in nature (Moses J.B., 2020). The below table lists the difference between both transformational and transactional leadership styles (pmi.org, 2021).

Attributes	Transformational	Transactional
Vision	vision-driven, proactive	task-driven, reactive
Good Communication Skills	communicate, inspire, instruct, and inform	traditional modes, reactionary, team not fully informed of the big picture
Ability to Inspire Trust	honesty and trustworthiness	team members not willing to risk careers to support the vision
Ability to Empower	make team member feel capable, build up, develop team members	focus on work rather than the team, not focused on team member development
Energy and Action Orientation	high levels of personal energy and enthusiasm	lack luster enthusiasm, just another job, another challenge
Emotional Expressiveness and Warmth	express feelings openly, emotions are controlled, positive, informative	team members not fully informed of their individual importance, concerned about outbursts
Willingness to take Personal Risk	not risk-averse, lead by example	Risk-averse, lead by directing
Use of Unconventional Strategies	think outside the box, creative decision-making processes	tend to think inside the box, traditional decision-making processes
Self-Promoting Personality	not shy or overly modest, actively involved in politics, use influence	tend to avoid limelight and politics, not effective using influence, reticent
Capable in Crisis	cool in a crisis, positive approach, problems are just challenges and opportunities	crisis breeds chaos, reactionary management, problems are problems and are threats

(Derived from DuBrin, 1995)

In the above section we have seen some of the leadership theories, and furthermore we will investigate the empirical literature of organizations role in advancement of information systems, how leading such changes have been occurring in recent times and the Kotter's model of change and lastly how the resistance to changes is addressed in further section.

2.2 Empirical Literature

2.2.1 Organizational effectiveness

Many firms do not consider human capital just as a resource aimed at producing goods and services to the firm. The human capital is seen as the individual ability to provide quality services to the firm informed of sober decision-making (Farzad, 2006). The level of management of any organization will determine its level of achievements. Any organization

will prosper depending on the capabilities of all the employees in the organization. Good leadership roles will enable the organization to earn big due to well decision-making procedures and organizational structure. Wallace and Weese in their literature review on leadership found out that lack of effective leadership in any organization will lead to downfall of such an organization as in the case of North American corporations (Wallace & Weese, 1995). The analysis of leadership style can effectively influence the performance of an organization. A research by Dale and Fox (2008) there is a direct relationship between the level of leadership and the level of commitment of the employees. Well-structured leadership will ensure that the employees are well organized such that the operations of the organization are not disabled in any way. Dale concluded that the leadership would formulate laws and principles that will guide the employees' operation in the organization. The level and standards of the leadership is the one that will determine the productivity of the organization.

2.2.2 Leadership and information

Study by Burns (1978) describes leadership as the least understood phenomena on earth. Leadership has been there since in history. The urge to leadership has not been effective as the trend of leadership is changing with generation. The field still needs active studies to fully understand different types of leadership roles. The early study of leadership was just concerned with effectiveness of the office but as the time passes, leadership has been considered more of the quality of information and decisions made. The quality of information will determine the performance of any organization. So, leaders are considered effective by their quality of information they make. According to Stodgill (1974) (Bass, 1990), leadership depends on the personal perspective but the most common one is the effectiveness of the information provided. However, Bartol & Martin (1998) argued that leadership is the process by which a leadership can influence others to work towards achieving certain goal of an organization. This is done through quality decision making and effective information.

2.2.3 Leading technological change

In the organizations, the working culture is changing due to technological advancements which are occurring very rapidly. The examples of such digital advancements are Artificial intelligence (AI), Robotics, Internet of things (IOT), Cloud Computing etc. In the industrial revolution, they are collectively termed to be the fourth type or simply industry 4.0. The rate at which these changes are happening is raising concerns about the workplace transformation. The consequences will be losing jobs up to a certain level or displacement of these due to the automation processes introduced in a short span. Some might have a very positive picture about the increased job market, but the business models are becoming much more competitive. Its organization's responsibility is to handle this digitalization with changing working environments by integrating them together to remain competitive in the market (Nadkarni and Prügl, 2020).

For effective implementation of technology in an organization, companies must go through fundamental transformation. Over the years, these transformations caused attention towards the organizational and leadership issues. These can be termed as non-technical issues. Company culture, leadership, and training of employees has become very important in achieving the digital transformation. During digitization, an organization goes through changes at different levels such as core business, structures, processes, reconfigurations, and changes in leadership roles etc. Therefore, in research, the focus towards management behaviour and changing leadership due to the impact of digitization has become prioritized and very active. Newer communication strategies, quick decision making due to immediate information availability access, educational advancements in leadership theories and top management's speedy optimization are emphasized more. Furthermore, to handle digital transition, higher management is required to have a new mindset to lead. Therefore, the existing leadership practices should be revisited by the leaders. Previously, communication abilities and leadership

were the focus in the programs of leadership, but nowadays, executives are expected to develop vision towards technology and transformative powers. Leaders should learn leadership through adaptive capabilities and transparency. This means they must have the ability to evolve from crises or problems through resilience.

Continuous disruption is caused by digital technologies in today's world. Change models that existed from the past refer to Three-phase models, which are applied to a project by practitioners from beginning to end and have a middle phase. Examples of such models are Kurt Lewin's (unfreeze-change-refreeze), Kotter's (creating an environment which is required for change, organization's engagement and enabling it for change, implementing and helping to sustain these changes), and Daryl Conner's (present-transition-desired state). But in the current situation of the digital world, most organizations will be stuck in the middle phase which is ambiguous and leaves an organization hanging in the air, one cannot expect the end phase. This is happening due to the advancement in technology (Flanding, Grabman and Cox, 2019).

2.2.4 Models of leading change

There are many factors which are influential in the way we work currently. They can be technological changes, new inventions, project-based style of working etc. Even if it's a small change or organization level change, it's common to get frightened or natural to become nervous. You are aware about the changes but not sure how it is going to take place? Who will be handling it? Or how it is going to end? (Ababneh, 2016).

As discussed above, the change models available are many. Here we are going to discuss one such famous model called Kotter's 8- step model. Kotter stated that, "Leadership must create and sustain the kind of changes needed for successful organizations to compete in

the current competitive world” (Kotter 1996). In the below fig, you can see the 8 steps of Kotter’s model (Kotter. 2021).



Step 1: Creating a sense of urgency: It is necessary for an organization to understand why the change is happening. Creating urgency will help to motivate the initial spark. According to Kotter, “creating a sense of urgency is critical to increasing the organization's awareness that it needs strategic adjustments and that there are always opportunities in sight.”

Step 2: Creating or building a core coalition: To bring in the changes to take effect, a strong leadership skill is needed and to form that the team is very important. Leading change is more valued than managing the change. Kotter’s notes says that for “effective change to happen, a team of effective leaders must develop into a coalition to build urgency around the need for change. People must know change is necessary”.

Step 3: Forming a strategic vision: When the change starts to happen, mostly you will come up with great ideas around it. Solutions can be just floating around these newer ideas. Creating a vision by linking all these will help people to understand the change in a better way. It helps in aligning the objectives for change and to proceed as a team. Overall, strategic vision helps to achieve the change roadmap.

Step 4: Communicating and sharing the vision plan: Next step would be to communicate the strategic vision to everyone who is involved. Powerful communication should be incorporated in everything which enables frequent communication regarding the change. These will help people to remember the change vision and the resistance to changes will be less.

Step 5: Empower to act on vision: Along with powerful communication, empowerment is important too. Empowering means allowing your employees to come up with new ideas, solutions, or approaches. Removing any impediments or obstacles along the way to change vision is very necessary.

