THE IMPACT OF BUILDING DIGITAL CULTURE ON EMPLOYEES' ENGAGEMENT IN THE ICT SECTOR

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Keywords

Digital Culture, Digital Transformation, Culture, Corporate Culture, Building Culture, Information Communication Technology, Employee Engagement, Organizational Culture, Power of Digitization, Digital Culture Challenges, Digitalization.

Minimum 7 keywords are mandatory; Keywords should closely reflect the topic and should optimally characterize the paper. Use about four keywords or phrases in alphabetical order, separated by commas.

ABSTRACT

Background:
Digital transformation is a cultural transformation that affects the majority of people who work, and it will never be realized unless companies still confidence in their employees that digitalization can help organizations, people, and society achieve a better future.

Purpose:
The purpose of the current study is to investigate the impact of building digital culture on employees' engagement, specifically in the Egyptian ICT governmental sector.

Methodology:
The research analyses of the data were collected using the mixed method approach, based on that, semi-structured interviewees were conducted with the aid of an interview guide to collect the qualitative data.

Findings:
The four main dimensions of digital culture: involvement, consistency, adaptability, and mission have a positive impact on employees' engagement in the ICT governmental sector in Egypt.

Conclusions:
Digital transformation is a cultural transformation affecting the majority of the people working, therefore Digital success requires companies to build a culture that is closely aligned with the business, talent, and technology strategies in order to facilitate and not impede the digital transformation, therefore aligning company culture and building the digital culture in the organization in the right way will affect positively

on employees' engagement.

RESEARCH BACKGROUND

According to (Ravasi D. &., 2006) organizational culture is defined as a set of shared assumptions that guide behaviors and are taught to new organizational members as a way of perceiving and even thinking and feeling, therefore organizational culture affects the way people and groups interact with each other, clients, stakeholders and that in return effects on how much employees identify with the organization, and in the context of the technological revolution that we are experiencing and the digital transformation, which has become an important competitive advantage that companies seek in light of the fierce competition in global markets, therefore digital transformation becomes a way of radical rethinking how an organization uses technology, people, and processes to fundamentally change business engagement.

In this context, various researchers predict that the next automation wave in the digital workplace will extremely affect the employability of knowledge workers as digital transformation is a cultural transformation affecting the majority of the people working, therefore exceeds the mere digitalization of products and services and companies need to redefine their industries and value propositions (Porter M. &., 2014), based on that, changing the culture within the organization is one of the biggest hurdles in digital transformation. Therefore, aligning company culture through building the digital culture in an organization will affect positively employees' engagement, leading to goal achievement (Sri Handari Wahyuningsih A. S., 2019).

During the last few decades, the world has witnessed an ICT revolution that has had an impact on the growth of digitalization; hence, organizations seek to keep up with technology to maintain competitive capabilities in light of the global competition in various markets. In this regard, any kind of incremental cultural change requires a lot of patience because it does not happen overnight. Accordingly, aligning company culture and developing a digital culture in the organization will have a positive impact on employee engagement (Clarke, 2018).

RESEARCH SIGNIFICANT

In organizations, culture is critical to the shared sense of purpose that mobilizes employees to work towards a common goal. In recent years, technology's role has fundamentally shifted. Technology has emerged as the primary driver of business innovation, therefore accepting this shift necessitates a rethinking of the role and impact of IT in the workplace. In this context, this research aims to study how building a digital culture impacts employee engagement in the ICT government sector. In order to achieve this aim,

several research objectives are to be achieved. The main objective is to ***explore how digital transformation is conducted in the ICT government sector in Egypt***, and in order to achieve this aim, the researcher seeks to answer the following research question: ***To what extent is digital transformation conducted in the ICT government sector in Egypt?***

LITERATURE REVIEW

The following sections illustrate the summary of prior studies and literature related to the concept of culture, corporate culture, the forces of corporate culture, Digital Transformation and its impact on corporate culture, Digital Culture, Organization Culture and Organization Performance, Organization Culture leads to Employees' Engagement, Concluding the Literature.

Culture

Each society contains people who think, act and behave in different and unique manners. This is considered culture. Culture according to research is a large and diverse set of intangible aspects of social life (Nicki Lisa Cole, Ph.D., 2019). Culture: "shares its etymology with several other words related to actively fostering growth," (Cristina De Rossi, an anthropologist at Barnet and Southgate College in London, 2015).

Culture includes material goods, the things the people use and produce. Culture is also the beliefs and values of the people and the ways they think about and understand the world and their own lives, Customs, laws, dress, architectural style, social standards, religious beliefs, and traditions are all examples of cultural elements. Therefore, every human is born within a certain culture, in which they set we develop and set ourselves within certain cultural horizons and we all are both creators and receivers of culture, at the same time. Thus, in order to understand people, it is necessary to analyze culture's signs, values, and symbols, the way they influence our thinking model and behavior, and so on (Lakoff and Johnson, 1999; Schein, 2004). Culture exists not only in societies, but can also exist within any group of people operating together inside a society. Therefore, organizations are known to have a culture of their own. This is called corporate culture.

Corporate Culture

According to Ravasi and Schultz (2006) characterize organizational culture as a set of shared assumptions that guide behaviors. In addition, the pattern of such collective behaviors and assumptions is taught to new organizational members as a way of perceiving and, even thinking and feeling. Thus, organizational culture affects the way people and groups interact with each other, clients, and with stakeholders. In addition, organizational culture may affect how much employees identify with an organization.

According to research, corporate culture comes in many forms. For example, there is a corporate culture called Clan, which reflects a supportive culture, which contains employee-oriented leadership, cohesiveness, participation, and teamwork (Han, 2012). The second type of culture is Adhocracy, which is known as entrepreneurial culture, it includes innovative, creative, and adaptable characteristics (Veiseh et al., 2014). A third one is Hierarchy culture, which is a combination of rules and regulations to control activities in the organization, (Sok et al., 2014). The last one is the Market culture, which includes competition and organizational goal achievement (Pinho et al., 2014). Regardless of the corporate culture, all employees must understand and follow the cultural philosophy that is set up. According to research, "If you don't understand the culture of your organization, even the most brilliant strategies will fail. Your vision will be resisted, plans won't get executed properly, and all kinds of things will start going wrong". For this reason, many organizations seek employees to understand the forces of the corporate culture.

Forces of Corporate Culture

Corporate culture is the Invisible Asset, "it is a system of shared values, assumptions, beliefs, and norms that unite the members of an organization.

Accordingly, there are several elements that Influence the Corporate Culture, that include the Leadership Stream, which highlights flow, pattern, strength, and ambit of active leadership across the whole organization moving from top to bottom. Teamwork Dynamics refers to the characteristic motion of members of an organization operating as a team for the achievement of specified objectives. Workplace Communication focuses on the prevailing standard of communication, conventional workplace language, and existing processes for exchanging information in an organization. Paradigms that refer to the mentality of employees and other workers about stated values, mission, vision, Policies, strategies, procedures, and action plans of the organization. Rituals and Routines, such as repetitive tasks and meetings overindulge employees thereby calibrating them into inertia and influencing their focus and drive. Stories, highlight tales about achievements, ownership, future opportunities, as well as past events that generated either negative or positive impacts on people, profit, products, policies, strategies, size, structures, and systems. In Control Systems, which compliance level of employees to established standards is usually influenced by control systems existing in that organization. Attributes of control systems used for classification include effectiveness, efficiency, scope, scale, elements, and type. Organizational Structures show hierarchical levels, reporting relationships, a span of positional responsibilities, workflow system, authority, and control. It reveals the operational philosophy of the organization. The Power Structures, essentially affect employee's perception of command forces and pressures relating to decision-making in the workplace, the basis of

power, and the spread of power. It provides room for mutual understanding concerning reasons for inclination, action, submissiveness, abandonment, and detachment. Finally, Symbols are inventories of clarified components of organizational identity and serve as Communication channels to employees and other people connected to the organization.

