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The Impact of Digital Transformation on Corporate Governance

A Dissertation in Partial Fulfillment of Masters in Business Law

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Dedication

To my beloved **parents**, whose celestial love, sacrifices, and prayers have made me the man I am today.

To my late brother, **Nabil** — your memory lives on in my heart, forever missed. I still remember the joy in your smile when I passed the entrance exams for the military academy, and I know that, had you been here, that same smile would be shining proudly for my graduation.

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Abstract

In an era characterized by rapid technological advancement, the interplay between corporate governance and digital transformation has emerged as a critical area of study. This dissertation delves into the complex relationship between these two domains, focusing particularly on the Lebanese context. It examines the impact of digital transformation on corporate governance practices, framed by Laws No. 81/2018 on Electronic Transactions and Personal Data, and No. 126/2019 on the Amendment of Lebanese Commercial Law. The study underscores the pivotal role digital technologies play in reshaping business operations, governance structures, and regulatory frameworks.

Digital transformation heralds a new era of technological revolution, significantly altering the dynamics of corporate governance. By enhancing transparency, accountability, and efficiency, digital tools such as AI, IoT, and big data analytics facilitate better decision-making processes and stakeholder engagement. This transformation demands a re-evaluation of traditional governance models to incorporate technological advancements, ensuring that businesses remain competitive and resilient in the digital age. The dissertation highlights the need for Lebanese corporations to embrace these changes to foster innovation and achieve sustainable growth.

Lebanon's economic crisis necessitates a strategic shift towards digital transformation as a means of recovery and reform. The adoption of digital technologies is crucial for modernizing corporate governance and enhancing the country's economic competitiveness. Laws No. 81/2018 and No. 126/2019 provide a legal framework to navigate the complexities of digitalization while upholding governance principles. The study explores how these laws can support Lebanese businesses in implementing effective digital transformation strategies, thereby promoting transparency, accountability, and sustainability.

The dissertation also addresses the challenges associated with digital transformation, particularly concerning data security and privacy. The increased reliance on digital tools and platforms raises significant concerns about cybersecurity and regulatory compliance. By examining global best practices and regulatory frameworks, the study offers insights into how Lebanese businesses can mitigate these risks while leveraging the benefits of digital transformation. The role of ethical considerations in managing digital data and ensuring compliance with laws like GDPR is also discussed.

Keywords: Corporate Governance, Digital Transformation, Lebanese Commercial Law, Electronic Transactions, Data Privacy, Technological Innovation, Economic Competitiveness, Regulatory Compliance, Transparency, Accountability.

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List of Abbreviations

MSD	Mobile Service Delivery
ERM	Effective Risk Management
DLT	Distributed Ledger Technology
DAO	Decentralized Autonomous Organization
ARPANET	Advanced Research Projects Agency Network
NIST	National Institute for Standards and Technology
CGIT	Corporate Governance of Information Technology
RPA	Robotic Process Automation
IEEE	Institute of Electrical and Electronics Engineers
BPM	Business Process Management
GDP	Gross Domestic Product
UNECE	United Nations Economic Commission for Europe
CGI	Conseillers en Gestion et Informatique
HR	Human Resources
SCM	Supply Chain Management
DDDM	Data Driven Decision Making
AR	Augmented Reality
IMF	International Monetary Fund
MENA	Middle East and North Africa
MSME	Micro Small and Medium Enterprises

COLIBAC	Lebanese Accreditation Council
SEC	Security and Exchange Commission
ESG	Environmental Social and Governance
CGC	Corporate Governance Code
GDPR	General Data Protection Regulation
DT	Digital Transformation
OMSAR	Office of Minister of State for Administrative Reform
AI	Artificial Intelligence
IT	Information Technology
BPA	Business Process Automation
IOT	Internet of Things
B2B	Business to Business
SOS	Symbian Operating System
IOS	iPhone Operating System
ERP	Enterprise Resource Planning
EC	European Commission
OECD	Organization of Economic Cooperation and Development
DSS	Decision Support Systems
IAF	Internal Audit Function
CRM	Customer Relationship Management
DoD	US Department of Defense
BI	Business Intelligent
IS	Information System

ICT	Information Communication Technology
SOX	Sarbanes Oxley Act
IIS	Internal Information Systems

Introduction

In a rapidly evolving and transformative world the concepts of corporate governance and digital transformation appear as interlocking rings that interfere and interact within the framework of the business environment. Corporate governance rooted in the principles of responsibility, transparency, accountability, and ethical standards has evolved throughout history in response to societal, economic, and regulatory contexts. Today, the digital transformation process heralds an era of an incomparable technological uprising. This uprising made a fundamental change in how companies are managed and operated, even in terms of how they communicate and interact with shareholders and other stakeholders.

Corporate governance, in particular, is a key site for this discussion and debate. Not least, because it highlights both the importance and confusion created by recent technological developments. There is a lot of interest in emerging technologies. But, what also seems clear, is that the various different stakeholders in the corporate governance space are moving at different speeds and in different directions. Everyone is aware that something important is happening. But, there is much less agreement on what the digital transformation means for the future of business models and organization, as well as corporate governance and other relevant regulatory frameworks.

Corporate Governance is now a fashionable trend, but the concept is as old as human history. Corporate governance, the system by which companies are directed and controlled, has experienced major developments throughout history, affected by economic, social, and regulatory variables. From the traditional forms of trade and commerce to the modern globalized and digitalized economy, the principles and practices of corporate governance have played a fundamental role in shaping the performance of corporations and conserving the interests of stakeholders. The roots of corporate governance can be traced back to the earliest nations such as Mesopotamia, Egypt, and Greece, where early forms of business and trade emerged.

During the Middle Ages, guilds and merchant associations played a central role in regulating trade and commerce in Europe. Guilds, comprised of craftsmen and artisans, established codes of conduct, work-based learning models, and quality standards to maintain the integrity of their professions. Merchant associations which were the result of an alliance between trading guilds, facilitated long-distance trade and provided dispute resolution mechanisms to ensure fair dealings among members. These early forms of corporate governance laid the foundation for modern business practices and ethical standards.

The emergence of the English joint stock company during the 17th and early 18th centuries played a pivotal role in the context of institutional advance. This period saw the development of the chartered corporation, best represented by the Dutch East India Company, and later the unincorporated joint stock company which is a type of business organization where two or more

individuals or entities come together to conduct business without forming a separate legal entity. The leased corporation can be seen as an institution that was largely successful in overcoming the “fundamental problem of exchange”. The unincorporated joint stock company later evolved as the result of the adaption of the leased corporation model brought about by institutional entrepreneurship. The development of the joint stock company during this period is important because it established the main characteristics and governance structures of the modern corporation.

The Industrial Revolution, began in the 18th century, when agricultural societies became more industrialized and urban. The transcontinental railroad, electricity and other inventions permanently changed society and how business is done, began in the United Kingdom and later spread throughout many other parts of the world. This economic transformation changed not only how work was done and goods were produced, but it also altered how companies should be administrated. This general change in societal organization shaped how business is done and how corporates work since the economy shifted from individual and small institutions into large and huge companies containing many employees, which in turn led to changing the way of work and imposing fundamental measures in order to control the management of the company formed as a result of this stage, and thus imposing challenges with regard to corporate governance. As conglomerate corporations emerged due to this revolution such as railways, steel and oil companies, worries about monopolistic practices, work exploitation, and environmental issues pushed governments to enact regulatory reforms to keep pace with the new variables. As a result, the United Kingdom introduced the “Companies Acts” in 1862 which reformed the nature of companies, while the United States enacted the “Sherman Antitrust Act” in 1890 that banned businesses from conspiring or merging to form a monopoly and it aimed to promote economic fairness and competitiveness while regulating interstate commerce.

During the 20th century, corporate governance continued to evolve as a result to the changing economic conditions and technological developments. In the beginning of this century Limited liability became a legal principle, separating personal and corporate assets. In the 1930s The Securities and Exchange Commission (SEC) was established in the United States to regulate securities markets. In 1940s World War II ended, Investors were unconcerned about governance as corporate performance soars. In 1970s Corporate governance entered the spotlight as the SEC takes an attitude on reforms. In 1980s the rise of hostile takeovers prompted a focus on shareholder rights and board accountability. In 1992 The U.K.’s Committee on the Financial Aspects of Corporate Governance (Cadbury Committee) released its Code of Best Practice. In 1998 The U.K. Corporate Governance Code replaced the Cadbury Code of Best Practice, incorporating broader governance principles. In 2002 The United States enacted the Sarbanes-Oxley Act to improve corporate governance and financial reporting. In 2008 Again, governance came to the fore as the U.S. economy experienced a crisis. In 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act was passed in the U.S. introducing additional corporate

governance reforms. In 2016 The U.K. Corporate Governance Code was revised, focusing on the relationship between companies and stakeholders. In 2019 Business Roundtable issued a new statement emphasizing the purpose of a corporation and the importance of all stakeholders. In 2020 Consumers pushed corporations to act more ethically and sustainably following the COVID-19 pandemic and the resulting economic fall.

Business history is full of stories of "disruptors" and "disruption," especially with regard to new technologies. Technological renaissance that began in the late 20th century is reshaping industries at an unprecedented pace. The dawn of the digital age characterized by a whirlwind of technological innovation and disruption has revolutionized business operations, enabling corporations to enhance productivity and expand their global markets. The emergence of Digital Platform Business Model has caused massive disruption across multiple industries and services and consequently led to optimizing efficiencies, speeding up information sharing and making business processes more dynamic. This new phenomenon has pushed businesses into redesigning their strategy, and enabled economies of scale for several smaller companies.

Globalization has drastically integrated the world by enhancing social, economic and political connectedness. It has transformed the world economy, creating a highly interconnected network of trade and finance. Corporations are participating in globalization directly, using digital transformation especially through digital platforms to develop, find new opportunities, showcase their products, and build business networks. The same applies to the business sector, which is rapidly incorporating globalization. The definition of business globalization is the way companies function in multiple locations globally and remain less inclined to operate within a single home country. The total flow of technology, goods, and information between consumers and countries has advanced globalization and digitalization in business which made the business world more dynamic imposing significant considerations on corporate governance practices.

Globalization brings new perspectives on corporate governance because it directs corporations to homogenize their governance standards globally rather than solely focusing on national performance criteria in their country of origin. Additionally, in the digital age, data are being transformed into a value-generating; consequently, data governance and data management have become part of the scope of corporate governance and are of crucial importance to both firms and their boards of directors in terms of improved decision-making and strategic positioning. From this perspective, theoretically, it is essential to consider a general guideline and focus on the underlying commonalities instead of differences; practically, the development of an autonomous governance mechanism by leveraging ethical constraints to complement legal constraints is necessary.

As we enter the 21st century corporate governance faces substantial new opportunities and problems. Leading companies will have to negotiate unexpected challenges as a result of the tremendous impact of technology and globalization on corporate operations, which is

simultaneously driving new competition and opening up new markets and business models. The proliferation of social media, chatbots and big-data analytics has affected the way communication and decision-making processes are made within the corporations, also this is posing risks associated to data privacy and cybersecurity issues. Moreover, the growing recognition of environmental, social, and governance (ESG) factors increases corporate accountability and stakeholder engagement in addressing demanding social issues such as discrimination, climate change and human rights exploitation.

Adopting digital transformation is changing the methods through which companies' function, generating innovative possibilities and difficulties that force firms to adjust to remain competitive in the digital era. Digital technologies have fundamentally altered the dynamics of governance structures and became more critical for firms to embrace this change and utilize technology to develop a more flexible, proactive and effective approach as digital transformation continues to advance at an accelerating pace.

Essentially, because digital transformation has brought about a lot of changes, the governance regime is elevated. The higher the degree of digitalization, the more apparent the decoupling of executive compensation from performance, indicating lower sensitivity of executive pay to performance outcomes. Within the framework of digital transformation, digital technology empowers shifts in corporate governance models, enabling process-based behavioral monitoring and constraining governance mechanisms, digital transformation has a positive impact on mitigating agency problems, as it enhances information quality, improves internal control standards, reduces excessive bonus, and diminishes managerial short-termism.

Secondly, Digital transformation brings a significant improvement in process optimization and decision-making processes. Businesses can act more quickly and intelligently when they can instantly communicate with people and groups in multiple time zones and locations. Decision-making agility is essential in today's international business world, as companies must react swiftly to shifts in the market and intense competition.

Due to the emergence of contemporary digital technologies, organizational environment and business processes are hastily changing as a result of the advances in the internet, artificial intelligence, big data, and other technology-mediated tools and techniques, along with the rapid changes in customer preferences and exceptional disruptions generated by the COVID-19 pandemic which was the sort of catalyst that companies needed to not only accelerate their plans for digital transformation but also to ensure that they were able to think digitally. The resultant business model innovation has fundamentally altered consumers’ expectations and behaviors, putting immense pressure on traditional firms, and disrupting numerous markets. This will facilitate and stimulate the rise of platform-style organizations, where companies operate as intermediaries connecting multiple groups of users.