Step 6: Generating wins which are short terms: Success motivates changes occurring. A small success which can be termed as quick win will bring in significant outcomes. The effort becomes constructive. It will create a platform for adjustments in vision with the actual results.

Step 7: Sustain acceleration: To sustain the long-term changes, it's important to consolidate the change plan. After the short success, one should not revert. Continuous improvements are key here. Analyse if anything needs to be changed along with what was successful.

Step 8: Institute new change: Lastly, the change should be incorporated into the organization culture. Leaders play a vital role in supporting this (Joseph Galli, 2018).

Kotter's model has various advantages as compared to other models. When you compare Lewin's model to Kotter's, it comes with greater direction for implementing change. Kotter advises to include a communication process with the employees which Lewin's model lacks. Out of many famous change models, Kotter's model provides detailed structure and clarity. From the beginning phase to managing and then sustaining the changes are described by Kotter's model effectively. Change model implementation will become successful when it is accepted by the team through proper communication. Factors like knowledge, support, and resources are important for a change model. Another important factor to change the model is it must consider the resistance. It is necessary to understand all the forces of resistance (Joseph Galli, 2018). Therefore, it's important to review resistance to change.

Understanding Kotter's change model helps the researcher to analyse the change process occurring in real time across various organizations which is one of the key objectives of research. And studying about the leadership role in such situations would help to cover another research objective to assess it. In the continuation to the current section, reasons for resistance and how it can be addressed are reviewed in the next section.

2.2.5 Overcoming resistance to change

In the current situation of constant change, continuous improvement is necessary for any organization to survive and compete. New opportunities along with the risks exist in this journey. To promote the changes and to break the paradigm, organizations must always bring in new concepts. To draw the attention of everyone during changes happening, resistance plays an important role in decision making. Constant communication with the employees is necessary

along with the time to adapt to the new changes that must be given by managers. It is the manager's responsibility to help the team to get involved in all the activities by providing the right atmosphere (Dye LD, 2011).

According to Steven R. Hirshorn (2019), It is not easy to accommodate a change, the first action towards change would be the resistance. This resistance delays the change of incorporation. If a decision is made for change implementation, resistance creates a wall. There is a chance that initially you feel good about rejection and give a controlled feeling. However, resistance gives a little benefit but change occurring cannot be stopped. There are various reasons for resistance to change, it can be the challenges it brings in, waste of time or ill-timed, sometimes it is the assumption that change doesn't solve anything or bring any useful result, all these cause the project to halt. In such situations, as a leader your attitude matters, communicating with a positive mindset helps in successful change. Some you will be hesitant as your team members but understanding the hardship and explaining why the change is necessary is very important.

Advancement in technology in an organization often brings risks due to many factors. It brings in new information, a new process and thinking which in turn causes the changes in people's roles in many contexts related to organization or social and productive elements. This can be very complex and can be very difficult in nature. The pressure caused by such difficulties causes suffering in all the components involved (Pries-Heje and Johansen, 2015). The changes can be at any level and will be concurrent. So, it is always said that resistance is more when there is change or advancement in technology. Especially in an IT firm, it may create negative behaviours. These behaviours can be observed and grouped as follows. Pessimistic, conformist, accommodating attitude etc. In pessimistic, due to past unsuccessful experiences it brings negative thinking. In a conformist attitude, one becomes accepting in

nature for any changes happening and does not raise any question for motives. This habit can be passive. Accommodative attitude- in this, it becomes habitual to be unable to participate. It is obtained to avoid such efforts. These resistances can be pointed out and some models are proposed to curb such resistances.

Problem solving Model: Consists of Group dynamics adoption techniques along with human relations strategies during transition implementation. Participation in the defining problem definition clearly and approval process for changes will happen according to the corporate client's needs.

Research Model: Change plan until the final evaluation process through implementation is strengthened by distribution and development.

Social interaction Model: standard determination for the changes is emphasized and in the social system this can be widespread. This can be achieved through leaders who facilitate, through informal contacts and from one individual to another. The process involves raising awareness, creating interest, evolution then followed by trail and lastly through adoption.

Threading Model: Per issue thread, the above process is integrated in a comprehensive system. New process is adopted through analysing the problem and finding a solution through a collaborative process. In any technological change the above recommendations can be used (Gonçalves & Gonçalves, 2012).

How an organization is perceived by its employees has a great impact on building its image. The organization's environment and culture reflect the speed with which changes are happening. Along with Kotter's framework, rewards schemes for employee recognition must be added. This helps in retaining the employees in the organization. Along with the above approach to handle resistance, Kotter's model effortlessly says resistance occurs due to

insecurity of the job. No one wants to be the part of failure; everyone wants to be involved in winning the team. If change establishes quick success, then those who were resisting earlier would want to align in the leading team. Change is not considered as a one time event which is very discrete anymore. Even in some cases classic models of change management may work in some projects in which you can see a clear ending from the beginning. To create long-term values and new goals, an organization must make a turnaround quickly at a specified date and should stop at a point in its project's change management. Technology adoption, on the other hand, is a never-ending technique (Kiesnere and Baumgartner, 2019).

In this highly dynamic digital era, imagining, acting accordingly becomes very fast-paced. Chaotic environment makes it difficult to succeed and effort to thrive in such an environment requires organizations to create a proper atmosphere. People should be supported to adopt innovation, personal growth in a constantly evolving world through transformation. Organizations which explicitly choose to reinvent themselves benefit from the digital age. Leaders might be aware of identifying the resistance to change but might be limited in their capability to see the future. By exploring the opportunities in this technology-taking, which is caused due to the uncertainty, newer leaders are not afraid to take the challenges (Flanding, Grabman and Cox, 2019)

To conclude the literature review, though there are various theories which are previously available and are related to IT-enabled change, digital transformation has become the most recent topic in academic research. In research streams, there are many who sought to assess digital transformation from many disciplines such as transformational changes, requirements, strategies and facilitation of these changes, there has been some focus related to leadership roles in digital transformation. There are more reviews available in industry transformation which were concentrated towards process-model automation, digital

advancement is taking the lead and has become a priority. The reviews highlighting this shift are available in the literature of various studies of digital transformation (Trenerry et al., 2021). Despite having the existing studies, integration of leadership skills with technological advancement needs to be revisited. The main objective of this research is to assess leadership skills which involves questions like, how leaders are helping the digital transition? What are the steps they follow to bring technological changes? How do they motivate the employees? And how the resistance to such changes is handled are addressed. This paper helps the researcher to identify the research aim and objectives which are discussed in the next section.

3.0 Research Aim & Research Questions

The aim of the research is to investigate the role of leadership in an organization to help adopt advanced technological systems. The research will focus on how the leadership in an organization can influence the extent at which the information system will improve.

3.1 Research objectives:

1. To assess the role of leadership skills in advancement of technology in an organization.
2. To determine how leadership can lead to improvement in introduction of advanced technology in an organization.
3. To determine how leaders are handling the resistance to change and how they motivate employees during technological changes.

3.2 Research questions

1. What is the role of leadership in advancement of technology in an organization?
2. How does leadership lead to improvement in introducing technological advancements in an organization?
3. How does leader's handling resistance to change and how do they motivate employees during technological changes?

