How does the Digital Transformation Change the Strategy of a Telecommunication Company?

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Digital transformation is a major factor in the rapid changes that are occurring in our general surroundings. The telecom industry is no exception to this, and it is seeing large-scale changes in its market. This industry is considered a key driver in the global evolution. The various technological developments from the advent of 5G to blockchain formation are all clear signs of the arrival of the telecommunications industry at the digital era.

However, the use of technology and the achievements of information technology alone will not lead to a digital transformation in an organization because digital transformation is something of a strategic nature. In other words, when we talk about digital transformation, we are not going to be entertained by new technology tools and applications. Instead, we are going to respond to this question: ‘What changes should be made to our business strategy with respect to the development of information technology?’ This study examined the necessary changes made in telecommunication company strategies based on linking literature reviews and empirical findings. The focus was on the digital transformation in MTN Irancell Company, one of largest private telecommunication companies in Iran. Digital transformation in MTN Irancell started in the beginning of 2016. In this project MTN Irancell converted its Business Support Systems to a quality oriented intelligent system.

This thesis provided a comprehensive set of changed management strategies that Irancell Telecom had adopted for the implementation of digital transformation. This was hoped to provide a framework and management tools for telecom companies keen to implement digital transformation. The empirical evidence of this study showed that digital transformation had affected all the company’s strategies. Particularly, it had affected the two dimensions of process and content. Moreover, all strategies at different levels were subject to many changes. These changes were very evident at the functional level and explicitly included digital activities in an interface with or fully in the customer’s side. However, all these activities should be aligned with business strategies in order to enable an active business transformation with information technology. The assessment of the results is based on available literature which reveals that this research is a unique study which demonstrates the effects of digital transformation across a wide range of organizational strategies in the telecom industry.

**Keywords/tags (subjects)** Digital Transformation, Telecommunication, Strategy,
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1. Introduction

Digital transformation is a comprehensive process, and it generally changes the strategy and operations of a company. The digital evolution brings new strategic decisions for executives. The decisions are related to value creation; digital engagement, and shift management; moreover, reviews of the company's skills and culture. For companies, it is important to understand the current state of the digital evolution and improvement areas.

In this chapter, a summary of the research, including the statement of the problem and the necessity of research, moreover, the research method and goals, are presented.

Background

According to Casadesus & Zhu (2012,5) companies can differentiate their business models as far as they can choose from the quality of them. Digital business is one of the new strategies for entering the business world and a way of improving the sales of a current business. Selecting this strategy as a tool for the transformation of companies that are with the customer in the last stage is related to the Business to Consumer (B2C) model. The eco-based digital business environment is a collaborative environment of stakeholder communities in the business ecosystem. In recent years, the Digital Business Transformation (DBT) has played a significant role, especially in the field of telecommunication. About two decades ago, nobody expected a major jump in transforming business into a modern digital business in all aspects of human life. According to the 2016 World Economic Documentation, the digital revolution has already changed many aspects of business and even the entire industry (World Economic Forum, 2016) including the telecom, consumer, electricity, logistics, and media branches. According to statistics released by Scopus, the amount of research on the issue of ‘digital business development’ has significantly increased from 2004 to 2017 as the most developed and industrialised countries focus on these issues.

Thus, recently, many companies are keen to change their business strategy and match their new business goals, with modern digital commerce for their business strategy.
According to Schallmo (2017), digital developments have emerged in recent years as a strategic concept for companies in all sectors. There are many research articles on new business assets for the digitalization of telecommunication companies. As Benzerga points out: The German government's initiative is the digital transformation in production. Known as Industry 4.0, this includes the Strategic Action Plan 2020 in Germany. (Benzerga, Hauf, Pretz, & Bounfour, 2017.) However, today more research is needed on possible practical ways to enter the digital markets.

There are many telecommunication companies that still do not know at all how to utilize the best practices required for entering the new era of digital re-structuring. There is a central focus on exploring the practical ways for a successful digital transformation in the telecommunication industry. These practical ways help the telecommunication industry to succeed in using modern digital commerce in the international business markets. Therefore, this study was also hoped to help to explore practical methods and research methods in this regard. To address the above issues, the questions of how to organize the digital transformation strategy and how to manage it were focused on in this study.

**Research Motivation**

Leading Organizations today, with massive investments in digital technologies, use them to create new revenue sources. Moreover, by analyzing the data generated during the purchasing process, they aim to create unique experiences for customers. Continuing value creation for customers requires a different kind of business, which is the core of agility, growth capability and compatibility. This, in turn, requires a comprehensive change in people, processes and technology.

Although business redesign is a prerequisite for the development of organizations in the digital era, there are still some fundamental gaps in the ideas of business leaders in this area. A study by Forester (2015), with the participation of 150 business leaders, illustrates some of these gaps:

- In 94% of the cases, organizations have implemented a form of a digital business strategy, but they are often confused with defining the concept of digitization.
• 59% of organizations have focused on digitization, with a purely instrumental approach and with a further focus on digital marketing in order to strengthen the market for their existing products and services.

• About 50% of organizations use digital technologies solely as tactical solutions to improve customer experience or the efficiency of the support process.

• Only 37% of organizations consider the development of digital products and services as part of their business strategy.

A further study by Dilwitt (2015) aimed at assessing the digital maturity of businesses and the differences in organizations’ growth. It was based on the views of 4800 officials and executives of organizations, and it reflects another part of the facts:

• 92% of organizations have emphasized the importance of digital technology over the next three years.

• Grown-up organizations, with 81% potential, have a comprehensive and transparent digital strategy, while the ratio for organizations with a lower maturity level is approximately 15%.

• Growth organizations consider innovation, decision making, business transformation and strategic goals as the main drivers of digital strategy with a 90% probability, while the digital strategy of organizations with lower maturity levels is solely focused on improving performance with a probability of 80%.

• Growth organizations are deeply aware that approximately 90% of the time, they are dedicated to the digital domain. However, the proportion for organizations with a lower maturity level is around 63%.

The summaries of these two studies reflect the fact that developed organizations have developed homogeneous transformational technologies. The technologies have also been integrated and put into practice to change the organization’s working practices. ‘Emphasize IT’ is today’s slogan, and it would have to be accepted that organizations that do not pay attention to this when launching e-commerce channels or mobile-based applications will not succeed. The key to successful digital maturation should be
to redefine the minds of organizations. Moreover, the promotion and consolidation of a strategic look at the transformational technologies could also be successful. However, recent research on digital business transformation focuses primarily on examining the challenges, drivers and failures of previous efforts. Although the pivotal role of a proprietary strategy in the field of literature is known, it is still under-developed and requires deeper work to fully understand how this transformation can be achieved. (Hess et al. 2016; Matt et al. 2014) Therefore, looking at the evolution of the digital business from a strategic perspective must enrich the scientific literature with a valuable insight, while also helping leaders to understand the recent advances and the foundations of the strategic transformational blocks that they are working on.

**Research Questions and Methodology**

The purpose of the research was to examine how to organize the digital transformation process and how to manage it. More emphasis was placed on the impact of the digital transformation on telecommunication companies’ strategies. Therefore, the main research question in this study was as follows:

"How does the Digital Transformation Change the Strategy of a Telecommunication Company?"

In answering this question, first, the concept of digital transformation and the sorts of strategies and their organizational levels were introduced. After this, the current status of the digital transformation in telecommunication industries was discussed by connecting findings from theories that looked for characteristics of a digital transformation in telecom firms. Finally, by exploring areas of various dimensions of digital transformation, changes in corporate and business strategies and functional strategies were searched.

With regard to the early stages of research on the digital evolution and its importance in practice and to the exiguity of research on this subject, an exploratory qualitative research approach was chosen for the present study. The qualitative research method determines the advantages of an exploratory design, with an emphasis on over-exploration. Moreover, interviews with the managers’ / business managers and
employees of the telecom companies were used to describe the shape or nature of what there was and to analyze the causes or the connections between them in addition to assess the adequacy and to help them to develop theories, strategies or actions.

**Thesis outline**

In this research, the practical methods for successful digital transformation in a telecommunication company were examined. This research had a descriptive-exploratory approach, and the survey method was used. A general description of the goals and content of this study is presented in Chapter 1, Introduction. After this, the Literature Review in Chapter 2 examines the roots of the digital transformation phenomenon and outlines a framework for a variety of digital developments in telecom companies.

Chapter 3 describes the research methodology. Moreover, the case company is presented, and the reliability of the questionnaire and data analysis methods is discussed.

In Chapter 4 focuses on the analysis the data. This chapter analyses the case company and summarizes the key issues of each source in the form of codes and categories.

Finally, Chapter 5 contains the discussion, analysis achievements and suggestions for future research. Moreover, the changes that occurred in the case company strategies by digital transformation are discussed.
2. Literature Review

2.1 Key Concepts

Digitization

Digitization refers to analog information and its encryption (zero and one) the computer can store, process, and transmit information. According to Daniel R. A. Schallmo and Christopher A. Williams (2018), digitization is the way toward changing from analog to digital form. Converting handwritten or typewritten text into a digital form is an example of digitization.

Digitalization

Unlike digitization, there is no unmistakable meaning of digitalization. Based on the Oxford English Dictionary (2016) definition, digitization is referred to the selection of digital or computer technology by an organization, industry, country etc. Brenner and Kreiss (2014) define digitalization as the manner by which numerous spaces of public activity are rebuilt around computerized correspondence and media foundations. According to Gartner’s glossary (2018), digitalization is the utilization of advanced digital technology to change a plan of action and give new revenue and value-producing opportunities. It is the way toward moving to a digital business. Janowski (2015) states that "digitalization is a constant change that focuses on finding new digital solutions for implementing business processes".

Therefore, digitalization is not only about the use of information technology (Khan 2016), it is also identified with all parts of business and includes all the necessary changes. These include changes in IT, social change, infrastructure upgrades, and business advancements.
Value Proposition

There are several definitions of value proposition. According to Bhat (2009), a value proposition is an expression of guarantee made by an organization to its clients that it will convey a specific pack of significant value creating benefits. Fifield (2007) states that it is a written statement, centering all market activities of an organization onto the clients' crucial elements that make a considerable difference in the customer decision making process to prefer the company's offer to superior competitor's. Lanning (1998, 55) describes the value proposition as a complete collection of experiences, containing value for cash that an association conveys to clients. Clients may see this set or mix of experiences to be unrivaled, equivalent or poor compared to choices. From the point of view of Pamela Hudadoff (2009), it is a statement of the experiences an objective that the client will sense after buying and using the product.

Value chain

Based on the World Business Council for Sustainable Development, many companies today consider value chains an essential part of their strategic planning. The lifecycle of a product or process, in other words, resource processes, production, consumption and disposal / recycling, is called the value chain (WBCSD 2011.). The concept of the value chain of an industry is a strong, effective and simple tool that speaks of the position, power and distribution in the industry. To simplify, this chain represents a design of an industry and all actors involved, from, for example, a telecommunication company to the retail outlets.

Internet of Things (IoT)

The Internet of Things means the connection of physical devices, such as vehicles, home appliances, smartphones, and so on forth, by using various types of software and sensors. In the new technology, all devices connected to a network have the ability to do their work automatically. They can display a series of special responses in a fully automated manner based on changes in their environment. They can also use different kinds of data, and this can be exchanged with other network devices without any human intervention.
Industry 4.0

Over the previous decades, humans have used more machines to complete certain industry-related affairs. Carrying things up with cars and supervising people, then moving toward doing things with computers without our involvement is what is now known as Industry 4.0 or the fourth industrial revolution. The German government first used Industry 4.0 to define the scope of artificial intelligence (AI), Big Data and the Internet of Things (IoT) to the industry and factories. However, many researchers believe that there is no definite definition for it.

Alp Ustundag and Emre Cevikcan (2018) state that Industry 4.0 mainly includes integrating production facilities, supply chains, and service systems to create value added networks. According to this definition, many new technologies, such as big data analytics, cyber physical systems, horizontal and vertical integration, the Industrial Internet and cloud systems are necessary to adopt.

Cloud Computing

In recent years, cloud computing has become an important technology in the field of information technology. In a general definition, hardware data and software service providers call processing "cloud computing." Cloud computing is a new process of processing, in which distributed resources, often virtualized, are delivered as a processing service through communication networks, such as local networks and the Internet. The focus of this model is to serve the user on demand, without the user having to know the specific processing equipment or the location of the processing. This service can be likened to a power grid, which, by connecting through a port, provides the energy needed to use its electrical equipment without knowing how to generate electricity and the exact location of its production. (Woodward 2018.)
**Agile Methodology**

Agile methodology means a software development methodology based on incremental and duplicate development that defines a consistent design approach for gradual evolution. The method, by dividing tasks into smaller designs, makes repetitions more flexible in time frameworks. The distinctive feature of agile processes is that, in order to compete for the customer, they even welcome the changes that are emerging in the late development of the software and regulate their behavior based on the thoughts applied. Agile methods act adaptively, that is, they match the conditions which help to reduce the likelihood of a large-scale failure. The criterion of success in agile methods is to achieve business value (Rouse, 2018.).

**2.2 Digital Transformation (DT)**

In recent years, the term digital transformation has been very much used in scientific and economic texts, and the idea of digital goods and services was created in the 1990s and 2000s (Auriga 2016). Between 2000 and 2015, the growth of smart devices and mass media prompted a noteworthy change in the manner that clients and organizations intercommunicated. Customers' expectations about response times and multi-channel access also had gradual significant changes as business owners realized that they were not alone in the digital communication with their customers in real time. Moreover, the growth of digital payment methods, such as the ‘PayPal’, had created more online and web-based sales.