Digital Transformation and its impact on corporate culture

Digital transformation marks a radical rethinking of how an organization uses technology, people, and processes to fundamentally change business engagement (George Westerman, MIT principal research scientist and author of Leading Digital: Turning Technology into Business Transformation). Digital transformation is generally viewed as an aggregation of modern tools and processes leveraged to solve business problems and satisfy customers. Various researchers predict that the next automation wave in the digital workplace will extremely affect the employability of knowledge workers. Unlike previous automation waves, which were confined to the replacement of routine work and low-skilled personnel, analytical machines will take away decisions from knowledge workers, and thereby provide better choices, faster, and more reliable (Davenport & Kirby, 2015).

Digital transformation is a cultural transformation affecting the majority of the people working. It has to be a leadership task. If you follow that, you have a high chance of success. If you delegate it, there is a big chance you will fail (Andreas Schierenbeck, CEO, ThyssenKrupp Elevator).

Digital transformation distinguishes itself from previous IT-enabled business transformations in terms of velocity and its holistic nature (Bharadwaj et al. 2013; Porter and Heppelmann 2014). Digital technologies radically increase the speed of innovation, disruption, and competitive dynamics of a firm's environment (Downes and Nunes 2013; Porter and Heppelmann 2014; Westerman et al. 2011). To cope with the rapidly changing environmental conditions and the increased pace of these changes due to technology innovation, organizations need to fundamentally transform and restructure their organizations in order to survive in a disrupted environment (Downes and Nunes 2013; Porter and Heppelmann 2014).

Digital transformation, therefore, exceeds the mere digitalization of products and services and companies need to redefine their industries and value propositions (Porter and Heppelmann 2014). Thus, we define digital transformation as the IT-enabled change in organizations through the digitalization of products, services, core processes, customer touchpoints, and business models (Fichman et al. 2014; Hess et al. 2016). Although prior literature acknowledges the role of culture in facilitating and managing organizational transformation (e.g. Pillay et al. 2012), culture has surprisingly only played a minor role in digital transformation research. Taking a closer look at research on digital transformation, most articles only

briefly touch upon culture within their actual research topic and lack a clear definition of, and approach to culture. Single values and generalized cultural attributes were sporadically proposed to foster digital transformation success, such as innovativeness (e.g. Fichman et al. 2014), risk affinity (e.g. Fitzgerald et al. 2014), collaborative working environments (e.g. Westerman et al. 2011), trial or error mentality (e.g. Kane et al. 2016; Piccinini et al. 2015), or agility (e.g. Kane et al. 2016).

According to Porter and Heppelmann (2014), Digital Transformation exceeds the mere digitalization of products and services and companies need to redefine their industries and value propositions, also Fichman et al. 2014; Hess et al. 2016, define digital transformation as the IT-enabled change in organizations through the digitalization of products, services, core processes, customer touchpoints, and business models.

Digital Culture

According to Arnault (2015), digital culture is a blanket concept that explains the main idea that technology and the Internet are responsible for the way we interact, behave, think, and communicate as human beings in a society. It is the byproduct of technology and access to information, which is in abundance, which in turn is a result of technological innovation. Buchanan, et al. (2016) discussed the face of digital workers and how can one implement digital culture in a better way. Jemielniak (2016) in their paper revealed many analogies showing connections between cross-cultural management research, and studying digital societies. Capgemini Consulting (2017)-gave an iterative approach that helps to shift the paradigm from corporate culture towards a digital mindset in an effective manner. Digital technology can unlock the hurdles in the potential and can bring the right culture. Alshehri, et al. (2017) provide a link between organizational culture and employee engagement by studying the enablers and inhibitors at Saudi banks. According to Clarke (2018), cultural change in any respect is an incremental change, which requires a lot of patience as it does not happen in a day.

Therefore, changing the culture within the organization is one of the biggest hurdles in digital transformation. Shaughnessy (2018) discusses that in order to promote the cultural and technical changes which are required for a successful digital transformation, a few leading firms have adopted an agile framework designed specially to support small teams to achieve goals related to customers and maintain other network systems within and outside the organization. According to Gartner, Digital Dexterity is the ability and desire to exploit existing technologies for better business outcomes. Simply digital culture refers to the relationship between humans and technology.

Table 1: PwC shares a view on what an Analog Culture looks like versus a Digital Culture

Analog Culture	Digital Culture
Customers and Demand • Pushes products into the market • Driven by purchase and supply	**Customers and Demand** • Pulls ideas from the market • Driven by customer demand
Organization • Strong hierarchy • Slow decision making • Defined tasks ("do this job")	**Organization** • Flat hierarchy • Rapid decision making • Result and product orientation • Empowered employees ("find a way to achieve a goal")
Attitudes and Ways of Working • Understands needs of long-standing customers and how to fulfill them • Orientation toward status quo, past lessons, and accepting constraints • Experienced and stability count • Homogenous teams, working within departmental silos • Career progression within defined paths • Focus on planning and optimization	**Attitudes and Ways of Working** • Understands needs of digital customers and how to adopt new trends • Orientation toward innovation, improvement, and overcoming constraints • Potential, vision, curiosity, motivation, flexibility, and adaptability count • Mixed teams working in cross-functional integrated communities • Strong collaboration • Rapid, unpredictable career progression • Focus on rapid launch and learn

Organization Culture and Organization Performance

Performance indicates to the achievement level of the mission at the workplace develops an employee's job, hence Organizational performance comprises the actual output or results of an organization as measured against its intended outputs (or goals and objectives). According to Richard et al. (2009), organizational performance encompasses three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.). Organizational productivity is determined by employees' efforts and engagement (Musgrove, Ellinger, & Ellinger, 2014).

In this context, the term Organizational effectiveness is broader (Upadhaya, Bedanand; Munir, Rahat; Blount, Yvette (2014). It is worth stating that specialists in many fields are concerned with organiza-

tional performance including strategic planners, operations, finance, legal, and organizational development. However, in recent years, many organizations have attempted to manage organizational performance using the balanced scorecard (BS) methodology where performance is tracked and measured in multiple dimensions. It is worth stating that different organizational factors affect internally related Organizational characteristics, including the purpose of the organization and Organizational instruments, and externally which are not under the control of the organization but which affect its structure and development such as Economic factors, Socio-economic factors, and Political-administrative factors.

Organization Culture leads to Employees' Engagement

Employee engagement is a key driver for organizational success. High levels of engagement promote retention of talent, foster customer loyalty, and improve organizational performance. Engagement is influenced by many factors: workplace culture, communication, managerial styles, trust, and respect (Lockwood, 2007). Many organizations recognize that employees are their best assets which allows them to compete in the marketplace to achieve a competitive advantage (Bailey et al., 2016). In today's ever-changing business world, employee motivation goes beyond salaries. Employees now anticipate that their role should contribute to and affect the business in a greater sense (Marciano, 2010). Hence, organizations need to ensure that employees are motivated to perform at their highest potential. Monsen (2009) in his research has stated that every individual employee is motivated by a different incentive internal or external, monetary or non-monetary by its nature.