4.0 Research Methodology

4.1 Introduction

Chapter 3 provides the basis and the direction that the researcher will use to tackle chapter four and five. This chapter will cover the research methodology of the study. The chapter will describe the methods that will be used to collect and analyse the data. The methods should be efficient to ensure quality data that will help to answer the research questions. The right choice of methods should be selected to ensure that the data obtained will give the real image of the reality. According to Basias and Pollalis (2018), the methods selected to assist in the collection of data and its analysis are very important because they will determine the level of accuracy in the depiction of reality. For a researcher to well select the right methods, he/she must consider the nature of the research questions. The research question will give direction on what methods to use in the collection and analysis of data. In addition, to research question, the research objectives will also play an important role in deciding the correct tools to apply when collecting and analysing data. However, Dodds and Hess (2020) explained that the best research methods are selected based on the current external environmental issues and the expected outcomes from the results. Therefore, the researcher should be able to identify the prevailing external environment issues. This will help them to effectively select appropriate methods to analyse the topic. Therefore, the role of leadership in introducing technological change of an organization is an interesting topic, which will catch the ears of many organizations. In the current economy, many firms are trying to improve the way they communicate for effective decision making which will determine the performance of any organization. This chapter will discuss ethical considerations, data collection and analysis methods, research design and limitations of the research.

4.2 Research Philosophy and Approach

Research philosophy is a belief or perception on how data collection, analysis, and the intended use to reach the target group (Crossan, 2003). The study was initiated to investigate the role of leadership in organization while introducing advancement in technology. The level of the information system in an organization is very important and it will directly influence the productivity of the organization. This is achieved through efficient decision-making. Therefore, the research philosophy that will be used in this study must be effective such that it helps the researcher to meet the demand of the research questions. Based on assumptions from how you see the world will help you to choose a research philosophy. These assumptions act as a guidance to your research strategy and methodologies. Practical considerations will have an impact on the philosophy you choose.

According to Saunders (2009), the three key approaches of research philosophy are ontology, epistemology, and axiology. Research process thinking will be influential based on the important differences between them. Each contains important differences which will influence the way in which you think about the research process. The term "epistemological" refers to human knowledge assumptions. The realities that you encounter in your research are said to be "ontological". Lastly, the research process is influenced by the researcher's own values. This is termed as "axiological" (Saunders, Lewis and Thornhill, 2007). In understanding research questions, and in analysing what methods to choose and in interpreting the findings, all these would be helpful. A good philosophy consists of well-thought and consistent assumptions, which helps in the entire process of research methodology with a good strategy, data collection and analysis. While investigating, researchers from business management, one must understand the philosophical responsibilities of the chosen strategy which creates an impact on questions related to what and how part (Glegg, 2018).

4.2.1 Epistemology:

This research is epistemology. In epistemology research design, the research takes the topic to be part of knowledge and carries out extensive research concerning the study to come up with information that may agree with the claim (Bryman, 1984). The epistemology research design also uses various steps to come up with a conclusion that may help to understand the concept of the topic (Hofer, 2001). Epistemology has two main approaches; they are Positivism and Interpretivism. In this research a mixture of both is considered.

Positivism and interpretivism will help the researcher to concentrate on the natural realities and humans. Human experiences are valued more other than objects or things. Human actions, their perspective, thoughts, explanations, actions in natural reality helps in identifying what researcher is looking out for in the study. Furthermore, interpretivism and positivism are explained in the Business & Management Philosophy section.

Epistemology method helps to provide an insight to the topic such that it may be able to forecast on how the results should be. This is done through comparison of data collected during the research and some of the papers that relate to the topic. This will provide a frame and an insight on how the results should be expected. The epistemology research philosophy will outline the knowledge claim or what is believed to be. The researcher will then carry out extensive analysis to prove the claim. The research aims at investigating the role leadership plays in promoting the information system of an organization. There are many theories that explain this topic. The published articles and journals about the topic will provide the overview on what to expect. That is what is believed to be true about the role of leadership in promoting the information technology of an organization. However, we have the current system which will provide what is true to be used in the analysis and come up with the results. The

combination of the two different perceptions about the study will provide wide explanation and varsity knowledge about the study (Galliers, 1991).

4.2.2 Business & Management Philosophies:

In Business and management there are five philosophies of research, they are Interpretivism, Positivism, critical realism, postmodernism, and pragmatism (Saunders, Lewis and Thornhill, 2007).

Positivism: Can refer to the philosophical perspective of natural scientists. Generalizations are made through observation of social reality, just as they are in physical and natural sciences. Data is produced by only phenomena that are through observation. Existing hypotheses are used to develop the research strategy. The hypothesis will be confirmed and tested by considering it as part or a whole which leads to further research through further development of theory. Main concern here is facts rather than impressions.

Interpretivism: Human beings are given greater weight than physical objects because they are more meaningful. Researchers investigate new organizational realities to have a better understanding. Individual lived experiences and cultural artifacts are the subject of this study. The researcher tries to include people who have their own perspectives.

Critical realism: Various societal and organizational structures are analysed by researchers using different methods. The focus here is how the researcher sees the underlying structures and the experience.

Postmodernism: It is reflexive axiology which is radical. Instabilities and absence are exposed when the data is deconstructed.

Pragmatism: Like axiology, ontology, and epistemology, practice improvement is the focus in pragmatism. Researchers adopt research strategies with respect to the problems of the research. The arguments ontology and epistemology have always had a competing ring around

them. The dispute is sometimes portrayed as a choice between the two- interpretivist and positivist of research philosophies. According to pragmatism, the research issue is the most essential predictor of the philosophy used. For certain questions, one strategy may be "better" compared to the others. Pragmatic view is one such approach which can be worked with both interpretivist and positivist philosophy. This will happen if research questions will not explicitly state which one is being adopted. Intuitively, pragmatism appeals to researchers because it avoids what they see to be needless arguments about ideas like reality and truth. According to pragmatism, research should be based on what is interesting and valuable to you. Various methods which you think are acceptable should be studied and results should have positive effects and your value system should be beneficial from your results.

4.2.3 Qualitative Method:

The nature of the study allows for qualitative research. The qualitative research will allow for study of the experiences, behaviours, relationships, and traits without involving the statistics (Basias and Pollalis, 2021). This research will not involve data processing using the descriptive methods. The qualitative research approach will involve observation, use of proactive data collection methods and flexible questionnaires that will help the respondents to have freedom to express their experience with the area of study. The research will aim to understand the role leadership plays in relation to information technology of an organization. Due to the covid-19 pandemic, the data will be collected through the phone interview questionnaire to avoid the physical contact. Based on this, the primary method of data collection will be appropriate. This method will allow for observation and use of respondent's experience to come up with results that will help to answer the research question.

4.3 Data Collection Method

The research is qualitative as mentioned above and involves collection of primary data. Since physical contact will be somehow hard, I preferred using phone interviews to gather data. The interview questions will be prepared and sent to the target respondents through email. Through the phone call, the interviewer will contact the target respondents and ask questions guided by the interview questions. The message will be recorded and transcribed to obtain the responses that will help to answer the research question. This will create room for quality information and a large volume of information that will help to effectively solve the research question. This method is appropriate than the face-to-face method as the respondent has enough time and no hurry to answer the questions (Meho, 2006). The interview through phone call ensures that the data obtained is up to date. The method is less expensive as the interviewer does not need to travel. It is time saving and the interviewer can ask a question for clarity in case the answer provided is not clear (Cachia and Millward, 2011). The semi-structured interview questions were opted because they are much flexible. They guide the respondents on what to answer and at the same time provide more room for expression. This type of interview ensures that the respondents have freedom to fully express themselves. This will ensure that the researcher obtain additional information that may be vital to the study (Fodor and Jaeckel, 2018). Similar kinds of questions were administered to various organizations to get their views on the role of leadership in the organization towards improving the information technology sector. The respondents will be able to define how they understand the term leadership and how it influences the performance of the organization through the decision-making.

