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The Transformative Effects of Digitalization on I. T Organization and Leadership

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Abstract: ***The rapid advancement of digital technology has resulted in a significant transformation of the organizational structure and leadership dynamics inside IT organizations. The evolution of organizational structures toward more flexible and agile configurations is a noteworthy feature of this change. Traditional hierarchical systems are being replaced by flatter, cross - functional setups that foster innovation and collaboration across diverse teams. This fundamental shift is motivated by the need to act fast to take advantage of new opportunities and adapt to the ever - changing digital environment. In addition to bringing about structural changes, digitalization has also caused a cultural shift in IT organizations, with a stronger emphasis on data - centricity. Data, which is increasingly recognized as a strategic asset, powers innovation and decision - making. IT leaders must spearhead this culture shift, promote employee data literacy, support data governance frameworks, and apply advanced analytics to glean actionable insights. Additionally, because of digitalization, customer - centricity has become even more important in IT organizations. In addition to promoting initiatives like customer journey mapping, user experience design, and feedback systems, IT directors are in charge of making sure that technical advancements keep up with the shifting demands and expectations of end users. By prioritizing the customer expertise, IT organizations may increase customer satisfaction, foster brand loyalty, and gain a competitive edge in the digital marketplace.***

Keywords: Digitalization, Cloud Computing, Cyber security, Organization Change Management, Digital Transformation, Digital Strategy, Leadership & Strategic Human Resource Management.

1. Introduction

In the modern business climate, organizations must become even more adaptable, perceptive, inventive, resilient, and creative in order to handle their competitive arena's growing complexity, volatility, unpredictable nature, and rate of development [1] [2]. Moreover, the latest advancements in the field of digital transformation also significantly alter how leadership is exercised within companies. Since smart phones and knowledge technology allow workers to have instant access to a variety of knowledge [3]. In the present digital era, digital change is a hot issue that is being discussed everywhere and is highly suitable to determine the business agendas of firms throughout the globe [4] [5]. Because of this, the leadership position is now essential to realizing the benefits of digitization, particularly in terms of controlling and upholding personnel through improved employee outreach, engagement, and connection [6]. Digital leadership has problems in dynamic situations with fast changing digital technology, swift globalization, and simple communication of scattered organizational forms [7] [8].

Since standardizing and integrating IT infrastructure, Internet - enabled company procedures, and data will demand a composite of digital, market, business, and strategic management abilities, digital leadership may be crucial to the digitalization of the platform used by the business [9]. Concentrating on internal strengths, leadership, connections, and the alignment of digitization with business strategy increases an organization's chances of success with digital conversion and improves its ability to react to changes in the outside world [10]. Getting over these obstacles reflects the main difficulties managers have while going digital [11]. The management style will decrease staff attrition. Employee inclination to leave is influenced by how they view their supervisors [12]. Encouraging work motivation, strong leadership, and a workplace atmosphere that every worker can successfully adapt to are necessary for fostering employee job satisfaction, which makes it difficult to achieve [13].

Surprisingly there hasn't been any talk about the way the rise of technology has influenced leadership in administration situations. Understanding and researching electrically transmitted leadership, or "e - leadership, " is crucial for at least three distinct reasons [14]. Earlier 20th - century methodical research on management used a strong leader - centric perspective and concentrated on finding particular universal characteristics and behaviors that made certain leaders more successful than others [15]. In order to create a statement of purpose, determine and set up targets, design plans, procedures, and techniques to achieve the goals of the company successfully and effectively, as well as to direct and coordinate the company's efforts and operations, leadership plays a critical role in a business [16]. Knowing how to motivate companies for flexibility is necessary to achieve this. Remarkably little, however, is known about this subject in the realm of leadership. Enabling individuals and organizations to deal with shifts and unpredictability in an efficient manner is a key component of leadership for flexibility within an organization [17]. Transforming leadership is a leadership style that advances the interests of staff members collectively and assists them in achieving group objectives [18].

2. Literature Review

Choi et al. [19] proposed organizational leaders frequently emphasize how crucial personnel is to achieving effective results from invention. Nevertheless, in situations when there is a significant degree of uncertainty, ambiguity, and risk of failure, breakthrough innovation (BI) is facilitated by techniques whose principles are frequently at odds with those of strategic human resource management (SHRM), particularly in huge companies. In this study, they determine the standards for SHRM that are most likely to impact business intelligence (BI) results in organizations, based on the motivation - opportunity - ability (MOA) paradigm. They include the reduction of career dangers, the acquisition of management ambidexterity (ability), idea generating facilitation (opportunity), and extrinsic rewards (motivation).