Today, focusing more on using mobile devices and creating value for customers, in other words, using a variety of customer data types that mobile technology can produce on a large scale is much more popular. This personalized customer information is very useful for businesses and enables them to design products moreover, interact and respond better to their customers’ specific needs. Using the ‘Google Trend’ tool, digital transformation seems have been taken into consideration around 2013 and 2014. (Google trends tool 2019.)
2.2.1 Digital Transformation Definition

Digital transformation has different shapes for every company; Therefore, providing a single definition is difficult. But, in general, digital evolution is the integration of digital technologies within all business areas. This integration causes fundamental changes in performance and how to value the customer. In addition, this is a change in the organizational culture that needs to be challenged with the present status. This means that it is sometimes necessary to put an end to the old business processes where the company is based, so that new and more relevant activities can be implemented.

Despite having many definitions and articles, digital transformation, understanding the source of confusion around this issue is clear. Greg Verdino (2015), for example, focuses on the achievements of digital transformation for a business: "Digital transformation eliminates the gap between digital consumer expectations and its real value" Nevertheless', David Terrar (2015) emphasizes all the ways businesses may be working to improve the current situation.

According to this definition, "digital transformation requires the change in leadership, different thinking, encouraging innovation" and new business models, increasing the use of technology to improve the experience of employees, customers, suppliers,
partners and stakeholders. Table 1, shows some of the most commonly used definitions of business models.

Despite the variety of definitions of digital evolution, there is a common axis in all definitions: digital transformation is an organizational discussion. In other words, the term digital transformation is used for all the changes that have arisen from the development of digital technology; in all social and economic aspects, inaccurate and to a degree commercial. It is important to mention that the use of technology and the achievements of information technology alone will not lead to a digital transformation in the organization. In fact, organizations can use digital tools to do precisely the same tasks and activities before digitising with a different tool, without any digital transformation. In this study, we consider the definition of digital evolution as defined by Schallmo, D., and Williams, A. C, in 2017.

“The digital transformation reticulation has consisted of all members such as Value-add chain division, customers and business. (BMWi, 2015, p. 3, Bowersox et al. 2005, 22ff., Bouée, and Schaible 2015, p. 6) New technology required new application. (PwC 2013, p. 9, Westerman et al., 2011, p. 5); In order to choose correct implanted decision for DT, it has required all skills which has involve the data exchange, extraction information; all this information should be used to calculate and evaluate final decision. (BMWi, 2015, p. 3, Bouée, and Schaible 2015, p. 6); This action will increase the performance of each company (Westerman et al., 2011, p. 5); digital transformation has consisted of many factors such as relationships, processes, products and more. (Bowersox et al. 2005, 22ff., Mazzone 2014, p. 8)"
<table>
<thead>
<tr>
<th>Author(s), Year</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMWi (2015:3)</td>
<td>Digitalization Stands for the complete networking of all sectors of the economy and society, moreover, the ability to collect relevant information and to analyze and translate this information into actions. The changes bring advantages and opportunities, but they create completely new challenges.</td>
</tr>
<tr>
<td>Bowersox et al. (2005:22ff)</td>
<td>Digital Business transformation is a &quot;process of reinventing a business to digital operations and formulate extended supply chain relationships. The DBT leadership challenge is about reenergizing businesses that may already be successful to capture the full potential of information technology across the total supply chain.&quot;</td>
</tr>
<tr>
<td>Westerman et al. (2011:5)</td>
<td>&quot;Digital transformation(DT)- the use of technology to radically improve the performance or reach of enterprisers- is becoming a hot topic for companies across glob. Executives in all industries are using digital advances such as analytics, mobility, social media, and smart embedded devices- and improving their use of traditional technologies such as ERP- to change customer relationships, internal processes and value propositions.&quot;</td>
</tr>
<tr>
<td>Mazzone (2014:8)</td>
<td>&quot;Digital transformation is the deliberate and ongoing digital evolution of a company, business model, idea process or methodology , both strategically and tactically&quot;</td>
</tr>
<tr>
<td>PwC (2013:9)</td>
<td>Digital transformation describes the fundamental transformation of the entire business world through the establishment of new technologies based on the internet with a fundamental impact on society as a whole.</td>
</tr>
<tr>
<td>Bouee and Schaible (2015:6)</td>
<td>We understand digital transformation as a consistent networking of all sectors of the economy and adjustment of the players to the new realities of the digital economy. Decisions in networked systems include data exchange and analysis, calculation and evaluation of options, moreover, initiation of actions and introduction of consequences.</td>
</tr>
</tbody>
</table>
2.2.2 Importance and Benefits of Digital Transformation

Based on a recent research by the Altimeter Group, (Solis, B., Szymanki, J., and Lieb, R., The 2014 State of Digital Transformation) people, processes, and technologies are elements that companies and business invest on them in order to benefit more from the market, with more market share. The report enables digital strategy professionals to identify their next step in investing in this field. This report points to the five benefits or significance of digital transformation. These are functional benefits and show that digital transformation contributes to increased productivity and help companies increase customer experience.

- **Lift in Customer Engagement** (75%) – One of the foremost benefits of digital evolution is increasing customer engagement and customer experience. Through online channels and communication, businesses can figure out how consumers think, what they want and what now their decisions affect. Companies tend to have more web-based sales and marketing processes that directly connect them to customers, using digital channels.

- **Improved Customer Satisfaction** (63%) – As the world moves towards the use of technology not only in search and training, but also in comparing products and services; it is quite natural that more digitised businesses become more prominent. With the transformation of business activities into digital channels, businesses can always see what satisfies customers. With customer satisfaction can gain more profit in future.

- **Higher Digital Traffic** (53%) – Customers will respond to channels, as you transfer your business and activities to digital channels. If you have a website for our business and display our products and services, we will experience more digital traffic and more.

- **Increased Lead Generation** (49%) – The action or process of identifying and cultivating potential customers or customer interest and inquiry into a business’s products or services is called lead generation. Using digital media,
the number of people and the percentage of target audiences that will be able to reach the business has increases.

- **Greater Conversions** (46%) – Conversion rate is the percentage of people who are doing the desired action. An example of conversion rate is the percentage of website visitors who buy something on the site. This rate can go up if business is adopting digital transformation, resulting in more sales and thus increase profits.

## 2.2.3 The Digital Transformation Pyramid

Alessandro Braga, Chief Digital Officer of Talent Garden and scientific coordinator of the Digital Transformation Master of TAG Innovation School, published in a recent article on the TAG Innovation School's website, defining six axes of Digital Transformation: people, process, technology (inside the company), customer, relationship and product/services (outside the company). Peter Weill and Stephanie L. Woerner, published an article in the MIT Sloan Review, in order to understand if a company ready for a digital future. They identified two business domains: customer experience and operational efficiency; which can use to gain their goal.

In general, digital transfer is not about technology, it is more related to strategy. In fact, it's a novel method for business and getting closer to the companies’ models. Patrick Turchi (2018), identified a digital transformation pyramid to help corporate businesses realizing the effects of digital technology. He considers 3 levels which should be approached for digital transformation for a firm: Strategy, Execution and Technology (Figure 2). He believes that it is better to implement digital transformation in two or three steps; ideally, it should cover all three levels. (in the long term)
In fact, implementing a new IT system or launching an independent e-commerce is not a digital evolution initiative, unless it is a part of a general operation model or a new go-to market method. Each level of the pyramid has a great influence on other components of the pyramid. As Turchi has said, Strategy, implementation, or technology alone cannot transform a company. Successful implementation of digital evolution requires a "system" approach to find evolving initiatives and an integrated review of (at least) two elements for organizational change. (Turchi, P., 2018.)

2.2.4 Focus on Digital Practices

Those companies that use modern digital solutions, especially social networks, mobile, analytics and computing can take advantage of the benefits of this approach quickly. Today, organizations have different IT solutions and can thus increase their organization's operational productivity and benefit from unprecedented capacity in their business. But businesses often do not use all the capabilities of these tools for many reasons; such as unfamiliarity with the nature of these solutions, lack of sufficient information and lose many opportunities for profit. Digital transformation begins with clients in most cases: how can business better understand their customers,
how can business upgrade their service level and how can business digitised their experience for our customers. In the following, we should generalise these concepts to three other areas: digitisation of operations, goods and services. (Figure 3)

By reviewing the digital transformation in a number of different industries (e.g. telecom, biotechnology, electronics, retail, consumer goods, chemical, banking, and insurance) we find that there is a set of common elements, in all four domains that most organizations use them in B2C and B2B markets. Based on these elements, we will find a framework for developing a digital transformation plan for organizations. (Digital transformation, E-Spin, Espincorp, 2018.)

![Digital Transformation Framework](image)

**Figure 3.** Digital Transformation Framework

(Digital transformation, e-spin, espincorp, 2018)

Of course, all these elements do not play a significant role in industries and businesses; therefore, this framework should be tailored to suit each market and organization a way that is compatible with the business. For example, all organizations do not have the capacity and the ability to transform their business based on agile methodology. (Digital transformation, E-Spin, Espincorp, 2018.)

Note that when an organizations determined to use this digital framework, it should first look at it as an elementary approach, not comprehensive; so prioritizing and determining the most significant and critical areas of work is important. In the following, we will describe each area of the digital framework.
• **Digitization of Customer Experience**

Customers are the most important stakeholders of each organization. To provide the best customer service, we first need to know them well. In recent years, customer recognition was only possible through internal systems of organizations. Companies with the help of CRM know when a particular customer has purchased one of the products. Today, with the help of the Internet, access to further analysis has been simplified; for example, ‘which complementary products are similar to what customers have bought?’

This kind of customer vision that comes from digital technology can also be used in digital marketing. In today’s world where everything is connected to the Internet. The first thing customers do, in researching to buy a product, is checking the Internet; browsing their websites and their personal networks, visiting the forums to consult and view ratings that that particular product is given.

In order to maintain their competitive edge, organizations should regularly submit their product information online and be associated with their products in order to provide advice on their products. Since customers and businesses are increasingly active online and are identifiable in this space; organizations can, with the goal of increasing customer loyalty, use digital marketing tools to personalise the advertising of their products and services.

Due to the proliferation of new interactive channels such as mobile and social networks, customers now expect all their interactions with the company to be consistent, across all existing channels. For example, they expect to be offered at the most appropriate time and place and get the products they purchase through the channel they chose. If organizations do not use this integrated approach, the risk of losing customers and increasing dissatisfaction will severely threaten them. In fact, Omni-channel communications and services are a keystone to digital transformation system. (Digital Transformation, e-Spin, espincorp, 2018.)
• **Digitization of Products and Services**

Organizations today are aware that they should not only sell products, they must create and sell an "experience". Today, there are a large number of Internet-connected products that are used and produce data. For this reason, businesses can monitor these products, provide them with more services and provide good and acceptable support services in times of trouble. To create these experiences, customers need to be involved in these processes, organizations need to know how they can accompany it; from the beginning to the end of the customer journey. Whatever more advanced ways organizations use to understand their customers and people’s expectations about providing goods and services which are tailored to their personal needs, increase. Organizations can do this by dividing products into smaller modules, then provide the final product through its reproduction, by the components which are relevant to customer needs.

This kind of "mass customisation" is usually seen in the software and service components. Mass customisation is accepted in various industries and given the digital technology, this trend is likely to increase. For example, custom LED lights for homes and sports shoes specifically designed for each individual are designed and built. By analyzing customer behavior in social networks, it is possible to predict how to use products and their satisfaction.

Organizations can rely on these data to anticipate these issues before creating specific needs or problems for customers. Given that consumers can easily access a large amount of information and go with one mouse click to other companies, they do not have to pay for products or services that they do not want or do not need. They actually only pay for what they use. This emphasis the need for proper Organization responses to this. (Digital transformation, E-Spin, Espincorp, 2018.)
• **Digitizing Operations**

Advanced digital technology can improve business processes in many ways. For example, in this technology, macro data analysis can improve logistics processes by tracking the flow of goods; it can be used to integrate business process platforms: Employees can also use their mobile platforms to perform their tasks at any location, whenever and by any device they do.

A number of organizations are seeking to take advantage of this in their various business processes and in their IT services. Organizations, through automation, standardisation and globalisation can become more agile, more responsive to change and in a better way, promote and maintain their profitability. This agility is essential since current competition is increasingly dependent on factors such as reactivity, the ability to predict markets hasty developments through human intervention, artificial intelligence and automation machines still cannot be fully accountable. Therefore, organizations must take advantage of an agile way of doing things.

IT organizations have taken agile approaches. This approach has led them to succeed in producing faster products and in the digital evolution plan. As production and delivery of new products and applications are accelerating, organizations must be able to be adapted in new situation and synchro to changes and changes as quickly and flexibly as possible. In addition, these organizations must give their personnel flexibility and freedom to operate more so that they can perform their tasks at anytime, anywhere and using any device. (Digital transformation, e-spin, espincorp, 2018.)

• **Digitizing organization**

"Value chain" is becoming more and more integrated in organizations every day. For this reason, businesses can become part of a larger ecosystem. This will help them deliver their global services to customers with ease. For example, insurance
companies can provide an alternative car to their customers when a car is damaged and improve customer experience through the service.

Digital solutions make players in the value chain more interactive and collaborative. On the other hand, organizations can create, manage, organize and provide a significant number of their products and services, or focus on a side-by-side that upgrades the customer experience and becomes part of the existing ecosystem.

Organizations such as Wallmart and Airbus, which form an ecosystem itself; define themselves as the standard of the industry’s value chain, often becoming the top players in their business.

In order to effectively and efficiently operate in an integrated ecosystem, the organization’s employees must work together, on the basis of a new method: they must shun the limits and collaborate in different sectors, in order to respond quickly to continuous market changes. Inside the organization, learning from each other’s knowledge and experience. Employees who are dispersed in different areas must also share their documentation, ideas, contacts, experiences and knowledge with a value-added business with the help of a two-way, multilateral collaboration tool. Organizational culture must also be geared towards a digital mentality, where innovation is rewarded; it can be encouraged by assigning digital experiences to employees to enter the digital world to acquire the skills and knowledge over time.

On the one hand Today, the production of products or services and the ability of customers to comment on and offer online communities with the aim of improving products. This has led to the development of digital collaboration beyond the borders of the organization. In this way, customers can have an impact on the product development process and benefit both the business itself. (Digital transformation, E-Spin, Espincorp, 2018.)
2.3 Strategy

The term "strategy" is a concept that originates from the military arena and later in other fields, including economics, trade and in particular the, field of politics and the state of application much has been achieved.