4.4 Sampling

Sampling is the process of selecting a given number of observations from a predetermined group for the purpose of analysis (Waples and Gaggiotti, 2006). The sampling method that should be used will depend on the nature of the research. The correct sample is

very important, as it will determine the quality of data obtained. A wrong sample may give results that do not represent the whole population. To ensure correct sample is used, the researcher used a non-scientific method to sample the population.

4.4.1 Purposive Sampling:

Purposive sampling method is appropriate, as only leaders of various organizations will be used to answer the questions. This was done to make sure that the specific objectives of the study are met. The sample will involve different departmental heads and if possible, the managers of the different organizations. The top management is more important as they are the one that makes the final decision about the organization. The manager is also an important respondent as they have experience on how the development of the information system in the organization has been faring. The purposive sampling method will ensure that the researcher is able to pick the correct respondents for the study. The respondents must have certain characteristics that must suit the demand of the data required.

4.4.2 Snowball Sampling:

The sample can be used to represent the whole population of leadership and their role in information technology. Along with purposive sampling method, snowball sampling is used. Snowball sampling is a type of non-random or non-probability sampling in the different sampling methods available. Use of non-probability sampling is because it allows one to choose a specific type of interview participants (Tansey, 2007). Therefore, many would suggest that when resources are less, go for non-probability sampling techniques. In snowball sampling, a chosen sample can be used to find the other samples to be a part of the study to increase no of the participants. Snowball method is chosen because the sample size is small. Due to the nature of the study the required participants are inaccessible or difficult to find (Taherdoost, 2016).

Chosen samples are from various organizations like Process Unit, Energy, and IT industry. Samples are heterogeneous in nature, that is irrespective of their genders, and they are contacted via LinkedIn. These are at higher management positions where they are leading a business unit or large number of audience/employees.

4.5 Data Analysis

Data analysis methods must be effective to ensure that the data collected is well described. The method to use in the analysis must make sure that it gives results that will help in meeting the demands of the research question. Therefore, this section must be paid much attention to ensure that correct methods are selected for analysis. The use of the wrong type of methods may result in ambiguous results that may lead to wrong decision making (Al-Najjar and Weinstein, 2009). The data analysis will depend on the type of data collected. The analysis of qualitative data will take a different approach compared to the quantitative data analysis. According to Srivastava and Thompson (2009), qualitative data analysis involves a systematic process of searching and arranging interview transcripts and notes from observation to understand the situation.

Qualitative method is widely used in data collection and analysis procedures that uses or generates data. Qualitative research methods are complex and extremely diverse. Thematic analysis is the first qualitative method that should be learnt by researchers as a foundation. For conducting many forms of qualitative analysis, thematic approach provides the core or basic skills. It can be termed as a tool (Smith and Firth, 2011). According to Braun and Clarke, Thematic analysis is a method which is used to identify, analyse, and report the patterns (themes) within the collected data. It describes, organizes dataset at a minimal and in detail. It frequently goes beyond this, though, and interprets many facets of the research issue. Thematic analysis (TA) has six phases.

Researcher chose the thematic analysis because of its benefits such as flexibility it brings in. That means thematic analysis is not tied to any theoretical framework. TA can be done in different ways. They can be inductive-deductive theory driven analysis, experiential-critical orientation or the third one as critical realist-constructionist perspective. In an inductive approach, themes are linked to the data themselves. It is referred to as bottom-up approach. In deductive approach, themes related to more theoretical orientation to the data. Questions are driving the analysis rather than seeing what is in the data. In the second TA method of experiential-critical, experiential captures people’s meanings, lives, and realities. Interpreting their reality. In critical orientation, more questioning or interrogating orientation of data is analyzed. In the critical realist- constructionist, reality or truth, situational data is analyzed to identify experiential, meaning or reality in which people are engaged. How our topic of research is understood, framed and constructed. In TA, all these can sometimes align together (Braun and Clarke, 2006) (Nowell, Norris, White and Moules, 2017).

Furthermore, there are six phases in thematic analysis as shown in the below table (Image: Braun and Clarke, 2006). These steps will be applied to analyze the identified dataset in the finding and discussion section.

Table 1 Phases of thematic analysis

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic ‘map’ of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Step 1: Precoding:

In this stage, as you know the interview data collected by interaction means the researcher will have some knowledge about what he/she is asking about the research. Regardless, the research must involve or immerse oneself in breadth and depth of the data. The interviewed data is transcribed extensively by reading and taking notes. Sometimes it is necessary to re-read to transcribe all the data of the interview. It becomes important to note down the words which are used many times as common. By doing this, a group of words or word clouds can be generated which will be helpful in discovery or exploration of what you are looking for in the research. Once this stage is complete, it will be useful for researchers to do the actual coding. Coding is a continuous process during the entire analysis.

Step 2: Coding- Identifying patterns

This step begins with generating an initial list of the familiarized data. Initial coding of data helps in identifying interesting content or feature of research. Coding is one significant part of the analysis because it helps to form meaningful groups. These groups of data are broader in nature which will be helpful for further theme's development. Coding to be done manually or by using a software. If the researcher considers it to do it manually then writing notes and highlighting using colors or underlying them with different pens will be effective in finding potential patterns.

Step 3: Post coding- Theme search

Since all the data has been combined and collected in the previous steps, now the long list of coded data which are identified from the data set. The broader themes are analysed and refocused to form the themes. Therefore here, the emerging themes are identified, developed, and summarised. A thematic map can be formed using tables, using paper pieces or mind maps,

and then grouped according to identified themes. Initial themes might be segregated as main themes, then later you can derive sub themes. Some of the codes might not be relevant and you can discard them. However, before going through the identified themes, it is necessary to note the interview participant’s positions or characteristics.

Participant’s characteristics:

Below table lists the interview participants and can be seen that they are anonymised to protect their confidentiality. Therefore, participant’s code has been given to them as IP1 to IP8. Code saturation was achieved by the researcher as it was determined earlier.

Interview Participant Code	Sex	Type of Firm	Location	Level of Management
IP1	Male	IT	USA	VP Engineering &Quality
IP2	Male	IT	Nenagh, Ireland	Site Lead
IP3	Male	Renewable Energy	Saudi Arabia	Executive Director
IP4	Male	IT development	Dublin, Ireland	Senior Manager
IP5	Female	Process Unit	Dublin, Ireland	Implementation PM (EMEA)
IP6	Male	IT	Bangalore, India	Senior Tech Lead
IP7	Female	IT	Bangalore, India	Tech Lead
IP8	Male	IT	Dublin, Ireland	Software Development Engineer

As you can see in the above table, Participants IP1 to IP6 have been at the highest level and this type of expertise was critical. They had leadership roles and had experience in the process of technological change at their organization at some level. IP7 and IP8 were the executives who worked under such leaders who have also undergone through the changing technological process. In the next section, emerging themes from these experts are presented.

Step 4: Reviewing themes

This section of reviewing helps in refining the above identified themes. There are two levels of refining in this phase. First level involves identifying a coherent pattern from the data extracts. If the identified pattern is not coherent, then rework needs to be done until the satisfactory condition is met. Thematic map is the outcome of this process. In the next level,

the entire data set is analysed to make sure that the identified thematic map reflects accurate representation. The major purpose of this step is making sure that you have not missed any additional coding of the dataset. If the map works, move to the next section or need to review and refine again until you identify potential themes.

Step 5: Naming themes

Defining themes at this point is important. That means giving working titles. It will help you in presenting the analysis. Defining means finding what aspect the research covers and to finding out the essence of the research. Finding out what is an interesting fact about them along with what is relevant and what is not relevant. Identified names should be punchy and give an immediate sense to the reader.

Step 6: Producing the Report.