Employee engagement has emerged as one of the greatest challenges in today's workplace. With complexities and stringent regulations in many organizations, employee engagement will continue to challenge organizations in the future (Mishra, Boynton, & Mishra, 2014). This aspect challenges management because engagement is a critical element in maintaining the organization's vitality, survival, and profitability (Albercht, Bakker, Gruman, Macey, & Saks, 2015; Breevaart et al., 2013; Farndale & Murrer, 2015).

Organizations that have highly engaged employees have greater profits than those that do not (Society for Human Resource Management [SHRM], 2014). Organizations with highly engaged employees experience increased customer satisfaction, profits, and employee productivity (Ahmetoglu, Harding, Akhtar, & Chamorro-Premuzic, 2015; Carter, 2015; Cooper Thomas et al., 2014; Vandenabeele, 2014).

Concluding the Literature

There is no doubt that the Covid-19 crisis has cast a shadow on the business environment in general and has negatively affected business results in all different sectors. Given the current situation with COVID-19, many workplaces are turning to remote work, some for the first time. With workers being away from direct supervision, employee engagement becomes that much more important, as an engaged employee can be trusted to competently, and consistently perform their job, often going beyond their job description to make sure that they are delivering high-quality results.

Accordingly, the pandemic was the main support and drive for institutions to move to digital transformation, and then the great importance of these institutions was to adapt to the environment and new work. Simply, life after the pandemic will not return to what it was in the past, and institutions that will not keep pace with this change will not be able to continue. Culture plays a very important role in digital transformation. Li, et al. (2014) believes that there are various challenges and hurdles to overcome; the result of a strong employee engagement strategy is the complete transformation of not only the organization but also of the persons who are acting as the stakeholders within the organization. In this context, digital success requires industrial companies to build a culture that is closely aligned with the business, talent, and technology strategies in order to facilitate and not impede the digital transformation, therefore aligning company culture and building the digital culture in the organization in the right way will affect positively on employees' engagement.

METHODOLOGY FRAMEWORK

According to (Saunders., 2012), the research process can be represented as an onion. There are several stages the researcher has to consider to develop the research design. These phases are represented as layers of the onion; the contents of the layers are; philosophies, approaches, strategies, selection of method(s), time horizons, and techniques and procedures. The structure of this chapter is based on these layers as illustrated in the below figure.
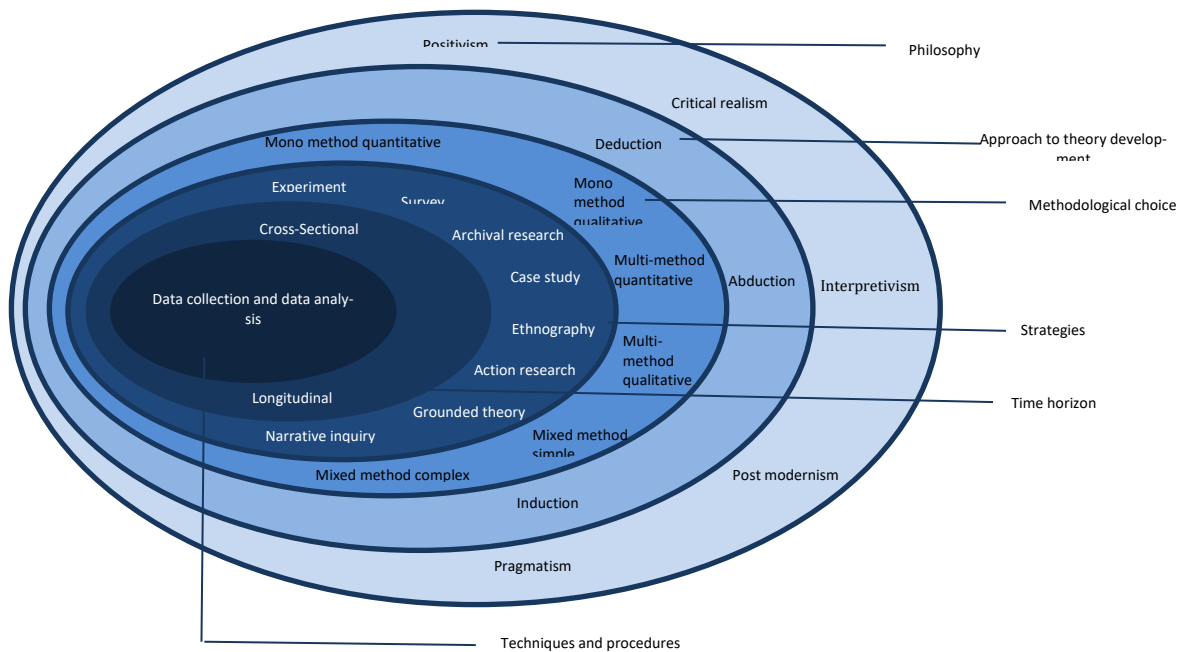
Figure 1: Research Process "Onion"
Source: Adapted from Saunders et al., 2012

In this study, the researcher chose to follow deductive research, thus she research seeks to build upon research and theories found in the literature review related to the role of culture and its impact on employee engagement. Based on the literature, the researcher develops several hypotheses to be tested. The researcher uses semi-structured interviews during the qualitative research approach and administrated questionnaires to collect the data during the quantitative research approach. It seeks to develop knowledge to obtain clarification on how the governmental ICT sector is becoming digitized; to understand how to implement digital culture with organizations; to measure the impact of digital culture on employees' engagement. In this study, the researcher chose the survey strategy to investigate the relationship between building digital culture in the organization (dependent variable) and employee participation (independent variable).