The root of the word "strategy" is the Greek word "strategia" (meaning "command and leadership"). Now, the simple meaning of strategy is an operational plan for coordinating and organizing actions to achieve the goal.

The strategy helps organizations to determine their success in the realm of the event that will bring them the most benefit and effectiveness (Wright and Allen 2006). In fact, organizations use a strategy to create value for their stakeholders. In other words, the strategy of an organization determines how they want to create value for shareholders, customers and citizens (Kaplan and Norton, 2004). Michael Porter (1996) argues that competitive strategy is "about being different." From Porter's point of view, strategies allow organizations to take advantage of three different bases of competitive advantage; cost leadership, differentiation strategy and focus strategy. These three bases are generic or public strategies. In the companies’ cost leadership strategy, the companies is developing and supplying standard products that reduce the cost of each unit, for the customer (who is sensitive to price). The strategy of differentiation is to provide products or services that are considered unique in the industry; which are not usually at a very high price. A strategy to focus on specific products and services is to meet the needs of small groups of consumers.

The strategy is expressed mentally and conceptually and can never be presented objectively and operationally. This topic rejects all the views that define strategy as a tool for achieving long-term, time-bound goals. This issue dismisses all the perspectives that define strategy as a means to achieve long-term, time-bound goals; it considers the strategy to be the overall orientation of the organization's move towards a desirable situation at the subjective and conceptual level.
All in all, a strategy means using limited resources, taking advantage of the opportunities in the business environment, which means businesses create a competitive advantage for themselves and thus to make distinctions in the businesses. Therefore, in order to succeed in business, they need to determine the right strategies so that we can first guarantee their survival and then development.

### 2.3.1 Levels and Types of Strategy

The strategy can be divided into three levels: Corporate Level, Business Level and Functional Level. (FIGURE 4), (Hanger and Wheelen, 2011.) Strategies at all these levels have five components of the realm, goals, resource allocation, identifying a sustainable and co-competitive competitive advantage.

![3 Levels of Strategy](image)

**Figure 4. Three levels of strategy**

(Hanger and Wheelen, 2011, p 19)

Each strategy is related to the coordination between the organization the firm; on the other hand, the environment covering it. In addition, the strategy is linked to the coordination of activities and organizational capabilities. If the whole organization wants to succeed, then these three levels should be Integrated. The three main steps in the strategic management model (compilation, implementation, and evaluation) are for all levels of strategy. Each levels have these three main stages. Each level of strategy forms the lower strategic level, so that implementing a higher level strategy is equivalent to developing a lower level strategy (Hanger and Wheelen, 2011.).
Appropriate, coordinated and aligned strategies can create synergies and create value for the organization. (Gao, 2008)

**Corporate Level**

Senior management determines the organization's overall strategy. In other words, decisions are made about the level of resource allocation; to low levels and the entry of new activities. The strategies of this level are generally measured in order to create value for the benefit of the organization and with indicators of profitability or performance in the stock market.

According to Hanger and Wheelen (2011), the main strategies of the corporate level are: Directional Strategy (organization orientation / targeting towards growth), Portfolio strategy (industries or markets where the organizations competing through product and business units / coordination of cash flows of units) and Parenting Strategy (the method used by the organization's managers to coordinate the activities of the supervisors, the transfer of resources and the use of resources in products and units / collaborative creation through the development and sharing of resources). David (2011), based on two internal dimensions (financial strength and competitive status) and two external dimensions (environmental stability and industry strength), has identified four strategies at the organization level: aggressive, conservative, defensive and competitive.

**Business Level**

The business strategy (commercially), which is designed to provide the benefits and direction of the operation of a particular business unit, emphasizes the improvement of the competitive position of an organization's products or a business entity in an industry or a specific market segment (Olson et al., 2005.). At this level, strategies are more specific and more detailed than previous levels. In organizations that are less complicated or comprise a business, two levels of corporate and business may be merged.
According to Porter (1996), at the business level, the organization can have multiple and diverse strategies; but two general strategies at the level of business units are more widely used: cost leadership and differentiation. With the cost leadership strategy, the organizations seek to reduce the cost of the product or service. Through a strategy of differentiation, the business organizes goods or services that are unique in the industry and among competitors.

Therefore, the goal of this strategy is to deliver products to customers, that are not at an affordable price (Stewart and Brown, 2009.). Combining these two types of markets with two competitive cost Leadership and differentiation strategies, the four strategies of cost leadership, differentiation, focus on differentiation and focus on cost, is constructed (Hanger and Wheelen, 2011). Miles and Snow (1978), state that the amount of changes an organization makes in its products or markets, has presented four types of business strategies: defender, prospector, analyser and reactor. Futurists, innovators and creators are looking for new markets; analysts prefer tested strategies, defenders focus on maintaining a small part of the market, without having a fixed strategy, in short-term response is sufficient. (Hambirck, 2003.)

Some researchers introduced four types of business strategies by combining the two models of Porter with Miles and Snow: Opportunities, analysts, low-cost defenders and differentiated defenders. opportunities with new products and services are often the first to enter the market. They will not hesitate to enter into parts of the new market where there is an opportunity. Analysts are modelling the success of other competitors in the market and equipping themselves to achieve those successes. Distinct defenders try to maintain a relatively stable realm through the strict protection of their market position. They focus on delivering product or service of superior quality. Low-cost defenders try to maintain a fairly stable territory through the strong protection of the product-market position and focus on the productivity of the product. (Desarbo, Benedetto, Song and Sinha, 2005.)
Functional/Operational Level

Task Strategies clarify the organization's operational framework for the organization. In this way, the organization's operations can be carried out in a coordinated manner with the business entities business integrity. Functional strategies are developed to realize the goals of the business unit. These strategies take into account the attitude used in a field of business to achieve enterprise and business goals and strategies by maximising resource efficiency, and to develop and enhance a distinct competence so that an organization can benefit from competitive achievement. (Hanger and Wheelen, 2011.)

In fact, these strategies determine the overall direction of each organization activities. The goal of each of these strategies is to carry out the correct and effective task and the coordination of the task strategies with the strategy of the organization or business unit is important. Functional strategies are considered as one of the important tools for the effective implementation of the organization strategies providing clear and immediate guidance for key functional areas within the business. The various types of business strategy strategies are: marketing strategy, production strategy, research and development strategy, HR strategy, financial strategy and information systems strategy. In Figure 5, different types of strategies are summarized:

![Figure 5. Levels of organizations strategies](Hanger and Wheelen, 2011.)
2.3.2 Digital Strategy

The advancement of digital technologies and their increasing use in companies have led researchers to align their business strategies and IT strategies. This alignment has led to the emergence of digital business strategies (DBS). Friedrich Holotiuk and Daniel Beimborn (2017) state: "digital business strategy is an emerging concept at the intersection of Information Systems (IS) and Strategic Management. DBS describes the fusion of business and IT strategy and the incorporation of digital technologies in business strategy".

The use of new technologies for existing business activities is often recognized as digital strategy. Sometimes, this term is defined by focusing on integrating new digital capabilities; such as computers, data, telecommunications, the Internet, etc. A digital strategy can be designed and implemented using a variety of methods. In general, these strategies often include the organization's perspective process, goals, activities and opportunities associated with it; in order to maximize the benefits of digital innovation for the organization. Emerging digital strategies have been developed to help firms develop their vision of digital competition; decide how to deal with other rivals and ultimately how to deal with digital corporate transformation.

The Boston Consultants Group (BCG) has proposed a schematic matrix for analyzing digital strategic options; when is based on two components of "re-engineer the value chain" and "reimagine the offering" (Figure 6). Digital facilities provide great opportunities for improving the efficiency and effectiveness of the organizations processes. These facilities can incorporate a simple to complex range from in-companies' processes, to processes that cross the boundaries of the firm; these affect a wide range of companies and individuals inside and outside the organization. For example, digitally collecting and analyzing data can greatly increase the effectiveness of sales, or businesses can use digital capabilities to distribute a service throughout its supply chain. These studies are in the form of a redesign of the value chain, whose approaches are diverse in terms of complexity and impact.

The opportunity for digital strategies is not limited to increasing the efficiency and effectiveness of processes. However, the redefinition of products and services can also
be based on new digital features, the production and delivery of products and services that are less costly and can be numbered. These types of products will transform the supply and demand system of the market, which will create highly unsustainable market shaping. An analysis of the use of digital features in the design of new products and services in the field of reimagine the offering to the customer. The combination of these two matrix concepts brings out three stage strategic approaches, which located in the diagonal in digital opportunity matrix, to face digital capabilities. (Gerbert, P., Gauger, C., & Steinhäuser, S. J. B. P. 2015, 1.)

- **Expansion Strategies**

  Digital expansion means more use of the current location using digital facilities. Where you decide to create more value for money. This kind of strategy is a conservative and fast approach, which is also an underlying way, as it increases the organization's digital capabilities and abilities. Starting a digital route with such approaches is wise, it is creating instant value creation provides the incentive to travel in the direction of digitisation of the organization. Establishing online communication systems with customers and suppliers is an example of the expansion of the digital domain in the firm. (Gerbert 2015, 2.)

![Figure 6. The Digital Opportunity Matrix](Gerbert, P., Gauger, C., & Steinhäuser, S. J. B. P. 2015.)
• **Exploration Strategies**

The simultaneous and limited value creation through digital use in products and services, in addition work processes; this reflects the discovery strategies in the digital domain. The use of new technologies for Auto-driving in cars and the different shaping of distribution of goods and services; using innovative, analytical and digital data are examples of strategic approaches to digital exploration. Naturally, these approaches depend on the focus of senior management and significant investment on it, which must be carefully and continuously monitored on their effectiveness. (Gerbert, P., Gauger, C., & Steinhäuser, S. J. B. P. 2015, 2)

• **Digital Transformation Strategies**

Strategies in Digital Transformation have the greatest potential to significantly increase the firm’s financial value creation and create sustainable competitive advantage; which naturally has high risks and risks. To achieve development strategies, senior management need to consider a five to ten-year perspective, planning a step backwards (in a return path) that should be taken to achieve it. Christine Matte et al (2015) state in their paper "digital transformation strategies" define digital transformation as a set of organization’s actions for using the latest digital technologies and exploiting their interests. They emphasis that digital evolution, in addition to business processes affects business products, organizational structure and management concepts. (Figure 7.)

![Diagram](image.png)

Figure 7. Relationship between Digital Transformation Strategies and other Corporate Strategies

(Matt, C., Hess, T., & Benlian, A., 2015, 5)
Also, they believe that the procedures through computerized changes can be considered from two points of view; “dimensions of digital transformation” and “procedural aspects of digital transformation”. As a structural perspective, they consider four main dimensions of the digital transformation strategy: “use of technologies”, “changes in value creation”, “structural changes”, and “financial aspects”. (Figure 8.)

![Figure 8. The Digital Transformation Framework](image)

(Matt, C., Hess, T., & Benlian, A., 2015, 5)

According to these dimension, and based on firm’s own strategy, the firm chooses about which part of the necessities is required to turn into a pioneer. In addition, the marketing strategy chosen by the companies, such as becoming a leader or attracting its share of the market, has clear effects on their digital transformation strategy. Regardless of how the companies chooses to become a leader, all dimensions’ aim is to support the "use of technologies". (Figure 9.), (Kasey.P.2017.)
As a procedural perspective, the development, implementation and evaluation of digitisation strategies is considered. Digital transformation is a continuously changing project, that can affect all operations in a company. Therefore, in order to define and implement a digital transformation strategy, it must be ensured that there are sufficient and clear responsibilities. Also, not only transformational leadership needs professional skills, but also all stakeholders affected by developments should also have active involvement.

It should be noted that the organization cannot simultaneously apply all of these approaches; the strategy is prioritized and selected, it should be programmed based on the amount of competitive capabilities that are available in the organization or can be achieved. For example, if competitive capabilities of the organization are not sufficient to shape the market space with new products and services, it can start the digitalization journey with customer experience management. Using social networks and collecting information through them can help the organization discover the disadvantages of the traditional distribution system and unmet customer expectations. For example, a toy manufacturer using data from social networks finds out that shoppers need to provide more services to learn about the use of toys, an unsecured need that can easily be provided online.
Other than that, customer analysts at that company found that children after using toys, such as building a home with Lego, are eager to share the feelings of being successful with others on social networks, meeting these needs. With a few simple approaches, the loyalty of current customers has come to fruition. It will multiply the companies and at the same time lead customers out of the market to buy these products.

2.4 Ten Journeys to Digital Telecommunication Companies

The view of many businesses about digital transformation were incomplete and ambiguous. Some consider it a change in technology, some as an opportunity to provide new digital services and others as a new approach to customer satisfaction. Although digital transformation can be any of these, it’s beyond all.

In his book "Transforming the teleco" (2018), Martin Creaner introduces ten distinct paths for telecommunication companies in relation to digital transformation or digitisation, which are described in this section. These ten paths include the various aspects of the telecommunications industry (including technology, organizational change, internal and external organizational perspectives, etc.), and although there may be some overlaps in some cases, these ten paths pose a unique challenge to this transformation. Telecommunication organizations can dig one or more paths, depending on their current location, to select one or more paths to avoid being left behind.

- **Journey 1: Move from separate network elements to cloud infrastructure and virtualized communications that are managed autonomously.**

  Current telecommunication infrastructure is composed of various elements that are regularly costly and hard to oversee. On the path to digital transformation, these elements must be transformed into cloud infrastructure and virtual communications, which can be managed at a much lower cost.
Network functions virtualization moreover, and software-defined networking (NFV-SDN) is the initial phase in understanding this way. Although it’s not easy to achieve and costs, complexity and disturbances in the network, but in any case, as the 5G era approaches, the need for NFV-SDN is also felt more and more. AIOps is a way to automate automation and intelligent infrastructure performance, which is known as the next generation of DevOps by utilizing artificial intelligence and metadata to improve operations.