With the advantages, come the disadvantages, particularly when it comes to data security and privacy. As businesses collect and store massive volumes of data from several sources worldwide due to the nature of how business is done and the relation between customers and corporations, they need to ensure that the cyber security measures taken are in place to protect private data. Corporate governance in the digital age is further complicated by the need to comply with data protection laws, such as the GDPR (The General Data Protection Regulation) in Europe. In light of this, while digital transformation presents organizations with many benefits in an increasingly globalized world, it also necessitates careful thought and risk management in order to uphold sound corporate governance.

There is no doubt that technology has significantly impacted every aspect of our daily lives, including the commercial sector. With the exacerbated economic crisis facing the Lebanese economy, the adoption of digital transformation in Lebanese corporations is inevitable, given its central role in the recovery plan and reform strategy. In fact, the adoption of technology as a vital catalyst could foster innovation, support the digital economy, achieve governance, reform and develop corporate administrations, and reduce corruption therein. This transformation has emerged as a fundamental force shaping the strategies, operations, and regulatory compliance of corporations. In Lebanon, the need to adopt this phenomenon is a must, with the enactment of Law No. 81/2018, which relates to electronic transactions and personal data, in the face of a digital revolution, Law No. 126/2019's (Amendment of Lebanese Commercial Law) requirements, the McKinsey report's findings, and the CEDRE Conference's imperatives all form the basis for improving the national corporate governance framework in the essence of the advent of digital transformation.

Much discussion has centered around improving the Lebanese commercial system, particularly in light of its recent economic crisis. A controversy arises from the fact that the Lebanese business elite are clinging to age-old principles in the face of modernization and the emergence of digital transformation and new trends in business administration. While the impact of digital transformation on corporate governance is of great importance, the reality is that the business ruling class continues to adhere to traditional methods of thinking. This leaves Lebanese businesses grappling with the imperatives of modernization while simultaneously upholding age-old principles of governance and ethics.

The years 2018 and 2019 were filled with governmental activities related to DT. Prime minister Saad Hariri’s government placed the matter among the priorities of its ministerial statement in 2019. Hariri formed a ministerial committee of the ministries and public institutions concerned to coordinate work among them and agree on a governance model for the DT process. Three parallel strategies were developed. Firstly, OMSAR (The Office of the Minister of State for Administrative Reform) developed the comprehensive DT strategy. Secondly, the Ministry of State for Technology and Investment was created and charged with developing the DT strategy for the private sector and economy. Thirdly, a national team consisting of various ministries,

economic sectors, and security and military authorities was formed to develop a plan for confronting cybercrime risks and preparing a national strategy for institutionalizing cybersecurity work.

This study aims to investigate the complicated relationship between corporate governance and digital transformation within the context of Lebanese commercial law by examining the revision of existing laws No. 81/2018 and Law 126/2019. It analyzes how digital transformation significantly impacts governance fundamentals, legal frameworks and ethical responsibilities, thus providing an outline for Lebanese companies in promoting the principles of transparency, accountability and sustainability.

While the Lebanese economy seeks to recover its economic crisis that has ravaged the country since 2019, and as its commercial businesses strive to remain competitive in the advent digitalized economy, it has become necessary to reconsider the methods and approaches to a new economic management, particularly with regard to transitioning from a rentier economy to a productive one. There is no doubt that the Lebanese economy can rise from its economic crisis and become competitive on the global stage through investment that prioritizes modernization and adherence to regulatory standards, which are increasingly intertwined with the adoption of digital technologies, Law No. 81/2018 and Law 126/2019 of the Lebanese Commercial Law which form the base, providing the legal framework upon which businesses must navigate the complexities of digitalization while upholding principles of governance.

Furthermore, insights from the McKinsey report and the demands of the CEDRE Conference highlight the importance of digitalization and governance reform in Lebanon. These recommendations emphasize the need to modernize infrastructure, enhance digital capabilities, and strengthen governance practices to foster economic growth and competitiveness.

Digital transformation, characterized by the integration of digital technologies into all aspects of business operations, has redefined the paradigms of corporate governance. From enhancing decision-making processes through advanced analytics to facilitating virtual collaboration across geographically distributed teams, digital tools have become essential assets in the governance toolkit. However, with these opportunities come a myriad of challenges, ranging from cyber security threats to ethical dilemmas in data management and privacy.

Amidst this landscape of opportunity and challenge, Lebanese businesses are tasked with navigating the nuances of corporate governance within the framework of Laws No. 81/2018 and 126/2019. This requires an accurate understanding of how digital transformation impacts governance structures, regulatory compliance, and ethical considerations. By embracing digitalization while remaining vigilant about legal and ethical responsibilities, Lebanese businesses can not only harness the benefits of digital transformation but also cultivate a culture of transparency, accountability, and sustainability.

Also this exploration seeks to unravel the details of the interplay between digital transformation and corporate governance in Lebanon, offering actionable insights and practical guidance for businesses navigating this complex terrain. Through a comprehensive analysis of Laws No. 81 and 126/2019, and insights from the McKinsey report and the CEDRE Conference, stakeholders can gain a deeper understanding of how to adapt governance practices to meet the challenges and opportunities presented by digital transformation. Ultimately, this journey towards digital maturity and regulatory compliance is essential for Lebanese businesses to thrive in an increasingly digitized and interconnected world.

In a world growing ever more interconnected and digitally driven, the interplay of digital transformation and corporate governance brings forth opportunities and challenges for businesses. This dissertation endeavors to delve into the consequences of this evolving dynamic, revolving around a crucial research inquiry:

"What opportunities and challenges does the impact of digital transformation pose for corporate governance?"

The study investigates the following sub-questions:

1- How does digital transformation enhance transparency in corporate governance practices?
2- What are the implications of digitalization on data privacy and security within corporate governance frameworks?
3- How does digital transformation influence the decision-making processes of corporate boards?
4- What role does digital technology play in facilitating stakeholder engagement and accountability in corporate governance?
5- How do regulatory requirements and compliance obligations evolve in response to digital transformation in corporate governance?
6- What are the effects of digitalization on the structure and composition of corporate governance bodies?
7- How do companies leverage digital tools to improve risk management strategies within corporate governance frameworks?
8- What are the ethical considerations associated with the use of digital technologies in corporate governance practices?

The **theoretical framework** of this dissertation can utilize diverse theoretical viewpoints and related concepts that align with the research topic The Impact of Digital Transformation on Corporate Governance. Part One of this dissertation, titled " Understanding Digital

Transformation in Corporate Governance" delves into the emergence of Digital Transformation in corporates.

Chapter One in part one of the dissertation titled "Overview of Digital Transformation" provides an in-depth overview of Digital Transformation (DT), emphasizing its emergence and the fundamental concepts of digitization, digitalization, and digital transformation. It highlights how new digital tools and information and communication technologies are revolutionizing business operations, reshaping how work is done, and creating value for stakeholders. The chapter underscores the importance of distinguishing between digitization (the conversion of analog information into digital form), digitalization (using digital technologies to change business models), and digital transformation (a strategic shift involving organizational change, cultural transformation, and a customer-centric approach).

The chapter discusses the strategic importance of digital transformation for businesses across various sectors, noting the common misinterpretations that can lead to strategic errors. It highlights the convergence of various technologies such as AI, IoT, blockchain, and mobile computing, which are driving significant changes in organizations and the competitive landscape. The case studies of CEMEX and NOKIA illustrate the potential successes and failures of adopting digital transformation strategies, with CEMEX successfully implementing a digital platform and NOKIA failing to adapt to the smartphone market due to slow reactions to technological changes.

Furthermore, the chapter compares current digital transformation efforts with previous IT-enabled transformations, emphasizing the revolutionary nature of today's changes. It highlights the necessity for businesses to embrace risk-taking and cultural changes to adapt to new technologies, noting that understanding digital transformation requires a clear and precise definition to guide organizational change. Ultimately, the chapter argues that digital transformation is not merely about technology but also about strategic, organizational, and cultural shifts to remain competitive in the evolving digital landscape.

The first section of Chapter One focuses on the "Definition of Digital Transformation." This section aims to define a unique definition knowing that despite the hype and confusion surrounding the term, DT fundamentally involves the integration of advanced digital technologies and tools to enhance various aspects of a business, including its models, processes, and customer experiences. Distinct from mere IT transformation, DT encompasses a more complex and strategic approach, necessitating significant organizational and cultural shifts. Definitions from various sources, such as the European Commission, OECD, and Deloitte, highlight DT's multifaceted nature, emphasizing its role in creating innovative business models, smart products, and enhanced operational efficiency. However, there remains a lack of consensus on a unified definition, leading to varied interpretations and implementations across industries.

The second section of Chapter One titled “Evolution of Digital Technologies in Corporate governance” delves into the evolution of digital technologies which has significantly impacted corporate governance, making it a crucial area of study for modern businesses. Since the early 1970s, digital technologies like Decision Support Systems (DSS) and Enterprise Resource Planning (ERP) systems have evolved to support complex decision-making and integrate various business functions, respectively. The Internet and intranets have further revolutionized corporate operations by facilitating communication and collaboration. In recent years, Business Intelligence (BI) solutions and Cloud Computing have transformed IT infrastructure, offering scalable and cost-effective solutions for data analysis and decision support. These technological advancements have enabled organizations to improve operational efficiency, reduce costs, and enhance customer experiences, making digital transformation an imperative for staying competitive in the digital economy.

Moving forward, Chapter Two in Part One titled “Digital Tools in Corporate Governance Structures” discusses the integration and significance of digital tools in corporate governance structures. It begins by outlining the fundamental principles and goals of corporate governance, emphasizing its role in balancing the interests of various stakeholders and ensuring transparency and accountability within organizations. The chapter notes the traditional hierarchical and centralized nature of corporate governance and highlights the evolution towards incorporating advanced digital technologies. This evolution aims to improve efficiency, enhance stakeholder participation, and promote transparency, thereby addressing both internal governance challenges and external accountability requirements.

In this chapter, specifically in its first section titled the “Emerging Digital Governance Technologies” we will explore the transformative impact of digital technologies on business structures and corporate governance. It highlights how the full implementation of digital transformation requires significant changes in relationships between shareholders and stakeholders, supported by advanced digital technologies such as blockchain, artificial intelligence (AI), cloud computing, robotic process automation (RPA), and smart contracts. These technologies enhance transparency, accountability, risk management, and efficiency while reducing reliance on formal bureaucratic structures. This section also underscores the challenges and opportunities presented by these technologies in reshaping corporate operations, emphasizing the need for businesses to adapt to remain competitive and sustainable in the digital age.

Following, the second section in this chapter titled “Governance Models Adoption” will discuss the widespread corruption in Lebanon, highlighting its presence in political and public institutions, and the country's poor ranking on the Corruption Perceptions Index. It outlines the severe economic crises Lebanon has faced since 2019, including the financial collapse, COVID-19 impacts, and the Beirut port explosion, which have led to significant economic decline. Efforts to address these issues include the CEDRE conference and consulting with McKinsey,

which pressured legislators to amend commercial laws to support economic recovery. The adoption of Laws 81/2018 and 126/2019 marked Lebanon's digital transformation, aiming to enhance corporate formation and performance, and promote good governance through digital solutions.

The first part in this section will discuss Lebanon's enactment of Law No. 81/2018, which represents a significant step towards modern business practices and digital transformation. This law formally recognizes the validity and enforceability of electronic documents and signatures, which were previously provisional, and establishes a regulatory framework for e-commerce and personal data protection. It defines key terms necessary for digital technologies and specifies conditions under which electronic writings and signatures are legally equivalent to their paper counterparts. Thus enhancing corporate governance and aligning Lebanon with global digital economic trends.

In addition to Law 81/2018, the second part of this section sheds the light on Law 126/2019 related to Lebanese Commercial Law, which aims to modernize corporate practices by incorporating technological advancements. This law was influenced by the need to fight corruption, reduce the budget deficit, and align Lebanese business practices with international standards to enhance competitiveness. Key amendments include provisions for online audit publications, remote participation in board and general assembly meetings through audiovisual technologies, and electronic access to company reports. These changes aim to improve transparency, governance, and attractiveness to investors, in line with recommendations from the CEDRE conference.

Part Two of this dissertation titled “Implications of Digital Transformation in Corporate Governance” discusses the significant impact of digital transformation on corporate governance, emphasizing the necessity for companies to adapt to new digital ecosystems to remain competitive. It highlights how digital technologies are reshaping business models, organizational structures, and power distribution within firms. The integration of digital strategies enhances innovation, transparency, accountability, and resilience, fostering better communication and decision-making between boards and shareholders. However, it also outlines the challenges, especially for developing countries, and underscores the need for leadership to embrace digital transformation, develop appropriate policies, and equip the workforce with necessary digital skills to capitalize on new opportunities and ensure organizational growth and sustainability.

Chapter one in Part two titled “Opportunities of Digital Transformation in Corporate Governance” discusses the opportunities digital transformation (DT) presents for corporate governance, emphasizing how the integration of digital technologies like AI, big data, and automation can enhance business efficiency, agility, transparency, and resilience. It explores how DT disrupts traditional business structures, fostering decentralized and inclusive models that improve communication and decision-making. The chapter highlights the importance of digital

tools in fostering corporate agility, sustainability, and innovation while addressing regulatory frameworks and risk management. It also underscores the critical role of dynamic capabilities and the potential benefits for environmental sustainability, supply chain management, and competitive advantage, ultimately advocating for the strategic adoption of DT to secure corporate growth and stability in a rapidly evolving digital landscape.