Table 2: Research Methodology

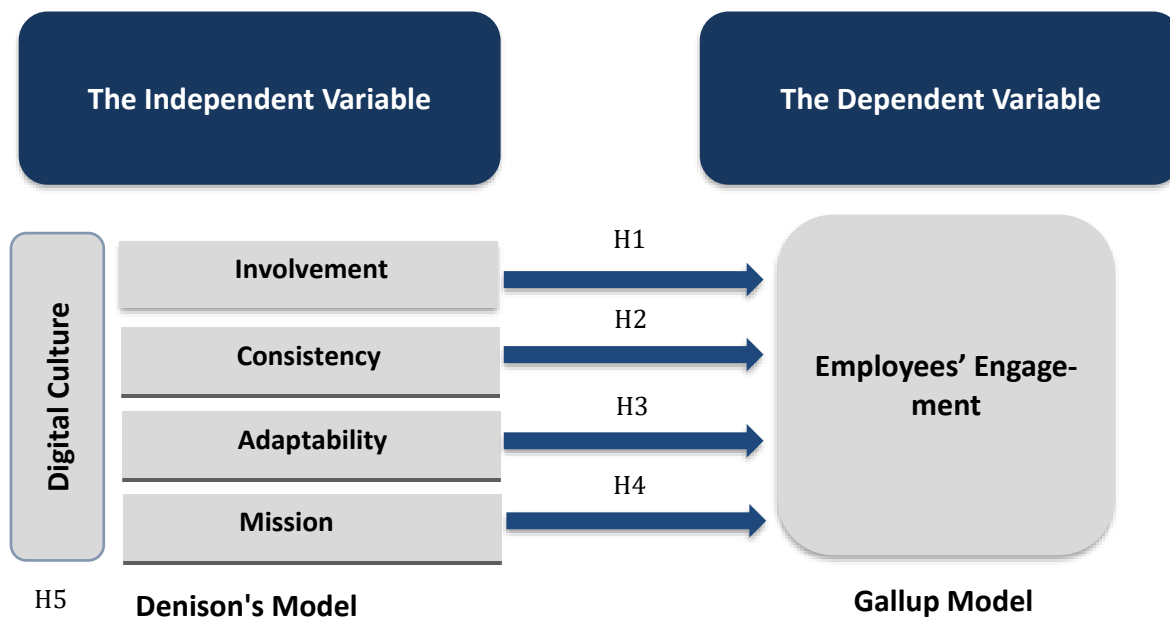| Research Design	Chosen Approach	Justification
Philosophy	Pragmatic	In pragmatist, research starts with a problem and aims to contribute practical solutions that inform future practice, where the ideas emerging from this study aim to create more awareness about how company culture affects employee engagement in an organization and how it has become a competitive advantage for organizations.
Theory Development	Deductive Theory Building	The deductive approach refers to developing a hypothesis based on existing theory and then designing a research strategy to test the hypothesis, where the study will begin with a social theory that they find compelling and then evaluate its implications through collected data. The study will develop a hypothesis of organizational digital culture and then evaluate its impact on employees' engagement through quantitative data.
Research Approach	Qualitative Research	The researcher used the qualitative approach, which will use semi-structured interviews for effective coverage and low cost.
Purpose of the Study	Exploratory and Descriptive	The exploratory study to determine the relationship between building the digital culture in the organization as a dependent variable and employee participation as an independent variable, also descriptive and inferential statistics will be applied where research will use the survey to collect data.
Time Horizon	Cross-sectional	The collection of data for the investigation will be done only once, over a specific period of time to answer research questions and through using the Google form for an online survey.
Data collection	Administrated Questionnaires Semi-structured Interviews	Based on the deductive approach, a self-administered questionnaire is a structured form that consists of a series of closed-ended and open-ended questions to assess the variables (independent & dependent), also interviews will be conducted with them as they will be knowledgeable in explaining the key of driving an organization culture into digital transformation; in explaining the barriers to digital transformation.
Population	ICT employees	As the government of Egypt wanted to turn Egypt into a digital country, therefore the ICT sector will play a vital role, as it is already considered an organization that has a digital culture.
Sampling	Connivance sampling	Non-probability sampling is conducted with a sample size in the quantitative research approach is 384 and will be a casual selection of top management employees from ICT governmental entities from different departments and divisions based on judgmental sampling in the qualitative research approach.

Source: Developed by the researcher

Research Ethics

Research ethics is an important issue when conducting a study. Research ethics is a codification of scientific morality in practice. The general principles that guide ethical practice in research involving human beings include; respect for autonomy, justice, and beneficence (Kitchin, 2007). These values seek to regulate research in a moral, principled, proper, and honorable manner. Research ethics that are used in this study, achieve the following points: *"norms that constitute good scientific practice, related to the quest for accurate, adequate and relevant knowledge (academic freedom, originality, openness, trustworthiness, etc.); norms that regulate the research community (integrity, accountability, impartiality, criticism, etc.); the relationship to people who take part in the research (respect, human dignity, confidentiality, free and informed consent, etc.); the relationship to the rest of society (independence, conflicts of interest, social responsibility, dissemination of research, etc.)"* (NESH, 2022).

In this context, and to confirm the ethical principles, the researcher followed the Arab Academy research guide. In addition, before having the employees participate in the research, they signed a consent form that explains in detail the data privacy, the confidentiality of the interview environment, and over-involvement during the interview depending on the interviewer's moral stance. When conducting the quantitative research, the questionnaire contained an introduction paragraph explaining the same points. These introductions are made clear to the participants in this study to reduce any harm or risk that participants may face by virtue of being in the study.

The Conceptual Framework

Based on prior studies, digital culture leads to employee engagement (Tabrizi, 2019). Therefore, in this study, a proposed research model is developed to illustrate this relation. Based on the findings of past research, digital culture consists of four main dimensions: (1) digital culture involvement, (2) digital culture consistency, (3) digital culture adaptability, and (4) digital culture mission (Mu & Vinig, 2019). These dimensions act as the independent variables of this study. The dependent variable is employee engagement. Figure 4 illustrates the proposed research model that is to be tested in this study.

Source: Developed by the researcher
Figure 2: The Research Conceptual Framework

Research Hypotheses

Based on the research model, five main hypotheses emerged. The following paragraphs illustrate each hypothesis and what past studies have concluded when testing these hypotheses.

- **Hypothesis 1:** There is a significant relationship between the digital culture Mission and employee's engagement in the ICT government sector in Egypt.

- **Hypothesis 2:** There is a significant relationship between the digital culture Consistency and employee's engagement in the ICT government sector in Egypt.

- **Hypothesis 3:** There is a significant relationship between digital culture Adaptability and employees' engagement in the ICT government sector in Egypt.

- **Hypothesis 4:** There is a significant relationship between digital culture Involvement and employee's engagement in the ICT government sector in Egypt.