- **Journey 2: Move from the security solutions for each product to a comprehensive and integrated security solution**

Interestingly, security issues do not seem to be the same as they should be in digital transformation, but ought to be considered as one of the fundamental worries of this change. Obviously, the new digital services will have higher security requirements and the existence of a security solution across the entire business will require data from the service development process, partners and the physical environment.

In particular, the advent of the Internet of Things, since it expanded significantly the operating space, raises many security issues that need to be managed.

- **Journey 3: Change path from the limited data usage to a comprehensive and integrated data-driven infrastructure**

On the path to this evolution, one of the key issues that telecom companies will address is developing a unified, coordinated approach for collecting, analyzing and distributing data in a secure and revenue-generating environment. The source of this data can be infrastructure, services, social channels, businesses, and business partners. In fact, the success of the digital economy depends largely on how organizations use data to improve their business condition and to build their income.

- **Journey 4: Progress in closed-system management systems towards the Open API platform architecture**

Telecoms companies should turn to the Open Source Architecture from the closed-end IT architecture that uses their "services" only to "their customers" through which they can freely access various interfaces. Is possible. Through these open platforms,
it is expected not only to support the development of telecom services within the organization, which other companies can also expand on their services.

- **Journey 5: Develop a portfolio of products from a limited and old service to a diverse range of new digital services**

  Telecom companies will learn how to expand their portfolio of products to develop a variety of digital services for new markets with high potential for revenue growth. They need to learn how to render service in which part of the market more suitable for competition and to make special changes in their organizational performance in order to reduce the complexity of operations and to optimize these diverse services. And manage efficiently.

- **Journey 6: Moving from the management of a small set of suppliers, towards the presence of native biologists from different partners**

  In the digital economy, computer companies need to get their hands on fast and profound relationships with business partners and suppliers. In fact, changes are needed in the number and variety of partners working with them, which, of course, adds to the complexities of how to manage relationships and engage with them. In order to achieve this, balanced governance among ecosystem partners should be considered as a fundamental component so as to take into account across the board and imaginative collaboration.

- **Journey 7: A transformation from a small set of business models to multiple business models for both main and secondary markets**

  As telecommunications companies are moving towards developing their portfolio of services, they need to be able to increase their agility and flexibility in creating value for their organization and others. Improving the value of new business models also requires the development of new operational models that can be implemented in parallel with the current business and operational models of the organization. This path requires new, low-cost IT and operational architectures that give telecom companies the flexibility they need to support large-scale business models without significantly increasing costs and complexity.
To have such architectures, it is necessary to make changes to the internal processes of the organization, moreover, financial, informational and physical flows to join the native of the business partners. Also, activities to manage total cost of ownership (TCO) and benefits assessment and realization (BAR) will be needed to manage the organization’s core costs efficiently.

- **Journey 8: Change the style of the traditional organization’s structure and culture to culture and digital organization**

An enterprise culture that works for typical infrastructure-based companies and help them to provide a portfolio of limited services to compete with other telecommunications companies, with the culture and structure in which the broad portfolio it offers a variety of digital services that are competitive with Internet actors and over-the-top (OTT).

The transformation in organizational culture and structure is likely to be the most painful and hardest part of the digital transition, as it directly affects the skills and behavior of individuals in the organization.

- **Journey 9: Change the focus from traditional channels to multiple channels for communication with the market/customer**

How digital telecommunication companies offer their products for sale to the market is very different from the traditional approaches of telecommunications companies. In the digital world, it is essential to open up new communication and channels with business partners, which can also help to branding, increasing revenue from digital services, and boosting previous channels.

To bring about this transformation, it is necessary to make changes to the operational processes, to create new ways to persuade employees and partners, moreover, new ways of adjusting business conditions to the expectations of customers in new markets, and this is much better than sticking to the principles Current is the field of telecommunications.
- **Journey 10: Moving from single-dimensional client management to multichannel management and 360-degree customer experience**

In the modern digital world, both the expectations of customers and the expectations of businesses have risen dramatically. The reason for this is having the experience of working with various actors in the field of the Internet and OTT, which uniquely and continuously provides users with various experiences on the phone. This evolutionary journey to the digital world will help telecom companies benefit from increased customer satisfaction, including reducing their turnaround.

The need for change is fundamental, and many telecom companies are already in this direction. This will require changes in systems, processes, data management, skills and culture within the organization, moreover, rapid reliance on the expectations of customers in different markets as the best practitioners in the field.

By knowing these ten paths, telecom companies can identify routes that are more suitable for them and deliver them faster, and synchronize with other organizations in the digital switchover.
2.5 Theoretical Framework

In 2004, De Wit and Meyer, present the view that there are three dimensions of strategy that can be perceived in each genuine key issue circumstance. These dimensions are strategy process, content and context. Strategy context is conditions surrounding strategy activities or strategy levels.

In this study, each level of strategy, corporate level, business level and functional level, is investigated separately. Thus, strategy context is not considered as a dimension of strategy. De Wit and Meyer include organizational purpose in context and people in content. This study, splits out the two towards bringing increased clarity to each dimension. Furthermore, organizational purpose and its staff are starting point for strategy development. All in all, for each strategy, four main dimensions including purpose, process, content and people are considered. At each level of strategy, the changes are observed in these dimensions.

Figure 10. Dimensions of Strategy

(Wit, B. d., & Meyer, R. J. A. i. p, 2004.)
3 Methodology

3.1 Research Strategy

In order to understand why and how telecommunication companies make strategic decisions regarding digital transformation, they need to have an insight into the thoughts and actions of respondents. This insight can be obtained by interpreting their thoughts. Therefore, this study followed the scientific philosophy of Interpretivism in the organization’s human resource management. For this, marketing is recommended since it often involves unique and complicated situations, and this philosophy of science often meets the qualitative approach (Saunders, 2009).

From the point of view of the method of scientific reasoning, and out of the three common methods, namely inductive, deductive and abductive reasoning (Reichertz 2014), this thesis tried to use abductive reasoning in order to bridge the gap in the research literature and understand the strategies of digital transformation in the telecommunication industries. In fact, theoretical perspectives from previous scientific research are combined with empirical observations and analysis of a case study. The "systematic combining process" of abductive reasoning is depicted in Figure 11 below.

![Abductive Reasoning](image-url)

Figure 11. Abductive Reasoning

(Dubois, A., & Gadde, L.-E. J. J. o. b. r. 2002, 555.)

The research question in this research was to understand how digital transformation changes the strategies of the telecommunication companies. The goal was to examine this phenomenon in a natural environment. According to Yin (2009), case studies are very useful for a contemporary phenomenon in real life so that researcher can
understand the insights on both the process and the context. Moreover, Saunders (2009) state that a case study is suitable for answering the research questions which are of the type 'why' and 'how'. This strategy allows for comprehensive research on the dynamics of single settings (Eisenhardt, 1989.). Since this study was mainly exploratory and dealt with questions about how the strategies of a telecommunication company are transformed as a result of the use of digital transformation, this research was strategically a case study.

In case study research, the number of cases and time perspective should also be considered. A multiple case study is useful for creating comparable and contradictory studies and if an observed phenomenon appears in several situations. (Saunders et al. 2009.) Meanwhile, a single case design is usually suited for the exploration of a particular setting, and thus, it was preferred in this study was (Yin 2009). Given the time constraint, the case study was a cross sectional rather than longitudinal one, which meant focusing on a phenomenon at a specific time rather than its changes over time.

Although case studies have often been criticized for not being generalizable, Yin (2011, 21) states that "case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes". Thus, we must overlook learning from an individual case in its context (Dubois & Gadde 2002.). According to Dubois and Gadde (2002), in-depth case studies are often required to provide better understanding of interaction between a phenomenon and its context. Performing numerous studies on a similar phenomenon under different conditions can lead to the development of a comprehensive theory. Therefore, single-case studies can be used to expand these theories (Yin, 2009). A case study can be repeated, and the researcher should not be in the position to answer predefined questions but to seek out unexpected results. This thesis followed the structure of the case study presented by Yin (2009).
3.2 Research Approach

Research, based on how the data is collected and analyzed, is divided into two main categories: quantitative and qualitative research. The quantitative researcher provides information through numerical data collection and observation of samples and then provides these data for a numerical analysis. In contrast, qualitative research is rooted in the assumption that the effects of the social environment are interpreted by individuals. These interpretations are transient and dependent on the situation. The qualitative researcher first collects verbal data by studying it seriously and deeply and then provides this data with analytical induction.

According to Strauss and Corbin (1998, 10-11), "The meaning of qualitative research is that of any kind of research that produces findings that have not been obtained by methods other than statistical methods or any kind of quantification". The methodology may focus on research into people's lives, biographies, behaviors moreover, organizational functions, social movements or international relations.

By the end of the 1960s, nearly 90% of the reports published in US sociology journals were based on quantitative and statistical research. Although comparable statistics are not available in the UK, it is believed that statistical research was dominant in the
late 1960s. Today, however, the theorem differs, and since of the theoretical critique of positivism, which tends to be of a rather statistical and quantitative nature, qualitative methods have now become central to social education and research. (Silverman, 2000.)

This technique was developed by cultural anthropologists for studying the customs and behaviors of people from other cultures. The philosophical basis of qualitative research is humanism and naturalism. The purpose of the humanist basis is to pay attention to the role and importance of man in qualitative research. According to this philosophy, the point of view of man with other beings is action based on motives or internal and external factors rather than reactions. (Rafiei, 2008, 133.)

The present study is essentially a type of exploratory research since it focuses on issues that have not been addressed before. In this kind of research, instead of testing a hypothesis, the purpose of collecting patterns and ideas is to create profound comprehension of the subject. To this end, qualitative research is needed to achieve a suitable method for achieving research goals. Moreover, interpretivism is usually combined with a qualitative method, something that was also motivated in this study due to the need to understand a phenomenon in a natural setting. (Berger & Luckman 1966; Prasad & Prasad 2002.)

All in all, this research started with a qualitative approach, in which there was no predetermined framework, such as a theory or model, and this framework was based on the collected data. As explained in the section below, the main source of data was in-depth interviews. At this stage, using semi-structured and exploratory interviews with experts, the impact of the digital evolution on the strategies of a telecommunication company was identified. In the next step, the data were analyzed using content analysis (Qualitative research method). The result of this was the identification of the initial model of how to change the strategies of the telecommunication companies that are taking advantages of the digital transformation.
3.2.1 The Case Company and Its Relevance for the Study

Irancell is the second largest cellular operator in the field of mobile network services, mobile broadband services (2G-3G-4G-5G) and Wi-Fi and high-speed broadband Internet connection TD-LTE works. The company was established in 2005 with a joint venture between the Multan Group (49%) and Iran Electronics Industries (51%). Irancell Company ranked 32th in the list of the largest Iranian companies in the fiscal year of 2014 with a total income of 4, 9 Trillion Toman (Iran's currency). Currently, the Multan Group holds 49% of Irancell shares and the joint consortium under the name of Iran's Electronic Development Company has 51% of Irancell shares.

At the beginning of 2016, Irancell realized that in a rapidly digitising world, digital transformation needed to remain competitive. The organization decided to develop a platform that uses digital technologies in all their business areas, in particular changing the processing and transferability of value to customers. On the other hand, the company is struggling with a cultural change that constantly challenges the organization’s existing status and previous personnel experiences. From some experts’ point of view, digital transformation in Irancell has had a direct impact on organizational change, and has been used in three areas of customer experience, operational processes, and business models. The company has provided a clear plan and structure for personnel, and provided them with the necessary training to prepare them for digital transformation.

With these tips and after consulting with the supervisor of the thesis, we find that the MTN Irancell company is a proper case to investigate and answer the main question of this thesis.
3.2.2 Data Collection

A total depiction of the potential sources of evidence in case studies is presented by Yin (1994). Interviews, documents, observations and physical artifacts are key sources, part of it, can also be considered as methods of collecting information. However, in qualitative researches In-depth interviews have been identified as one of the most powerful methods. They are used to thoroughly examine the ideas of respondents, thus, more insights are found on the subject. The researcher is able to get a lot of information from those who work in the relevant field with appropriate questions that are conducive to the discussion. The interviews create a relationship between the researcher and the subject. Therefore, new topics related to the subject and the respondents will be discovered since the interviews will take on an interactive format.

The standard questionnaire of quantitative studies with regard to the research objectives associated with this study question was very inadequate, as they were too rare, rigid and tight. This can be attributed to the structured and standardized nature of the research tool. The questionnaires have little flexibility related to the participants' responses. The researcher believed that this approach is not useful for exploratory studies whose purpose is to exploit the potential alignment of a practical model for creating a new theory. Therefore, given the sensitive nature of the subject, personal interviews can be considered the best way to collect data. As a result, In-depth Interview was appropriate to answer the research question.

Data collection was started by designing interview questions. The questions were divided into four sections, which included the background of the interviewee, the review of the digital transformation in the company, cooperate level strategies, business level strategies and functional level strategies.
The following table introduces the interviewees, their positions and the duration of each interview.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Position</th>
<th>Date</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mehdi Arabzadeh Yekta</td>
<td>Senior Manager of Solution Development at MTNI B2B</td>
<td>12- Jan-2019</td>
<td>120 Min</td>
</tr>
<tr>
<td>Mona Bokharaei nia</td>
<td>Senior Manager Architect &amp; Digital--MTN Irancell</td>
<td>17- Jan-2019</td>
<td>120 Min</td>
</tr>
<tr>
<td>Ahmadreza Nasiri</td>
<td>Senior Manager Business (Sales/Purchase) Digital Dept. –MTN Irancell</td>
<td>19- Jan-2019</td>
<td>90 Min</td>
</tr>
</tbody>
</table>

The interviewees have been selected based on the position and responsibility they have in designing and implementing the digital revolution in Irancell Company. After answering to the interview questions by interviewees, she/he was asked if another specialist would suggest for interviewing who worked on the specific subject or strategy level. The selection of interviewing management staff emphasized their knowledge of digital technologies and digital evolution. However, in order to arrive at a comprehensive view of digital transformation and digital innovation, interviews with management personnel, such as Operations and Sales, are included in the data collection.