Their hypothesis states that although these SHRM practices could have a direct impact on BI results, the larger organisational context—more especially, the level of managerial conservatism—is probably going to have an impact on these impacts as well. Utilizing questionnaire responses from 79 global companies with headquarters in the United States, they evaluate our predictions and discover that, first, the effects of professional risk, extrinsic incentives, and innovative recruitment and retention on business intelligence results differ depending on the firm's level of conservatism. Second, regardless of the firm's degree of conservatism, middle managers' development of multifunctional talent has a beneficial impact on BI achievements.

Zwikael et al. [20] proposed businesses frequently implement performance - enhancing assignments, the scientific community continues to be at odds about how to assess the initiatives ultimate effectiveness. Consequently, researchers utilize disparate measures to assess the identical project's successful outcomes variable, leading to discrepancies in study findings. The shortcomings of present - day project success evaluation techniques include their inability to be applied to all kinds of projects and their failure to distinguish between project success measurement and program individual achievement (such as the achievement of the project management). This work constructs, verifies, and displays generic scales to assess the achievements of two key leaders and the general achievement of any project using two long - term research studies grounded in the satisfactory theory. Several unique successful project characteristics are produced as a result: Project control success measures how well the endeavor's owner realizes their company's case; successful project accomplishment measures how well the project leader executes the plan; and the venture into the project success measures how well the project performs for its funder. By providing a conceptually sound comprehensive assessment methodology that will improve the performance assessment of enterprises and their leaders, this work adds to the body of knowledge.

Wei et al. [21] proposed analyzes the agreement issue in linear multi - agent structures with heterogeneity disruptions caused by Brown motion movements. Its primary accomplishment is the construction of a control mechanism to accomplish a changing unanimity for multi - agent systems in directed topology with stochastic noise interference. Conventionally, the connection weights are fixed, independent of the connection arrangement. Utilizing the Riccati inequality, a new networked controller is created, adjusting the interaction weights linked to the gain matrix by state mistakes involving neighboring agents. This unique control rule uses the local connection to asynchronously convergence the state errors among both leaders and followers to the minimal value, thanks to the introduction of time - dependent coupling penalties. Analysis is done on the reliability of the closed - loop structure utilizing the suggested management law using the equation and the Lyapunov guided technique. The efficiency and benefit of the created control approach are illustrated by the presentation of two simulation outcomes produced by the new and conventional schemes.

Castellano et al. [22] proposed partnering with internationally scattered R&D teams is still difficult. Modern theories of leadership in international virtual teams represent an important, as of yet unstudied, area of study that can contribute to increased productivity at work. The present research aims to examine how self - and shared - leadership affects virtual R&D teams' effectiveness. The relationship between the effectiveness of virtual R&D teams and the interaction of collaborative and self - leadership is mediated by dedication, faith, and intensity. The findings demonstrate that self - driven executives must possess strength and dedication in order to get more output from remote R&D teams. Furthermore, in order to accomplish collaborative management through selfleadership, trust is a prerequisite. The research adds to the body of knowledge on collaborative virtual teams and management. For executives and companies putting intra - and/or inter - organizational arrangements into virtual R&D organizations, they have practical ramifications.

Wei et al. [23] proposed use of enterprise social media (ESM) in work environments has grown significantly. Businesses use the ESM platform to facilitate staff communication and information exchange. Companies and business executives still face difficulties when it comes to effectively utilizing ESM technologies in work environments. This area of study has not received much attention from earlier research projects. The current body of study research examines how the use of ESM affects staff flexibility by taking electronic proficiency into account as a moderating factor in meta - knowledge. The present research examines how ESM adoption enhances employee agility with meta - knowledge using 263 answers from Chinese workers. The findings verify that companies may enhance individuals' meta - knowledge by investing in ESM technologies and that the use of ESM has a strong correlation with individual agility using meta - knowledge. The association involving the use of ESM and employee agility is strengthened by digital fluency, which also reinforces this connection through meta - knowledge. Lastly, the study's philosophical and managerial ramifications are examined in light of the findings.

Nonetheless, there is a significant knowledge vacuum about the ways in which organization conservatism and SHRM practices combine to shape the results of breakthrough innovation. Additionally, even though extensive models for evaluating the success of projects have been developed, there is still a need for a framework that is universally applicable and capable of distinguishing between individual performance and project success, especially for project managers. Furthermore, even though ESM is being used in offices more and more, little study has been done on how ESM use improves employee agility, particularly with regard to the moderating effect of digital fluency. Closing these gaps will help advance our understanding of project management assessment, company flexibility through ESM use, and SHRM practices.