This phase involves writing up the report after final analysis. The report must be cohesive and interesting, logical writeup of the story. Report should be illustrative and analytic in nature. It is not just providing data; it should be beyond description. Demonstration should be such that it uncovers the complexity relating to the research objective.

These steps are applied to the research while analysing and presenting the results in findings and discussions section in the next chapter.

4.6 Reliability and Validity of the Study

Reliability is different according to the quantitative and qualitative research paradigm. In quantitative, it is “applicability”, “consistency”, “truth value” and “neutrality”. Whereas in the qualitative paradigm or naturalistic paradigm it is trustworthiness. The main criteria are confirmability, fittingness, credibility, and auditability to achieve this trustworthiness. These are redefined as credibility, dependability, transferability, and confirmability by Guba and Lincoln (2003) (Spiers et al., 2018). Reliability is a very important aspect in data collection.

The instrument used to collect data must be consistent with the results collected such that there are no discrepancies when the results are collected more than once or after multiple datasets coded, we can also explain reliability as the consistency of measure. To obtain this trustworthiness, strategies like prolonged, persistent engagement and observation, peer debriefing, audit trials are recommended. Investigator must be adaptable and responsive to the changing situations, sensitivity, and ability for summarization along with clarity is required. Use of recording devices which will help in transcribing will enhance the reliability (Poth and Searle, 2021).

On the other hand, validity refers to the accuracy to which the tool can give the results. A more accurate tool is preferred, as the data obtained can be trusted to give the correct impression of the reality. Roberts and Priest (2006), validity is the accuracy of measure. When a result has high validity, it means the results have high chances of giving the required characteristics that can be used to meet the demand of the question. High reliability is an assurance that the data obtained is reliable. Therefore, the method or tool selected should be able to be reliable and valid to ensure that the data obtained is useful. The semi-structured interview will contain the same set of questions that the respondents will answer. The same kind of questions will ensure that the data obtained will be reliable. The well-arranged questions will ensure that the respondents are able to understand the flow of the questions. This will ensure high validity of results.

4.7 Ethical Issues

According to Westin (1996), The ethical consideration is an important issue as the environment that will prevail between you and the community will determine the availability of the required information. This study involves primary data. This means the researcher will be in touch with the respondents through the interview questions. The most important aspect

that leads to ethical issues with this kind of study is the allocation of time and privacy. The time that should be allocated for the interview should be enough such that the respondents are able to answer the questions without hurry. Limited time may make the respondent to hurriedly answer the questions incorrectly. Since our respondents are in top management, researchers must ensure they have enough time to provide the required information.

According to ethical standards of the National College of Ireland, sensitive information is not unethically disclosed, it can be opinions, employees name, organizations name or events, facts etc. The information obtained is not disclosed prior to or after the actual interview. All the chosen interviewees are not under the age of 18 and have provided their informed approval to the scheduling of the interviews. Handwritten and digital notes, and any relevant communications are confidential and secure. The safety and privacy of the respondents will make them feel comfortable and create a good rapport that will result in quality data being obtained.

4.8 Limitations

Primary data collection is faced by many challenges given that the data must be received faster for it to be valid. The presence of the covid-19 pandemic has limited the number of respondents available for interview. The lack of physical contact is a big challenge. The mailed interview response rate was very low. Few interview feedback were received. Some of the respondents took too long to respond. Researcher had to make a follow up to obtain the feedback. This reduced the time available for analysis of data. The low response rate led to having a sample that cannot efficiently be used to represent the whole population. According to Glaser and Strauss (1967), a good interview needs to involve many respondents such that a theoretical pattern does not appear in the result selected. Also, a large sample will ensure that the results collected provide an in-depth examination of the study. A small sample may provide

results that may rely on theoretical concepts to explain the findings. The interview method of data collection will give results based on the personal experience, views, and values.

According to Cunliffe (2010), the research will consider the nature and perception of humans concerning the study. Human perception will provide a way in which the research will decide on the method to use for collecting and analysing data. Therefore, the application of epistemology in studying the role of leadership in promoting information technology of an organization is the appropriate way to follow. The philosophy will define the topic in a broad way to acquire more knowledge that will answer the research question. Due to the covid-19 pandemic, the data will be collected with methods that will not allow socialization.

The chosen data analysis is a qualitative Thematic analysis type which is an inductive, experiential, and realistic-constructive way to identify theoretical alignment of data along with the people's experience in the realistic environment. The data obtained will be transcribed and coded to obtain the required information. The different roles of leaders in ensuring the technological system of an organization are effective will be provided from the transcribed messages. Next chapter consists of detailed analysis of the data collected through the methodology mentioned in this chapter.

4.9 Pilot Study

Pilot study is referred to as small-scale feasibility study which consists of a miniature version of planned main study. Like the main study, a small version of the test is carried out to make sure that methods chosen will work later. Since its nature is small, sometimes it is misinterpreted as an actual study which does not have a required sample for research. Pilot study is planned from the start of the project intentionally before even investigating at a large scale for research. The main benefit of conducting pilot study is that it offers revisions to the

main study and adjust accordingly (Kim, 2010). Therefore, researcher made sure to conduct a small test to make sure all the required setup for the phone interview is proper. E.g., audibility issues are checked, questions are adequate to find what you are looking for, and if the allocated time is enough for study is analysed.

Here list of pilot study questions is presented first, and later revised set of questions are presented.

Research questions

1. What is the role of leadership in advancement of technology in an organization?
2. How does leadership lead to improvement in advancement of technology in an organization?
3. What are the changes happening in management styles and leader's growth due to the technological changes?
4. To assess the role of leadership skills in advancement of technology in an organization.
5. To determine how leadership can lead to improvement in introduction of advanced technology in an organization.
6. To determine how leaders are handling the resistance to change and how do they motivate employees during technological changes.

Revised List of questions:

1. How do you understand the term leadership? Who is a leader according to you?
2. What are the factors which drive the company into change in advancement of technology?
3. Do these technological advancements bring in companies strategic and operational change?
4. How do you motivate your employees to ensure that they are in line with your goals to improve the information technology of the organization?
5. How do you introduce the changes in the advanced technological system?
6. How do you handle resistance to such changes?
7. How do executives help in transformation with respect to technology? As a leader how do you guide them?
8. In the current complex business environment, what kind of leadership is required?
9. Do employees have any input for these changes?

5.0 Findings and Analysis

5.1 Introduction

This section will focus on the analysis and findings of the results. The chapter will analyze the collected data as stated in research methodology of this dissertation. The results were presented on the role of leadership with the effective introduction of information technology in an organization. The data to be analyzed here aims to answer the research question and objectives. The research objectives are,

- To assess the role of leadership skills in advancement of technology in an organization.
- To determine how leadership can lead to improvement in introduction of advanced technology in an organization.
- To determine how leaders are handling the resistance to change and how do they motivate employees during technological changes.

The study targeted 8 respondents for an interview as mentioned in the sampling methods in Chapter 4. This chapter will look at this dissertation and data analysis in thematic perspectives as discussed in research methodology. The chapter will cover the findings based on the objectives. The analysis will be based on the human experience and the help of the previous literature or studies on the topic. The interviews transcriptions were compared and only the information that made clear understanding was selected to help in the analysis. The similarities and the differences were separately analyzed to find the Important message. The findings were analyzed in relation to the previous findings.

5.2 Findings

According to thematic analysis as discussed in the methodology there are six steps to present the findings. It is crucial to discover the sub-themes or themes for analysing the data. Using the precoding step mentioned in the thematic analysis above, some of the important words noted down from the transcribed data are "leading", "technology", "resistance" and "motivation" and these were used more often. Therefore, more relevant questions were asked which helped the researcher to understand the raw data. After the data collected from the precoding, the next step in TA is identifying the themes and subthemes. Since the research is related to assessing the role of leadership in advancement of technology, the identified main themes are classified as Technological change and Leader/Actor oriented.