Section one of this Chapter titled “Modern Business Dynamics” will explain the critical role of modern technology in contemporary business dynamics, emphasizing the importance of digital transformation across various facets such as taxation, production, training, digital marketing, supply chains, and sustainability. It highlights how digitalization enhances business efficiency, market recognition, and competitive advantage through improved information and communication technologies (ICT). Key areas examined include the evolution of audit as a governance mechanism, the impact of digital transformation on stock liquidity and market performance, the necessity of cultivating a digital culture, the evolution of digital marketing, and the revolution of digital supply chain management. The text underscores the transformative power of digital technologies in optimizing business processes, enhancing transparency, and fostering innovation to meet modern market demands.

Section two which is titled “Stakeholder Engagement” discusses the importance and impact of stakeholder engagement in corporate governance, emphasizing how digital transformation can enhance communication, data-driven decision-making, collaborative tools and platforms, corporate social responsibility (CSR) and environmental, social, and governance (ESG) initiatives, and risk management and compliance. It highlights how engaging stakeholders through digital technologies can foster transparency, trust, and collaboration, leading to better decision-making, innovation, and corporate performance. The integration of stakeholder needs into business strategies is shown to improve corporate resilience, reduce risks, and contribute to societal benefits, emphasizing the need for robust processes and people-focused strategies to achieve sustainable digital transformation.

Chapter two of Part Two talks about the challenges businesses face in implementing digital transformation within the context of corporate governance. It highlights the necessity for companies to adapt to digital technologies to remain competitive, requiring changes in business models, processes, and customer engagement. Despite the benefits, numerous obstacles exist, including resistance to change, skill gaps, regulatory barriers, and technical disparities. The text also addresses the risks of digital transformation, such as cybercrime, data privacy issues, job displacement, and the digital divide between developed and developing countries. Effective digital transformation necessitates strong leadership, strategic planning, and investment in digital culture and skills to maximize benefits and minimize risks.

“Data Privacy Concerns” in the context of these challenges addresses the evolving landscape of data amid digital transformation and the increasing sophistication of cyber threats. It highlights

the shift from traditional information security to a more complex cyber security paradigm, emphasizing the need for holistic governance and proactive strategies involving all stakeholders. This title discusses the rise of cyber threats due to interconnected technologies, the manipulation of consumer behavior through data collection and targeted advertising, and the challenges of regulatory frameworks in keeping pace with rapid technological advancements. It underscores the urgency for comprehensive legal protections and compliance measures to mitigate risks while promoting innovation, ultimately advocating for a unified legal approach to effectively address the complexities of the digital economy.

Section two of this chapter titled “Digital Transformation Lebanon” discusses the numerous challenges facing Lebanon's economy, particularly its aging infrastructure and severe political and economic crises exacerbated by the 2019 protests, the COVID-19 pandemic, and the Beirut port explosion. It highlights the urgent need for reforms in governance, legislation, and digital transformation to attract investment and improve the business environment. The ineffective Law 81/2018 on Electronic Transactions and Personal Data is critiqued for being outdated and insufficient in addressing modern digital needs and privacy protections. Additionally, it emphasizes the obstacles for digital entrepreneurship, such as funding shortages, lack of consumer protection in e-commerce, cultural resistance to online purchasing, and inadequate digital infrastructure, all of which hinder economic growth and innovation in Lebanon.

The **contribution** to the field of the dissertation “The Impact of Digital Transformation on Corporate Governance” is multifaceted, offering both theoretical insights and practical implications for corporate governance and digital transformation within the context of Lebanese commercial law.

Firstly, the dissertation provides a comprehensive analysis of how digital transformation (DT) impacts corporate governance (CG) practices, particularly in Lebanon. By examining the implementation of Laws No. 81/2018 and No. 126/2019, it elucidates how these legal frameworks facilitate or hinder the integration of digital technologies in business operations. This analysis contributes to a deeper understanding of the interplay between legal reforms and technological advancements, offering a valuable reference for policymakers, legal scholars, and business leaders aiming to navigate the complexities of digital transformation in a legal context.

Secondly, the dissertation highlights the significance of digital transformation in enhancing corporate governance fundamentals such as transparency, accountability, and sustainability. It underscores how digital tools and platforms can improve decision-making processes, stakeholder engagement, and regulatory compliance. This contribution is particularly relevant for corporations striving to adopt more ethical and sustainable business practices in an increasingly digitalized economy. The dissertation provides actionable insights for companies to leverage digital technologies effectively, ensuring that governance structures are robust and adaptable to the fast-evolving digital landscape.

Thirdly, the dissertation addresses the challenges posed by digital transformation to corporate governance, such as data privacy, cybersecurity, and ethical considerations in data management. By exploring these challenges, the research offers practical guidance on risk management strategies and compliance with international data protection regulations like the GDPR. This aspect of the dissertation is crucial for businesses seeking to mitigate the risks associated with digital transformation while maintaining high standards of governance. It serves as a valuable resource for developing comprehensive cybersecurity policies and ethical data governance frameworks.

Additionally, the dissertation sheds light on the role of digital transformation in fostering economic growth and competitiveness in Lebanon. It aligns with the recommendations of the McKinsey report and the CEDRE Conference, emphasizing the need for modernization and governance reform. By demonstrating how digitalization can drive innovation, efficiency, and economic recovery, the research provides a strategic roadmap for Lebanese businesses and policymakers. This contribution is instrumental in guiding Lebanon's transition from a rentier economy to a productive, technology-driven economy, addressing both immediate economic challenges and long-term development goals.

Lastly, the dissertation contributes to the broader academic discourse on corporate governance and digital transformation by presenting a theoretical framework that integrates various scholarly perspectives and practical case studies. It enriches the existing literature by offering a nuanced analysis of how digital technologies are reshaping governance structures and practices. This theoretical contribution is valuable for academics, researchers, and students exploring the dynamic relationship between technology and governance. It sets a foundation for future research on digital transformation's impact on corporate governance, particularly in emerging markets and developing economies like Lebanon.

To answer the research question provided, this dissertation will provide an in-depth exploration and analysis through the following overview:

Part One: Understanding Digital Transformation in Corporate Governance

Chapter One: Overview of Digital Transformation

A- Definition of Digital Transformation

B- Evolution of Digital Technologies in Corporate Governance

Chapter Two: Digital Tools in Governance Structures

A- Emerging Digital Governance Technologies

B- Governance Models Adoption

Part Two: Implications of Digital Transformation in Corporate Governance

Chapter One: Opportunities of Digital Transformation in Corporate Governance

A- Modern Business Dynamics

B- Stakeholder Engagement

Chapter Two: Challenges of Digital Transformation in Corporate Governance

A- Data Privacy Concerns

B- Digital Transformation in Lebanon

Part One: Understanding Digital Transformation in Corporate Governance

Nowadays, digital transformation is driving organizational activities in an interdependent process that usually implies a strategy redefinition given its crucial implications in terms of the reorientation of business models and how it is managed. This is making digital transformation the main driver of the present change in organizations' management processes which is occurring simultaneously to respond to changes taking place in organizations' environment, and due to increased digital technology adoption, aiming to improve their competitiveness through market differentiation. Digital transformation is simultaneously a self-guided phenomenon, where actions aim to respond to opportunities generated by digital technologies.

The purpose of adopting digital transformation by companies is to change the methods of operation and to generate fresh possibilities, forcing firms to adjust to remain competitive in the digital era. Firms is seeking to embrace this change and utilize technology to develop a more flexible, practical and effective approach as digital transformation continues to advance at an accelerating pace. The pivotal role that organizational digital transformation plays in an era of relentless technological advancement affects the managerial aspect of corporates by which corporate governance is the main driver. Leadership, organizational culture and technological enablers are identified as crucial drivers of innovation and competitiveness within organizations.

In the meantime, characterized by progressive technological developments and digital innovation, business around the world are amidst a deep transformation in their operational approaches and managerial structures. This transforming phenomenon which is referred as digital transformation sheds the light on the importance of predicting new future trends for strategic planning in the rapidly changing digital world and highlights the advantages as a motivational source for organizations to invest in digital initiatives suggesting a comprehensive reform of organizational structures, operational models, and long-term coordination. Leaders need to be fully aware of this reality as they frame conversations around digital transformation. A business may take on digital transformation for several reasons but by far, the most likely reason is that they have to: It's a survival issue. However, amid this sweeping tide of transformation, one facet emerges as particularly consequential: its impact on corporate governance – the intricate framework of rules, practices, and processes that govern the direction and oversight of companies.

The assimilation of digital technologies into the realm of corporate governance precipitates a gigantic shift in the very fabric of organizational dynamics. As we all know corporate governance is usually divided into two main aspects: the vertical governance which relate to the relation between shareholders and managers, and the horizontal governance which occurs between shareholders themselves. Adopting technology in this domain reshapes not only the hierarchical structures and decision-making standards but also essentially redefines the

mechanisms through which stakeholders interact and participate in governance processes. In today's fiercely competitive business landscape, characterized by relentless technological disruption and rapid market evolution, the strategic utilization of digital capabilities to drive efficiency, enhance agility, and foster competitiveness has become an imperative for survival and success.

As organizations dive into the trend of adopting the complex field of digital transformation, for sure it will be grappling with the numerous challenges and opportunities given by this phenomenon. The convergence of digital capabilities and corporate governance principles emerges as a critical focal point, thus understanding the complex relationship between these two concepts is a must for organizations seeking to adapt, innovate, and prosper in the digital era. This necessitates a comprehensive re-evaluation of how organizations function, make their decisions and how stakeholders' engagement strategies should align with the new implications of digital governance.

Furthermore, as corporations seek to adopt the concept of harnessing the potential capabilities of digital technologies to improve its performance and initiate a sustainable growth, the results concerning various stakeholders are profound and far-reaching. From boards of directors with challenges concerning steering organizational challenges to executives instructed with dealing with the advent digital initiatives, and shareholders trying to gain more transparent and accountable actions since every stakeholder constitute a deeply implicated concern in the transformative journey towards digital governance.

In essence, as businesses immerse the energetic domain of digital transformation, the incorporation of digital technologies into corporate governance policies comes as a major standard of the contemporary era. By adopting the advent digital capabilities and reshaping the governance guidelines with new trend in the light of these technological advancements, businesses can guide themselves to the frontlines of innovation and flexibility in an progressively digitized business world.

In this part, the Understanding of Digital Transformation in Corporate Governance is discussed, exploring the rise of Digital Transformation in businesses and the way it's affecting corporate governance. Chapter one, "Overview of Digital Transformation" examines the Definition of Digital Transformation, Drivers of Digital Transformation, Key Technologies Driving Digital Transformation, and the Impact on Business Operations.

In the second chapter, titled "Evolution of Digital Technologies in Corporate Governance," the narrative delves deeper into the historical trajectory of digital technologies within the realm of corporate governance. It traces the evolution of digitalization from its emerging stages to its current status as a cornerstone of modern governance frameworks. Initially, digital technologies were primarily utilized to streamline administrative processes and enhance efficiency in

corporate operations. However, over time, their role expanded beyond mere optimization to encompass more strategic functions, such as decision-making support and stakeholder engagement.

As the chapter unfolds, it clarifies how digital technologies have progressively reshaped the landscape of corporate governance, revolutionizing traditional practices and ushering in a new era of transparency, accountability, and stakeholder empowerment. The adoption of digital platforms for board communication, the implementation of data analytics for risk management, and the utilization of blockchain for transparent record-keeping are just a few examples of how digital innovations have invaded every facet of corporate governance. Moreover, the democratization of information facilitated by digitalization has empowered stakeholders, enabling greater participation in governance processes and fostering a culture of collaboration and inclusivity.

Furthermore, the chapter illuminates the pivotal role of digital technologies in mitigating governance challenges and enhancing regulatory compliance. With the increasingly complex regulatory landscape and heightened scrutiny from stakeholders and authorities, organizations are under immense pressure to uphold rigorous governance standards. Digital tools such as compliance management software, advanced encryption methods, and real-time monitoring systems have emerged as indispensable assets in this endeavor. These technologies not only streamline compliance processes but also provide organizations with greater visibility into their governance practices, enabling proactive risk management and preemptive interventions to mitigate potential compliance breaches.

Moreover, the chapter underscores the transformative impact of emerging technologies like artificial intelligence and machine learning on corporate governance practices. By leveraging advanced algorithms and predictive analytics, organizations can augment decision-making processes, identify emerging risks, and anticipate market trends with unprecedented accuracy. AI-powered governance solutions can sift through vast volumes of data, extracting actionable insights to inform strategic decisions and optimize resource allocation. Additionally, the integration of AI-driven chatbots and virtual assistants facilitates seamless communication between stakeholders, enhancing transparency and responsiveness in governance interactions. As organizations continue to harness the potential of these cutting-edge technologies, the evolution of digital governance promises to redefine the very fabric of corporate stewardship in the digital age.

Chapter One: Overview of Digital Transformation.