3. Problem Statement

Notwithstanding the widespread recognition to human resources is essential to fostering creative success, there is a mismatch between SHRM practices and the ones that facilitate business intelligence, particularly in large companies. This discrepancy highlights how important it is to choose and implement SHRM tactics that effectively support

business intelligence outcomes. It is exacerbated by factors such as uncertainty and institutional rigidity [19]. The agreement issue in linear systems with multiple agents impacted by heterogeneity disruptions brought about by Brownian dynamics is examined in this work. It introduces a unique distributed control system based on Riccati inequality in an attempt to solve the drawbacks of fixed connection weights. The goal of the project is to reduce state mistakes among leaders and followers by using time - varying coupling weights to achieve dynamic consensus in directed topology under stochastic disturbances from noise. This would increase the stability and efficacy of systems with many agents [21].

4. Proposed Method

As previously said, the company manner of working and business settings are already being impacted by digitization. Ignoring digitization might put you at danger of losing in these fiercely competitive marketplaces. A company's internal operations and overall operating environment may be impacted by digitalization. In addition, digitization has the potential to disrupt current industries, create new ones, and alter the roles of participants in value chains. For instance, digitization could lead to the creation of new intermediates in the supply chain and the removal of existing ones [24]. This may result from things like easier access to customers and a rise in the usage of mobile devices. As a result, there are three ways to look at the effects of digitization and its objectives for a structure: 1. internal efficiency, such as better functioning through digital channels and reorganizing corporate procedures; 2. opportunities from the outside, such as fresh companies within the current industry (new clients, new services, etc.); 3. Disruptive disruption; digitization drastically alters corporate responsibilities [25]. Below figure 1 shows the digitalization impact.

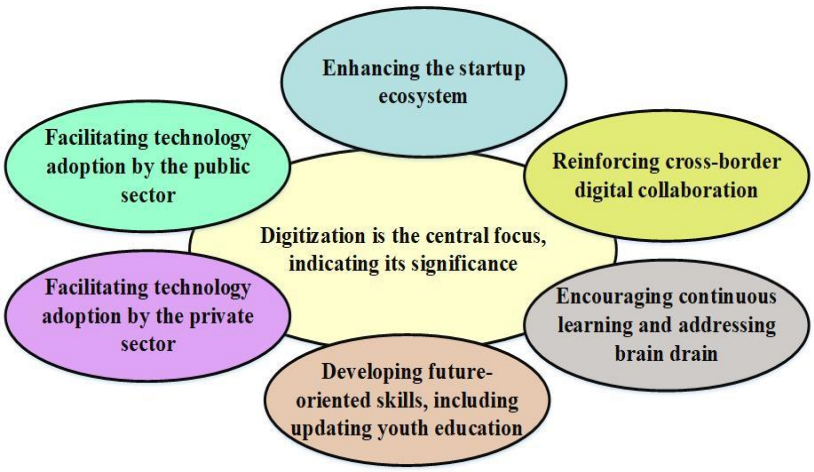

Figure 1: Digitalization Impact

4.1 Evolution of IT Organization Structures

This theory provides a solution to the main issue with previous research on the development of concepts and establishes a framework for further studies in this field. Researchers can explain substantial shifts in the subject matter of the designs by more firmly tying the creation of novel designs to certain underpinning advances in technology than did previous study. Furthermore, by combining a more robust explanation of the a longer - term vibrations of shifts in paradigm with an asymmetrical consideration of the repeated process, we can see how seemingly opposing models—like strategy and structure versus quality supervision or mathematical management as opposed to human relations—are actually complementary pairs within a single the organizational paradigm. Additionally, by dissecting each model's developmental stages, researchers are able to see the many roles that various actors along with leadership ideas have had in promoting change within the models' elements as well as the agency behind these modifications to the structure.

A more comprehensive account of this longer - term evolutionary process improves our ability to explain the ongoing shifts in organization as well as our understanding of the causal dynamics of certain historical occurrences. Thus, the goal of this work is to provide a modest but meaningful contribution toward a more comprehensive understanding of one of the basic concerns in our field: "Where do novel forms of organization come from?, " a subject that has not yet been fully addressed.

