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Research paper

Understanding the digital transformation on the telecom companies and covid19 effect on the employment

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Abstract

This article delves into the digital transformation on the telecom companies and COVID-19 effect on the employment explores the impact of digital transformation in the telecommunications sector, particularly in the context of the COVID-19 pandemic. It examines how digital advancements have reshaped corporate processes, culture, and customer experiences, leading to significant changes in the telecom industry. The research also delves into the effects of these transformations on employment within telecom companies, both before and after the COVID-19 outbreak. The document aims to understand the implications of automation and digitalization on jobs and to assess the role of COVID-19 in accelerating these changes.

Keywords: *Digital Transformation, Telecommunications Industry, COVID-19 Impact, Employment Trends, Automation and Digitalization*

1. Introduction

Digital transformation is the process of transforming corporate processes, culture, and customer experiences into content that meets business and market criteria. Digital transformation is the restructuring of business in the digital era. It extends over typical advertising, promotion, and customer support roles. In its place, the way you see and connect with customers is where digital transformation starts and finishes. As we progress from paper to worksheets to intelligent systems for company administration, we have the opportunity to reevaluate way we do business and involve our consumers (salesforce, 2021).
The method of digital transformation is well known in the telecommunications business. Successive generations of network infrastructure (now visible in the introduction of 5G mobile) have provided the foundation for the delivery of digital services. However, a frequent issue persist (evolving, 2022). Telecom service providers are undergoing a profound shift that is transforming them from traditional communication service providers (e.g., voice call, text letter) to digital service providers (such as song, mobile, television, cloud facilities) this digital transformation will increase the performance of telecom organizations (Valdez-de-Leon, 2016).
As an effect of the COVID-19 outbreak, telecom businesses are prioritizing digital transformation as a high priority all around the world. As these companies strive to virtualize and automate their networks, many aspects of the business, from network operations to customer experience, benefit from a variety of digital transformation programs. Leaders will continue to spearhead the digital transformation effort till 2021 in order to further improve their products (Mckinsey, 2021).
The primary goal of this is to comprehend and measure the impression of automation and digitalization technologies on employment in telecom organizations before and after COVID-19.

1.1. The fourth industrial revolution

The Fourth Industrial Revolution is a continuation of the Third, often identified as the Digital Revolution, which witnessed the enhance of computers and record-keeping automation; yet, the next movement of change varies in a few crucial respects from its predecessors.

1) Innovations are being generated and disseminated at a quicker rate than ever before.
2) Returns to scale are boosted by lower marginal manufacturing costs, as well as the creation of portals that collect and focus action across several industries.
3) This global change will influence and be affected by all nations, with system-level implications in a variety of fields. As technology generates new prospects for economic, social, and personal progress, the industry 4.0 has the ability to empower people and communities. However, technology has the capacity to exclude some people, exacerbate inequity, create new security threats, and sever human ties (SCHWAB, 2016).

New types of collaboration are emerging and governance, complemented in this attempt, a positive unifying story will be important. Three important actions are required to do this.

- We should remain to promote responsiveness and comprehension of the problems at hand. Decisions aren't made in a vacuum. We need a comprehensive approach that brings together the best minds from both the public and private sectors from across the globe.
- We need to create complete, optimistic story regarding the Fourth Industrial Revolution's progress as example, we must ensure that our individual and collective behaviors, particularly in capital and financial markets, are guided by values and ethics. True care and compassion must take the place of tolerance and respect, with empowerment and inclusion acting as ideals that guide our conduct.
- We must begin overhauling our commercial, cultural, and political structures immediately. Our existing governing arrangements are clearly insufficient. and dominant wealth production strategies are incapable of meeting current or, more importantly, future demands. What is required today is substantial and imaginative systemic change, not small-scale modifications or minor reforms.

The Fourth Industrial Revolution will be shaped by people, culture, and values. New technologies, no matter how advanced they seem, are essentially tools made by humans for humans. This is something we must keep in mind as we fight to ensure that innovation and technology continue to put people first, leading to long-term, inclusive development.
The Fourth Industrial Revolution has the potential to either destroy conventional elements of significance in culture, such as labor, industry, home, and identity, or to awaken mankind to a cognizance and ethical consciousness based on a common history (SCHWAB, 2016).