The emergence of information and digital technologies, characterized by the widespread use of information and communication technologies and the proliferation of new digital tools, marks a new era of transformation known as digital transformation. Within business organizations, this type of organizational change, enabled by technology, focuses on leveraging information and

digital technologies to influence various aspects of the organization. Adopting new technology in business like the chatbots, mobile apps, process automating, cloud computing, e-commerce, and big data analytics etc… is improving their daily operations. These technologies are redefining how work is done and reshaping how businesses function, creating value and bringing distinct experiences to help stakeholders.

To better understand Digital Transformation, it's essential to differentiate between three closely intertwined concepts: Digitization, Digitalization and Digital transformation. “Digitization” is at the operational level and can be defined as the transformation of signals and media objects (e.g. documents, images or sounds) in a digital form processed, stored, and transmitted through digital devices and networks caused by the adoption of digital technologies and application of systems that are built upon them. In this format, information is organized into discrete units of data called bits that can be separately addressed, usually in multiple-bit groups called bytes[(1)].

On the other hand, “Digitalization” is a tactical application, it encompasses the socio-technical practice of utilizing digitization capabilities across societal and institutional contexts to harness the structural benefits of digital technologies, which means it is the use of digital technologies to change a business model and provide new revenue and value producing opportunities; it is the process of moving to a digital business. In essence, it involves integrating digital technologies into economies, organizations, and communities to generate and distribute value. By leveraging existing resources alongside digital technologies, organizations can devise new value propositions and strategic directions as advocated by decision-makers. [(2)]

Digital Transformation differs significantly from Digitalization[(3)]. Digital transformation is a strategic shift, it reflects the ability of organizations, its leaders and employees, to adapt to rapid changes brought by evolving digital technologies. Digital Transformation encompasses various initiatives; Digitalization projects are typically a subset of these efforts. Executives who equate Digital Transformation solely with Digitalization are making a critical strategic error. In reality, Digital Transformation necessitates an organization's ability to skillfully navigate change, essentially elevating change management to a fundamental skill as the enterprise evolves into a customer-centric entity from end to end. It is taming digital technologies (social media, mobile, analytics or embedded devices) to enable major business improvements such as enhancing customer experience streamlining operations or creating new business models. This agility should not only facilitate the ongoing digitalization projects but should also mix with them.

[(1)] Härting Ralf-Christian, Reichstein Christopher and Jozinovic Philip, The Potential Value of Digitization for Business Insights from German-speaking Experts, University of Applied Sciences, Germany, 2017, p 1.
[(2)] Ioana Borcan, Review of International Comparative Management, University of Craiova, Romania, 2021, pages 377-378.
[(3)] Verina Natalja and Titko Jelena, Digital Transformation: Conceptual Framework, Vilnius Gediminas Technical University, Lithuania, 2019, p720.

Ultimately, digitization and digitalization are essentially about technology, but the digital transformation is not. Digital transformation is about the customer, in other words we digitize information, digitalize processes and roles within a business's operations, and digitally transform the business and its strategy. Each step is essential but insufficient for the next. Importantly, while digitization and digitalization focus primarily on technology, Digital Transformation centers on the customer, in other words digital transformation is not about the implementation of Information Technology solutions only, we should think about it in a broader context as about "organizational change", "cultural transformation" and "moving towards customer-centric approach".

In recent times, Digital Transformation (DT) has experienced a surge in popularity. Nowadays, it's virtually impossible to attend any professional gathering without encountering discussions about the significance of DT. This trend extends to the academic sphere as well, where numerous studies underscore the utility and relevance of DT for organizations operating within the contemporary business landscape. In many cases, companies perceive digital transformation either just as drastic changes in technology or a substantial increase in the exchange of information. That is why very often the process is defined in negative terms. In addition, misleading perception is as harmful in defining transformations in strategy as sticking to an already implemented one.

Arguably, the nature of digital technologies is a fundamental key difference causing the dramatic shift within organizations and in the competitive landscape. Today, we are reaching an inflection point, where the effect of these digital technologies' manifests with "full force" and enables "unprecedented things". Currently, there is a convergence of various technologies including mobile, location-based services, virtual reality, digital twins, block chain, Artificial Intelligence (AI), wearable tech, chatbots, neuroscience, business process automation (BPA), and machine-to-machine interactions facilitated by the Internet of Things (IoT). These innovations are interconnecting and enhancing one another, merging across physical, digital, and social domains to create a synergy of technological advancements. In addition, digital technologies have mobility and ubiquitous connectivity features, which provide immediate interaction and access to a wide range of data and computing power; these features are also reflected in today's products and services and enable a wider reach (of people), regardless of geographical location. [(1)]

The abundant availability of data resulting from the mentioned capabilities allows companies to analyze insights and make informed decisions in real-time. Hence, AI emerges as an immensely powerful tool that is already exerting a significant impact on society. AI, particularly machine learning, and more specifically deep learning, is increasingly integrated into our daily lives.

[(1)] Bolton, R. N., McColl-Kennedy, J. R. Cheung, L. Gallan, A. Orsingher, C. Witell, L. and Zaki, ***"Customer Experience Challenges: Bringing Together Digital, Physical and Social Realms".*** Journal of Service Management, 2018, pp.776-808.

Major entities like Google utilize AI to identify vast numbers of images, while self-driving cars employ it to learn obstacle recognition and response. These deep learning systems exhibit remarkable accuracy when evaluated across extensive datasets. However, achieving satisfactory performance solely based on averages may not suffice for many real-world applications. These systems must be highly reliable, particularly when the consequences of errors are significant.

These terms are often used interchangeably, but it's beneficial to understand their distinctions. "Artificial Intelligence" (AI) is the term commonly employed, though using it as a catch-all lacks precision. AI serves as an overarching term encompassing any machine activities that imitate human thought processes. The concept of AI dates back to the 1950s, "Machine learning" is a subset of AI that has gained significant traction in recent years, sparking widespread interest in the field. It involves training algorithms, typically with large datasets, to learn tasks instead of manually coding specific instructions. "Deep learning" represents an improvement of machine learning, advancing the technology to a higher level. Modeled after the brain's neurons, deep learning processes vast amounts of data through complex neural networks, learning autonomously without human intervention. Similar to humans, albeit more reliably, it learns from its errors. While many of these concepts have existed for decades, their practical application necessitated access to immense datasets and computational power, which have become available only in recent years[(1)].

With the advancement of digital technology, many companies are transitioning from traditional methods of operation to creating highly responsive digital systems capable of swiftly delivering goods from production facilities to consumers upon order placement. The conventional approach of manufacturing goods first and then waiting for sales forces to sell them is becoming outdated. In a B2B (Business-to-Business) context, for instance, CEMEX introduced an e-commerce platform named 'CEMEX Go' to facilitate seamless delivery of its Ready-mix concrete product, marking the introduction of the first end-to-end digital platform in the cement industry. Implementing this platform involved more than just technical development; it necessitated the cultivation of digital capabilities and a digital culture within the organization. CEMEX is striving to foster a culture where decision-makers and employees possess a 'digital mindset', demonstrating both the readiness and ability to develop practical solutions that address customer requirements. These technologies not only automate basic processes, fulfill informational needs, or influence business strategy, as was the role of IT in previous eras, but they also possess the capability to reshape the entire service strategy due to their unparalleled functionalities. They ensure the efficiency, scalability, reliability, and predictability of core operations while

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[(1)]Magistretti Stefano, Dell'Era Claudio and Petruzzelli Antonio, ***Enabling Digital Transformation Through Artificial Intelligence,*** School of Management Politecnico di Milano, Italy, 2019, pp 1-21.

facilitating swift development and implementation of innovative solutions in response to, or even anticipation of, customer demands. [1]

On the other hand, NOKIA was in the 1990s and early 2000s one of the largest mobile phone companies in terms of volume, sales, market share and profit, but it failed to make the transition to the smartphone market in the early 2010s. Although, NOKIA till 2007 had a market share of 80% in the smartphone market, the main reason for losing ground during the "second coming of the smartphone age" was due to the weak position of NOKIA in the "technological system" (or ecosystem) i.e. the network of interacting actors in a specific techno economic area involved in the generation, diffusion, and utilization of technology and its complements. Till 2007 Nokia dominated the smartphone market, mainly due to the Symbian Operating System (SOS). On the smartphone market NOKIA was having a market share around 70% leaving the competitors far behind. In 2007 Apple launched the iPhone and Apple begun to eat up NOKIA alive in the US. In 2010, the year in which Android and iOS made substantial market progress, Since then sales dropped, numerous factories and facilities were closed, employees were dismissed, as well as the market capitalization dropped considerably, form € 110 Billion to € 15 billion in 2012. In 2013 the announcement was made public that Microsoft would acquire NOKIA's mobile device business, and the deal was closed in April 2014 leading to the end of Nokia[2]. So what truly happened to NOKIA?

Mobile phone market leader NOKIA underestimated the importance of smartphones, and although remaining as a market leader for entire mobile phone industry until the early 2010s, it was underachieving in the smartphone market in comparison to its main rivals Apple and Samsung. NOKIA tried to gain a market leadership in the smartphone industry through strategic alliance with technology company Microsoft, which, however, failed to achieve its goal. The Biggest problem was the operating system and the entire ecosystem which did not attract consumers as a same level as iOS and Android. NOKIA's decision to react slowly to a disrupted smartphone market was a costly mistake. Instead, the management of NOKIA decided to ignore changes in consumer preferences and refused to adopt the digital transformation strategy[3].

The right technology can move your business forward, but a digital transformation strategy will propel your business ahead of the competition – and keep you there. It is the guidepost that pins all your transformation efforts to a unified set of goals. It's clear that digital transformation is

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[1] CEMEX. 2017."CEMEX delivers the future: CEMEX Go", available at: https://www.cemex.com/media/press-releases/-/asset_publisher/nnqyAoJ3dM7x/content/cemex-delivers-the-future-cemex-go
(Accessed 22 February 2024).

[2] Bouman Harry, ***How Nokia failed to nail the Smartphone market***, Econstor, 25th European Regional ITS Conference, Belgium, 2014, pp 1-19.

[3] Jaakko Aspara, Juha-Antti Lamberg, Arjo Laukia and Henrikki Tikkanen, ***Corporate Business Model Transformation and Inter-Organizational Cognition: The Case of Nokia***, Long Range Planning, 2011, pp 1-23.

emerging as a strategic priority for companies across various industry sectors. Even if companies ignore the full impact of digital transformation in some aspects, it will automatically emerge in other sectors. So why it is important to discuss digitalization and digital transformation? Since we are living in an exposed economic world which is manipulated by social media and data availability penetrating the daily lives of individuals, both privately and professionally: people are learning via social media, interact with intelligent machinery, transmit and receive data via tablets or smartphones, as well as benefit from integrated, shared and updated real-time mobility systems, all of these are turning into information, and this situation is posing challenges for incumbents as new market entrants redefine the landscape.

Indeed, management consultants and practitioners have long been engaged in contemplating service strategy and transformation, particularly in response to the advancements in information technologies during the 1990s and 2000s. For instance, a paper published in the Sloan Management Review in 1999[(1)] discussed the imperative of involving the entire organization in business transformation. Its authors advocated for senior managers to shift the organization's worldview, address deeply ingrained values and beliefs, and cultivate new skill sets while implementing new management processes to support the emerging reality[(2)].

However, digital transformation presents even greater challenges. This is because there exists a fundamental inequality between the scope and complexity of previous transformation endeavors (often labeled as IT-enabled transformation) and today's digital transformation. In the past, transformation primarily focused on evolutionary changes—enhancing existing practices to serve the same customer base with similar products and services but with improved efficiency. The primary goals were to enhance internal integration, facilitate the redesign of business processes and networks, and to some extent, allow for the redefinition of business scope. Today, however, digital transformation encompasses all of these objectives and more[(3)].

If IT-enabled transformation was evolution, digital transformation is a revolution, often referred to as the Fourth Industrial Revolution. What sets this era apart? Firstly, the technologies themselves are distinct. During the IT-enabled evolution, technologies were primarily leveraged to enhance efficiency, optimize business operations by automating rudimentary processes, and accelerate information exchange. However, the merger of contemporary digital technologies such

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(1) D'aveni Richard, ***Strategic Supremacy through Disruption and Dominance***, https://sloanreview.mit.edu/article/strategic-supremacy-through-disruption-and-dominance/, 1999, [Accessed 13 May 2024].

(2) Journal of Services Marketing, ***Digital Transformation: Harnessing Digital Technologies for the Next Generation of Services***, available at : https://api.repository.cam.ac.uk/server/api/core/bitstreams/9a4b5464-d210-444f-93cb-804aff802b13/content (Accessed 22 February 2024) page 5.

(3) Vial Gregory, ***Understanding digital transformation: A review and a research agenda***, Department of Information Technology, HEC University, Canada, 2019, pp 22-27.

as social media, mobile computing, analytics, cloud computing, and the Internet of Things promises to catalyze much more profound changes, particularly through the convergence of personal and corporate IT environments[1].