Simultaneous firm - and institution - level transformation is necessary for the efficient use of the innovative new technologies in the emerging main industries and for their dissemination into the more established sectors. They concentrate on the latter in light of the driving question of this work. The rise and acceptance of an entirely novel techno - economic paradigm—that is, a framework of best practices for utilizing the latest innovations most efficiently both inside and outside of the new industries—accelerates the mainstreaming of the new capabilities at the company sector. These theories had some important technology and commercial components, but they spoke very little about the relevant organisational and management components. In this research, they posit that the neo - Schumpeterian foundation offers a useful foundation for constructing a comprehensive account of the development of leadership models [26].

Table 1: Key Models, Technological Revolutions, and Paradigm Shifts

Model	Description	Key Technological Revolutions	Paradigm Shifts
Scientific Administration	A method of leadership frequently linked to Frederick Taylor that is centered on streamlining operations and procedures. The division of work and efficiency are emphasized.	Revolution Industrial	Automation
Human Connections	Highlights the significance of social elements in the workplace, including as morale and employee happiness. It emphasizes the value of employee needs and interaction.	As a Science, Psychology is Growing	Humanizing
Plans and Organization	Incorporates strategies into the structure of the company, focusing on goals and internal alignment. Its main objective is to employ strategic planning to get an edge over competitors.	The Development of Strategic Management	Commercialization
Management of Quality	Focuses on client happiness and ongoing progress. It places a strong emphasis on measurements, procedures, and an organizational dedication to performance at all levels.	Revolution in Quality	Globalization

4.2. The Role of Cloud Computing in I. T Transformation

They arranged these skills in descending order of optimal placement inside the DIKW structure, which goes from data to information and knowledge. In conclusion, researchers hypothesise that IoT is fundamental to the majority of the abilities listed because it enables the gathering and sharing of data, which enables businesses to implement cutting - edge services and features. Because of this, each example makes substantial use of any number of IoT - related features. To create pay - per - use revenue designs, Canon and Piaggio, for example, identify both the product and the customer/user. Cloud computing serves three purposes. First and foremost, it is necessary for the effective and accessible storage of massive volumes of field data (IaaS layer). That in turn makes information collecting and data aggregation and processing (IaaS and SaaS layers connected) possible. Canon, for instance, gathers data about several products used by a single client. Canon generates statements that include details that facilitates the client's accounting procedure and accurately bills the customer for the whole fleet by purposefully collecting data about users and their departments and companies and equipment IDs. Combining IoT data stored on the eMaintenance infrastructure with the business's ERP and apps makes this possible [27].

With its robust computing structure and ability to provide customers with universal products and services, cloud computing is a web - based computer solution that has many benefits over grid and other computer systems. The efficiency of several sectors in the management of supply chains may be supported by cloud computing technologies. Additionally, cloud computing appears as a significant technological advancement that might optimize supply chain systems' cost and operational effectiveness by offering software solutions and an administrative platform for the whole supply chain network via the internet. demonstrates how cloud computing is frequently seen as a novel computing architecture that enables users to temporarily employ network - based computing hardware that is provided as a service by a cloud service provider at one or more abstraction layers.

Although cloud computing is not an entirely novel technology, it is now among the most significant developing technologies because of its significant impact on how information and services are controlled. In the meanwhile, cloud computing is now offering business systems the ability to minimize the value and optimize the effectiveness of every device within the company. This makes it possible for cloud computing to manage several processes and enhance the efficiency of production, distribution, and purchasing networks. The cost, quality, speed, and flexibility of supply chain companies may all be enhanced by the effective and efficient implementation of cloud computing. Additionally, cloud computing is utilized as an optimization innovation that helps to improve processes in supply chains by offering platform, applications, and architecture. In order to increase a business's competitiveness and achievement, cloud computing also introduces flexibility into how it does business. This indicates that cloud computing technologies may significantly improve the firm's assembly's flexibility, agility, quality, visibility, and performance. People should include cloud computing technologies into their business processes due to the efficacy of these systems for enterprises. Furthermore, research indicates that cloud computing can offer highly dependable, scalable, and available computing facilities on demand in a dispersed context [28].

Table 2: Role of Cloud Computing in I. T Transformation

Aspect of IT Transformation	Role of Cloud Computing
Flexibility and Scalability	Provides The infrastructure of information technology on - demand scalability, enabling it to grow or shrink in response to changing business requirements.
Economy of Cost	Reduces initial capital costs by providing pay - as - you - go alternatives that offer economical options.
Availability	Facilitates remote access to resources from any location with an internet connection, encouraging mobility and teamwork.
Reconstruction after a disaster	Providing backup information and services centers spread worldwide to enable reliable solutions for disaster recovery.
Creativity	gives people the opportunity to use cutting - edge technology like big data analytics, AI, and machine learning, which encourages creativity.
Agility	Increases time - to - market and improves IT agility by enabling rapid application and service installation.
Security	ensures data safety and regulatory compliance by providing cutting - edge security features and regulatory qualifications.