Real interviews began by contacting the interviewees through email, which described the goals and objectives of the thesis. Since of the distance available, it was decided to conduct interviews in two phases. First, they answered questions in brief and by email, and then an oral interview was conducted via Skype, in which more detailed explanations were provided.

The thesis presents the interview questions in Appendixes I. All the interviews were in Farsi language, as that was the native language of all the interviewees moreover, interviewers. The interviews then interviews were transcript in English. In all interviews, interviewers initially described the motivation and objectives of the study,
and then the interviewees were asked to describe their position in the organization. Then we began to discuss the general conditions of digital transformation in the case company, including design, implementation, financial, results, and problems. After the digital transformation, a closer discussion was conducted on the effects of this change on Irancell’s strategies at all levels of corporate, business, and functional. This section of the interview was conducted to answer the main question of this thesis.

3.2.3 Data Analysis

In this study the data were analyzed based on content analysis, in which categories were developed from research questions and existing theories, and followed by an exploration of connections and patterns between the different dimensions of strategies. However, in qualitative data analysis, usually there are many difficulties due to the large amount of data to be handled (Bryman and Bell, 2011.), that is included in this study. It was difficult to make sure all important aspects of the interviews and observations were taken into account when filing the data appropriately for a general overview. One way to deal with this problem is to use computer software (Bryman and Bell, 2011.), but this tool has not been used in this study. It was considered necessary that the data be handled and analyzed by the researcher, manually. (Yin, 2009)

Since most of the data was collected through the interview, data analysis was started with the full transcription of the recorded interviews. Then, an initial thematic coding procedure was conducted. The coding of the dataset assisted our research by organizing, making sense of the qualitative data and identifying patterns of meaning. To get our framework, a staged process was followed: first, we coded strategic changes which explicitly focus on dimensions of telecommunication company’s strategies such as content, context, people and process. The detected changes were registered in an Excel spreadsheet. The coding provided an initial, cumulative, and non-repetitive collection of changing factors that took place in the sample. The second step was a repeated analysis of the dataset for the mentioning of the strategic level of changes, which created a result matrix with information on which changes was mentioned in which level of strategy.
As a result, this analysis provides a total of 46 entries with different changing factors per strategy level. This comprehensive set of changing factors provided rich insights, but it was still criticized that these changes occurred in a few instances. Thus, the set of changing factors was reduced to only those were identified in secondary sources. (e.g. websites, reports, research articles, etc.) Ultimately, changing factors with overlapping content was grouped. Finally, the 2, 4, and 5 factors were considered as factors that have taken the most impact of the digital transformation at corporate, business and functional levels strategies, respectively.

3.2.4 Verification of the Results

The concepts of trustworthiness (reliability) or rigor differ in quantitative and qualitative studies (Graneheim and Lundman, 2004., Corbin and Strauss, 2008.). According to Lincoln and Guba, 1985, the validity of the qualitative research studies includes four criteria of Credibility, Transferability, Dependability, and Confirmability. (Graneheim and Lundman, 2004.)

Credibility

Credibility means meaningful effort to ensure that the meaning of the data is properly interpreted. Credibility refers to the internal validity of the research, that is, the degree to which the findings of the study are true and that the findings reflect the research purpose and the social reality of the participants in this study. (Lincoln YS and EG., 1985, Lietz et al., 2006.) In order to obtain credibility, we attempted to select the most experienced and professional participants; the attempt was made to complete the questionnaire as comprehensively as possible; The most suitable semantic unit was selected. (Graneheim and Lundman, 2004.) The internal validity was assessed through content validity. The panel of experts (research team) was used to support the production of concept or coding issues (Elo and Kyngas, 2008.), moreover, member checking.

In this regard, the text of the interview and the extracted codes were provided to the participants, and they commented on its validity and, in the event of any inconsistency,
were considered. In addition, things that were ambiguous or participants were not properly understood was clarified through telephone and e-mail.

The full text of all interviews with coding was sent to the supervisor. His confirmation and supplementary comments was used at all stages of the implementation, codification and extraction.

**Transferability**

Transferability in qualitative research is synonymous with generalizability, or external validity, in quantitative research and refers to which the study findings can be transmitted or used in other groups or locations. Various views and experiences of various contributors to a phenomenon, the same maximal diversity principle, increase the transferability of the findings. In order to facilitate transferability in this study, the researcher provide a clear description of the context, how to select and the characteristics of the participants, data collection and analysis process so that the reader can judge the applicability of the findings in other situations. Also, by providing rich and accurate findings with appropriate citations, the transferability will increase. (Graneheim and Lundman, 2004, Lincoln YS and EG., 1985, Lietz et al., 2006.)

**Confirmability**

Confirmability demonstrates the association of data with resources and the emergence of results and interpretations of these resources. Remaining an audit is a way for researchers to document the confirmability of research findings, that is, recording activities over time so that other people can follow them. This process can be comparable to financial auditing. In fact, this criterion shows that the results of the research are not the result of hypotheses and preliminary findings of the researcher (Lincoln YS and EG., 1985, Lietz et al., 2006.).

The complete analysis of this study was steps, including data collection, analysis and the formation of the themes is available to audiences, in order to give them the ability to audited the research. The process of doing research was also put at the disposal of related supervisor to confirm the validity of the research.
Dependability

Conceptually, dependability is more similar to the reliability of internal consistency and re-testing in quantitative approaches, and refers to sustainability or instability of the data in other positions or time. The dependability of a research reflects the consistency, logic, and continuity of research findings. If the findings of a study are close and interrelated, it means that the reader will be able to evaluate the adequacy of the analysis through the follow-up of the researcher's decision-making process. To achieve some dependability scales, there is a need for a research Audit trial (Lietz et al., 2006, Lincoln YS and EG., 1985.). In this study, an audit of the research, namely the accurate examination of the data by a peer check, was used to increase the dependability of the research.

4. Results

This chapter examines the information collected from the in-depth interview to reflect the impact of digital evolution in strategies at different levels. Data collected to provide experimental support and explanation for the research question. Data collected to provide experimental support and explanation for the research question. The interviewees have shown that the topic raised their interest and, as a result, confirmed the interviews. The three respondents responded by sharing their managerial and professional views on digital evolution and strategy issues.

Based on the designed questionnaire, this chapter first briefly describes the company (Irancell Telecommunication Company) and how to implement the digital transformation, and then the impact of this change on the company's strategies is examined.
4.1 MTN Irancell Corporation & Background

Figure 13. MTN Irancell Logo

(Irancell company official registration logo, 2019.)

MTN Irancell (MTNi), one of the leading mobile operators in Iran, is emerging in the world of technological change. MTNi significantly invests in advanced communication networks across Iran.

The license agreement for the Mobile and Network Services License Agreement was approved by Parliament and the Guardian Council, and the license fee was paid by Irancell on October 25, 2005, the license of the GSM network and GSM services by the MICT on November 27, 2005. It is noteworthy that a valid license is located across the country and is granted for full geographical coverage.

Within a short time after obtaining the license, Irancell was able to expand the network operations. Therefore, the pilot launched his network on August 28, 2006, only 9 months after obtaining a license. Eventually, Irancell Network was officially launched on October 21, 2006 in Tehran, Tabriz and Mashhad. Irancell successfully develops its network in a short time, taking into account experienced local and international experts and providing quality services throughout the country on the basis of international standards. Irancell's network connects its subscribers to the advanced generation GSM system to benefit from EDGE (2.75 G).

Evolution GSM (EDGE), an advanced generation GPRS data service, gives Irancell subscribers access to the Internet and other similar high-speed networks through their phones to send and receive voice, video and text messages. Slowly in order to develop
its market share, products and services, Irancell participated in the bidding for WiMAX services and was licensed on February 28, 2009. At present, Wi-Fi Internet has a high speed between 128 Kb / s and 2 Mb / s in 29 cities.

On August 5, 2014, Irancell was licensed to launch a test on 3G and 4G mobile phones, and in the short term 3G and 4G were launched commercially on August 26, 2014. Based on this license, Irancell can subscribers to the broadest and fastest mobile Internet. MTN Irancell received the national license for TD-LTE for the first time in Iran on August 26, 2015, after which the geographical and technological limitations of the WiMAX license were removed. (Irancell history, 2019.)

- **Irancell Products and Services**

During these 5 years, Irancell has always tried to provide services and products to its customers, which, in terms of up-to-date services and products in the world in this area, and in terms of efficiency to meet the needs of subscribers. Thus, during this time, Irancell has provided its customers with many services and products for the first time in the mobile phone market, including mobile Internet service, multimedia messaging service, popular songs, mobile newspapers, gold numbers, electronic charging, Caller ID, credit card roaming, data roaming, postal service, Irancell virtual map (face), messenger SIM card, mobile banking services, gold area service, virtual private Wi-Fi network, etc.

According to these services, Irancell has been able to account for about 45% of the market share of the country after 5 years, which has not been possible unless Irancell has been able to provide its mobile services in a wide and quality manner during these years.

With increasing sales and distribution points, Irancell has provided subscribers with access to Irancell’s facilities and services through a million and 400,000 access points, which has enjoyed an annual growth rate of 180% over the years 2008-2010, and Meanwhile, e-commerce accounted for 64 percent of the total sales of Irancell pins, which is one of the internationally-accounted for Irancell. Among the successes of
Irancell, the launch of the project of access and use of banking services in the country is currently 20 banks with the provision of ATM services, Internet, store terminals, web kiosks, mobile phones, mobile banking and direct charging for the provision of mobile banking services with Irancell. Cooperate. There are currently 18 main distributors, 9060 sales and after sales service providers, codecs, one million and 180 thousand terminal stores, 18 thousand and 500 ATMs, and more than 200 thousand SIM card and charger vendors with Irancell.

Figure 14. Irancell Market Share

(Irancell official annual report, 2019. 5)

4.2 Market Trends and Barriers to Success

In order to cope with future challenges faced due to mobile broadband internet (4G/LTE, 5G), Agile IT (TCO & TTM), Digital Transformation, Customer Retention, MTNi is nowadays shaping their route to the future. Below are some key challenges as per today’s environment

- Facing aggressive OTT competition, resulting in revenue decrease on traditional services.
- Digital Economy Transformation across telecom and non-telecom.
- Having a good coverage network is not sufficient anymore.
- Innovation through Partner relationship, especially vertical industry.
• To take advantages of customer 360 information for deep analysis for better customer retention.
• Lack of service measurement
• Unified customer experience across the channels
• Limited personalization
• Legacy / offline campaigns and loyalty program

Lack of focus on quality of service and delivery of new products

The standard structures are defining the framework and standard to address the above mentioned challenges with Agile Business Program, Open Digital Program and Customer Engagement Program as illustrated below to help MTNi to align with future needs. We summarize the designed framework in Figure 15.

The Core Value Proposition is to provide a platform that enables MTNi Digital Transformation in order to meet future Business Objectives for MTN Irancell. This platform suite must be based on a highly flexible integration and orchestration platform that supports the integration and communication between services deployed across multiple cloud environments and on premise data centers.

Figure 15. The Designed Framework of MTNi

(Irancell official annual report, 2019. 12)
4.3 Digital Transformation in MTN Irancell

Digital transformation in MTN Irancell is started in the beginning of 2016. In this project MTN Irancell is going to convert its current Business support systems (BSS) to a quality oriented intelligent system. The BSS are the components that a telecommunications service provider (or telco) uses to run its business operations towards customers. The most important goals of the company for digital transformation are reduction of overhead costs, HR based fault and also improving customer experience. Irancell believes that the customer experience should remain a priority while you convert to digital. Digital BSS-focused blogs can equip their knowledge to provide the optimal customer experience.

In other words, the highest level of compatibility, speed, and performance is an essential need for operators to deal with the challenges of digital transformation. To support their business, separate systems are unsuccessful. Also, these systems are not flexible sufficient to patronage digital ecosystems, customer personal experiences, and quick introduction of services. Just as networks are subjected to digital transformation, the business of operators and systems that drive business success will also be affected by this evolution.

The new Irancell Digital Business Support System (BSS) is designed to deliver drive values from new networks and digital IT investments. According to their digital marketing general requirements, they provide an accurate, real time, and agile digital marketing platform which provides end-to-end capabilities such as marketing management, marketing planning, marketing execution, marketing evaluation, and multi-channel collaboration.

The customer insight gained is applied to many domains pertaining to customer experience such as customer service, cross/up-sell, retention, etc. Although Customer Insight Management builds upon traditional business intelligence and analytics for customer transactions and interactions, it is unique as it provides real-time customer treatment for various aspects to provide relevant, timely, and personalized actions. The Digital Marketing platform has following key functional areas:
• Campaign Management: Campaign Management should support end-to-end marketing activities including marketing analysis, activity planning, review, execution, monitoring, and evaluation.

• Policy Center: Policy Center should support batch decision making, event real-time decision making, and personalized real-time decision making.

• Intelligent Customer Contact: Intelligent Customer Contact should support traditional channels and electronic channels, and support contact policy creation based on the customer contact and feedback history.

• Customer Insight: Customer insight should generate multidimensional customer features (tags) and provide 360-degree customer portraits through big data analysis and mining.