1.2. Digitization, digitalization, and digital transformation

Since the fourth industrial revolution, technology that opened the door to the digital world has been growing on a daily basis. Digitization, digitalization, and digital transformation are some of the new terms that have emerged throughout the years. There was some uncertainty and ambiguity regarding the three notions, and it is critical to differentiate between them in order to go forward with the study with a clear knowledge of digital transformation (GUPTA, 2020).

1.2.1. Digitization

According to (Vrana, 2021), digitization is the manner of changing present records and files from Analog to virtual. Consider scanning a picture or developing a PDF from a paper report. The records are simply encoded in a virtual layout in preference to being modified. Digitization, making a digitized replica of analog/physical objects like paper records, film pictures, photos, sounds, and more (i-scoop, 2022). Also known as digitization, this is the process of converting traditional audio and video output to digital forms. (truqcapp, 2022). According to (Chapco, 2018), Digitization is required for digitalization to take place. Digitalization is the use of digital technology and digitized information to effect how job gets completed, revolutionize how consumers and organizations connect, and generate new (digital) income Pillares. Digitization is the transfer of analog to digital. Internal process optimization (e.g., job automation, paper minimization) that results in cost savings is referred to as digitization. Digitalization, on the other hand, is a strategy or process that extends beyond the use of technology to indicate a more fundamental shift in the whole business strategy and the development of labor.

1.2.2. Digitalization

According to (Leonardi & Treem, 2020), one helpful definition of digitalization is the practice of digital technology and digitized information to influence way work is carried out, revolutionize how consumers and businesses connect and cooperate, as well generate newly discovered (digital) income pillars. Essentially, digitization is required for digitalization to occur. To go back to our previous example of transforming papers into digital files on a computer. For example, a digitalization program may entail transferring these data to the cloud to alter collaboration and reporting procedures and apply logical tools to give useful knowledge and perspectives to be future initiatives will be less risky and more efficient as a result of this. Digitalization encompasses digital technology's power to absorb and analyze data in order to enable new technologies and make smarter business choices, while digitization is the act of transforming existing information and procedures to digital form. There were many meanings of digitization offered. (Brennen, 2014), describe digitalization from an objective perspective as digital information and the influence of digital media on today ’s world. "The use of digital technology to modify a company model and generate new revenue and value-producing possibilities; it is the process of shifting to a digital business," according to Gartner's IT lexicon. However, this raises the issue of what really constitutes a digital firm. I-SCOOP has a solution. They say that a digital company is the consequence of a number of digitalization activities (e.g., moving from analog to digital supply chains) and is a necessary stage in the innovation process.

1.2.3. COVID 19

The COVID-19 pandemic has influenced the way firms in different industries and places operate for years. According to (Mckinsey, 2020) the findings of a current McKinsey Global CEO Survey. Companies have advanced the Digitization of their customer and stockpile links, as well as internal procedures, by a few years. Furthermore, almost all defendants say their companies have implemented at least temporary keys to see several of the increasing expectations placed on them, and that they have done so far quicker than they planned before the predicament. Furthermore, respondents believe that the majority of such modifications will be lengthy, and that they are currently investing money which will almost certainly assure their long-term existence. Digital technologies are generally seen as a potential tool of promoting equality in a variety of areas, including education, the labor market, financial access, and healthcare. The COVID-19 crisis has expedited digitization processes in both services and manufacturing in most nations, but at variable rates, owing to government-imposed cultural separating standards and other COVID-19-related restrictions, as well as shifting customer demand during the pandemic. In addition to the strain of home and childcare tasks even during closure, the COVID-19 epidemic has harmed women by exposing them to potential complications and a higher likelihood of being jobless (Sorgner, 2021).

2. Findings

2.1. Overview

Several jobs may be amenable to automation, while others may not, resulting in increased value. New machines will boost human productivity and efficiency, lowering the number of workers needed to do the same jobs. During COVID 19, people's and organizations' behaviour was changed to allow for greater virus protection, such as using digital platforms for shopping, and working from home rather than coming to the workplace every day. Such widespread use of digital platforms and completing tasks through them occurred in a matter of months

rather than years, as was required to raise digital awareness and make it more convenient for persons to make advantage of them. That'll be beneficial result in a quickening of the digital transformation and have an impact on employment in the near future.
Most businesses are presently suffering as a consequence of the COVID-19 epidemic, such as the resultant major commercial and economic sectors are closed and, as a result, a decline in performance in terms of finances, jobs, and advertising (Cankurtaran, 2020).
Now the researcher will answer What is telecom digital transformation and how it goes beyond technology?