Legacy Modernization	aids in the modernization of outdated systems by making the transition to cloud - native architectures and services easier.
Resource Optimization	dynamically allocates computer resources in response to demand, enabling effective resource usage.

4.3 Digital Skills and Talent Management

The capacity to take advantage of new market possibilities and develop new business models are essential components of the digital transformation process. Developing digital skills will need a large investment as part of this digital transition, and those skills must complement the business plan. All aspects of the organization—strategy, people and culture, management structure and processes, business process and technology—must be fully developed in order to fully realize these potential. Digital transformation is mostly about how businesses adapt to emerging digital trends in the market. The rise of these trends might occasionally require you to adjust to how your partners, clients, staff, and rival businesses utilize digital technology. Second, digital transformation encompasses far more than just an organization's technology implementation practices. For digital transformation, other concerns like strategy, talent management, organizational structure, or leadership are just as crucial as or even more crucial than technology. Organizational advancements, societal shifts, and modifications to company models are all included in the term "digital transformation. " Disruptive change impacts internal procedures and value propositions in addition to consumer interactions. Business advances and digital technology have an impact on several industries. bringing in new cultures, transforming society, altering the competitive environment, boosting client expectations, upending long - standing company models, obfuscating industry boundaries, and presenting previously unheard - of possibilities and challenges for businesses worldwide. As a result, one of the most crucial strategic concerns facing all firms today is digital transformation [29].

Table 3: Skills and Talent Management

Aspect of Talent Management	Description
Skills Identification	Determining the precise digital capabilities needed for projects and efforts both now and in the future.
Skills Assessment	Using exams or evaluations to gauge how proficient current employees are in digital abilities.
Skills Development	Offering workshops, training courses, and other materials to improve staff members' digital literacy.
Recruitment Strategies	Creating plans to draw in and hire people from the external labor market who possess the requisite digital capabilities.
Cross - Training	Promoting cross - training programs to make sure staff members have a wide range of digital abilities outside of their areas of specialization.
Performance Management	Integrating objectives for the development of digital skills into systems for employee feedback and performance reviews.
Succession Planning	Identifying and developing future leaders with excellent digital abilities for leadership positions.
Retention Strategies	Putting policies in place to keep top personnel by providing chances for skill and career development.
Collaboration Platforms	Employee knowledge and skill sharing can be facilitated by employing digital collaboration tools.
Continuous Learning Culture	Promoting an environment of ongoing education where workers are motivated to keep up with new developments in digital trends and technology.

4.4. Cyber security Challenges in the Digital Era

An intricate web of moral dilemmas and ramifications must be navigated in order to include AI into cyber security. The extensive analytical powers of AI raise serious worries about data privacy and protection, even as these issues are fundamental to its usefulness in danger detection and mitigation. It's crucial to strike a balance between using massive amounts of data for cyber security and protecting user privacy, since AI systems are trained on and analyze them. The "black box" problem, or the lack of interpretability and transparency in some AI models' decision - making processes, adds to the complexity. As artificial intelligence grows more and more integrated with cyber security, its opacity may obscure responsibility and make it more difficult to fix security lapses or breaches. Furthermore, the vulnerability of AI to harmful applications, such as the development of AI - powered cyberthreats, highlights how urgent ethical issues are. Tight ethical and legal restrictions on the application of AI in this field are necessary since, if unchecked, these dangers may take advantage of the technology's ability to cause extensive harm. Robust governance and regulatory frameworks are required to drive the ethical deployment of AI in cyber security in light of these concerns. Such actions ought to guarantee responsibility, preserve data privacy, enforce transparency, and lay down precise rules to reduce the possibility of AI being abused. By doing this, we can safely leverage AI's promise to improve cyber security while minimizing its hazards. As a result, using AI in cyber security is a useful tool that has its own complications rather than a magic bullet. To overcome these obstacles, a methodical strategy combining AI's advantages with human supervision, moral principles, and robust governance is required [30].