Moreover, innovation is occurring at an unprecedented pace as these technologies intersect and complement one another. Another pivotal distinction lies in the ability of certain new technologies to be integrated into products themselves. Thanks to significant advancements in processing power, miniaturization, and the widespread availability of wireless connectivity, next-generation smart and connected products have emerged. These products not only offer enhanced functionalities but also have the capacity to provide services, thereby paving the way for the development of entirely new value propositions.

From a value chain standpoint, the incorporation of smart connectivity fosters a novel approach to collaboration, with companies engaging with their customers and even collaborating with other organizations, sometimes even competitors, to co-create value. Additionally, it reshapes organizations' understanding of and interactions with their customers. With insights into how customers utilize their products, the ability to predict and anticipate potential issues, and the utilization of this data to enhance the customer experience, organizations can profoundly transform their customer relationships.

Today's technology-driven changes impact both the inside and outside of organizations. As companies aim to utilize these new technologies, they must embrace taking risks as a normal part of their culture. This can be particularly challenging for companies, as they are accustomed to policies taken by Board of Directors, companies need to be capable of handling this level of uncertainty and adapting quickly to new situations. However, imposing such cultural change isn't that easy. It requires a thorough reassessment of a company's norms and values, as well as significant changes in organizational structures. This radical change can't be done without knowing the real essence of digital transformation and the best way to start understanding this phenomenon starts with a precise, clear and detailed definition which constitutes the guidelines that direct the change[2]. So, what is the definition of Digital Transformation?

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[1] Journal of Services Marketing, ***Digital Transformation: Harnessing Digital Technologies for the Next Generation of Services***, available at : https://api.repository.cam.ac.uk/server/api/core/bitstreams/9a4b5464-d210-444f-93cb-804aff802b13/content (accessed 22 February 2024) page 5.

[2] Journal of Services Marketing, ***Digital Transformation: Harnessing Digital Technologies for the Next Generation of Services***, available at : https://api.repository.cam.ac.uk/server/api/core/bitstreams/9a4b5464-d210-444f-93cb-804aff802b13/content (accessed 22 February 2024) page 6.

A-Definition of Digital Transformation

Competitiveness between corporations in recent decades has placed increasing pressure on businesses to change. This requires businesses to efficiently integrate to not only stay alive but also thrive in competitive environments. Efficient integration can only be achieved through digital processes and collaborative tools. With this being the case, the importance of digital transformation (DT) has increased. The current hype surrounding the concept of "Digital Transformation" is seriously affecting its credibility, and it is creating much confusion in both research and academic fields. By developing a unified definition of DT, the result will bring some clarity about this concept and its associated core primitives and defining attributes[(1)].

"Transformation" is currently a buzzword across industries, indicating the need to improve one's business capabilities to meet evolving market needs. Digital transformation and Information Technology transformation are sometimes considered to mean the same thing, and the terms are used interchangeably. While both Digital Transformation and IT transformation involve technology, they have distinct goals and outcomes. The degree of complexity in digital transformations exceeds that of other previous transformations, such as IT-enabled transformation. Companies have been pursuing digital transformation for years now, but there is not always consensus on what that means.

The increasing digitalization of economies has highlighted the importance of digital transformation and how it can help businesses stay competitive in the market. However, disruptive changes not only occur at the company level; they also have environmental, societal, and institutional implications. This is the reason why, during the past two decades, the research on digital transformation has received growing attention, with a wide range of topics investigated in the literature, since understanding what Digital Transformation means will truly help in linking all its constituents to serve the main purpose of corporations.

Within business organizations, this type of transformation, facilitated by technology, focuses on leveraging information and digital technologies to affect various aspects of the organization. Thus, companies are experimenting with digital technologies, and they build a digital service strategy to enhance their competitive positioning which does not solely depend on the technologies they adopt, but more importantly builds on the strategy they deploy. Companies have to design the right experience for their customers[(2)].

Extant literature has increased our understanding of specific aspects of digital transformation, however we lack a comprehensive portrait of its nature and implications. Numerous approaches

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[(1)] Ribiere Vincent and Gong Cheng, ***Developing a unified definition of digital transformation***, Technovation, Vol 102, 2021, p 102.

[(2)] Kraus Sasha, Durst Suzana and Veiga Pedro, ***Digital transformation in business and management research: An overview of the current status quo***, International Journal of Information Management, Vol 63, 2022, p 1.

have investigated how organizations and industries have embraced digital technologies and showcased their transformative effects. However, despite ongoing research in this area, it's evident that the literature is still in its early stages. There's a notable lack of consensus regarding the definition and core elements of digital transformation, contributing to a well explained illustration about its true meaning. However, it is also clear that some organizations are struggling to digitally transform due to this misunderstanding.

Different studies present divergent views on digital transformation. While some authors consider even minor technology-enabled changes, such as implementing a new ERP (Enterprise Resource Planning) system, as digital transformation, others perceive it as a more radical and evolutionary process unfolding over time. Additionally, some researchers link digital transformation to business models and strategies, while others interpret it as a paradigm shift or a sequential process. [(1)]

Digital Transformation (DT) has become an imperative for most organizations in our world of emergent and continuous changes. The term DT has been so broadly used (and misused) that it becomes very confusing. Consequently, the need to provide some conceptual precision to DT is urgently needed. The lack of a unified definition of DT is critical for several significant reasons. As for researchers, it is challenging to develop DT theory, define and test relationships between DT elements, and develop a consistent stream of research that builds on what has been done before.

When conducting a search for "Digital transformation" on Google, users will encounter numerous articles presenting a range of explanations, each offering its distinct interpretation. Remarkably, there is no universally agreed-upon definition. However, the majority of these explanations highlight the crucial role of technology and its tools in driving this phenomenon. Most DT definitions serve solely as a repackaging of previously existing ideas and the importance in this context is that no matter how to define this phenomenon, the main goal lies in putting companies on the right track to meet the challenges of management and adaptation in a world governed by rapid changes.

1-Conceptual Understanding

Lately, DT has been widely researched in academia and increasingly implemented in companies and it gained immense popularity. These days, one cannot go to any professional event without hearing about the importance of DT. The same applies to the academic community, with numerous papers emphasizing the usefulness and relevance of DT for organizations in the

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[(1)] Resego Morakanyane, ***Conceptualizing Digital Transformation in Business Organizations: A Systematic Review of Literature***, University College Cork, Ireland, 2017, page 428.

current business environment[1]. In this section, we will explore the conceptual dimensions of digital transformation and its characteristics, arguing that the term is over-hyped and has been used to rebrand various fields to attract management attention.

Here are several critical definitions given by several academics and organizations:

- **European Commission definition (2019):**
  "Digital transformation is characterized by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart products and services"
- **OECD (Organization for Economic Co-operation and Development) (2018):**
  "Digital transformation refers to the economic and societal effects of digitization and digitalization. Digitization is the conversion of analog data and processes into a machine-readable format. Digitalization is the use of digital technologies and data as well as their interconnection which results in new or changes to existing activities."
- **Ismail, Khater, and Zaki (2017)**
  "Digital transformation is a process through which companies converge multiple new digital technologies, enhanced with ubiquitous connectivity, with the intention of reaching superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the business model, the customer experience and operations, and simultaneously impacting people and networks".
- **Schwertner (2017)**
  "The application of technology to build new business models, processes, software and systems that result in more profitable revenue, greater competitive advantage, and higher efficiency".
- **Deloitte (2018)**
  "Digital transformation is the use of technology to radically improve the performance or reach of an organization. In a digitally transformed business, digital technologies enable improved processes, engaged talent, and new business model".
- **Bloomberg (2018)**
  "Digital transformation requires the organization to deal better with change overall, essentially making change a core competency as the enterprise becomes customer-driven end-to-end. Such agility will facilitate ongoing digitalization initiatives but should not be confused with them". [2]

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[1] Tomat Luka and Trkman Peter, ***Digital Transformation – The Hype and Conceptual Changes***, Economic and Business Review, Vol 21, 2019, p 351.

[2] Natalja Verina, Jelena Titko, ***Digital Transformation: Conceptual Framework***, Vilnius Gediminas Technical University,2019, page 721.

Although there isn't a definitive and formal definition of Digital Transformation due to varying viewpoints, it's widely acknowledged as a transformative process that addresses numerous facets of an organization's capabilities. These attempts in defining Digital Transformation identify what is new but fall somewhat short, as they present well known factors such as identification of ecosystem, business models, digital innovation, the importance of people/workforce, and the consideration of digital technologies for changing products, services, or processes. The key thing in defining Digital Transformation is to look at the second part of this term which is "Transformation", many company executives and people out there get lost on the digital part but digital is just the tool. Digital Transformation is essential to corporate strategy, its aim is to exploit on opportunities within the digital economy by harnessing digital capabilities to reshape various aspects of a company, including its business model, customer focus, operational procedures, and corporate culture.

2-Characteristics of Digital Transformation

Digital transformation (DT) is essential for all companies and industries, depending crucially on systems, IT, strategy, and people. Digital transformation applies to all aspects of human, it forces companies and industries into organizational changes and critical business adaptations if they want to survive and prosper[(1)]. It is a pillar of the continuous search for innovation and competitiveness by organizations. Simply, digital transformation is not only technology but a journey that organizations go through to transform their capabilities and change how it operates and delivers their services. The most significant objectives of digital transformations are to drive growth, enhance operational efficiency and enable new capabilities and address risks.

In other words, digital transformation helps with revenue growth, customer experience, cost reduction, business agility, employee performance, governance, and compliance. It gives better customer experience because it simplifies the process of interaction between buyers and companies. It is also characterized in boosting productivity, smoothing business process which simplifies the business process and strategies, also business with uniform work strategy gains a comparative advantage with the help of Digital Transformation. Moreover, it has an effect on cost reduction which also results in significant time savings. In this context, the behavior of digital transformation is characterized as radical, disruptive, evolutionary, continuous, and intricate. For a more inclusive and comprehensible description, digital transformation primarily demonstrates evolutionary characteristics.

3-Factors initiating Digital Transformation

The factors of digital transformation encompass attributes that exert influence and facilitate the progression of corporate transformative evolution. Although the existing literature is somewhat

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(1) Porfírio Jose Antonio, Carrilho Tiago, Felicio Jose Agusto and Jardim Jacinto, ***Leadership characteristics and digital transformation***, Universidade Aberta, Portugal, 2021, pp 611-617.

limited, it has identified factors such as workforce capabilities, organizational values, organizational infrastructure, managing capabilities and strategies[1]. Numerous studies have articulated these drivers in terms of various outcomes, including profitability and new revenue growth, customer satisfaction, enhanced operational efficiency, convenience, high-quality technical standards, increased business agility, heightened employee productivity, and competitive advantage. While some overlap between digital transformation drivers and impacts has been observed, caution has been taken to distinguish between the two: drivers represent attributes that shape and enable the process, whereas impacts denote the emerging benefits derived from digital transformation.

Although the debate persists regarding which attribute holds the greatest digital motivation, we oppose that digital technologies play a pivotal role in the digital transformation journey and the best example to explain this was the Nokia case which was mentioned in "Chapter One: Overview of Digital Transformation". We assert that the capabilities inherent in these technologies, in conjunction with other factors such as organizational culture, strategy, and digitally adept human capital, drive the digital transformation process. Merely relying on digital technologies to propel the digital transformation process is insufficient; instead, it necessitates leveraging digital capabilities, strategies, culture, and talent development.

4-Impacts of Digital Transformation

Digital transformation impacts refer to the consequences that business organizations undergo due to the transformation process. While the analyzed studies has not explicitly categorized these impacts, we can divide them into "customer-focused" and "organization-focused" categories: customer-focused impacts affect customers, whereas organization-focused impacts affect the organization itself[2]. These impacts can yield either positive or negative effects on both customers and the organization. An important aspect of digital transformation is the change in customer demand and behavior due to digital technologies. As a result, we are increasingly experiencing the world through information technology. This had led to increased customer informedness, changed purchase decisions and increased ability to evaluate products and services online. Organizations needs to react and are doing so by understanding their customers better and developing new types of relationships with them[3].

During the last years, the impacts caused by digital transformation on companies have been disruptive. Contrarily to prior technological revolutions, the current scenario is characterized by the rapid growth of innovation that has impacted organizations differently. In particular, an

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[1] Muehlburger Manuel, Rueckel David and Koch Steven, ***A Framework of Factors Enabling Digital Transformation***, 25th Americas Conference on Information Systems, USA, 2019, pp 4-5.

[2] Resego Morakanyane, ***Conceptualizing Digital Transformation in Business Organizations: A Systematic Review of Literature***, University College Cork, Ireland, 2017, page 436.

[3] Tolboom I.H, ***The impact of digital transformation***, Delft University of technology, The Netherlands, 2016, p 3.

increasing number of organizations revised their management control systems to adequate their business models to the external pressures made by competitors and regulators consequently leading to better administration and reinforcing governance principles.

As a conclusion Digital Transformation could be defined as:

"A gradual process utilizing digital technologies and capabilities to empower business models, operational procedures, and customer experiences, fostering value creation".