2.2. Digital transformation drivers

Companies must continue to serve the demands of their clients in order to survive in the market. Those who prosper in the market, on the other hand, must put in a little more effort to anticipatory research and analyse their consumers' opportunities and behaviours in order to match their significance offer. According to (Osmundsen, et al., 2018), increased consumer consumers think and evolving habits are important actions for beginning the digital transformation.
However, as (Küfeoğlu, et al., 2019) discovered, the internal requirement of the organization to generate value for its consumers by digital transformation is fuelled by the introduction of new business streams that disrupt the market's present models.
Furthermore, digital advances in a certain sector produce a burning framework inside that manufacturing to stay up with the advancement of technology. With new entrants, digital developments might affect or extend the competitive environment. Furthermore, regulatory developments force enterprises within a geographical region or sector to digitally adapt their operations (Osmundsen, et al., 2018).
Finally, this research's analysis of the literature has consistently stressed the close link between diverse factors; developing technology led to digital transitions in sectors, increased consumer expectations, and new business models challenging current ones. In contrast, start-ups' creative use of developing technology alters the competitive environment and creates new market entrants (Bloomberg, 2018).

2.3. Digital maturity model

Several variables have been highlighted as significant drivers of digital transformation, including:

- Scientific progress: All thing head for become link to the Internet. Connected automobiles and money digitalization are two examples of this.
- Firms delivering e-services that use of telecommunications infrastructure suppliers while retaining the majority of the revenue created.
- Shift in client opportunities toward an all the time-connected, individualized lifestyle and computerized facilities.
- Goods of conventional communication activities, resulting in revenue flatlining or declining (timreview, 2016)

This transformation is best shown by two examples: Rogers in Canada as well as AT&T in the United States. AT&T developed a wholly new program for home security watching in 2013, this has subsequently served as a model for how to successfully shift to digital services. Rogers initiated an initiative in 2014 with the goal of digitizing the whole customer lifecycle in order to revolutionize the client satisfaction. Rogers is said to have dramatically improved customer experience, as shown by a considerable rise of number of customer contacts occurring via digital channels, major increases in client satisfaction ratings, and decreases in client grievances (Deloitte, 2016). These two successes, however, seem to be outliers rather than the norm, while the majority of communications service providers are still working out how to change (deloitte, 2020).
Such shifts penetrate every element of communications service providers' operations and operating models, but there is a shortage of materials and standards to assist operators in navigating like change. Indeed, multiple studies (strategyand, 2022) Communications service providers have indicated that they are already committed to digital transformation and making efforts in that regard, but they lack a defined plan or direction. They're all going in different directions, and in many instances, they're changing their minds as they "test and learn" (Valdez-de-Leon, 2016).
These businesses turn to current systems, including landmark publications, to navigate their digital transformation route in a more confident and methodical manner, based on advances in IT-enabled business transformation (e.g., Venkatraman, McKinsey, Westerman). These frameworks provide a decent assembly and knowledge of the digital dilemma; yet, their scope is too broad and high-level. This is most likely due to the fact that they were all created to be general in nature, allowing them to be applied to any business. None of these models are particular to the telecoms sector, and as such, they are not intended to provide specific assistance for constructing a telecommunications-specific road to digital transformation.
It is necessary to develop a framework that bridges this gap. This kind of model should have the following features:

1) Provide an organized perspective on digital transformation.
2) Be sufficiently thorough to address all areas of digital transformation.
3) Be aware of the situation and challenges that communications telecommunications companies confront.
4) Maybe you'll be able to describe the current situation, but you will also be able to provide an example of a more contemporary, digital communications service provider.
5) To be free to behave as an industry norm to help telecommunications service providers measure themselves among peers or against themselves as they evolve.