- **Hypothesis 5:** There is a significant relationship between digital culture and employee's engagement in the ICT government sector in Egypt.
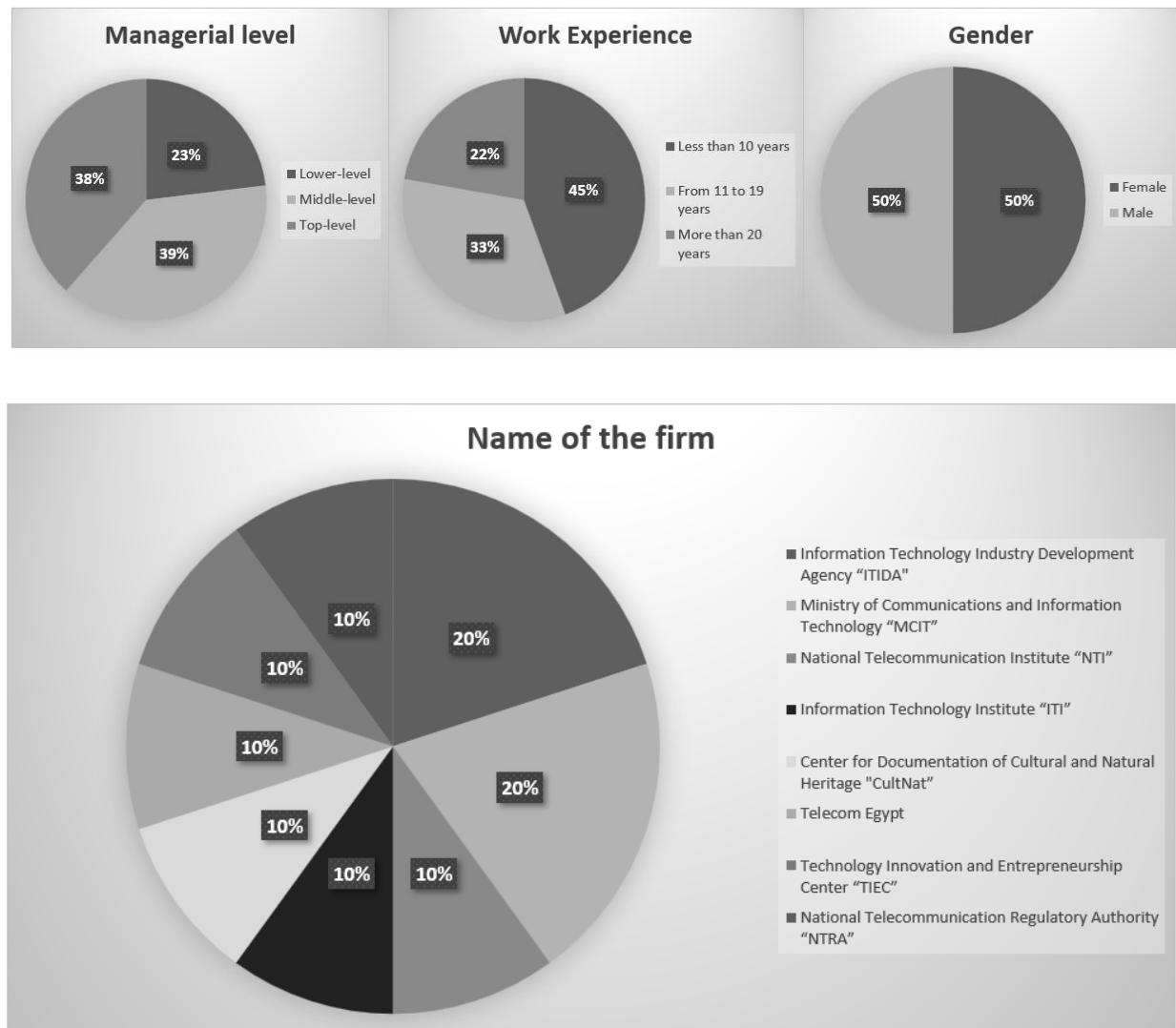
THE RESEARCH ANALYSIS

The qualitative research used semi-structured interviews to collect the needed data to be analyzed. The interviews were conducted with the aid of an interview guide that contained several sections with various questions: an introduction section, a section that focuses on digital culture, digital challenges, and employee engagement, and then a conclusion section. Ten interviews were conducted until the saturation level was met. Saturation means that when interviewing the individuals, towards the end no additional data were being found whereby the researcher can confirm the completion of the data collection and begin to develop assessment and properties of the category. The data that was gained during the qualitative research was analyzed using thematic analysis, closely assessing the data to identify common themes – topics, ideas, and patterns of meaning that come up repeatedly. In order to begin the analysis, the researcher transcribed all the interviews (transcription is found in the appendix). Once the interviews were transcribed, a revision of the documents was made to be combined, reduce, and rearranged the data to be able to identify the main codes that emerged, then subsequently the themes. The themes represent the main conclusions that emerged from the questions that were asked, where nine questions were inquired in this study, which led the study to develop 9 main themes.

<u>**Key Area 1: Generic Section**</u>

The interviews were held among different employees in the ICT sector in Egypt. These employees came from different backgrounds at work and held different socio-demographic characteristics. The employees participating in the interview were from several organization entities. The majority of the interviewees were engineers and computer scientists; the minority of the interviewees had a business background and fine arts. The employees that participated in this study held managerial level, the majority were from middle-level of management, while the minority were from Lower-level and Top-level management. These interviewees held different years of experience, ranging from two years of experience to twenty-two years of experience. Table 8 illustrates the interviewees' socio-demographic traits that participated in this study. Now, the following sections illustrate the thematic analysis that emerged from these groups of employees. The following section pinpoints each key area that was found in the interviews, the questions that were discussed, and the summary of the comments made during the discussions.

Table 3: The interviewees' socio-demographic traits

Participant	Specialization	Organization	Managerial level	Branch	Experience	Gender
Participant #1	Business	Information Technology Industry Development Agency "ITIDA"	Middle-level	Unit manager	17 years	Male
Participant #2	Engineering	Ministry of Communications and Information Technology "MCIT"	Top-level	Division manager	22 years	Male
Participant #3	Business	National Telecommunication Institute "NTI"	Lower-level	Operation manager	4 years	Female
Participant #4	Engineering	Information Technology Institute "ITI"	Middle-level	Department manager	11 years	Female
Participant #5	Fine Arts	Center for Documentation of Cultural and Natural Heritage "CultNat"	Middle-level	Project manager	12 years	Female
Participant #6	Engineering	Ministry of Communications and Information Technology "MCIT"	Lower-level	Department manager	5 years	Male
Participant #7	Computers Science	Information Technology Industry Development Agency "ITIDA"	Middle-level	Senior	13 years	Female
Participant #8	Computers Science	Telecom Egypt	Lower-level	Senior	2 years	Male
Participant #9	Business	Technology Innovation and Entrepreneurship Center "TIEC"	Middle-level	Project manager	6 years	Female
Participant #10	Engineering	National Telecommunication Regulatory Authority "NTRA"	Top-level	Division manager	20 years	Male

Source: Developed by the researcher

Key Area 2: Basic Perspectives of Digitalization at Work

The interviews began with various introduction questions that aim the discussion if the employees are aware of the various technologies that are used in the organization. This section was introducing the practice of digitalization mindfulness. In this section, two main questions were asked: (1) Are you familiar with the technologies (software) that are used in your organization in the ICT sector? (2) Do you have experience in using these technologies? These questions allowed for two themes to emerge. Figure 5 illustrates the emerging themes from the question inquiries. The following paragraphs illustrate the analysis of the questions and how the themes emerged.

Figure 1: Themes related to Basic Perspectives of Digitalization at Work
Source: Developed by the researcher

Question One: Are you familiar with the technologies (software) that are used in your organization in the ICT sector? What are they? The purpose of this question was to understand employees' awareness of the technology software that is applied in their organization. Based on replies, many employees gave different examples of software that they use to conduct their job tasks during work, such as Enterprise Management Systems (EMS), VoIP, and open-source software programs. An interviewee quoted that: *"ICT is a digital business"* (participant 1). An interviewee stated that: *"Organizations, not just mine, are using some sort of digitalization. In an organization, especially my organization, we convert analog data sources into digital files. Employees at my organization, regardless of the management level or position, need to and know how to create spreadsheets, scanning paper documents or photographs and saving them in PDF format on a company's drive"* (participant 4). Another employee stated that: *"Digital technologies found today changed business models of all fields whether we wanted it or not; with these technologies, the organization witnessed new revenues and value-producing opportunities"* (participant 8)*.*

During the discussions, all employees mentioned the usage of Microsoft products. Microsoft products are the most popular software that is used in the governmental ICT sector as the majority of the employees are using Microsoft products, which provide various benefit programs, such as Windows, Microsoft Office, Microsoft Teams, Skype, Outlook, and a lot of different products that meet both individual and business requirements.