5.2.1 Technological change:

Since the research is related to advancement of technology with respect to leadership, one of the main themes identified here is technological change. It is necessary for researcher to understand what factors will influence such changes.

There are multiple factors which are responsible for digital transformation. competition, value, customers or stakeholders, new ideas or innovation, data, all forces the digital transformation. customer behaviour changed over the years due to new digital technologies. These new technologies help in creating value for customers and how we connect with the customers. Reviews, customer communication has become an important factor and it has become two ways. This will help in rapid delivery of the outcomes to customers. Competitors are uncovering ways to quickly value customers. Competition within the industry and outside of the industry are making customers move towards digital offerings (Cortellazzo, Bruni and Zampieri, 2019). The way we think about the competition has changed over the years. Considering the next factor as data, in today's era data is generated at a very fast rate by everyone. It is not limited to companies only. Newer technologies like cloud-based systems are

becoming cheaper and available immediately. These systems are easy to use and store the data. Valuing the information or data has become a challenge. Another major factor to address is new ideas, testing them and prototyping or experimentation has been easily enabled by digital technologies. Digital transformation is also about strategy, it is necessary to change mindset towards strategic approach (Rogers, 2016).

In continuation to the above literature, the researcher included questions related to influential factors related to technological advances. Here some of the research interview participants quotations are presented. Out of eight interviewees, seven participants gave weightage to customer value and competitiveness, faster delivery, agility etc and one of the interview participants believes that technological advances happen based on the organizational size and cost. Below are some of the quotes stated.

(IP1)

“A lot of times, its market dynamics that impact competitiveness in your business. If you are not competitive enough or other people or companies are ahead of you with their outcomes. This becomes first major factor. Second big factor is agility and delivery. Faster delivering of content to customer and brings in customer value, and benefits to the customer with irrespective of engineering or product development company”

(IP4)

“competent/ competitors like they use something new technology and they are going ahead or something like that environment fall into factors”

(IP3)

“Internal and external factors, customer benefits, economic and social elements are major”.

(IP2)

“Technology as a term I think refers to quite a broad church, any time you change a technology within a company, especially a larger company, smaller companies are much more flexible, but large companies, typically, you know, invest a lot in technology, and then it's very difficult to change it out because in order to change it out, you've got to justify the cost”.

According to IP1, IP3 and IP4, market dynamics, competitors, delivery becomes the major factor. In relation to this IP1 said, Other major factors for technological change type of cost, time, organizational growth, new technology, community of acceptance (IP7 & IP8). However, IP2 believes that technological change will depend on company size. Overall findings from the interviewees when an organization is aiming for digital transformation are customer benefits or customer values, competitive environment tops the most.

Main theme, ‘Technological change’ is reviewed, and a sub theme identified as change process introduced. This will give us insight into real time scenarios happening within an organization and the leader’s contribution to the technology improvement within the organization.

5.2.1.1 Sub theme: Change process introduced:

Change process:

Change is a strenuous task to carry out in any organization. It doesn’t matter whether the organization is big, small, complex etc. Therefore, before implementing change, it is necessary to plan carefully at the top management level. It is recommended that at least 30% of the implantation time should be allocated to planning. There are various reasons for change to fail, they are poor planning, not enough risk assessment, and absence of strong change implementation methodology. Risk assessment of three pillars “Process-Technology-People”

of the organization should be performed. The result of risk assessment should be used to plan the implantation process. Then the objective for the change implantation should be set (Rajan and Ganesan, 2017) (Kotter, 2021). To achieve desired output from the change process, it is necessary to follow a certain structured procedure with a well detailed plan. The plan might include various steps and many action items to address various problems. They can be effective collaboration, communication, various change theories studied, culture, stakeholder involvement, resistance mitigation etc (Rajan and Ganesan, 2017). However, in the literature review, we have seen benefits of Kotter's change model in detail along with the steps for change model implantation. In this research analysis, Interview participants were asked to elaborate their experiences with respect to technological change in their organization. The result is able to capture some of the examples of how the change process has occurred in real time.

IP1

“If you planning to bring in change in technology, people, or process in a strategic way, usually it follows with an operational or engineering playbook to accommodate a change. to bring in maximum benefits and to reduce costs these operational and strategic change is very important.”

IP2

“And it does depend on the technology -some technologies are minor, and they don't actually make. they do not have any strategic or operational impact. Yeah, but for example of GC cloud like Google Cloud, where it has greater strategic planning and impact. So, we need to make sure that we are fully educated and trained to support the new tech stack. And before it arrives. So, what we don't want to do is parachute, new technologies, on top of engineers and expect them

to be productive. Immediately they need some time to train before they, there is a critical dependency on them to deliver. So, at the moment, for example, one of the goals for us this year is to identify the future technology roadmap, and make sure we're fully trained before it gets rolled out. Okay. So, involvement, I suppose training and involvement before.”

IP3

“There are certain steps you need to follow when you want to introduce change in your organization. They can be Identifying the team, Planning (data wise), Define proper steps Timing is important, Trainings are necessary, take inputs, Address the challenges, rework”.

IP4

“It depends really and political the kind of technology that you're involved in, some technologies may require being both big bang approach where you're going to need to bring everyone on board. So, if I think we would have transitioned out in Lotus Notes and using Gmail, many years ago and they were at the time it was a huge change. But we didn't do it in kind of dribs and drabs we just kind of did this. Okay, this is going to be the change. So, regardless of whether you're going to roll it out as a big bang or if you've got to kind of work through smaller rules and how to build it up.”

IP6

“minimal viable product even in process or even these organizational changes right you think, what's the, what's the small set of folks that I can get to the right set of people that will agree upon this at an

organization level, then you know say that's like sessions level then the next step is, how do I bring along their staff, you know what's that's the next step, like how do I get them convinced that this is the right thing to do”.

IP7

“I think the key thing to it is just stakeholder engagement as early as possible. So, communicating about so obviously look this big change is coming this big technology change coming.”

IP5

“a pilot group of users. And they worked together to kind of figure out what they wanted to do with it and then kind of slowly kind of released it to the rest of the organization so. um but yeah it was strategic and operational definitely”.

From the interview participants IP1, IP2, IP3 it's noted that change is introduced through strategic planning. It might be necessary to follow the organizational playbook or guidance to bring the change. According to IP3 timing to introduce change is also very important. Change process will be easy if you first introduce it in a pilot group first and then through impact analysis slowly rolling out the entire department or business unit or across the organization (IP5 and IP6). Early involvement of stakeholders is very important(IP7), minimal viable products are also an important factor while introducing change.

5.2.2 Actor based:

Since the study is related to assessing the leadership skills- leaders or employees, executives can be identified as actors. These actors play a vital role in the organizational transformation. Actor's themes are related to skills they possess, role they play in the

transformation, structural reorganization, or resistance to change, all become part of the study. Therefore, under this theme there are various sub themes identified, leadership skills, motivation, and resistance. By this, we can understand how leadership is related to the information system of an organization? It is also important to know the role played by leaders to ensure that the information system of an organization is smooth throughout the changes (Cortellazzo, Bruni and Zampieri, 2019).