This gap is supposed to be filled by the model given the digital maturity model for telecommunications service providers may be found here. The approach used to construct and develop the model will be described first in this article. The model will then be introduced, including the size of its constituents and phases of maturity Finally, the article will address how it may be implemented and developed upon (timreview, 2016).
Designing the initial model, A comprehensive examination of relevant literature, case studies from other firms, and interviews with subject matter experts kicked off the design phase. These steps laid the groundwork for defining a number of key characteristics of digital transformation, culminating in a multi-dimensional model. The model's seven dimensions are seen in Fig. 4.

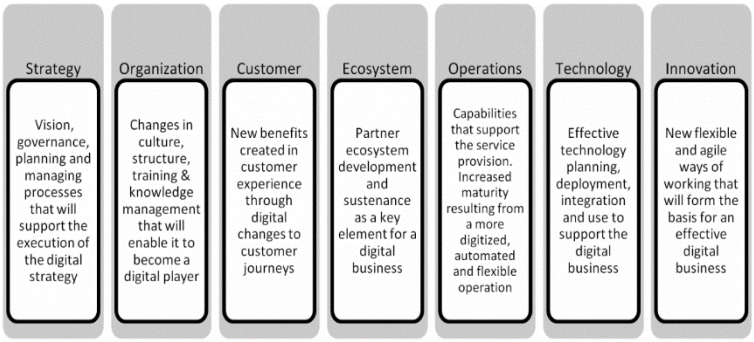

Fig. 1: Depicts the Model's Basic Structure and Seven Dimensions for Telecoms Service Providers.

The concept was later updated to include a multi-staged, progressive approach to change. The goal to go above and beyond a simple low or medium or high concept and develop a more nuanced (representing the real issue) and industry-specific maturity scale with a high level of detail without being too complex. Five maturity stages were chosen and the seven dimensions are contained in the model's skeleton, or outline. (See Fig. 5).

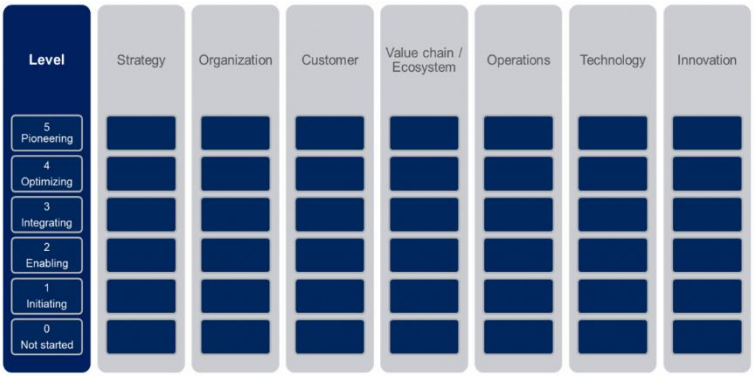

Fig. 2: Preliminary Sketch of the Digital Maturity Model for Telecoms Service Providers.

Then, for each element in the matrix, an initial set of attributes was established. This process involved a study of current literature, an evaluation of alternative available models, and feedback from subject matter experts. After completing the initial draft of the model, the last stage was to present it to an outside panel of specialists for them to evaluate, critique, and contribute to the development of a full-fledged maturity model.

In the telecom sector, obtaining expert advice for a novel idea or establishing a framework in areas where there is little practical proof is known as digital transformation, the Delphi method was abandoned to complete the model development (Okoli and Pawlowski, 2004). The process entails assembling a panel of subject matter experts and polling them iteratively using organized surveys. A series of sampling rounds are conducted till a consensus is obtained (Fig. 6). A panel of ten experts was assembled for this research, consisting of representatives from industry analyst and consultancy firms, as well as communications service providers, university, and academia.

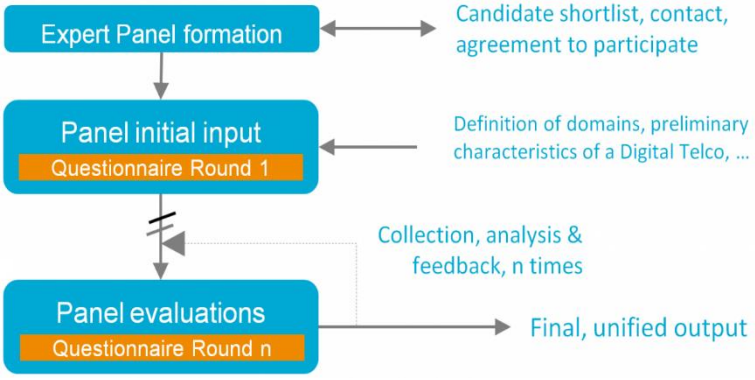

Fig. 3: The Dephi Method.