The procedures and safeguards put in place to preserve the integrity and security of networks, devices, and information systems are referred to as cybersecurity hygiene. Cybersecurity hygiene is critical in the context of IoT for the following reasons:

- Data privacy and security: A lot of data, frequently sensitive data, is collected, processed, and transmitted by Internet of Things devices. Ensuring appropriate cybersecurity hygiene contributes to the protection of user privacy and upholds confidence in IoT ecosystems by preventing illegal access, leakage, or alteration with this data.
- Ensuring the availability and dependability of the system: IoT devices are being employed more and more in vital applications like energy management, transportation, and

healthcare. To prevent interruptions and possible injury, it is essential to guarantee the availability and dependability of these systems. Cybersecurity hygiene measures add to the general stability and resilience of IoT infrastructure by preventing and lessening the effects of hacks.

- Legal and regulatory compliance: Governments and regulatory agencies throughout the world are developing policies and standards to guarantee the security and privacy of IoT systems and devices as the IoT environment develops. Establishing strong cybersecurity hygiene procedures aids companies in fulfilling these obligations and averting any penalties, penalties, or harm to their reputation.
- Minimizing the attack surface: The Internet of Things (IoT) ecosystem offers a huge attack surface to hackers since it has billions of linked devices. Best practices for cybersecurity hygiene can help companies lower the risk of successful attacks and limit the potential harm that can result from security breaches.
- Protection of company reputation: Internet of Things security lapses may seriously harm a company's standing by driving away customers and hurting its financial line. Businesses may show that they are committed to safeguarding consumer data and upholding secure IoT settings by emphasizing cybersecurity hygiene.
- Saving money: By putting cybersecurity hygiene procedures in place, businesses may save money on incident response, system recovery, and any legal fees that come with security breaches. It may be less expensive to proactively invest in cybersecurity safeguards than to respond to a security crisis after it has already occurred [31].

4.5. Data Governance and Management in a Digital Environment

Few people have paid much attention to data governance, and businesses frequently ignore it while trying to implement BDAS and develop Fair, Accountable, and Transparent (FAT) algorithms. The emphasis is frequently on experimenting with AI, but less attention is paid to gathering and preparing data for AI, which frequently takes up the majority of the time. Yet, governance is made more difficult by the fact that data is so pervasive, that it can be difficult to use vast amounts and types of data from many sources, that the influence of data flows on data quality is unpredictable, and that many people are unaware of how important data quality is. Numerous factors, including as timeliness, completeness, objectivity, consistency, believability, and relevance, all contribute to the overall quality of data and define its suitability for a given purpose.

Interoperability technologies have made data collecting and exchange easier within the past ten years. Interoperability, however, also makes it easier for false data to spread quickly and easily between systems, contaminating them exponentially. Data types and structures become more complicated due to the same technology improvements that collect data from heterogeneous resources, store it in different ways, and give it new attributes. Identifying the same real - world entity, such as a person, within a single database (de - duplication) or across many databases (record linkage) is further complicated by massive amounts of data. Furthermore, over time, data glitches may result in mistakes even in cases when precise data is maintained. These anomalies result from environmental shifts that cause disparities between the real world and the way data represents it. For example, when a residential address is changed, the previous address is still listed. Thus, achieving high standards of information quality is challenging [32].

4.5.1. PHI (personal health information) data governance

Effective governance of PHI remains an elusive aim, despite several requests for its administration to safeguard individual privacy and make information available for health system research and innovation. Certain types of PHI can only be shared or sold to the extent permitted by laws and regulations protecting patient privacy. Other PHI is mainly uncontrolled, such as data created by people using consumer gadgets. Beyond safeguarding personal privacy, organizations' proprietary claims over health data created or maintained by their own ICTs (information and communications technologies) may restrict the sharing of data for inter - organizational system enhancements or research. Technical obstacles are also caused by the complexity and lack of standardization of health data, as well as the large number of health ICT systems that are not interoperable. A range of governance structures are developing to tackle the potential and difficulties associated with health data governance. Their typical configurations of fundamental characteristics, such as objectives, power dynamics, technology, and markets they service, make them distinguishable. Five analytical factors that define diverse PHI governance forms were found in a research on PHI data governance, and a tentative taxonomy of forms resulting from various arrangements of these dimensions was produced [33].