360-Degree View Supports

• Customer be can easily retrieved by using key attribute for example:
  - Customer ID, Customer MSISDNs, National ID etc.
  - Customer contact information, home address, office address, billing address
  - Certificate/ID Type, Certificate/ID No, Registration Time, Expire On
  - Customer type VIP, Student, Gov official etc...
  - Family Attribute
  - Corporate Attributes
  - Registration Channel
  - Resource Information (SIM, Devices etc.)
  - Type of SIM card (3G, 4G, TDD-LTE)

The system is capable to monitor marketing activities using defined KPIs (Key Performance Indicator) during execution. Marketing feedback must consider the collection of responses to marketing activities through channels, interfaces, or third-party systems after the activities are executed. It is able to collect marketing feedback to understand execution effect of marketing activities and adjust marketing decision making accordingly. It can analyses Closed Loop Feedback (CLF) for a particular segment of users. The Multi-Channel engagement subsystem provides the customer contact Omni-coverage capability and perform unified intelligent contact control for
carriers' internal channels and Internet social channels, effectively improving the customer contact frequency and efficiency, and ensuring customer experience. The full customer portrait life cycle management is supported, including creating, browsing, searching for, evaluating, claiming, bringing online, suspending, and bringing offline customer portraits. Multiple customer segment analysis methods are supported, including: Composition analysis, Comparison analysis, Trend analysis and Primary factor analysis. The following analysis models is supported in the system, facilitating customer behavior and characteristics insights from various dimensions:

- Comprehensive customer value assessment model
- Customer churn forecast model
- Tariff sensitivity evaluation model
- Other-network stickiness assessment model
- Customer influence assessment model
- Channel efficiency and effectiveness analysis model
- Customer service life cycle definition model
- Customer family attribute identification model
- Customer location attribute identification model

Real-time marking, i.e., connect to the real-time messaging middleware to mark customers' Internet access behavior in real time, including the accessed object, app, website, and browser, facilitating real-time marketing applications, is considered. Also, the system has the ability to combine customer analytics with business logic and contact strategies to deliver real-time decisions and recommendations to interactive customer channels, such as the Web, call center and point of sale (POS). The Omni-Channel Analytics is used for collecting data. It collects data from the following sources:

- Client side data. Client side data is collected from browser or native mobile apps using Java-script code. The collected data consists of usage statistics and user behavior.
• Server side data. The server side data is collected at the HTTP and application server level. The collected data consists of server traffic statistics and performance, and errors of the service. In addition to local data collecting, Omni-Channel can use third party services such as Google Analytics and Visual Website Optimizer as a data collecting method. The collected data can be analyzed, processed and reported from commercial, technical and customer behavior point of views. The reporting dimension categories include e.g.:
  • Customer Behavior
  • Demographics
  • Technology
  • Location
  • Acquisition
  • Marketing
  • Sales
  • Site Content
  • Events
  • Site Performance
  • Errors and problems

The data can be reported using different tools: Omni-Channel administrator tools - contains dashboards and basic reporting tools for sellers, content creators and marketing managers. Big data analysis is used to assess their digital transformation journey. A data integration engine is provided underlying data processing and computing services for the data integration module of the Unified Data Governance Platform. Also, a predictive analytics engine is provided for underlying data processing and analyzing services for the predictive analysis of the unified data analysis and development platform. The following services is considered:
  • Clustering analysis
  • Classification analysis
  • Data prediction
  • Personalized recommendation
  • Influence propagation.
Depending on the staff's need to teach how to implement this platform, Irancell provides user training prior to launch to a select group of non-technical users as part of a "train-the-trainer approach". Apart from this technical training to a selected number of employees on administering the system prior to launch was also in scope. Such training is provided with the aim of allowing such employees to administer the system. Finally, the company provides technical training to a select number of employees on platform development and customisation. Such training is provided with the aim that the developers would be able to extend the functionality of the solution. Training for any solution-specific technologies, if and where this is applicable, is also provided to the technical users.

While, Irancell's digital transformation process is still a progressive process, the platform is completely implemented and targets are hit. Clearly, while the senior management of Irancell has accepted the importance of digital transformation and shaped the vision in line with it, the road map is being developed to fulfill the (and still emerging) vision as a process of transformation. The outcome of digital transformation for Irancell are a set of KPI such as customer satisfaction, cost reduction, revenue increase, etc. Finally, the main challenges of digital transformation in MTNi are lack of skillful resources, hiring expertise, cost and time of delivery for innovation and team adoption for governance.

4.4 Corporate Level's Strategies and Digital Transformation

In order to clarify the effect of digital transformation on MTNi's strategies in corporate Level, the following three questions are considered.

Q1: What is the role of the vision/mission in your digital transformation strategy?
Q2: Is your company's Digital strategy incorporated into the corporate strategy?
Q3: What changes brought into your company's corporate strategies by digital transformation?
These questions were asked from all Interviewees. The explain that the role of vision/mission in their DT journey is building the future of company and set a goal for company. Moreover, a compelling vision and mission lead to a successful digital transformation, which means that successful digital transformation begins at the top levels. Managers need to change their perspective, change organizational behaviors to change organizational culture and set tangible goals for digital initiatives.

**Vision**

- To lead the delivery of a bold, new digital world to our customers.

**Mission**

- To make our customers' lives a whole lot brighter

Figure 16. MTN Irancell’s Vision and Mission

(Irancell official annual report, 2019. 17)

When you direct a digital transformation, you create an exciting opportunity: an opportunity to create and make an agenda that makes the change. Creating a new way of working, providing better customer experience and the power of the organization's position for long-term success.

MTN Irancell's digital strategy is completely coordinate with their corporate level strategies by the change of internal and external environment affected by new technologies based on digital platforms. In pursuit of MTNi's vision to lead the delivery of a bold, new Digital World to their customers, and MTNi's mission to make their customers' lives a whole lot brighter, they leverage the talent of their employees to offer innovative products and a quality customer experience. They also, recognize the value of diversity within a group with a solid organizational culture.

In response to the third question, respondents expressed different technologies and effects, which, for ease, summarize them in Table 3, page 58. According to Table 3, two aspects of their strategies i.e., process and content have changed more than other dimensions in the strategies of this level. The most effective factors which caused these changes are new technologies (internet of things, data processing, artificial intelligence etc), and adaption with speed of change in new markets.
4.5 Business Level's Strategies and Digital Transformation

According to Figure 5, business-level strategies are divided into two broad categories: competitive and collaborative strategies. Therefore, each of these groups has been examined separately. The following questions have been asked to answer all three respondents.

Q1: What changes brought into your company's competitive strategy by digital transformation?
Q2: What changes brought into your company's collaborative strategy by digital transformation?
Q3: What is the most effective factor in these changes?

Table 3. Changes in Corporate Level Strategies

<table>
<thead>
<tr>
<th>Working Level</th>
<th>Purpose</th>
<th>Process</th>
<th>Content</th>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td>R:1</td>
<td>Chance for entering new market for future, changing traditional to digital evaluation</td>
<td>IoT interrelated computing devices, objects, DP-AI</td>
<td>Adoption to New Standard of Evaluation digital such DT 4.</td>
<td></td>
</tr>
<tr>
<td>R:2</td>
<td>Building future of company &amp; set a goal for organization</td>
<td>AI - ML - DP</td>
<td>Adoption with disruptive technologies, Speed of change, Lack of human resource skill</td>
<td></td>
</tr>
<tr>
<td>R:3</td>
<td>Help retailers put their purchase orders for whole sellers in the most easiest and direct way, any time in any place without limitations</td>
<td>Mobile Visit Application software</td>
<td>Changing of internal and external environment affected by new technologies based on digital platforms.</td>
<td></td>
</tr>
</tbody>
</table>

Respondents were asked to answer these questions considering factors such as the following factors,

- Current market share,
- Product/services mix,
- Price,
- Delivery,
- Quality,
- Value-added services,
- Sales
- Distribution channels,
- Technology,
- Ease of doing business.

Or with regard to question 3, External Influences, Customer Influences, Provider Influences, etc. The core competencies of the organizations should be on customer satisfaction or preferences in order to achieve higher than average returns. It can be achieved through business strategies. Business Level Strategies Details of the steps taken to provide value to customers and gain competitive advantages by utilizing the core capabilities of specific markets or specific products.

The position of the company in the industry and the competitors is determined by the strategy at the business level. Senior management determines who will serve, what needs to be met, and how these needs will be satisfied. Customers should be identified in a variety of ways such as geographic traits, lifestyle and personality traits (tastes and values), usage rate, brand loyalty, and etc. Also, the ability to predict and meet the needs of future customers is important and will lead to maintaining a competitive edge in the future. Finally, organizations need to determine how to collect resources and capabilities to meet these needs.

Respondents' answers are summarized in Table 3, page 61 to make it easier to review the changes that have been made to Irancell's business strategies due to digital evolution. In competitive section, digital transformation has made the company successful in implementing the differentiation strategy, through expanding services and products to customers, and thus attracting more customers. Regarding to collaborative strategy, the use of new technologies such as artificial intelligence and
increasing automation has led to a reduction in the use of new manpower. These technologies have made it possible for them to fully recognize their customers' needs and response to them quickly which led to more customers' satisfaction.

As it can be seen from Table 3, the content of both competitive and collaborative strategies has received the greatest impact from digital evolution [In this table we used the abbreviation symbols Internet of Things as IoT; Data Processing as DP; Artificial Intelligent as AI; Machin Learning as ML. Next, the process component is also affected by this transformation through the development of data and new applications. Regarding to collaborative strategy, the use of new technologies such as artificial intelligence and increasing automation has led to a reduction in the use of new manpower. These technologies have made it possible for them to fully recognize their customers' needs and response to them quickly which led to attract more customers. It made it possible for Irancell to surpasses all the rivals in the country.

According to respondents, the factors that have had the greatest impact on these changes are: understanding business context (understanding the factors that impact the business from various perspectives), process modeling (the graphical representation of a company's business processes), active collaboration, and innovation. Employees were invited to express their viewpoints and how these had impacted upon their work environment, which led to innovative models, process and applications.
### Table 4. Changes in Business Level Strategies

<table>
<thead>
<tr>
<th>Working Level</th>
<th>Purpose</th>
<th>Process</th>
<th>Content</th>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive</td>
<td>R:1</td>
<td>Data Development and Service to Customer, new Application</td>
<td>More beneficiation and attract more customers,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R:2</td>
<td></td>
<td>More agile, more online</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R:3</td>
<td></td>
<td>being the first and leading smart mobile distribution platform in Iran</td>
<td></td>
</tr>
<tr>
<td>Collaborate</td>
<td>R:1</td>
<td>Collaborate Strategy Development from tradition to Modern, New application Introduce Digital Currency</td>
<td>IA uses tools and overview 360 to customer</td>
<td>Less uses the People new Operation at any point</td>
</tr>
<tr>
<td></td>
<td>R:2</td>
<td></td>
<td>Increasing the Level of clarity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R:3</td>
<td></td>
<td>Agility, time and place independency in receiving orders</td>
<td></td>
</tr>
</tbody>
</table>

### 4.6 Functional Level's Strategies and Digital Transformation

To successfully manage and implement a corporate and business strategy, you need teams in your organization that can work well together. Each of these teams plays a different role in the organization, which means that each team must have its own functional strategy. The strategy of the team must directly follow corporate and business strategies, which means that all levels of strategy support each other and strengthen them to achieve the success of the organization.

In order to achieve the strategic goals, set at the higher levels of the organization, you need to work efficiently. Therefore, an important element of the functional strategy of the units of the organizations the application of the best practices and experiences to help the organization achieve its goals. Another important factor in creating and implementing an efficient strategy for operational units is activities that lead to
optimization of supplier management, quality management and operational excellence. As outlined in Chapter 2, Figure 5, page 24 in this thesis, we consider the following operational units for an organization:

- Marketing unit
- Production unit
- Research and development unit
- Human resource unit
- Financial unit
- Information and IT system

The strategy changes for each of these units have been reviewed.

**Marketing Strategy**

Irancell Company uses new digital solutions, especially social networks, mobile, analytics and cloud computing, and has enjoyed the benefits of this approach quickly. The company has various IT solutions that can increase the operating efficiency of its organization and benefit from unprecedented capacity in their business. These technologies have made customers better known, upgrade their service levels, and digitize their customers’ experience. The customer contact Omni-coverage capability is provided by using multi-channel engagement subsystem.

### Table 5. Changes In Functional Level Strategies

<table>
<thead>
<tr>
<th>Working Level</th>
<th>Purpose</th>
<th>Process</th>
<th>Content</th>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Strategy</td>
<td>Marketing Strategy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Securing stakeholder interests</td>
<td>Market-entry strategy</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Advertising new products in less time, independency from traditional visiting and marketing, accessing to customer behaviour so we can develop customized sales promotions quickly</td>
<td>Selling products with new promotion with product</td>
<td>Advertising new products in less time</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>360 degree view on customer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------</td>
<td>------------------------</td>
<td>---------------------------------------</td>
<td></td>
</tr>
<tr>
<td>R &amp; D Strategy</td>
<td>-</td>
<td>new product</td>
<td>quick access to customer needs and expectations data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>planning</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Production Strategy</td>
<td>Customer satisfaction</td>
<td>Response</td>
<td>Responsiveness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Quality Indicators</td>
<td>Quality Indicators, Availability Time, Loyalty Indicators</td>
<td></td>
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<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
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<tr>
<td>HR Strategy</td>
<td>Embody responsibilities strategy</td>
<td>Positive adaptation in company change behavioral</td>
<td>Staff training and organizational culture change</td>
<td></td>
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<td>soft skill improvement</td>
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<td>productive and multitasked HR</td>
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<td>Financial strategy</td>
<td>Instant money transfer on new application applied in system</td>
<td>New currency Money use, &quot;Crypto&quot; currency such as, Litecoin (LTC), Ethereum (ETH), Zcash (ZEC)...</td>
<td>Firstly needful new digital implantation between system</td>
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<td>data analysis and prediction technique for next financial decision set</td>
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<td>Decreasing the overhead costs so increasing the profit</td>
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<td>Information system Strategy</td>
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<td></td>
<td>Implementation of more effective information system in order to support our BI</td>
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The importance of having a digital marketing in multiple channels for Irancell Company is:

- Customers expect to receive timely response at any time of the day. If they do not respond quickly to their questions, they will go to another seller.
- Buyers of goods start their shopping trip online, before they come to the retailer in person.
- With a deep analysis, you can exploit the customers' purpose, to attract them to their site, or to find out how many people are interested in their products or services.