Based on employees' replies to this question, the researcher concludes that employees of the ICT sector by default use digitalized programs so to conduct their required tasks in their jobs. They apply a digitalized culture - technology and the internet are shaping the way employees interact and perform in their jobs. It's the way that we behave, think and communicate within the organization. Technology is not a choice, but a mandatory tool for employees to work and perform their professions. The majority are familiar with the technologies that are applied in their organizations and are in contact with their usage. Each organization has its own preferred and used systems and programs. Due to this analysis, the researcher

concludes the first theme: *Information and communication technologies (ICTs) are the means of performing the required job task in the organization.*

Question Two: Do you have experience in using these technologies? The purpose of this question was to explore the employees' capabilities in using technologies that are applied in their organization. Based on employees' replies, the majority of employees' have experience in using technologies. They have claimed that they developed this knowledge before they actually entered the organization – during their college years. An interviewee mentioned: *"As a student, the college allowed me to explore new subjects and deepen my understanding of difficult concepts, particularly in STEM. With this knowledge I was able to use it at work"* (participant 6). Another interviewee mentioned: *"Through the use of technology inside and outside the classroom and in our daily lives, we can gain 21st-century technical skills necessary for future occupations"* (participant 8). Some employees mentioned during the interviews that they had to be trained to work with the digitalized systems that were applied in the organization. Some employees were relatively newly introduced to the system; they did not use it until they came to the organization. A specific employee mentioned: *"We might have the technical skills and the cognitive skills needed to use the system, but it is better to learn and use the system more effectively with direction"* (participant 1).Based on employees' replies to this question, the researcher concludes that employees of the ICT sector hold various technical skills. The power of the internet and its related products has enabled global communities to form and ideas and resources to be shared more easily. They have the ability to interact and complete tasks using computer-based technologies and other associated technologies. Nevertheless, each technology differs in application or features, or usage; and therefore, may require certain training to better understand the system comprehensively. The employees that work in the ICT sector had the technical skills but further developed them from the job experience and as a part of the business digitization in the ICT governmental sector. Accordingly, based on the discussion of question two, theme two emerged: *Individuals have basic ideas of technology and scientific knowledge for practical purposes or applications, whether in industry or our everyday lives.*

Key Area 3: An Overview of Digital Culture in ICT Organizations

This part of the interview aims to explore the interviewee's level of understanding the Culture identification, Digital culture awareness, and Digital Benefits. In this section, three questions were asked: (1) Describe your organization's culture in regards to the mission, employee involvement, teamwork, relationship with management, etc.? (2) What is digital culture? Did your organization begin the digital transformation? (3) What are the benefits that you see in applying the digital culture in your organization? These questions allowed for three themes to emerge. Figure 6 illustrates the emerging themes from the interviewee's responses to the questions. The following paragraphs illustrate the analysis of the questions and how the themes emerged.
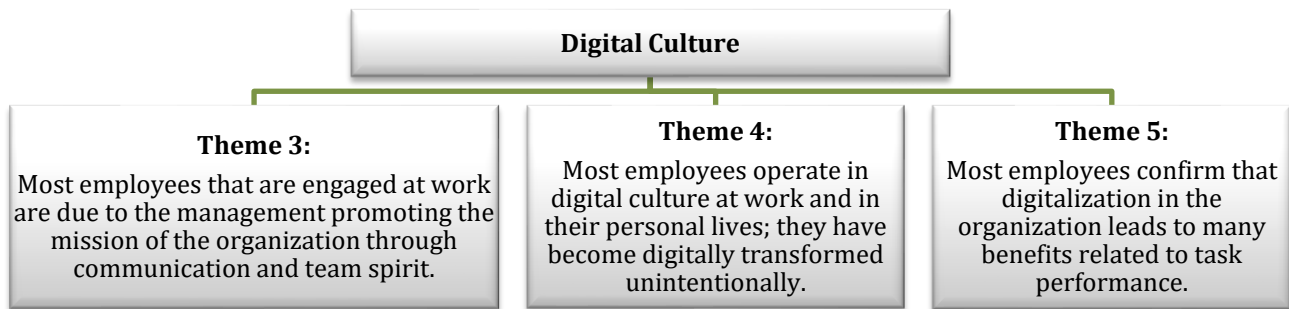
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┌─────────────────────────────────┐
│         Digital Culture         │
└─────────────────────────────────┘
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Theme 3:	Theme 4:	Theme 5:
Most employees that are engaged at work are due to the management promoting the mission of the organization through communication and team spirit.	Most employees operate in digital culture at work and in their personal lives; they have become digitally transformed unintentionally.	Most employees confirm that digitalization in the organization leads to many benefits related to task performance.

Figure 2: Themes related to Digital Culture
Source: Developed by the researcher

Question One: Describe your organization's culture in regards to the mission, employee involvement, teamwork, relationship with management, etc.? The purpose of this question was to explore the employees' opinions about their organization's mission, involvement, teamwork, and relationship with management. When it comes to the organization's mission, based on employees' replies, the majority of employees stated that their organizations have a strong culture that is represented mainly by a clear mission, core values, communications channel, training opportunities, and career development that led to a great work environment and create a strong organizational culture. In this regard, an interviewee stated: *"We have a clear mission that defines our organization's objectives and well-training programs, and comfortable workspaces"* (participant 8). Another interviewee mentioned: *"We have a clear mission, values, and great teamwork"* (participant 1). Therefore, the mission of the organizations that the employees worked in was known to the employees. It was communicated to them as they worked in the organization.

Later the discussions moved to the topic of employee involvement. The employees believe that they were involved in the organization. Their organization focused on having employees become interactive members. An employee mentioned*: "My organization holds weekly meetings so we can discuss our progress or any obstacles we might have faced so to help us become more productive"* (participant 3). However, the majority of the employees see that interactivity can be better provided to the employees. "*Meetings are not enough to get me engaged at work. I just sit down and listen, not participating in most discussions"* (participant 9).

When the discussion focused on teamwork and relationships, the majority of the employees agree that they are managed by leaders who can provide team spirit, motivation, and strong communication that aids in relationship building within the organization. An interviewee mentioned: *"My manager encourages us to work together and speak our mind on what is the best way to complete the task"* (participant 6); *"In my organization, the open door policy is applied with my manager, therefore it created a strong communication channel between the managerial level and employees"* (participant 10); *"As a manager, I believe it is important to develop relations with employees so they can be willing to put a lot of effort at what they do at*

work. I seek to satisfy various needs among employees, such as professional developments and training opportunities, so it can create among employees a sense of loyalty to the team" (participant 7). An interviewee mentioned: *"We have a great and strong culture in the organization, and we have a strong communications channel between all managerial levels"* (participant 2).

Based on employees' replies to this question, the researcher concludes that employees of the ICT sector have a clear understanding of the organization's mission, vision, and core values. These elements have been communicated to the employees. The interviewees confirm that a strong communication channel exists at the managerial level. Therefore, management in the companies seeks transparency to get employees on board with the organization's culture. Awareness of what the organization expects from the employees is important to create engagement. In addition, the researcher believes that the interviewees work in organizations that develop a sense of great teamwork spirit. Having a collectivistic value in the organization allows employees to seek to work together to get the job done. Therefore, collectivism in organizational culture can lead to employee engagement. Due to this analysis, the researcher concludes the third theme*: Most employees that are engaged at work are due to the management promoting the mission of the organization through communication and team spirit.*

Question Two: What is digital culture? Did your organization begin the digital transformation? Explain. The purpose of this question was to explore the employees' knowledge about digital culture and whether their organization applies digital transformation. When asked what is digital culture, the employees gave various meanings. For example, one interviewee stated: that "digital culture is working from home"; another interviewee mentioned "digital culture is the new norm of living life"; another interviewee mentioned that "digital culture is the concept of digital transformation". Therefore, the researcher concluded that most employees were not fully aware of the definition of digital culture. Digital culture is the concept that describes the technology and the internet achieving the way that people interact as humans. When it comes to digital transformation, it is the way we think and communicates within society. Nevertheless, the interviewees applied digital culture in their jobs. They have become digitally transformed, even though they were not able to correctly define it. Some supporting quotes that show that employees are digitally transformed are: *"Digital culture becomes an important part of our life, it is the way that we behave, think and communicate within society, and our organization is one of the governmental arms that lead digital transformation in Egypt"* (participant 1). *"Everything becomes digital in our life and all must cope with new technology trends, therefore our organization is always keen to invest in technology"* (participant 7).