4.6. Leadership Strategies for Digital Transformation

Involving business and information system executives in their individual firms' digital transformations also requires strong leadership. Effective digital transformation (DT) combines SMACIT (social, mobile, analytics, cloud, and internet of things) technology with an organization's current capabilities. Digital strategies are used to direct leaders' efforts and create new value propositions. Organizational leaders, in particular the managers engaged in DT, guide the group and encourage participation in business unit meetings about strategic IT matters. Greater strategic business knowledge and more decision - making flexibility are often the outcomes of this participation. DT may be thought of as the conductor of a digital orchestra, with the leader acting as the orchestra's master

Depending on their influence on organizational performance, degree of autonomy in strategic IT decision - making, strategic business acumen, and interpersonal abilities, IT leadership jobs have varying effects on businesses. Within a company's digital transformation operations, the Chief Digital Officer (CDO) may take on three primary roles: i) entrepreneur; ii) digital evangelist; and iii) coordinator. With a strong customer focus, the entrepreneur CDO encourages the adoption of new technology for innovation and occasionally shows the way to adapt whole business models. In order to get the entire company to embark on the digital "journey, " the digital evangelist CDO encourages people to

change the organizational culture at all levels of hierarchy and departments and shares its DT plan. Initiating and planning the organizational transformation and encouraging cross - functional collaboration towards the creation of the IT and IS strategy and infrastructure are the coordinating CDO's wider responsibilities.

In order to implement changes resulting from DT, the Chief Information Officer (CIO) and the Chief Executive Officer (CEO) must work closely together and effectively, taking into account the unique needs of every employee. This requires moving down the company's organizational ladder and involving the majority of the workforce. Compromise with DT is influenced by leadership traits such as staff autonomy and management democracy in the decision - making process. A higher level of management engagement in the discussion of strategic IT issues typically results in a more decentralized procedure in the decision - making process for strategic IT. An arrangement In order to implement organizational strategy changes, CDO encourages cross - functional cooperation, which suggests a more democratic form of leadership. They put up the following claim: P1 - Solutions that demonstrate more advanced phases of DT either have or do not have increased staff autonomy and more decentralized decision making procedures, which are linked to more democratic leadership styles [34]. Below figure 2 shows the research model.

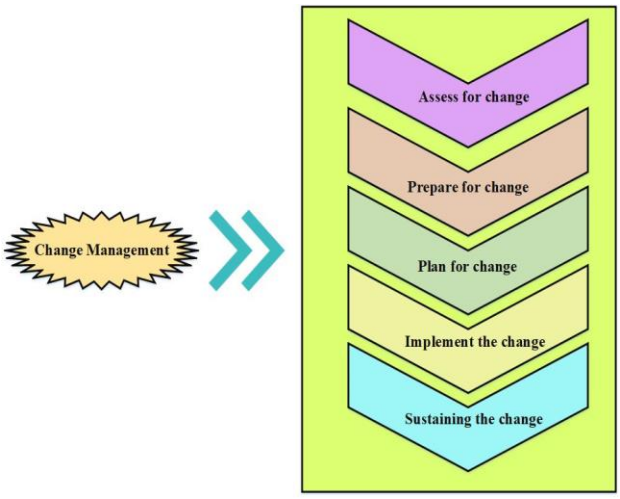

Figure 2: Research Model

4.7. Case Studies: Successful Digitalization Initiatives

The study involved the context of the Republic of Tatarstan, Republic of Udmurtia, Republic of Bashkortostan, Ulyanovsk Region, Samara Region, Orenburg Region, and other areas of the Russian Federation, there are 2, 105 students between the ages of 18 and 23 (45% boys and 55% girls), 2, 103 parents of students, and 225 university teachers (43 percent male and 47 percent female). This study set out to determine the state, issues, and future directions of digital competency building in Russian higher education institutions. Using Google Forms, the questionnaire was administered within a month of the course. An automatically generated Google spreadsheet was utilized to organize and examine the survey data. Written consent from the respondents was sought for the use of their personal information in order to administer the survey and evaluate the findings. The questionnaire included 8 questions related to understanding the essence of modern digital competencies in Table 4.

Table 4: Questions for the analysis of the Digitalization Initiatives

Personal data (age, gender)	Question	Answer options
	Organization in which you work/study	
	Gender	
	Age	
1	Are you satisfied with the level of digital technology at your organization?	yes / no / much
2	Do you use social networks in your professional activity?	yes / no / much
3	Evaluate your digital proficiency	low / medium / high
4	Evaluate your experience in using digital technologies	less than 2 years / 2 to 5 years / 5 to 10 years / over 10 years
5	Do you enhance your digital competence?	often / from time to time / I do not pay attention, everything turns out by itself
6	In your opinion, do digital technologies improve the educational process?	yes / no / they do not, and it does not matter
7	What do you mean by digital competences?	They allow me to work deeply and safely anywhere and without prejudice to competence / They allow you to work on the Internet, learn with various online products and services / Other
8	Evaluate the quality of digital knowledge gained at school/university	lower / equivalent to my level / higher / I know more than school/university teachers / Other

4.8. Future Trends in I. T Organization and Leadership

Regarding the second study question, experts anticipate that digitalization would bring about a number of changes in leadership roles. It is become more and more crucial to understand all departments and specialized areas, to identify interlocking systems, and to collaborate across disciplines when it comes to using information to solve problems and search for and organize information. Routine administrative duties related to material resource management are becoming

less common as assistance is given by digital technologies (systems that enable shift planning or job allocation) or tasks are moved to the employees' scope.