All in all, using this system, the company has been able to successfully implement relational marketing tactics. Through tactics of service quality and price perception, have obtained customer satisfaction and through tactics of proposed value and quality of service have gained the trust of customers. Also, with the customer's taste and beliefs, the diversity, market-entry and online marketing has also undergone a major change. Advertisement for goods in less time and at a lower cost, accessing to customer behavior to develop customized sales promotions quickly are other results of their new strategies.

**Production Strategy**

Often, the activities of the production unit form the largest part of the capital and human assets of the organization. In most industries, the major part of the costs associated with the production of a product or the provision of a service is spent alone. Therefore, in the general strategies of a company, production can be the highest value as a competitive weapon.

There are many definitions of the production strategy by various researchers. Skinner was the first person to define the production strategy in 1969; he defined it with the use and exploitation of production resources and facilities as a competitive strategy of the production strategy.
Irancell is committed to providing maximum satisfaction to its customers by using new technologies. As a result of digital transformation, the company identifies the needs and desires of customers through smart automation and data analysis. Based on this knowledge, they can easily identify the market target and how they position their product in the market. It concludes that among the elements of their production strategy, market target and positioning have taken the greatest impact of digital transformation. The process of production is also fully affected by this transformation. Most stages of producing a product include generating, testing the concept, business analytics, marketability tests, technicalities and product development, commercialise, post launch review and perfect pricing are made by smart automation. In the competitive market, new products demanded by customers are produced faster than competitors and are offered with greater appeal both in terms of price and in terms of other factors such as quality, benefits and services. Hence, the digital transformation has affected the responsiveness, quality indicators, availability time, and product development. Naturally, these conditions increase its customers' loyalty.

**Research and Development Strategy**

The research and development strategy at Irancell Company is based on management, participatory, and enterprise-based systems, and focuses on the entire innovation system that includes competitors, suppliers, customers, distributors, other partners and stakeholders. Therefore, there is a kind of R&D economic institution in which knowledge flows and learning takes place within its boundaries. In this process, IT tools play an essential role.

Irancell launched the first center of applied innovations in order to development of digital telecommunication industries. The center has begun its work in three axes of mobile payment solutions, customer value management, and the development of software and mobile application solutions, and will be expanding its activities in the future following the need for a digital market.

Therefore, this strategy has expanded the boundaries of the company increasingly to the outside, has developed extensive interaction with customers, and created a
network of collaborative activities that resulted in the restructuring of organizational structure, organizational culture and the production of new products.

**Human Resource Strategy**

The human resources strategy determines what the organization intends to do about performance and human resource management policies and they are rigorous and coherent. The biggest challenge facing Irancell is to keep up the competition and take the necessary steps in order to keep the recruitment of talented and capable employees. The primary player that distinguishes everything in any company is human resources and they think the staff It tends to forget that the most important assets of the company are the fact that it is easy to obtain financial resources, but it is very difficult to obtain a good workforce. All that is involved in training and planning of the force Humans do business directly with business improvement.

The Irancell's human resources strategy, which consists of four main sections, is as follows:

- **Rewards and appreciation**: Use rewards and appreciation programs to enhance individual and team performance.
- **Talent Management**: Attract, maintain and grow a professional team of talented and diverse employees.
- **Organizational Effectiveness**: Ensure the coordination of business and organization in order to maximize employee participation and achievement of performance goals.
- **Learning and Development**: Creating an environment where employees are encouraged to learn and promote and so on.

The four sections, the orientation of the company to attract talent, operational effectiveness, performance and reward are determined. The company's underlying thinking is that human resource strategy is not just the responsibility of human resources, it is the responsibility of the whole organization, and is therefore used as the "staffing and organizations strategy".
According to the respondents' response, Irancell faced a shortage of expert human resources to implement the digital transformation. This made the organization's strategy focused on training staff and changing organizational culture, training productive and multi-tasked HR, recruiting professional and workforce in the field of digital transformation and embody the responsibilities strategy.

**Financial Strategy**

The financial strategy is one of the strategies in the field of financial management, which includes decision making on investment, financing, and dividend policy. Irancell Company has adopted various financial decisions by considering four types of financial strategies. These strategies are financing strategy, circulating capital strategy, investment strategy, and dividend strategy. Financial managers make decisions about them in accordance with the organization's strategies, in such a way as to maximize their alignment with the organization's strategy and, at the same time, make more profit for the stakeholders.

According to the designed platform, with the help of analyzing data and prediction techniques, the company is able to take future financial decisions with less risk. For example, due to the increasing use of digital currencies, the company has been investing heavily in this sector. Since digital currencies use decentralized technology and allow users to securely pay and save money without having to register or use banks and intermediary organizations. This means that digital transformation, in the financial strategy section, has had the greatest impact on the financing and investment strategies through the implementation of forecasting techniques and the developing of products and services. Thus, digital transformation provides support for high-level management in financial decisions using financial metrics derived from models that are based on data analysis and research findings, competitive economy assumptions.
Information System Strategy

In order to improve the level of customer satisfaction and improve over the quality of services, Irancell Telecommunications Information Technology Strategy has been developed. Promoting the company's business strategy, improving customer satisfaction, increasing market share, and improving the quality of services are among the benefits of implementing this project. Other goals of implementing Irancell's IT strategy can be to reduce operating costs, increase revenue and provide the information needed for decision makers. To implement it, the current status of the analysis and migration plan from the current situation to the desired situation has been developed step by step.

The project is one of the projects under implementation by the company for the implementation of specialized tasks, such as the provision of integrated IT architecture in Irancell Telecommunication Company. The most recent changes made to this new strategy include intelligent set of services, and the development of the infra structures such as software and hardware.

Finally, with a general overview of Table 2, we find that the two components of operational level strategies, processes, and content, have the greatest impact of digital transformation. This trend is similar to the observed trend at the two previous levels. The most important factors that make these changes are: market entry strategy, 360-degree view on customer, smart automation, data analysis and prediction techniques, and development of infra structures.
5. Discussion

This thesis examines the necessary changes that have been made in telecommunications strategies for the successful implementation of digital transformation by linking literature reviews and empirical findings. The theoretical part mainly covers the digital transformation process, levels and dimensions of strategies, while the findings aggregate the comments, and experiences of experts in the field of digital transformation.

The study was conducted in four stages. In the first step, literature review was conducted for definitions of digital transformation, digitization, strategy, and its organizational levels. In the second phase, the characteristics of digital evolution in telecommunications companies were investigated, and the multi-dimensional theory of strategies was used to illustrate the changes that were made in the company under study.

In the third stage, a two-part questionnaire with 20 questions in the first part related to the implementation of the digital transformation in the target company and 12 questions in the second part related to the changes introduced in the organization's strategies at three levels of organizational, business and operational, was designed. In interview with three of the managers of digital transformation in Irancell Company, firstly, the purpose of interview and interview questions were sent by e-mail. Then, with the interviewees' agreement, interviews were done individually and by Skype. The interviewees are selected on the basis of the expertise and responsibility they have in Irancell.

Finally, the data obtained from the interviews were analyzed based on content analysis technique and qualitative analysis method, and followed by an exploration of connections and patterns between the different dimensions of strategies. Figure 1 shows the process of research and the results of different stages and summarizes.

The study results show that the telecommunications industry has moved from a capital intensive to a user-centric service. Perhaps such a change could be the result of the
gradual convergence of the Internet and telecommunications. However, it is clear that this convergence is strongly changing telecommunications companies.

**Figure 17. Research Process Summery**

In short, the case company’s digital transformation process is as follows. Irancell Telecom has become a smart company by launching the digital platform which is a collection of quarterly telecommunications and information technology projects with a specific business purpose, according to which all activities of different sectors of information technology, marketing network and customer service are in line with customer satisfaction. The major design goal is to develop a service-driven infrastructure in cloud environment to support global customers including the existing MTN network subscriber base (Section 4.3).

The digital platform is a new business approach that has created a new working environment. The Telecommunication Information Technology Innovation Center was established to facilitate the strategic goals of Irancell Company. The use of modern technologies, the use of the best international experience, maximizing the team spirit and unity and cooperation with trusted domestic and international partners, including the principles of implementation of information technology development projects, will accelerate the achievement of strategic goals of the MTNi company (section 4.3). Also,

<table>
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<tr>
<th>Definitions</th>
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<td>• Literature review (72 articles)</td>
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<td>• Definitions for digital transformations and related technologies.</td>
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<td>• Definitions for strategies and its levels.</td>
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<th>Characteristics</th>
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<td>• Literature review</td>
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<td>• Relevant characteristics of digital transformation in telecommunication companies</td>
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<td>• Relevant characteristics of dimensions and levels of strategies</td>
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<th>Questionnaire</th>
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<tr>
<td>• Generation of Generic questionnaire to evaluate the impact of digital transformation on telecom companies’ strategies.</td>
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<td>• Interviews with three responsible manager in case company</td>
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<td>• Interview with email and in person with skype.</td>
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<th>Data analysis</th>
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<tr>
<td>• Manually qualitative data analysis in excel</td>
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<tr>
<td>• The coding provided an initial, cumulative, and non-repetitive collection of changing factors</td>
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<td>• Creating a result matrix</td>
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</table>
employee empowerment, coordinated activities are among the other principles of implementing IT development projects that accelerates the decision process of the Irancell Telecommunication Company (section 4.3).

From a theoretical perspective, the company has selected six journeys out of the 10 proposed journeys of Martin Creaner (Section 2.4) to implement its digital transformation.

- Journey 1: Move from separate network elements to cloud infrastructure and virtualized communications that are managed autonomously.
- Journey 3: Change path from the limited data usage to a comprehensive and integrated data-driven infrastructure
- Journey 4: Progress in closed-system management systems towards the Open API platform architecture
- Journey 5: Develop a portfolio of products from a limited and old service to a diverse range of new digital services
- Journey 9: Change the focus from traditional channels to multiple channels for communication with the market (and customer)
- Journey 10: Moving from single-dimensional client management to multichannel management and 360-degree customer experience

These journeys are selected based on the principles of customer experience, innovation, internal co-operation, data, competition and value. A set of KPI such as customer satisfaction, cost reduction and revenue increase are the outcome of digital transformation for Irancell and the main challenges of digital transformation for them are lack of skillful resources, hiring expertise, cost and time of delivery for innovation and team adoption for governance (section 4.3).
5.1 Answer To Research Question

In order to investigate the nature and dimensions of the effects of digital transformation on the strategies of telecommunication companies and to express how they are related to the organizational strategies, the following main question was raised:

"How does the digital transformation change the strategy of a telecommunication company?"

To answer the above question, library studies and literature analysis of related domains have been used based on the abductive approach and the use of content analysis method. In this regard, many resources have been analyzed in the domain of organizational strategies (levels and components), digital transformation, industries affected by digital transformation and strategic management. The results of this study show that alignment of digital transformation and the corporate and business strategies of companies is one of the major research axis in two areas of strategies and technology management.

The focus of this study has been on telecommunications companies that have used digital transformation. Despite the fact that telecommunications companies play an important role in the economies of the nation, they need a comprehensive technological program in the field of technology due to the availability of various technological assets mainly due to the fact that modern digital technologies have dramatically increased both the expectations of customers and business expectations. The reason for this is having the experience of working with various actors in the field of the Internet and OTT, which uniquely and continuously provides users with various experiences on the phone.

This evolutionary journey to the digital world will help telecom companies benefit from increased customer satisfaction, including reducing their turnaround. How digital telecommunication companies offer their products for sale to the market is very different from the traditional approaches of telecommunications companies. In the
digital world, it is essential to open up new communication and channels with business partners, which can also help to branding, increasing revenue from digital services, and boosting previous channels.

Current telecommunication infrastructure is composed of various elements that are often expensive and difficult to manage. On the path to digital transformation, these elements must be transformed into cloud infrastructure and virtual communications, which can be managed at a much lower cost. To realize these changes, operational processes, new ways to persuade employees and partners, new ways of adjusting business conditions to the expectations of customers in new markets, and more importantly changes in strategies, are needed.

Irancell's strategies at various levels have been heavily influenced by their digital transformation journey. As it can be seen in the company's vision and mission, digital strategy is completely coordinate with their corporate level strategies by the change of internal and external environment affected by new technologies based on digital platforms (Section 4.4).

In business level strategy, digital transformation has made the company successful in implementing the differentiation strategy, through expanding services and products to customers, and thus attracting more customers. Also, the use of new technologies such as artificial intelligence and increasing automation has led to a reduction in the use of new manpower (section 4.5). Regarding to functional level strategies, digital transformation has been effective in establishing a highly constructive relationship with customers and through this, it has helped implement strategies such as the relationship marketing strategy, market entry strategy, online strategy (Section 5.5, Marketing strategy).

Using new technologies such as big data and cloud system, the company can easily identify the market target and how they position their product in the market. Most stages of producing a product are made by smart automation. The digital transformation has affected the responsiveness, quality indicators, availability time, and product development (Section 5.5, Production strategy). In order to develop the company's business, the first center of applied innovations has been launched.
The center works in three axes of mobile payment solutions, customer value management, and the development of software and mobile application solutions (Section 5.5, Research and development strategy). To compensate the shortage of human resources involved in implementing digital evolution, focused on training staff and changing organizational culture, training productive and multi-tasked HR, recruiting professional and workforce in the field of DT and embody the responsibilities strategy (Section 5.5, Human resource strategy). Through the implementation of forecasting techniques and the developing of products and services, DT has had the greatest impact on the financing and investment strategies (Section 5.5, Financing strategy). They had launched integrated IT architecture, intelligent set of services, and developed the infrastructures such as software and hardware (Section 5.5, Information system strategy).

To analyze these changes, the theory of multidimensional strategies presented by De Wit and Meyer, in 2004, is used. Based on this theory, there are three dimensions of strategy that can be recognized in every real-life strategic problem situation. These dimensions are strategy process, content and context. Strategy context is conditions surrounding strategy activities or strategy level (section 2.5).