The Delphi research produced the subsequent results:

- The development of a comprehensive management framework with some well features and stages of maturity.
- The development of a number of characteristics that digital communications service operators are anticipated to exhibit at specified degrees of maturity for every of the model's aspects.

The final model's seven dimensions (improved and reordered throughout the model creation process) are as follows:

1) Strategy: The goal, leadership, strategy, and control techniques that will guide the digital strategy's execution.
2) Organization: Describes the adjustments that will enable the business to become a digital player in terms of communications, culture, structure, training, and knowledge management.
3) Consumer: Top aims include involvement and autonomy, as well as extra advantages in user experience provided through digital transformation of customer experiences.

4) Technology: Capabilities that allow successful technology strategy, implementation, to enable digital business, we need integration and automation.
5) Operations: Putting an emphasis on the capabilities that help with patient care. A more computerized, automated, and adaptive process implies a greater degree of maturity in this area.
6) Ecosystem: A the environment of collaborators creation and upkeep as a critical component of a digital company.
7) Innovation: Emphasizing skills that allow more adaptable and versatile methods of working, which will serve as the foundation for an efficient digital company.

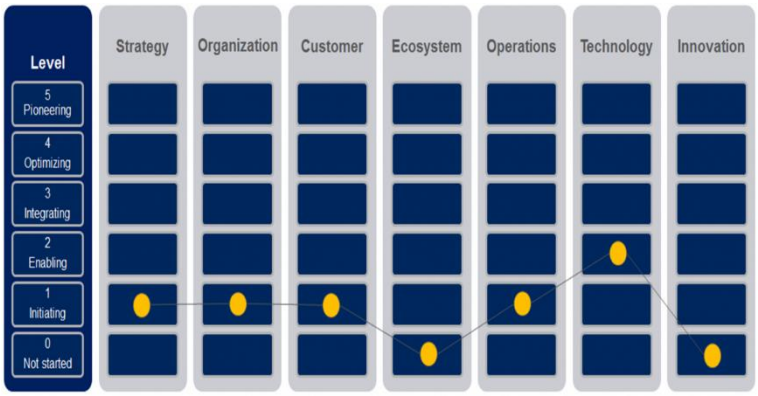

Fig. 4: The Final Digital Maturity Model for Telecoms Service Providers, Displaying the Maturity Levels of A Fictional Business in Each of the Seven Categories.

The dimensions are intended to cover the critical areas of the company that are affected and, as a result, have an influence on digital transformation. As previously stated, the dimensions were developed by significant study and input from subject matter experts. Surprisingly, two factors showed up regularly as crucial yet were usually underestimated in their role in digital transformation across the study: ecosystem and innovation. The importance of these two areas is likely attributable to the dynamic nature of digital technology and the need for continuous innovation that reaches beyond the bounds of a single business. As a result, the two dimensions in the model are distinguishable from one another.
The model's application
The model's goal is to show a communications service provider's degree of maturity at a specific moment in time. It also shows what a more developed digital firm seems to be. anyway, the type does not prescribe the "optimal method" to progress up the maturity scale. It just doesn't mean that Level 5 is required for all businesses. Rather, it's an execution model in which the levels represent a snapshot of the scope of execution. It is critical for any company to determine the amount of maturity it wishes to achieve in accordance with its business objectives, context, resources, and timetable. The model may also be used as a benchmarking tool to compare an organization's situation to that of a rival or peer, or to that of operating entities within the similar company. The model may be utilized to measure growth and the outcomes of earlier expenditures. Finally, here are a few samples of how the concept may be applied:

- give a logical breakdown of current and desired locations
- as a tool for comparison
- to identify faults in an area that might compromise the transforming proposal's overall success.
- as a means of establishing the next steps and goals in the digital transformation.
- to determine if the company's implementation activities have been correctly. prioritized and organized, or whether it has "the wagon before the horse."
- to evaluate or validate the outcomes of prior investments.