There will be more accountability for outcomes for leaders. The change that is most often cited is a distinct movement in duties towards the category of managing human resources, namely the advancement of workers through coaching and responsibility sharing. Furthermore, according to the experts, managing change is a work area that will become even more crucial for future leaders. The four goals in this area are to accept failure, respond flexibly and agilely, communicate freely and clearly, and accompany change. These tasks have not yet been incorporated into leadership task frameworks.

In terms of strategy orientation, it will become more crucial to identify the window of opportunity for early and frequent decisions on the market, to envision future scenarios for digital strategies and cultural shifts, and to encourage the development of creative teamwork techniques in addition to new products. Clear goal agreements and a results - oriented approach are still crucial. Leaders need to assess potential solutions and rapidly understand the fundamentals. Experts also believe that it is becoming more and more crucial to foster a good culture of error where workers are given autonomy and mistakes are turned into opportunities for growth. Experts believe that a leader's role as a coach—one that encourages people to grow and considers their point of view—becomes even more crucial when it comes to employee development. This is because coaches may treat each person as an individual, identify their strengths and limitations, and show empathy.

Experts also see modifications to interface design: The management of change and early, transparent, and open communication—especially through digital media—will become increasingly crucial. According to the experts, the latter entails developing a fundamentally optimistic outlook and a strong desire for change, eliminating hesitation and failure - related anxiety, being receptive, and having the guts to make judgments that are understandably warranted. Within the value orientation category, experts see a growing relevance in communicating self - assurance, owning up to mistakes and growing from them, and communicating generational conflicts. Experts also see a success - critical leadership behavior—change orientation—that is becoming increasingly important. It becomes crucial to be open to new things (like technology and cultures), which includes being eager to learn, being aware of the possibilities and areas of specialization in technology, and keeping up with a variety of management techniques and knowing when and how to apply them [35]. Let's assume we have 200 employees in our IT organization for these calculations.

Table 5: Features of IT Organization and Leadership

Attribute	Frequency	Percentage
Gender		
Male	120	60.0%
Female	70	35.0%
Other	10	5.0%
Years of Experience		
< 1 Year	25	12.5%
1 - 5 Years	70	35.0%
6 - 10 Years	50	25.0%
11 - 15 Years	40	20.0%
> 15 Years	15	7.5%
Position		
Junior Developer	40	20.0%
Senior Developer	60	30.0%
Team Leader	30	15.0%
Project Manager	40	20.0%
Department Head	30	15.0%
Educational Level		
High School	10	5.0%
Bachelor's Degree	100	50.0%
Master's Degree	70	35.0%
PhD	20	10.0%
Technical Proficiency		
Beginner	20	10.0%
Intermediate	80	40.0%
Advanced	70	35.0%
Expert	30	15.0%
Leadership Experience		
None	60	30.0%
< 1 Year	40	20.0%
1 - 5 Years	50	25.0%
6 - 10 Years	30	15.0%
> 10 Years	20	10.0%
Team Size		
< 5	20	10.0%
5 - 10	60	30.0%
11 - 20	80	40.0%
> 20	40	20.0%
Familiarity with Emerging Technologies		
Cloud Computing	120	60.0%
Artificial Intelligence	150	75.0%
Blockchain	80	40.0%
Internet of Things (IoT)	90	45.0%
Cybersecurity	140	70.0%

5. Conclusion

The transformative effects of digitalization on IT organization and leadership are profound and multifaceted. Digitalization has not only reshaped organizational structures but also necessitated cultural and strategic shifts within IT organizations. Leaders in the IT domain must navigate these changes adeptly, embracing agility, data - centricity, and customer - centricity as core principles guiding their actions. The journey towards digital maturity requires IT leaders to cultivate a collaborative and innovative culture, leverage data as a strategic asset, and prioritize the delivery of exceptional customer experiences. By embracing these imperatives, IT organizations can thrive in the digital age, driving innovation, fostering growth, and delivering tangible value to their stakeholders.

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