Irancell's strategies are divided into three levels: corporate level, business level and functional level. In this study, each level of strategy is investigated separately. Thus, strategy context is not considered as a dimension of strategy. De Wit and Meyer include organizational purpose in context and people in content. This study, splits out the two towards bringing increased clarity to each dimension. Furthermore, organizational purpose and its staff are starting point for strategy development. All in all, for each strategy, four main dimensions including purpose, process, content and people are considered. At each level of strategy, the changes are observed in these dimensions (Section 2.5).

At all three levels, the two dimensions of process and content have had the greatest impact and change through digital transformation. The purpose dimension has changed significantly, at the corporate level. Then people dimension has seen a slight
change, at the business and functional level. The most effective factors for these changes can be summarized as follows:

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<tr>
<th>Corporate Level</th>
<th>Business Level</th>
<th>Functional Level</th>
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<tr>
<td>• New technologies (internet of things, data processing, artificial intelligence etc),</td>
<td>• Understanding business context</td>
<td>• Market entry strategy</td>
</tr>
<tr>
<td>• Adaption with speed of change in new markets</td>
<td>• Process modeling</td>
<td>• 360-degree view on customer</td>
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<td></td>
<td>• Active collaboration</td>
<td>• Data analysis and prediction techniques</td>
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<td></td>
<td>• Innovation</td>
<td>• Development of infra structures</td>
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Figure 18. Effectives factors summery
(Interviews summery)

5.2 Managerial Implications

Many companies encounter a lot of trouble or fail in digging digital transformation. The main reason for these disappointments is that managers at the start of the journey encounter different ways of implementing change in the organization and usually drown in a variety of managerial advice which are sometimes contradictory. Some companies, after implementing a particular strategy, realize its inefficiencies and try to put it aside and take a new strategy. This method is damaging and one of its disadvantages is the imposition of massive human and financial costs to the organization.

This thesis provides a comprehensive set of management strategies that Irancell Telecom has adopted for the implementation of digital transformation, which provides a framework and management tool for telecom companies keen to implement digital transformation. Literature suggests that when creating, developing and implementing a digital strategy, companies typically invest in digital technologies and digital
infrastructure and do not exceed their technology itself. This leads to evolutionary
development rather than the fundamental transformation of business by utilizing
digitization and making full use of its potential.

However, according to the experience of Irancell Telecommunication Company there
are several implications that would be useful for managers. Our empirical study shows
that the first step in digitizing the company is to turn IT into the infrastructure and the
foundation of the organization. In fact, the databases of any organization or
corporation are the heart of it. Therefore, any expenditure on creating databases, the
purchase of information storage equipment and the conclusion of large contracts with
IT service providers is not only justified but also a worthwhile investment.

Next, understanding the true business context and its changes has been one of the key
factors behind Irancell's success. They completely understood that technology has
changed society and the business world. This theme is well illustrated that the ability
of managers to predict and correctly understand how technology has influenced their
business has become one of their key skills right now. Using social networks to get
information about the latest interests and demands of customers is one of the ways
that managers and decision makers of organizations and companies are able to react
to changes in the market.

Also, the success of the digital transformation of the company depends heavily on
having innovative and professional staff. So, it would be necessary to increase the
digital capabilities of their employees, which help them to be more productive and
more competitive.

In fact, Implementation and adaptability with digital transformation will involve each
individual in the organization. So, when it comes to technological change, regardless
of whether these changes are the Internet of things, big data, or machine learning, first
and foremost, people and organizational culture should be taken into consideration.
Finally, it's no longer possible to look at the information technology sector separately
and independently of other parts of the organization, but it should be seen in the
wisdom of all sectors of the organization. In fact, digital technologies play a key role in
all operations and processes of the organization and have a key role in empowering employees and realizing the strategic goals of organizations.

5.2 Assessment of the Results in the Light of Literature

This study contributes to existing literature, since it is a unique study that relates to the effects of digital transformation across a wide range of organizational strategies in the telecom industry. Not just from the perspective of a particular strategy, but for all levels of strategy, which is different from other studies that focus only on digital strategy, or a business model.

The findings of this study regarding the digital transformation journey, implemented by Irancell Company, confirm the previous studies of Martin Creaner (2018) and Caylar (2016). The effects of digital transformation on functional-level strategies, i.e., marketing, production, financial, research and development, Human resource and information technology strategies, are well suited to digital transformation framework by Christian Matt (2015) and Hess, (2016).

In addition, our results indicate that digital evolution focuses on changing new technologies, products, processes and organizational aspects. Its range is very wide-ranging and explicitly includes digital activities in an interface with or fully in the customer's side but all these activities should be aligned with business strategies in order to enable an active business transformation with information technology. These findings are in line with the previous related studies such as Christine Matte et al (2015) and Charias, S., & Hess, T. (2016).

The present research is a first study to examine the details of changes in the strategies of different levels of organization through digital transformation. There are few researches that only have a specific strategy, such as product strategy (Zysman, J. (2003)) or marketing strategy (Mulhern, (2009). Leeflang et al (2014)); However, it is worthwhile to note that the findings of this study are also consistent with them
5.3 Research Limitations

Each research, in addition to being innovative and having strong points, has some methodological limitations. Limitations related to qualitative single-case study are the main limitations of this study. The research method chosen in this thesis -Qualitative single–case study- has advantages and limitations. This is often the best way to discover a new phenomenon. However, there are two main constraints: the generalizability and reliability of the results. (Dubois & Gadde, 2002.)

The qualitative nature of this study eliminates the generalization of the results, and single-case study is very small to confirm correctly the aspects of the changes made to the telecommunications company strategies by the implementation of the digital transformation. This study was very small for this exploratory field, which led to a simple analysis of how the strategies changed through digital transformation. But research has to start somewhere, even in newer ones.

Other than the general limitations of a qualitative, semi-structured interview, within a less developed research field, moreover, the respondents’ biases towards their understanding and interpretation of digitalization, strategic and organizational changes related to digital transformation, most of the arguments in this thesis are in need of further grounding in relevant theory.

Another important obstacle encountered in this study was the difficulty in persuading the companies invited to participate in the study activities. Regarding the research topic and the sensitivity of the companies to their strategies, most telecom companies are not willing to cooperate in this thesis. They often avoided providing strategic information.

5.4 Recommendations for Future Research

Digital transformation is a very extensive subject and can be conducted by applying different subjects in future research. The subjects can refer to the innovations in the services of CRM platforms, market entry strategies in the world of digital
transformation, and much more. More precisely, in the following we have several suggestions for future research.

- The degree of success in digital transformation seems to depend on culture and organizational structure. So, it would be interesting to further explore the cultural aspects of digital transformation in businesses, not just the more ‘technical’ or ‘process related’ aspects of the phenomenon.

- The single case study is very small to correctly address the aspects of the telecommunications company’s strategy changes with the implementation of digital transformation. Therefore, in future studies, it will be worthwhile examining this phenomenon in a larger number of companies and comparing their results.

- Almost all corporate leaders are aware of the potential of digital transformation to create new value and improve their competitive position and invest in it. Unfortunately, some companies create digital capabilities, but do not get the expected result. So, is the business really making progress in these investments? Where are we in the quest for success in digital transformation? To answer these questions, we propose an in-depth research on a maturity model to determine the organizational degree of Digital Transformation.

- The four industries—pharm, telecommunications, finance, and technology—are leading in digital evolution. Manufacturing industries have a smaller role in this field. Culture, systems, processes, and even the abilities of each industry play an important role in digital transformation. Therefore, it is suggested that in future studies, explore the opportunities and potential of existing manufacturing industries in the implementation of digital transformation, introduce effective models and strategies to them.
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Appendices

Appendix 1. Questionnaire

This questionnaire has 5 sections includes background, digital transformation in case company, corporate level strategies and digital transformation, business level strategies and digital transformation and functional level strategies and digital transformation.

1. Background

Please introduce who you are and What position do you have in your organization?
Can you explain to me your role within the company management structure?

2. Digital transformation in case company

What year did you start the digital transformation journey of the company?
What are the drivers for starting the digital transformation in your company?
What is the most important goal of your company’s digital transformation strategy?

Blocks of digital transformation strategy in case company

- The use of technologies
  What technological changes have you made to implement digital evolution?
  What technologies you are investing to improve customer / partner / vendor experience?
  What technologies you are investing to improve your business operations?
  What technologies you are investing to improve your product innovation?
  What technologies you are investing to improve your business analytics?

- Changes in value creation
  How “digital” is you interface to the customer?
  How do you create revenue from your business operations?
  What types of value creation changes was occurred?
• **Structural changes**
  Who is in charge of your digital transformation endeavor?
  As a part of your digital transformation strategy, did you integrate new operations into existing structures or create separate entities?
  What types of operational changes was occurred?
  Did you need to acquire new competencies? If so, how did you plan to acquire them?

• **The financial dimension**
  How strong was the financial pressure on your current core business?
  How did you finance the digital transformation endeavor?

**Assessing digital transformation strategy**
What is the outcome of the digital transformation for your company?
To what extent you were successful in implementing digital transformation and what is the key for your success?
How do you assess your digital transformation maturity?

**The challenges of digital transformation**
What kind of challenges have there been in digital transformation and implementing the digital strategy?
- Transformative challenges?
- Innovation challenges?
- Governance challenges?

What have been the largest challenges and how has your company reacted to them?

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3. **Corporate level strategies and digital transformation**
What is the role of the vision/mission in your digital transformation strategy?
Is your company's Digital strategy incorporated into the corporate strategy?
What changes brought into your company's corporate strategies by digital transformation?

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4. **Business level strategies and digital transformation**
What changes brought into your company's competitive strategy by digital transformation?
Consider factors such as

- Current market share,
- Product/services mix,
- Price,
- Delivery,
- Quality,
- Value-added services,
- Sales
- Distribution channels,
- Technology,
- Ease of doing business.

What changes brought into your company's collaborative strategy by digital transformation?

What is the most effective factor in these changes?

Consider factors such as External Influences, Customer Influences, Provider Influences, etc.

Functional level Strategies and Digital Transformation

What changes brought into your company's marketing strategy by digital transformation?

Consider factors such as

- Market-scope strategy
- Market-geography strategy includes local, regional, national, or international market
- Market-entry strategy
- Market-commitment strategy can be achieving market dominance, to become a major factor in the market, or merely to play a minor role in it
- Market-dilution strategy
- Customer Segments
- Customer Lifecycle

What changes brought into your company's production strategy by digital transformation?
Consider factors such as

- **Cost** includes procurement, overhead and production expenses
- **Quality**, encompasses both specification quality (i.e., product quality and reliability) and conformance quality (i.e., reliable and consistent manufacturing)
- **Delivery**, involves both dependability and speed and includes production lead time, procurement lead time and the ability to meet delivery promises
- **Flexibility**, refers to changes in the product, product mix, product variety and sequence along with volume flexibility, capacity adjustments and variations in customer demands
- **Capacity**, which includes the amount, type and timing, along with production planning and control.
- **Sourcing and vertical integration**, comprising the direction, extent and balance, also called the supply network.
- **Facilities**, consisting of the size, location and specialization,
- **Information and process technology**, refers to the degree of automation, interconnectedness and lead versus follow moreover, technology, process technology and plant and equipment.
- **Resource allocation and capital budgeting systems**
- **Human resource systems**, comprising selection, skills, compensation and employment security, also referred to as workforce, human resources, and labor and staffing.
- **Work planning and control systems**, including purchasing, aggregate planning, scheduling, control or inventories and/or waiting time backlog, along with production planning/materials control,
- **Quality systems**, relating to defect prevention, monitoring, intervention and elimination, *Product and process development systems*, referring to leader or follower and project team organization,
- **Organization**, which involves centralized versus decentralized, which decisions to delegate, roles of staff groups and structure, includes measurement and reward systems
- **Manufacturing strategy process** includes formulation and implementation

**What changes brought into your company's research and development strategy by digital transformation?**

Consider factors such as

- **Architecture** includes centralized or decentralized model, using outsources or insources for R&D activities,
• **People**, despite the growing use of robotics and automation the people you hire, remain obviously a highly important aspect of your strategy. How are you going to attract them? What is your value proposition for them? What are the technical background you are requiring?

• **Portfolio** refers to the selection of different R&D projects (Propriety) and the resources you are going to allocate to them simultaneously (Cost and Risk).

• **Processes** refers to project management decisions, the milestones, the timing of reviews, Evaluating R&D Projects, etc. For instance, are you going to implement a more flexible structure and leave autonomy to your researchers or carry out a highly structured one and frequent reporting?

What changes brought into your company’s HR strategy by digital transformation?

Consider factors such as

• **HR practices and performance** includes employment security, training and development, compensation, selective hiring, career development and etc.

• **Re-engineering organizations and work** including a ‘flattened’ hierarchy, decentralized decision-making to line managers or work teams, ‘enabling’ information technology, ‘strong’ leadership and a set of HR practices that make workers’ behavior more congruent with the organization’s culture and goals

• **Leadership**

• **Workplace learning**

• **Trade unions**

What changes brought into your company’s financial strategy by digital transformation?

Consider factors such as

• **Budgeting**, includes ensuring sufficient liquidity to cover day-to-day operating expenses without accessing outside financial resources unnecessarily. Budgeting also addresses the question of how a company can invest earnings to achieve long-term goals more effectively.

• **Risk management**, including revenue, evaluating the potential financial exposure a company incurs by making capital expenditures or by instituting certain workplace policies. Financial companies may also employ strategies such as value-at-risk.
• **Ongoing review and evaluation.** includes developing and putting in place regular procedures for review and evaluation of how well the company is doing in terms of staying on track.

What changes brought into your company’s information systems strategy by digital transformation?

Consider factors such as

- **Computer hardware.** This is the physical technology that works with information. ...
- **Computer software.** The hardware needs to know what to do, and that is the role of software.
- **Telecommunications.**
- **Databases and data warehouses.**
- **Human resources and procedures.**