Based on the responses of employees to this question, the researcher concludes that employees in the ICT sector have a high level of usage of digital technology in their life and at work. Due to advanced

technology that emerged in societies, people have adopted various innovations that improve the performance level of the individual in various tasks, whether communication, sending mail, transportation, data filing, etc. Thus, due to the dynamic market that employees, have transformed many tasks digitally. Accordingly, based on the discussion of question two, theme four emerged: *Most employees operate in digital culture at work and in their personal lives; they have become digitally transformed unintentionally.*

Question Three: What are the benefits that you see in applying the digital culture in your organization? Explain. The question aims to investigate the extent to which employees benefit from the application of digital culture. In this regard, the majority of employees acknowledged the importance of applying digital culture and that they had already achieved professional and personal benefits from its application. It enables them to carry out the tasks entrusted to them easily and in a faster and more professional way. It enables them to work from home or anywhere else just as if they are in the office. It enabled cost saving for the organization; operations of various tasks are not costly. It connected the organizations better with various stakeholders, such as the employees, the consumers, the suppliers, etc. Some supporting quotes that were mentioned by the interviewees were: *"Simply, I can work now from home as if I am in the office, communicating quickly to any colleague or manager when needed"* (participant 1). *"Facilitating work in a very professional way, which aids in an increase in productivity"* (participant 9). *"It becomes easier to do the tasks required from us; however, the challenges we face relate to security issues"* (participant 10). *"Technology provides many benefits; therefore, I seek to train myself in various digital technology so I can be up-to-date in my work performance and the requirements of the labor market"* (participant 2).

Based on employees' replies to this question, the researcher concludes that employees of the ICT sector are very familiar with the benefits of using technology, and to what extent that effect facilitates work. The technology used at work is beneficial for productivity despite the challenges (security issues) faced. Digital culture in organizations is inspired and being adopted by employees in the organizations as it is becoming a continued requirement to sustain in the market. Therefore, employees are being updated and trained to cope with the speed of technology trends. During the discussion, various benefits were mentioned. All benefits had a role in improving work performance among employees accordingly, based on the discussion of question three, theme five emerged: *Most employees confirm that digitalization in the organization leads to many benefits related to task performance.*

Key Area 4: Digital Challenges Section

This part of the interview aims to explore the interviewee's level of understanding of the digital challenges and the role of organizations in digitalization. In this section, two questions were asked: (1) What are the challenges that you face during the digital transformation in your organization? Explain (2) How does your organization help its employees in dealing with the digital transformation in the organization? Explain. These questions allowed for two themes to emerge. Figure 7 illustrates the emerged themes from the interviewee's responses to the questions. The following paragraphs illustrate the analysis of the questions and how the themes emerged.

Digital Culture Challenges

Theme 6:	Theme 7:
Technological developments are rapid and progressive, requiring constant learning from employees to keep pace.	Most organizations seek to provide knowledge to employees by educating them through training, courses, and hands-on experience.

Figure 3: Themes related to Digital Culture Challenges
Source: Developed by the researcher

Question One: What are the challenges that you face during the digital transformation in your organization? Explain. The question aims to investigate to what extent employees face challenges during digital transformation. Based on employees' replies, the majority of employees stated that they have great challenges in coping with rapid and successive changes in technology whether software programs or hardware devices as new technology updates and new trends are very massive and very fast. Each year new products are introduced that hold better options and performance levels than the previous technology. An interviewee stated that: *"New technology updates and new trends are very massive and very fast"* (participant 8). Another employee stated that: *"Rapid and successive changes in technology whether software programs or hardware devices"* (participant 10). During the discussions, all employees mentioned that there are rapid and successive changes and updates in both software and hardware technologies. Minor employees mentioned security. The majority did not worry about security reasons as they believe the new technology has resolved this issue. *"I am not worried about security issues because if there is a problem with security, the technology would not become popular in the market nor used by our organization"* (participant 4).

According to employees' responses to this question, the researcher concluded that the difficulty of digital transformation is the concept of the constant improvements and developments that are made to various products. A new application, new software, and new product function that are always changing for the better requires employees to always train and develop their skills to be able to use these technologies. Workers in the ICT sector understand the rapid and successive changes in technology, whether in hardware or software and this stimulates their desire to learn and develop their skills in using technology. Based on these conclusions, the researcher concludes the sixth theme: *Technological developments are rapid and progressive, requiring constant learning from employees to keep pace.*

Question Two: How does your organization help its employees in dealing with the digital transformation in the organization? Explain. The purpose of this question was to investigate the extent to which organizations provide support to employees to deal with digital transformation. The majority of employees stated that the organizations provide regular training on updated software and programs. The discussion among employees reveals that employee development is a significant factor needed so employees can easily accept and adopt the required digital transformations. An interviewee mentioned, *"Provide regular training in the most updated software is necessary so I know how to use it in my job"* (participant 1). Another interviewee stated that: *"My organization invests in gaining the various technologies at work so we can use and practice it to be productive on it"* (participant 2). A specific employee mentioned, *"My organization sponsors employees to take various courses to increase the knowledge required from them to maintain the organization's digital culture"* (participant 6).

According to employees' responses to this question, the researcher concludes that the majority of the employees believe that in order to accept the digital transformation and overcome the obstacles that might be faced in digital culture, knowledge is necessary. The researcher understood from the discussions that the ICT sector places an effort to train and educate them in various innovation usage within the organization. In addition, the company invests in purchasing the latest technology so they can have hands-on experience; the most updated software, hardware, and training on using the new technologies. Based on that, the researcher concludes the seventh theme: *Most organizations seek to provide knowledge to employees by educating them through training, courses, and hands-on experience.*

Key Area 5: Employee Engagement Section

This part of the interview aims to explore the interviewee's level of engagement. In this section, two questions were asked: (1) Does the organization provide you with certain empowerment? Explain. These questions allowed for three themes to emerge. Figure 8 illustrates the emerging themes from the interviewee's responses to the questions. The following paragraphs illustrate the analysis of the questions and how the themes emerged.
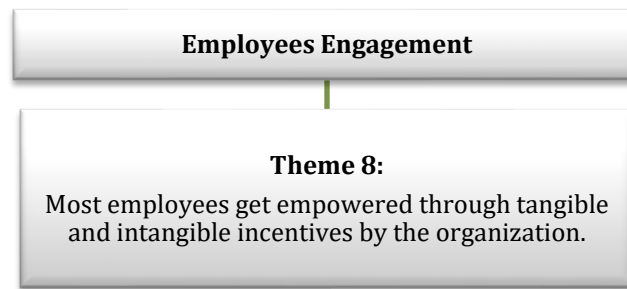
Employees Engagement

Theme 8:
Most employees get empowered through tangible and intangible incentives by the organization.