2.4. Theoretical framework

Fig. 8 illustrate the theoretical framework.

Fig. 5: Illustrate the Theoretical Framework.

We will use an inductive approach on this research as he will collect experimental data for telecom digital transformation and effect of COVID 19 on environment work to develop a solution to the subsequent research issues:
Question 1: As for what extent will automation and digital transformation result in job losses in the telecommunications industry?
Question 2: What role will COVID-19 have in mediating the link between automation and joblessness?
As per (Elsafty, 2021) study for 6 Head of departments in the technology sector of one Mobile telecom, who account for 25% of the Mobile operator's overall workforce within the research.
the HODs about their work force's participation to the tasks and skill set listed below and what is their impact to their main responsibilities?

Tasks /Skills	
1 -Technical abilities (resolving technical issues that necessitated manual involvement in small locations and sometimes needed finger dexterity).	10- Bargaining with suppliers to purchase a product or service
2 - Ability to solve problems	11- Customer service representative
3- Capabilities for learning (Learning new things on a regular basis and putting them into practice).	12- Conducting research 13- Analysing data
4- Making preparations	14- Building new assets

5- Managing responsibilities in accordance with the plan	15- Designing and scribbling
6- Team leadership	17- lobbying with other parties 16- software development
7- Educating and educating others	18- Personnel development
8- Delivering speeches or making presentations	19- Making advertisements
9- Offering a product or service for sale	20- Hiring individuals

We may compute the contribution of non-automatable activities to total tasks by replying the following inquiry on the 20 Skills/Tasks shown above. This allows us to assess the risk of automation per department, and by bringing all departments together, we can establish the dangers to the corporation.
We will inquire with the Technology HODs regarding the influence of COVID-19 on the efficiency provided by the 20 duties on their team's participation This efficiency, which should continue beyond the epidemic, will result in fewer non-automatable abilities being performed, causing increasing job hazards.
Fig. 9 depicts the flow diagram for the questionnaire.

Fig. 6: The Flow Diagram for the Research Questions Is Shown.

3. Results and analysis

We use the following procedures to determine the Automation Risks to Technology Staff:

1) Determine the number of individuals doing non-automatable jobs Z = = $\sum_{k=1}^{n20}$ An*Bn

Where An: Is the number of workers doing one of the activities that cannot be automated.
Where Bn: Is the proportion of time spent on this task as a percentage of the total time spent by the persons participating in this work.
The 20: Tasks that aren't automated.

2) Determine the number of persons who do Automatable Tasks. D= C – Z.

Where C= Number of workers.

3) Determine the Automation Risk R1= D/C

When different technological units in telecom carriers are automated, the outcomes of the risks on 6 technological sectors will be 41.23 % of the mobile operator manpower. and 8.46% Incremental Total Risk from COVID 19. Total Joblessness Risk 49.69%.

4. Conclusion

This article's digital maturity model was created to assist telecoms suppliers of services on their digital transformation path. The clear absence of industry-specific tools to guide such transformations inspired the creation of such a model. The resulting model is intended to be used as a tool for assessing digital maturity at a given point in time and assisting in the formulation of a digital transformation strategy and plan. Practitioners are encouraged to adopt the model as a key component of their digital transformation toolkit. The model is designed to be used as a tool to describe present and desired levels of maturity; however, it is not prescriptive in the sense that it suggests the best approach to attain the desired level. As a result, it is proposed that supplementary tools be created to assist in defining "best practices" and further developing the framework. For example, as more communications service providers engage best practices based on in-depth empirical data may be developed based on digital transformation journeys, and as successes and failures become increasingly recognized and documented (Providers, 2016).

5. Recommendations

The study suggests the following to boost the success rate of digital transformation in profit organizations:

1) The top authority in the business, generally the CEO, should promote and advocate the digital transformation.
2) The ADKAR change management approach should be intended to restart anytime stakeholders join the digital transformation path. Change agents should be identified early on to guarantee that all personnel are on the same page.
3) Members of the steering committee should be held responsible for fostering a supportive culture, as well as assuring value generation and benefit realization.
4) People should work harder to maintain their employment by continuing to study and obtaining non-automatable abilities.

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