Leadership and Leader:

In the actor based main theme, the important sub theme identified with respect to the actor is Leader and Leadership skills he/she needed. The research focus here is to understand leadership roles due to the digital transformation. Only a very limited number of theoretical analyses about this is available according to Huber (1990). Decision making processes, organizational behaviour and leadership role, data etc have been disrupted by the technological advances (Rocha & Sausa, 2019). As mentioned in the literature review above, there are many theoretical reviews available for leadership theories. Universal, contingency, and behavioural theories are the major categories which define leadership. Over the last decade they became popular behavioural theories. Scholars use the following primary hypotheses to explain how leaders interact with their teams: Transformational and Transactional theories by Burns (1978), Bass (1990). Transformational leaders inspire followers and motivate them whereas transactional leaders see their connection to their followers as an exchange process. They gain the compliance of followers by rewards and praise (Bass 1993). Leaders need to set guidelines, expectations for their employees. Necessary skills needed for leaders at this digital era are, effective communication, motivating, inspiring employees, creating positive environments, collaboration, quick decision making, managing, or handling change which is disruptive, identify the need for change, initiating change, risk taking, flexible etc. they should be having vision towards achieving organizational goals and be able to communicate the same to the

team. All these skills will help the leaders to improve their transformative powers (Trenerry et al., 2021). To understand the leadership skills needed during digital transformation, interview participants were asked questions to define leadership and what a leader means to them. Below quotes will help us understand whether any new characteristics are added to the assess the existing leadership theories.

(IP1)

“Leadership is about driving change, managing change, Leadership comes with a burden of understanding various factors like technology, business or any other and not just focused on one. Leadership is the act of being in the capacity to control a given group to work or operate towards a given objective. This is where the leader and the follower work towards the common goal”

(IP2)

“Leadership is different for everybody, a leader who provides leadership and provide direction and a frame of reference, so people need a frame of reference and support”

(IP3)

“A leader is a person who can provide direction to followers. Leaders are objective and visionary in that they will always work to achieve their objectives towards the performance of the organization”.

(IP7)

“Who beliefs in vision, goal, has belief in himself and his people”.
“Leadership is just about setting the tone for a team and giving his/her time. So, it's the person that's going to go in and make the team aware of what it is that's expected of them. Show them leading perhaps leading by example”

(IP4)

“I aspire to that, I hope my team would describe me as will be an authentic leader, and better practice servant leadership”.

(IP5)

“Leadership required is charismatic, authentic and leaders are influential role models, I would say, and you know they have a big impact on the organization, they have a big say in strategic decisions”.

(IP8)

“Leaders understand the vision and they're able to communicate that to people”.

Most of the participants said that a leader is one who has a vision towards organization goal as an important factor and who can give directions to followers (He is the one who sets himself as an example) (Rogers, 2016). This was one of the main characteristics of transformational leadership. When compared with the literature review all the interview participants' statements were like the identified characteristics for a leader. Out of eight participants, four have mentioned that authentic leadership quality is very important when an organization is undergoing change (IP5, IP4, IP3). And they also suggested that authoritative leadership quality should not be considered. Overall interview participants expressed interest in having transformational leadership quality as the main characteristic which is authentic charismatic (transformative), and a servant leadership.

Resistance & Motivation:

Another sub theme identified is motivation. During technological change, it is a very important factor to handle resistance and motivate employees in the organization. Whenever an organisation is undergoing certain changes, it is evident that people might resist. It becomes the leader's responsibility to convince people and align them with goals (Walker, 2006). It is important to perform resistance analysis before impending change. If the resistance is not

assessed properly then it becomes a potential threat to the organization. Organization's management can also know the resistance intensity of an employee and helps it recheck the vision to make right decisions (Joseph Galli, 2018). Following quotations are made by the interview participants when asked about the reasons for resistance to technological change and how it can be overcome. Following quotes are stated by interview participants to address the resistance for any technological changes.

Quotes related to Resistance:

(IP1)

"I will try to have the discussion in terms of what the benefits are and what the drawbacks are in another strategy is to have that discussion with what's current state, like what is it, what is it now, the way that we are technology change".

(IP2)

"So, what's really, really important for change management is engagement, and communication".

(IP3)

"Coaching, correcting. Addressing the concern".

(IP4)

"Collaboration is key".

(IP7)

"Resistance can occur when they feel that they were left out to the decision-making process. Viable scenarios that might not actually work and maybe bring them to the task group, getting around people you know you can listen what they have to say and then involve them if it's possible".

The study findings stated that when the resistance occurs it is necessary to address it with clear communication (IP1, IP2). Collaborating with employees and conveying the benefits of change will help the leaders to bring in the change (IP4, IP3). However, IP7 says that

resistance to change occurs when they feel that they are excluded. Which creates job insecurity as explained in the literature review.

Motivating employees has become a practical challenge. Attitudes, skill levels, personality factors help in moderating learning or training to practical knowledge. These factors are at individual level and apart from these factors like supervisor support, attitude of co-workers will also motivate the employees. At an organizational level, training programs which help in developing skills which are necessary for digital transformation is an imperative task. During digital transformation, knowing the level of change requires identified resources to be motivated to participate and perform the required actions (Venkatesh, 2000). The leadership style which is made up by motivation as it's one of the factors is transformational leadership as discussed in the literature review. When the organizational goal is conveyed to the employees by their leaders through motivation, it gives them purpose (Bass, 2006). This will lead to meaningful actions. Another factor to motivate employees is by rewarding them. Rewarding increases employee satisfaction there by easing the transformation.

Quotes related to motivation:

(IP1)

“Challenge one another and discuss to reach a consensus on what to apply for the benefit of the organization. I am a transformative leader who loves to entertain ideas. then employee is rewarded.”

(IP2)

“One of factor important here is giving technically interesting challenges, giving brand new platform which will help in career progression.”

(IP3)

“Giving space and time, how do you convey your thoughts and structural elements brings in motivation”.

(IP4)

“it's just all the time communicating that their work makes a difference what they're contributing is playing a role in the direction in which the organization needs to go on”

(IP6)

“I think if people feel that they're a part of that change, that, that drives the motivation then in”

(IP5)

“Communication to the people, constantly keep reminding people about the change and why we're doing this project”.

Study results show that interview participants IP1, IP2 and IP4 mentioned that communicating vision goals clearly and other factors like rewarding them, giving them challenging work (which helps in personal growth as well) are efficient (IP1, IP2, IP8) in motivating. Another finding here is giving space and time for the employees in the change process implementation was important as well for motivation. Giving trainings and involving them in technical challenges acts as a plus point.

6.0 Discussion on Findings

6.1 Introduction:

This chapter explains the findings of the study. The research collected and analyzed the primary data. The interview was used to collect the data and the researcher applied a discussion-based method to analyze the data collected. The study had 3 main objectives to meet.

- To assess the role of leadership skills in advancement of technology in an organization.
- To determine how leadership can lead to improvement in introduction of advanced technology in an organization.
- To determine how leaders are handling the resistance to change and how do they motivate employees during technological changes.

Therefore, as stated above this dissertation helps in investigating what type of leadership can contribute to digital transformation in an organization. So essentially this chapter brings together the existing literature and findings to discuss the contributions of this study.

6.2 Understanding of leadership and a leader

Leadership is an act of providing direction to the followers such that you are able to meet certain goals and be able to benefit the followers (Day, 2012). There were various definitions of leadership according to the responses from the interview participants. However, the kind of leadership helps an organization to achieve digital advancement is transformational. This is because the employers and the employees tend to have a common goal of the organization. Transformational leader are visionary such that they can push the employees to work hard to achieve certain objectives (Bass & Riggio, 2006). The research indicates that

transformational leadership is the style that the leaders take in the organizations involved in the study to introduce technological change. The transformational leaders are the ideal leaders for organization that need practical change in their information system. The leaders tend to win the hearts of the employees which make them more trusted by the employees. Every employee has a chance to contribute to the organization's decisions. Therefore, the final decision to be made by the leaders will be inclusive of all the employees and it will be easier to put the idea into practice.