Figure 4: Themes related to Employees Engagement
Source: Developed by the researcher

This part of the interview aims to explore the level of passion employees hold for their jobs. During the discussions, employees mentioned that most managers empower employees by giving them extra responsibilities in their jobs. For example, *"Employees can lead certain projects without the supervision of top management"* (participant 1); *"Sure, I am a part of the decision-making in my organization"* (participant 2); During the discussion, the employees mentioned that most managers believe in developing employee confidence and motivation through recognition and acknowledgment; these intangible rewards empower employees to want to prove worthy of this appreciation. Some employees believe empowerment can come when there is a financial incentive. *"Tangible rewards encourage employees to want to be given more responsibilities and obligations"* (participant 5).

Judging by the responses of the employees, the researcher concludes that the tangible and intangible role that the government plays in providing the mechanism of empowerment leads to employees feeling that they want more responsibilities, making them more engaged at work. Employees feel that with various empowerment they can employ and express themselves physically, cognitively, emotionally, and mentally during their work performances. Accordingly, based on the discussion of question one, theme eight emerged: *Most employees get empowered through tangible and intangible incentives by the organization.*

Key Area 6: Conclusion Section

This section summarized the power of digitalization. One main question was asked in this section: (1) Do you believe that digital transformation is necessary to achieve the current KPI? According to the employees' responses in the interviews, the researcher developed the final theme as shown in Figure 9. The following paragraphs illustrate the analysis of the questions and how the themes emerged.
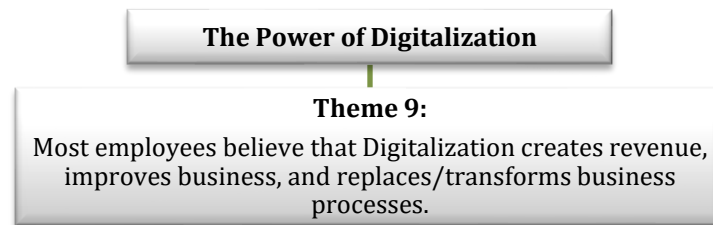
The Power of Digitalization

Theme 9:
Most employees believe that Digitalization creates revenue, improves business, and replaces/transforms business processes.

Figure 5: Themes related to Conclusion
Source: Developed by the researcher

Question: Do you believe that digital transformation is necessary to achieve the current KPI? The question aims to explore the importance of digital transformation to achieve the organization's KPI. Based on employees' replies to the question, the majority of employees stated that digital transformation is necessary to achieve the organization's KPI, especially in tracking the status of any project, finding and solving problems that may occur during implementation, and project completion and reporting. The discussion among the employees illustrates that whatever a company's vision for the future is, it must include digital transformation to grow. An interviewee mentioned: *"The future of tomorrow lies in the companies' existence online and using digital technology and creating a virtual existence; therefore, yes, digital transformation is necessary as we can work from anywhere and anytime to achieve our KPIs"* (participant 1). Another interviewee mentioned: *"Currently, advanced technology and digitalization is a mandatory tool to achieve our annual targets and finalize all projects"* (participant 5). Another interviewee also stated: *"Technology is the new business model that is to be applied in all businesses that seek effective levels of operational performance and productivity"* (participant 6). *"Digitalization is of course necessary as we play a role in achieving digital Egypt vision 2030"* (participant 8).

Based on employees' replies to this question and during the discussions, the researcher concludes that employees of the ICT sector understand the new and transformative technologies and to what extent were rapidly effect on enabling businesses to innovate and thrive in an increasingly digital world, especially in applying Egypt Vision 2030, and Egypt's digital transformation strategy, which embarked on building Digital Egypt through laying the foundations for the transformation of Egypt into a digital society. Accordingly, based on the responses of the employees to this question, the researcher concludes that employees agree that digital transformation helps organizations keep up with emerging demands from the market – whether it is related to operation functions or customer demands. It allows companies to compete better in an economic environment that is constantly changing in response to technological evolutions. Therefore, for businesses to be able to survive in the face of the future, digitalization is a necessity – an obligation. Based on this conclusion, the final theme emerged: *Most employees believe that Digitalization creates revenue, improves business, and replaces/transforms business processes.*

Conclusion

Semi-structured interviews were used to collect the data necessary for analysis, where the re-
searcher conducted ten interviews until reaching the saturation level, the data were collected in an inte-
grated manner and analyzed objectively to reach the results and conclusions. in this regard, the study
sought to find out are interviewees' views on the application of digitization within the performance of the
institution; to what extent employees lack of knowledge or misrepresentation of the concept of digital cul-
ture; and whether the digital culture in the organization improves employee participation and perfor-
mance. The qualitative data collection and analysis reflect what constitutes a digital culture, and the current
digitalized practice that is implemented among companies in Egypt, specifically in the ICT governmental
sector.

In this context, the final results were represented in the following themes: (1) ICT is the means of
performing the required job task in the organization, (2) Individuals have basic ideas of technology and
scientific knowledge for practical purposes or applications, whether in industry or in everyday lives, (3)
Most employees that are engaged at work is due to the management promoting the mission of the organi-
zation through communication and team spirit, (4) Most employees operate in digital culture at work and
in their personal lives; they have become digitally transformed unintentionally, (5) Most employees confirm
that digitalization in the organization leads to many benefits related to task performance, (6) Technological
developments are rapid and progressive, requiring constant learning from employees so to keep pace, (7)
Most organizations seek to provide knowledge to employees through educating them through training,
courses, and hands-on experience, (8) Most employees get empowered through tangible and intangible
incentives by the organization, and finally (9) Most employees believe that Digitalization creates revenue,
improves business, and replaces/transforms business processes as illustrated in table 9, which summaize
the qualitative data analysis themes.

The first step in a process designed to create cultural change and organizational transformation is
diagnosing the current culture. However, the most important part of the process is translating a cultural
profile into action. Accordingly, the study strategy and methodology were designed in a way that points
towards the achievement of the study objectives. Based on that, the purpose of this study was to investigate
the impact of building digital culture by using Denison's organizational culture model, on employees' en-
gagement by using a Gallup survey in the governmental ICT sector in Egypt, where all the research ques-
tions were answered completely. In general, the results of the study support Denison's findings that corpo-
rate culture with its main four traits "involvement, consistency, adaptability, and mission" is positively re-
lated to employees' engagement. Accordingly, with these qualitative outcomes, the research finalized the

proposed research model developments, and hypothesis conduction to gain empirical evidence, supporting the research topic in the Egyptian ICT governmental sector.

From this standpoint, it was also necessary to clarify the advantages of building a digital culture, not only for the success of digital transformation but because it has other important aspects such as: (1) Breaking down hierarchies and expediting work, as Its important to give employees the freedom to make their own decisions, which give them the ability to act more quickly. (2) Encourages innovation, as digital culture enables organizations to foster a workplace that motivates employees to try new things whilst enhancing the learning of your workforce. (3) Attracts new age talent and retains current workforce, which increases employee engagement, permitting them to bring their voice of opinions and create an impact.

Acknowledgment

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