B-Evolution of Digital Technologies in Corporate Governance

The contemporary trends in economic development are marked by a notable impact of digital information technologies. Examining the digital economy as a distinct sector and assessing its common influence with corporations, which serve as active participants and drivers of digital economic growth, is gaining increasing significance. The digital transformation of corporate governance is a pretty new concept in the vocabulary of modern business but has already generated the interest of the academic community. The study of the digital transformation in corporate governance is of practical importance, which is why many businesses study this topic and try to implement technologies in their business processes.

Since the early 1970s, decision support systems (DSS) which are computer technology solutions and applications that can be used to support complex decision making and problem solving, have evolved significantly(1). Many technological and organizational developments have exerted an impact on this evolution. DSS once utilized more limited database, modeling, and user interface functionality, but technological innovations have enabled far more powerful DSS functionality. DSS once supported individual decision-makers, but later DSS technologies were applied to workgroups or teams, especially virtual teams. The advent of the Web has enabled inter-organizational decision support systems, and has given rise to numerous new applications of existing technology as well as many new decision support technologies themselves. It seems likely that mobile tools, mobile e-services, and wireless Internet protocols will mark the next major set of developments in DSS. (2)

Enterprise Resource Planning (ERP) systems are cross-functional integrated systems consisting of software modules supporting operational activities such as accounting, control and human resources. The ERP phenomenon has been a reality for institutions over several decades. ERP systems were broadly implemented in many organizations to control diverse operations since 1990s. ERP systems implementation implies new ways of designing functions, leads to new work procedures, changes job definitions and restricts flexibility in job tasks. ERP systems are considered to be the most important and substantial IT infrastructure that interacts with the accounting functions in the last 22 years. ERP systems have implicit in their design a new

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(1) Angehrn Albert and Luthi Hans-jakob, ***Intelligent Decision Support Systems: A Visual Interactive Approach***, European institute of Business Administration, France, 1990, p 18.

(2) Shim J.P, ***Past present and future of decision support technology***, Mississippi State University, USA, 2002, p 1.

institutional logic for controlling business and information. The internal audit function (IAF) is one of the most interested functions in the IT infrastructure and its impact on the internal control system; therefore, it has been affected by ERP systems implementation .[1]

Throughout the 1990s, Customer Relationship Management (CRM) became the number one focus since the nature of doing business changed from the product-centered stage to customer-centered stage. This technology allowed businesses get the knowledge of who are the customers, what they bought and when they bought it and even predictions based on the historical behavior. Eventually CRM led to improving the deliver customer centric relationships, increasing companies abilities to understand the customer current needs, what they have done in the past and what they plan to do in future thus improving corporate management.[2]

The Internet and its corporately owned counterpart, intranets, continue to prove fertile in producing a wide variety of business applications. The evolution of these networks from a US Department of Defense (DoD) research project back in 1990s into a novel tool for educational and research organizations and, subsequently, to a vast collaboration among public and private sector institutions drew on a number of formal and informal governance mechanisms to coordinate standards and infrastructure investment[3]. Presently, the Internet and Intranet are essential components of corporate operations, supporting communication, collaboration, and data storage and analysis.

In the face of the current digital transformation affecting business worldwide any organization is striving to become intelligent and to achieve competition advantages through the use of a Business Intelligence (BI) solution. The advent of cloud computing in the 2010s transformed corporate IT infrastructure, allowing organizations to remotely host Internet and Intranet services. Under these conditions, large investments in traditional BI solutions are often unpractical and unattractive, while popular solutions based on Cloud Computing, called Cloud BI on demand are increasingly popular. Integration of a Cloud BI solution has special interest for organizations that desire to improve agility while at the same time reducing IT costs and exploiting the benefits of Cloud Computing. Cloud Computing represents one of the significant trends in the development of provision, management and security of IT within an organization[4].

Digital transformation is enabling organizations to improve their operational efficiency, reduce costs, and improve customer experience. Digital transformation is becoming increasingly important for businesses across all industries. Furthermore, embracing digital technologies allows organizations to engage with stakeholders effectively and address social issues such as

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[1] Basuoglu Nuri, Daim Tugrul and Kerimoglu Onur, ***Organizational adoption of enterprise resource planning systems: A conceptual framework***, Journal of High Technology Management Research, 2007, pp 1-25.

[2] Xu Yurong, Yen David, Lin Binshan and Chou David, ***Adopting Customer Relationship Management Technology***, Miami University, USA, 2002, pp 443-444.

[3] Murray M.A, Kerridge S, Slade A, Grey D and Ferguson I, ***The Application of The Internet and Intranets in Business***, International Federation for Information Processing, USA, 1999, pp 96-103

[4] Mircea Marinela, Ghilic Bogdan and Stoica Marcan, ***Combining Business Intelligence with Cloud Computing to Delivery Agility in Actual Economy***, Bucharest Academy of Economic Studies, Romania , 2011, pp 1-16.

diversity, inclusion, and ethical practices. Digital transformation is perhaps the most pervasive managerial challenge for incumbent firms of the last and coming decades. However, digital possibilities need to come together with skilled employees and executives in order to reveal its transformative power. Thus, digital transformation needs both technology and people. In the last years, scholarly attention, particularly in the information systems (IS) literature, was on a steady rise leading to a significant increase in the number of papers addressing different technological and organizational aspects of digital transformation. In the light of this development, we are convinced it is the right time to map the territory and reflect on the current state of knowledge.

1-Digitalization and Its Impact on Economic Development

Although computerization has been enabling changes in the structure and economic geography of industries for decades, recent public discourse has become focused on a set of "new" advanced digital technologies and technology applications that appear poised to dramatically reduce demand for routine tasks and transform the organization and content of work. The continued fine-slicing of activities into ever narrower and more specialized business functions, the organization and spatial separation of deskilled or low-skill jobs from knowledge-intensive jobs, and the automation of the low-skill tasks and/or their mobility to lower-wage locations are all indicative of this trend.

'Digitalization', which is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities to a digital business[(1)], is creating a new digital economy powered by advanced "cyber-physical" systems spanning 'advanced' manufacturing and almost every aspect incorporates. The idea that the digital economy will advance with great rapidity creates worry about dislocations, especially from rapid reductions in demand for labor-intensive and routine jobs from automation, autonomy, and artificial intelligence. The products and services commonly mentioned in connection to the digital economy can be divided into two main market segments: industrial and consumer. The advanced technologies are accelerating the ongoing trends in the corporates, work content, and the geography of industries.

2-Understanding Digital Transformation in Corporate Governance

Governance is a central component of successful DT with effective governance providing appropriate levels of coordination and sharing for digital initiatives, in line with the company's structure, culture, and strategic priorities. With Digital Transformation the focus of governance extends beyond just the decision rights and accountabilities of the IT unit. Rather than 'just' being an organizational unit, technology is now core to the organization, its operations (i.e., everything is about technology and how it drives business), and the products and services it offers to customers. This increases the scope to an organizational level of governance, spanning

(1) Sturgeon Timothy, ***Upgrading Strategies for the Digital Economy***, Global Strategy Journal,2019, p 2.

organizational domains such as business strategy, marketing and sales, production, or human resources[1].

Thanks to the impact on censorship function which is one of the most crucial supporting tools of corporate governance pillars, digitalization, provides a more developed responsibility and accountability framework by ensuring transparent, timely, and accurate information needed and requested by stakeholders. By courtesy of the developing technologies in this process, the amount of data included in the business decision processes has increased and therefore the possibility of richer content opportunity has emerged in terms of both financial and non-financial reporting. Big data analysis, artificial intelligence, and blockchain technologies enable the transformation of the censorship function and therefore of corporate governance practices, along with other business functions[2].

Additionally, digital and customer experience-centric business models emerge, either creating new paradigms or modifying existing ones. Consequently, DT culminates in automated, data-driven, and virtual business processes, facilitated by enhanced digital technology utilization and the creation of smart, connected, and customized products. Improved firm performance and the generation of new value result from enhanced service quality brought about by DT. Moreover, DT leads to dynamic industry-level performance due to changing market conditions. Beyond organizational control, DT influences the broader environment, enabling continuous innovation driven by digital technologies and external actors.

3-Impact of Digital Technologies on Organizational Structure

Digital technologies have brought about a new era of efficiency and innovation in the ever-changing business landscape producing new strategic and organizational challenges for incumbent firms that require major digital transformation (DT) processes, leading to the evolution of new business models. In order to operate efficiently, organizations are enforced to adopt new patterns of business and to adequately apply innovative organizational solutions inherent for modern digital age. Digital transformation is an imperative for organizations due to their necessity to stay competitive on the market, so organizations should experience significant structural changes.

Some argue that we are amidst an era of digital Darwinism [3], wherein the pace of technological and societal advancement surpasses that of organizational adaptation. Changes to operating processes, along with digital transformation acceleration have presented organizations with an opportunity to reimagine their technology strategies and how it aligns to the business. Digital transformation should be considered as a journey and long run process which make organization

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[1] Jewer Jennifer and Van der Meulen, ***Governance of Digital Transformation: A Review of the Literature***, Memorial University of Newfoundland, Canada , 2022, p 6636

[2] Flyverbom Mikkel, Deibert Ronald and Matten Dirk, ***The Governance of Digital Technology, Big Data, and the Internet: New Roles and Responsibilities for Business***, Copenhagen Business School, Denmark, 2017, pp 4-16.

[3] Mirković Vladimir, ***Strategic Management and Decision Support Systems in Strategic Management***, University of Novi Sad, 2019, p 256.

more adaptable on requirements of modern business. It brings a lot of advantages to the company, but we also should take into account some challenges that leaders and managers are faced with. One of those challenges is how to adequately prepare organizational structure that supports digital transformation. Speed and collaboration are the key factors that organizations need to achieve and master. That consequently means reducing the number of hierarchical levels, decentralization of decision making and greater collaboration among employees. As the traditional bureaucratic organizational models are rigid, without potential for further improvement in terms of new market conditions, it is obvious that new forms of organizational structure should be introduced.

Since the digital transformation rapidly changes industries, organizations should react quickly in order to create new business opportunities and seize novel market niches. In recent years, digital transformation runs into the epicenter of interests of researchers, organizations and business leaders. As digital transformation changes the whole business landscape of organizations, it is necessary to capture the extent of its usefulness[(1)].

We live in a world that is increasingly digital, but not yet completely digital, which makes it quite interesting. The transition from the pre-digital age, just a few short years ago, to a new digital reality provides fertile ground for businesses. This revolution has already impacted nearly every corner of modern life. Over the past two decades, digital technologies have profoundly altered marketing and consumption, and the change will continue in both expected and unexpected directions in the decades to come and this will not happen if corporations doesn't change the way things are done and this automatically will lead to a change in mindset and a change in the structure of businesses. With this radical change digital transformation will be the incentive towards introducing new business models facilitating collaboration among employees, bolstering operational efficiency and enhancing business productivity.

Pervasive digital technologies challenge the logic of traditional business models. Digitalization has empowered customers with more choices, expectations, and demands, which has forced firms to reevaluate or supplement traditional transactional customer value propositions with new relational or multidimensional value propositions. Amidst rapid shifts in the business environment and evolving customer needs, organizations must respond adeptly. firms need to build strong dynamic capabilities to rapidly create, implement, and transform "business models" to remain relevant in the emergent digital economy. A "business model" describes an architecture for a how a firm creates and delivers value to customers, and mechanisms employed to capture a share of that value particularly in a digital context. It has become a new unit of analysis that examines how a firm creates and delivers value to its customers and captures profits from managing a system of networked activities, emphasizing that this system of activities need to be

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(1) Mirkovic Vladimir, Lukic Jelena, Lazarevic Snezana and Vojinović Željko, ***Key Characteristics of Organizational Structure That Supports Digital Transformation***, University of Novi Sad, Serbia, 2019, p 256.

aligned with one another in order to develop an efficient mechanism to create superior performance for the firm while delivering value for the customer[(1)].

Speaking about Digital transformation and its application in corporates isn't something easy. Corporates need to understand that such transformation needs a unique strategic alignment in the long term which ensure coherence among business strategy, corporate infrastructure, Information technology and information system infrastructures. To better understand Strategic alignment, we should understand what are the perspectives that are affected by this alignment. The first perspective can be viewed when all changes within the organization are correlated with the corporate strategy. The second perspective is known as technology transformation and potential business strategy which is identified to drive the changes such as IT strategy and IS Infrastructure. The third perspective presents the capabilities of IT on the potential impact it can bring to products and services offered by the company, it is stated to determine the main characteristics of a business strategy that allows developing distinctive competencies. The fourth perspective of the model is the Server Level that focuses on developing and deploying a high level of IS service organization[(2)].

Digital Transformation which can be described as a series of revolutions, imposes fundamental consequences in organizations' structures: unprecedented computing power, infinity of virtual space and ubiquitous connectivity, have presented enormous potential to create enterprise effectiveness, increase flexibility and to enable entirely new business models. Digital transformation requires an altogether new institutional logic and effective response at a requisite organizational level. Reconfiguring businesses in this aspect lines with the shifting value proposition that requires increasingly specialized resources, more dynamic capabilities, and in-built resilience in the face of change. Understanding how organizations function during digital transformation is critical to overcoming organizational challenges and charting an optimal path for future development. [(3)]

Every organization, irrespective of its size, market presence, historical background, traditions, geographic location, employee count, product portfolio, or customer base, acknowledges the necessity to enhance its "digital" capabilities, emphasizing agility, flexibility, and responsiveness to evolving customer demands and expectations. Embracing digitalization should be viewed as a deliberate and well-organized endeavor, with business and Information Communication Technology (ICT) strategies aligned cohesively.