The leader will try to involve all the employees in the decision making of the organization (Leithwood & Jantzi, 2005). The study supports the claim that employee involvement will help in gaining employees trust and helps the employees to understand every change that is happening in the organization and be able to respond to it. Leaders always encouraged them to take training, understand their career goal, provide mentorship, communicate, and collaborate with the employees regularly, and by being sympathetic or authentic leaders become inspirational role models. That is why leaders in an organization should have integrity so that the junior employees can learn from them. Overall, according to the results from the study, transformational leadership is efficient to ensure technological change of an organization goes smoothly. The interview participants of this study also support the sentiments in the literature that leaders who are involved in the advancement of the information system in an organization must be visionary and interested in technology advancement.

6.3 Role played by leaders in improving information system of an organization.

The role of advancing in information technology must be spearheaded by the leaders of the organization (Neufeld et al., 2007). The leaders are responsible for coordinating, leading and planning the department to ensure that technological changes are implemented in the

organization. These are able to find the need of the organization and come up with measures to fix the issue. The leaders are able to delegate duties to the employees to ensure that they are able to detect any danger associated with the system of the organization to make sure that the organization's information is not subjected to cybercrime. A leader must possess a high level of information technology skills, as he/she will be consulted when things are not going according to the plan. A leader is also responsible for making sure that they set deadlines for implementation of the new technology in the organization. This is to make sure that different departments in the organization are able to comply with the changes in the information technology of the organization. The deadline will make sure that the new technology is able to come into operation as stated in the plan. A delay may limit the effectiveness of the technology (Sostrin, 2021) (Rogers, 2016).

According to the results from the study, interview participants stated that technological transformation involves many processes and activities. The leader also states that the employees are provided with training to make sure that they have knowledge on the usage of the new technology. As we can see, the results from the research are in-line with the literature review throughout the thesis.

6.4 Resistance & motivation and how it relates to the advancement of information technology in an organization.

The employees are the one that carries out duties at the ground level and they understand better what happens to every event. For the success of an organization, the employees must possess exceptional skills that will make sure that they become aware of the change process and its challenges. The strategic planning will enable the organization to obtain advanced technology that will help in the improvement of the information system. However, the employees need motivation to raise their morale to work well (Herzberg, 2008). With a motivated team, the leaders will have easy work to improve the information system of an

organization. Therefore, the leader must make sure that they motivate their workforce to make them realize high returns. One way through which the employees can be motivated is through provision of training (Robescu & Iancu, 2016). This study agrees with the literature review that leaders must ensure to motivate their employees all along the digital transformation. The training will add more skills to the employees. The leaders are also able to entertain new ideas from the employees. Another way through which the employees can be motivated by the leaders is through the provision of exposure according to the interview participants. The employees need to be exposed to advanced technological systems or the technical challenges. This will pose a challenge to them, and they may target to improve their productivity to reach that level.

7.0 Conclusion & Limitations

7.1 Conclusion

Technological advancement system is an important sector of an organization. It provides the backbone of an organization. Leaders should be able to play an important role to ensure that the information technology of an organization is able to operate well as all other activities of the organization will depend on that sector (Armstrong & Sambamurthy, 1999). Transformational kind of leadership is recommended when an organization wants to advance its information system (Thite, 2000). Such kind of leaders are visionary and objective. They can entertain new ideas that will help the organization to technologically change its operations. The transformational leaders always target the employees to have the same motive as them. The leaders ensure that their employees can share the objective such that they will be working with a common goal. The leaders tend to motivate their employees to make sure they raise their morale. The rise in morale improves the productivity of the employees. Therefore, for information technology of an organization to be effective, there are many stakeholders in an organization who must work together to make sure it is a success.

7.2 Limitations

There are some limitations or drawbacks to this study, which can be later considered for future studies. Since the study was related to assessing leadership role with digital transformation, the main target group here are the leaders or top-level executives. Any organization, which undergoes digital transformation involves people or employees at various levels. One of the limitations of this study is it covered the organizational leaders and does not involve the individuals at lower levels in a wider range. Another limitation of the research is with respect to research analysis methodology, choosing qualitative methodology (related to interviews), might result the answers and interpretation to be biased. Second, since the digital

transformation is complex process, using thematic map exposes certain linkages, but might fail to miss others. Furthermore, given the standard of practice for literature review involves academic journals, some of the research content might have missed from the books. Overall, employee's perceptions versus leaders can be used for future studies with a different methodological approach will be helpful to uncover another aspect of leadership & digital transformation.

7.3 Future study

It is inevitable to avoid the rapid development of digital technologies. However, the result will lead to economic transformation, but rises concerns with respect to workforce. That is., the relation between the employees and organization's work culture. To survive in this competitive world, its necessary for an organization to accept the fast-moving technological changes. For a successful digital transformation, both leaders and employees play a crucial role (Rogers, 2016). In this paper, study was limited to various leadership skills needed for a technological transformation. Topics related to recommended leadership skills, change process, role of the leaders to motivate employees, resistance for changes followed in real scenarios are studied. However, employee's role and understanding, their attitude, perceptions were not studied in-depth. And, since leaders are in top management positions, their technical expertise are not addressed. Along with employee's involvement in a technological change process and questions related to how much technical knowledge a leader should have for a technological advancement could be an interesting topic for future research.

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9.0 APPENDIX A

9.1 Interview Questions:

1. How do you understand the term leadership? Who is a leader according to you?
2. What are the factors which drive the company into change in advancement of technology?
3. Do these technological advancements bring in companies strategic and operational change?
4. How do you motivate your employees to ensure that they are in line with your goals to improve the information technology of the organization?
5. How do you introduce the changes in the advanced technological system?
6. How do you handle resistance to such changes?
7. How do executives help in transformation with respect to technology? As a leader how do you guide them?
8. In the current complex business environment, what kind of leadership is required?
9. Do employees have any input for these changes?

9.2 Consent Form

Participant Consent Form

This template is designed primarily for those doing qualitative interviews with adults from non-vulnerable populations and dealing with non-sensitive topics.

The form would be different in the case of focus groups or quantitative research. If conducting research with vulnerable populations and / or sensitive topics please see Research Ethics Committee website for further details.

The points listed on the template below are for illustration only. You may alter the wording to suit your project as you see fit.

A consent form is not simply about a person giving you permission to involve them in research, it is an agreement between the researcher and the research participant outlining the roles and responsibilities they are taking towards one another throughout the whole of the research process.

The researcher should retain one copy of the consent form signed by both themselves and the participant. The participant should also be given a copy of the consent form as a record of what they have signed up to.

Even if a person has signed a consent form consent should still be re-established at the point of doing the interview.

Template

[*Title of project*]

Consent to take part in research

- I..... voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
- I understand that participation involves...*[outline briefly in simple terms what participation in your research will involve]*.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that disguised extracts from my interview may be quoted in...*[list all forum in which you plan to use the data from the interview: dissertation, conference presentation, published papers etc.]*.

- I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
- I understand that signed consent forms and original audio recordings will be retained in [*specify location, security arrangements and who has access to data*] until [*specific relevant period – for students this will be until the exam board confirms the results of their dissertation*].
- I understand that a transcript of my interview in which all identifying information has been removed will be retained for [*specific relevant period – for students this will be two years from the date of the exam board*].
- I understand that under freedom of information legislation I am entitled to access the information I have provided at any time while it is in storage as specified above.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Names, degrees, affiliations and contact details of researchers (and academic supervisors when relevant).

Signature of research participant

Signature of participant

Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

Signature of researcher

Date