[(1)] Wager Maximilian and Warner Karl, ***Building Dynamic Capabilities for Digital Transformation: An Ongoing Process of Strategic Renewal***, University of Glasgow, Scotland, 2019, pp 8-13.

[(2)] Munas Mohamed and Arun Kuruvikulam, ***AN Evaluation of Strategic Alignment Model in Digital Transformation Based on Intel Case Study***, Asia Pacific University, Malaysia, 2020, pp 5238-5242.

[(3)] Mirković Vladimir, ***Strategic Management and Decision Support Systems in Strategic Management***, University of Novi Sad, Serbia, 2019, p 259.

Chapter Two: Digital Tools in Corporate Governance Structures

In the past twenty years, corporate governance has gathered significant public attention due to its perceived significance for the economic well-being of both corporations and society at large. This area encompasses a wide array of concepts and phenomena, as evident from the definition embraced by the Organization for Economic Cooperation and Development (OECD): "Corporate governance is the system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as, the board, managers, shareholders and other stakeholders and spells out the rules and procedures for making decisions in corporate affairs. By doing this, it also provides the structure through which the company objectives are set and the means of attaining those objectives and monitoring performance". [(1)]

Corporate governance involves balancing the interests of many stakeholders of the company, such as shareholders, senior management, customers, suppliers, financiers, government, and society[(2)]. The ultimate goal of the good governance of the company is to add value to it and to ensure that those who directly or indirectly contribute to its establishment can participate in the increase in value. On the other hand, one of the most important principles of corporate governance is the creation of the necessary level of transparency of the company, a high level of reputation, as well as the recognition of shareholders as creators of share capital who buy shares in the company, finance its activities and in lack of trust in the company, can vote with their feet that is sell shares at a given time.

Traditionally, corporate governance means the structures and processes within an organization designed to facilitate the downward flow of authority, responsibility, and control from investors (who are the economic, legal, and moral owners of the company), through a board of directors, to management, and ultimately to the employees, while accountability flows in the opposite direction. The principal aim of corporate governance is to safeguard the interests of the investor/owner/shareholders[(3)].

It is evident from this definition that corporate governance is built on the idea of a closed, centralized authority, and of a clearly-defined hierarchy with distinct roles and functions. Moreover, corporate governance rules have been designed to protect the interests of those at the summit of that hierarchy—namely, the investor-shareholders. As such, the discourse and practice of corporate governance was an adaptation to, and product of, a world of centralized, hierarchical

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[(1)]Arjoon Surendra, ***Corporate Governance: An Ethical Perspective***, The University of the West Indies St. Augustine, Trinidad, 2013, P3.

[(2)] Garzón Castrillón Manuel Alfonso, ***The concept of corporate governance***, Foundation for Research and Business Educational Development, Columbia, 2021, pp 178-194.

[(3)] Fenwick Mark, ***The End of 'Corporate' Governance: Hello 'Platform' Governance***, Kyushu University, Japan, 2019, pp 178-180.

organizations—large corporations in particular. This regulatory approach made sense when large corporations were the primary engines of economic growth.

In practical terms, the "Shareholder Primacy Model" necessitates companies to implement strategies aimed at prompting all other participants within the organization to behave as if they were investor-shareholders[(1)]. This alignment of incentives among various stakeholders enhances firm performance, typically measured by share price, thereby benefiting not only all stakeholders within the company but also members of the public who gain from the products and services offered by a prosperous firm. This kind of framework has provided the context for modern debates around corporate governance i.e. identifying regulations that compel or, at least, 'nudge' the 'agents' within the firm to act 'as if' they were owner-principals. In this respect, corporate governance has been heavily involved in the rise of shareholder primacy.

The background for the modern shareholder primacy model has been shaped by corporate scandals. Especially over the past two decades, corporate governance reform has been largely motivated by the aim to mitigate the occurrence of such scandals. The underlying notion is that effective corporate governance should strive to diminish the likelihood of managerial misconduct, thereby enhancing shareholder value. The pursuit of identifying structures, procedures, and mechanisms to attain these twin objectives has been a key driver for regulatory reforms in this domain over the last decade. As such, the goal of much contemporary corporate governance reform has been to limit opportunities for managerial 'misbehavior'. 'Misbehavior' here means acting in any way that is harmful to the shareholder-owners' best interests. A corporate culture that eliminates—or at the very least minimizes—opportunities for misbehavior of any kind offers the best means to maximize shareholder value and is, therefore, seen as optimal.

Recent years have seen a rapid increase in accountability pressures on particularly large global companies. The increased call for transparency comes from two different angles, which show some (potential) convergence in terms of topics and audiences: accountability requirements in the context of corporate governance, which expand to staff-related, ethical aspects; and sustainability reporting that has broadened from environment only to social and financial issues[(2)].

Interestingly, the increased call for transparency comes from two different angles, which most recently have started to show some overlap. On the one hand, accountability requirements in the context of corporate governance have expanded, and are starting to sometimes cover staff-related, ethical aspects (such as codes) as well. On the other hand, separate from the more

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[(1)] Stout Lynn, ***New Thinking on "Shareholder Primacy"***, Cornell Law School, New york, USA, 2012, pp 8-24.
[(2)] Jackson Kevin, ***Global Corporate Governance: Soft Law and Reputational Accountability***, Brooklyn Journal of International law, Vol 35, 2010, p 55.

traditional governance framework, sustainability reporting has emerged. While originally focused primarily on the environment, the scope has broadened to frequently also include ethical/social issues, usually employee and community matters, the organizational structure in place to control all this, and financial aspects. This means that these two rather distinct channels of accountability not only show some (potential) convergence in terms of topics, but also in targeting broader audiences[(1)].

The accounting scandals experienced especially in recent years show that, the relevant legislation, regulations, arrangements, social values and accounting ethics are not taken very seriously and still some problems do exist. Following scandals such as Enron, WorldCom, Ahold, and Parmalat, recent initiatives to strengthen corporate governance and accountability[(2)] represented by the Sarbanes-Oxley Act (SOX) ―which purpose is to protect investors by improving the accuracy and reliability of corporate disclosures― have primarily focused on internal mechanisms. Key components mandated by SOX include: Senior management responsibility, management accountability, Internal control report, Data security policies, External auditor independence, protecting whistleblower employees, the issuance of year-end financial disclosure reports. These efforts are directed towards improving shareholder awareness and influence over corporate behavior across diverse business sectors.

Businesses, regardless of size, are embracing advanced technologies, refining job descriptions, and devising fresh accountability and performance management strategies to adjust to the evolving landscape termed the "New Normal". As a result, to this context Digital Governance has been recognized as a well-established domain with a highly ambitious objective, which is quite beneficial for the corporations and the economy: to study and advance the exploitation of ICT for addressing problems and needs corporate governance, and develop novel methods and frameworks for enhancing their internal efficiency, service quality, auditing and policy-making effectiveness through the use of Information Communication Technology (ICT).

The first generation of Digital Governance, referred to as 'e-Government/e-Governance 1.0' is "Efficiency" oriented and aims: to improve efficiency of internal processes and functions of corporates through the electronic support and automation, as well as transformation and enhancement of them, using complex Internal Information Systems (IIS) ; and also, to enable audience and firms to conduct through the Internet (and even through mobile phones) any time and from anywhere e- transactions with corporates[(3)]. The second generation referred to as 'e-Government/e-Governance 2.0' is "Transparency and Stakeholders Participation" oriented, and aims to offer ICT-based capabilities towards increasing stakeholders' participation, as well as openness and accountability of corporates, and thus enhance the quality of democracy (similarly

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(1) Ans Kolk, ***Sustainability Accountability and Corporate Governance: Exploring Multinationals' Reporting Practices***, University of Amsterdam, The Netherlands, 2008, p 5.

(2) Kızıl Cevdet, ***Accounting Scandals and Eye-Catching Frauds: USA-Japan***, Istanbul Medeniyet University, Turkey, 2018, pp 123-133.

(3) Charalabidis Yannis, ***Future Research Directions on the Science Base and the Evolution of the Digital Governance Domain***, University of the Aegean, Greece, 2019, pp 1-6.

as ‘e-Government 2.0’ is defined the digital support of existing practices concerning corporates transparency, openness, accountability and stakeholders’ participation, and as ‘e-Governance 2.0’ is defined the digital transformation and enhancement of them). Finally, the emerging third generation of ‘e-Government/e-Governance 3.0’ comes as a response: [1]

- on one hand to the growing problems and challenges those modern corporates face, which have to be managed through effective corporates’ policies.
- and on the other hand, to the deluge of data produced from the first and second generation of Digital Governance: mainly large quantities of data produced by corporates’ internal as well as e-transactions (Internet or mobile based) information systems, and also textual data from various social media accounts of them or other external sources); and also, data produced from the use of new digital technologies, such as sensors, Internet of Things (IoT), etc.

This third generation of Digital Governance aiming to exploit these data for providing support for better policy-making towards addressing the above problems and challenges, and secondarily for providing advanced services to the economy.

Digital governance is a broad umbrella-term referring to the networked extension of ICT (Information Communications Technologies) relationships including faster access to the internet, Mobile Service Delivery (MSD), social networking, remote connectivity, and the use of advanced technologies to provide greater security and higher-level transactions. Applications of technologies such as artificial intelligence (AI), blockchain, cloud computing, data analytics, and voice recognition are cumulatively altering the administrative foundations of corporates[2].

Participatory governance is one of the building blocks and a necessary condition in the strategic frameworks for the innovation-driven economic transformation of the corporations. Participatory governance is related, first, to the concept of a strategy’s "bottom-up" design, and secondly to the better diffusion of the results across both shareholders and stakeholders. Digital tools and platforms are indeed essential enablers of this transformation. As technology has the potential to radically change the way stakeholders interact with the corporation. Participatory governance means that the existing governance structures need to be transformed, either radically or incrementally, to facilitate collaborative decision-making. At highest transformation level, this

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[1] Charalabidis Yannis, ***Future Research Directions on the Science Base and the Evolution of the Digital Governance Domain***, University of the Aegean, Greece, 2019, p5.

[2] Milakovich Michael, ***Digital Governance: Applying advanced Technologies to Improve Public Services***, University of Miami, Florida, 2022, p 3.

would lead to a corporate based model of governance with inter-stakeholder connections facilitated by new technologies[1].

Speaking about digital tools in corporate governance forces us to shed the light on "Big Data". Talking about 'big data' means reflecting on the implications that the accumulation and analysis of an enormous amount of digital data have for corporations and for their information management strategies. The notion of "big data" refers to both the unprecedented size of contemporary databases and the emerging techniques for making sense of them. This understanding of big data will have consequences for our reconfigured definition of data-mining enhanced surveillance and corporate governance reinforcement[2]. The specific justification for collecting the data may come only after the fact, thus demanding that all data be collected and stored for its future use-value—its correlational and predictive potential—even if there are no envisioned uses for it at present. Big data surveillance, in this regard, is structurally speculative: data that is seemingly entirely unrelated to a particular strategic objective may well yield the most useful unforeseen relationships.

With the help of digital tools in the way on how business is done, digitization/digitalization enabled "dataveillance" – "the systematic use of personal data, systems in the investigation or monitoring of the actions or communications of one or more persons possible". Unlike physical and electronic surveillance, dataveillance is automated. As a result, the economic constraints on traditional surveillance are minimized and more individuals and/or larger populations, can be monitored especially in the premises of corporates.

Second, surveillance is no longer the sole domain of corporates. It is now integral to practices of digital enterprises - "companies regularly capture, store, and analyze large amounts of quantitative and qualitative data on their consumer base every day". Digital platforms feed and thrive on data. A 2019 European Commission report argues that "data is a crucial input to many online services, production processes, and logistics. Therefore, the ability to use data to develop new and innovative services and products is a competitive parameter which relevance will continue to increase. [3]

A-Emerging Digital Governance Technologies

The application of digital technologies to reform businesses structures and governance methods is widely and perhaps naively viewed as the 21st century "savior", the enlightened way to

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[1] Tsarchopoulos Panagiotis, ***Digital tools for participatory governance***, Aristotle University of Thessaloniki, Greece, 2018, pp 104-105.

[2] Andrejevic Mark and Gates Kelly, ***Big Data Surveillance***, University of Queensland, Australia, 2014, p 186.

[3] Kempton Barbara Anne, ***Inclusive Digital Development***, The Academy of ICT Essentials for Government Leaders, UN ESCAP,2022, pp 19-20.

strengthen governance, reduce costs, and improve the quality of productivity in regard to social and environmental aspects.

The full implementation of Digital Transformation requires fundamental changes in the relationship between shareholders and stakeholders with their corporation, using ICTs as catalysts for business as well as administrative communication. This entails attitudinal and behavioral changes, secure networks, and less dependence on formal bureaucratic structures; transformation of administrative, work procedures, and productive systems to manage business services in a more efficient way; the integration of advanced digital technologies with remote broadband wireless internet services and the creation of new forms of global interactive corporate citizenship and self-governance[(1)].

Every aspect in business is rapidly evolving in a digital direction. Myriad opportunities for improved performance are extensive, but at the same time often overwhelming to those who lead and manage often antiquated service systems to the new standards of digital technology that both shareholders and stakeholders have come to expect.

Emerging Digital Governance Technologies (DGT) are very welcomed as a necessary guide to the Information Communications Technologies (ICTs) applications that are empowering corporations to fulfill their promises. Computer-assisted and internet-driven information and communications technologies (ICTs) impact all public and private services worldwide. The sudden shift to remote delivery to cope with the Corona Virus has forced many otherwise reticent corporations to rapidly deploy unfamiliar working procedures and delivery systems.

Although many Businesses around the world have trailed applying Digital Governance Technologies, many corporates did a great job adopting it and are converting from agency centric bureaucracy to citizen-centric digital self-services to deliver services remotely. Converting from legacy systems to advanced technologies is affected by the rise in anti- bureaucratic regimes, COVID-19, global financial crises, greater debt, inflation, and lost tax revenue. Among the incentives for adopting ICTs are the harsh realities of economic austerity, the pandemic response, and conservatism. Although financial desperation (sometimes) fosters innovation, existing traditional structures, and individuals who lead and manage them, sometimes fail to recognize the need for change; others resist innovation to maintain their power.

Integrating High-Tech Information Systems (HTIS) with complex corporate structures is a merger that many corporations have yet to fully achieve. Block Chains, Cloud Computing and Artificial Intelligence (AI) have shown immense growth in last decade. The synergy created by these tools provides an additional competitive advantage to the corporations. Newer

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[(1)] Milakovich Michael, ***Digital Governance: Applying Digital Technologies to Improve Public Services***, University of Miami, USA, 2022, p 1.

technologies/products and governance implications have also emerged for almost all existing forms of technologies[1].

Digital Governance Technologies (DGT) can help corporations in preventing fraudulent activities, mitigate risks, and safeguard the interests of stakeholders, including shareholders, employees, customers, and maintaining compliance with laws. By establishing clear lines of responsibility, decision-making processes, and reporting structures, digital governance technologies can enhance transparency and accountability, making it easier for stakeholders to monitor and evaluate a company's performance.

Effective Risk Management (ERM) is facilitated by digital governance technologies. Data analytics tools analyze diverse data sources to identify risks and vulnerabilities, facilitating proactive risk mitigation. Moreover, cyber security measures protect against cyber threats and data breaches, mitigating financial and reputational risks.

In summary, emerging digital governance technologies are reshaping corporate operations and governance practices. By enhancing transparency, accountability, stakeholder engagement, addressing regulatory requirements, and managing risks effectively, these technologies enable corporations to adapt to the evolving business landscape and drive sustainable growth and value creation. Some of the key emerging digital governance technologies in corporates include:

1-Blockchain:

Blockchain is one of the most important technical invention in the recent years. Blockchain is a transparent money exchange system that has transformed the way a business is conducted. Companies and tech giants have started investing significantly in the blockchain market. It has become growing popular because of its irrefutable security and ability to provide complete solution to digital identity issues. It is a digital ledger in a peer to peer (P2P) network.

Blockchain technology is normally associated with cryptocurrencies such as Bitcoin. It is a database of record of transactions which is distributed, and which is validated and maintained by a network of computers around the world. Instead of a single central authority such as a bank, the records are supervised by a large community and no individual person has control over it and no one can go back and change or erase a transaction history.

As compared to a conventional centralized database, the information cannot be manipulated due to blockchain's built in distributed nature of structure and confirmed guarantees by the peers. In another words, when a normal centralized database is located on an individual server, blockchain is distributed among the users of a software. Blockchain allows anyone on the network to access everyone else's entries which makes it impossible for one central entity to gain control of the

[1] Malhotra Charru, ***The Role of Digital Technologies in Governance***, Indian Institute of Public Administration, India, 2018, p 3.

network. Whenever someone performs a transaction, it goes to the network and computer algorithms determine the authenticity of the transaction. [1]

Distributed Ledger Technology (DLT) and blockchains can ensure that the data is stored in a verifiable and immutable way, and there is no longer any need for an intermediary to establish trust between the company and shareholders. A permissioned distributed ledger can also constitute a set of rules for shareholder voting, including majority requirements and access rights, so that shareholders can exercise their rights in accordance with the applicable corporate law framework and the company's articles of association. Blockchain technology can harmonize shareholder engagement opportunities by offering a common discussion platform for shareholders and board members. Decentralization can also affect the work of the corporate board. Ultimately a decentralized autonomous organization (DAO) is a governance system that work with smart contracts and could have the ability to take over (part of) the work of the centrally designated board[2].

Blockchain's transparent and decentralized platform has attracted various industries and organizations are inclining more and more towards using blockchain for various business purpose. With the help of blockchain, authorization and identification of people have become easier and frauds and records loss can be avoided. Due to blockchain's ability to store and verify documents efficiently, the legal industries have started using blockchain to verify records and documents securely. Blockchain can significantly reduce the court cases and battles by providing an authentic medium to verify and confirm truthfulness of legal documents.

Blockchain is a revolutionary concept as it has been successfully able to bring the transparency among the users and has become a game changer for many industries. Blockchain encourages entrepreneurship by destroying corruption and breaking down the walls of bureaucracy and establish the ownership of common mass. This peer-to-peer technology has opened the door to new possibilities and has provided a personal ground for economic empowerment. It is too early to say what lies ahead, but the future of blockchain looks promising and it can be concluded that blockchain technology is here to stay[3].

2-Artificial Intelligence (AI):

Suffocated by the huge numerical and qualitative dimension of data to be analyzed, companies need organizational systems and tools that allow them to interface with this reality. Through the

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[1] Sarmah Simanta, ***Understanding Blockchain Technology,*** Business Intelligence Architect, Alpha Clinical Systems, USA, 2018, p 23.

[2] Van Der Elst Christoph, Technology and Corporate Governance, https://www.ecgi.global/publications/collections/technology-and-corporate-governance, 2018, [last visited 25 April 2024].

[3] Sarmah Simanta, ***Understanding Blockchain Technology***, Business Intelligence Architect, Alpha Clinical Systems, USA, 2018, p 28.

creation of decentralized and more efficient systems able to process information at a higher speed than any human, artificial intelligence is the answer to these renewal requests. In the context of Corporate Governance, artificial intelligence refers to algorithms capable, through the application of machine learning mechanisms, of recognizing patterns, analyzing and processing data. The AI learning process is closely linked to the instructions entered within their computer code, which leads to the inevitable transfer of typically human characteristics such as opportunism and fallibility. AI shares the aim of creating more effective, efficient, simple, and transparent processes by automating the work of sharing, collecting, and processing data. This action would lead, according to some of the already mentioned works, to a rebalancing of power relations within corporate governance, to the establishment of direct and transparent relations between ownership and control and, consequently, to the obsolescence of intermediate or external subjects such as boards and proxy advisors[(1)].

The recognition system takes place through an AI learning process based on the study of historical data. The methods of analysis and data processing depend on the instructions inside an algorithm's codes. AI will be able to redefine the balance within the Corporate Governance area. AI algorithms may become better on average at governance of decision making for individuals than their superior ability to process information, freedom from biases, and lack of side interests. The use of these technologies allows companies to respond to the growing complexity of the external environment by allowing them to process analysis and information in real-time and to make more reliable forecasts. The replacement of boards with AI could generate a radical revolution in Corporate Governance relationships, from Human-to-Human to Machine-to-Machine: relationships between artificial intelligence systems able to interact with each other using the instructions included in their codes, the information coming from the common network, and the execution of smart contracts. This regime can be defined as an "automatic market" since the demand-supply equilibrium is able to instantly adapt to external contingencies without the aid of the human factor[(2)].

In the context of corporate governance relations, these technologies could, in the short term, be able to increase the level of transparency among shareholders, supporting committees' activities and increasing shareholder engagement through the cost reductions deriving from process simplification. On the other hand, it is important to understand how to apply these technologies without ending up being overwhelmed. Artificial intelligence is the most controversial issue nowadays and it seems to be everywhere. We experience it at home, on our phones, and in corporations. AI will be in just about every product and service we buy and use, and its

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[(1)] Kaggwa Simon, Eleogu Tobechukwu, Okonkwo Franciscamary and Ajoke Oluwatoyin, ***AI in Decision Making: Transforming Business Strategies***, Hult International Business School, USA, 2023, pp 423-433.

[(2)] Fenwick Mark and Vermeulen Erik, ***Technology and Corporate Governance: Blockchain, Crypto, and Artificial Intelligence***, Kyushu University, Japan, 2018, pp 2-25.

application to business problem solving is growing in leaps and bounds. The integration of Artificial Intelligence (AI) into strategic business decisions marks a transformative era in corporate strategy, reshaping traditional models and enhancing business agility.

Artificial intelligence (AI) is more and more used in different ways including artificial neural networks, fuzzy systems, evolutionary computing, intelligent agents, and probabilistic reasoning models. These tools are helpful for the analysis of data trends, the provision of forecasts, the anticipation of users' data needs, and so on. AI helps to make and shape the decision-making process and has the ability to support and even replace human decision-making, particularly under conditions of uncertainty. It already resulted in the use of a robo-director Vital with a board observer status. AI contributes to the monitoring and synthesizing of information, risks, compliance, etc. Second, AI is a helpful tool for simulations and scenario planning and the standard of care of directors can start to include an appreciation of the strengths and weaknesses of AI tools. AI tools with organizational strategy, knowledge management, decision-making processes, and service innovation. AI may not entirely steer a firm's strategic decisions; given the nature of decisions automated by AI, it is imperative for firms to establish governance bodies to define the doctrine for using such technology.

The promise of AI is immense, and the technologies, tools, and processes needed to fulfill that promise haven't fully arrived. If you think you can let the technology develop and then be a successful fast follower, think again. It's very difficult to leapfrog from a standing start, particularly when the target is moving so rapidly and you don't understand what AI tools can and can't do now. With researchers and AI pioneers poised to solve some of today's thorniest problems, it's time to start understanding what is happening at the AI frontier so you can position your organization to learn, exploit, and maybe even advance the new possibilities[(1)].

3-Cloud Computing:

Cloud computing began with the idea of the term an "intergalactic computer network," introduced by J.C.R. Lickliter in the 1960s. He developed the Advanced Research Projects Agency Network (ARPANET) in 1969. The idea of this program was for everyone to be interconnected and able to access data and programs from anywhere in the world. The scientist John McCarthy also is said to contribute to the concept of cloud computing. He proposed that computation be delivered as a public utility. Since the 1960s, cloud computing has developed a great deal. However, the modern era of cloud computing began to take shape in the late 1990s

[(1)] Chui Michael, Manyika James and Miremadi Mehdi, ***What AI can and can't do (yet) for your business***, McKinsey Global Institute analysis, USA, 2018, p 11.

and early 2000s with the development of internet-based services and advancements in virtualization technology. [1]

A generally accepted definition of cloud computing is provided by the National Institute for Standards and Technology (NIST), USA: "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. The NIST cloud computing definition is widely accepted and valuable in providing a clear understanding of cloud computing technologies and cloud services. [2]

Cloud computing is a shift from computing as a product to computing as a service that is delivered to consumers over the internet. The main differences between the cloud and traditional computing are in the areas of what to manage, the form of the contract, accounting treatment, increments of functionality, development and maintenance tasks, infrastructure tasks, units of measure and cost structure. Cloud computing is composed of various elements from other computational models such as autonomic computing, grid computing and utility computing; it now forms one of the most innovative computational deployment architectures in the modern world. Cloud computing can be defined as a set of services in IT that are provided to a customer on demand over a network. Hence, for some researchers, cloud computing promises to be an alternative to supercomputers, clusters and grids[3].

The emergence of cloud computing technology has led to significant changes in corporate governance, particularly within the Information Technology (IT) sector. Cloud computing represents a fundamental shift in how IT services are created, managed, and deployed, which directly impacts the governance of these processes. As companies adopt cloud computing, they must adapt their governance frameworks to ensure proper oversight and control of IT resources. This adaptation includes addressing both technical and business-related issues, thereby ensuring that cloud services are integrated smoothly into the organization's overall governance strategy. [4]

The relevance of cloud computing to corporate governance extends to the entire organization, necessitating the adoption of good IT governance practices company-wide. This comprehensive approach to governance, known as Corporate Governance of Information Technology (CGIT),

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[1] Misenheimer Kevin , Cloud Computing The Future of Business, Journal of Information Systems Technology and Planning , Alabama University, USA, 2016, p 43.

[2] Mell Peter and Grance Timothy , ***The NIST Definition of Cloud Computing***, National Institute of Standards and Technology, U.S. Department of commerce ,USA, 2011, pp 2- 3.

[3] Lee Juhnyoung, ***A View Of Cloud Computing***, Watson Research Center, USA, 2012, pp 1-7.

[4] Palos-Sanchez Pedro, ***What Role does Corporate Governance Play in the Intention to Use Cloud Computing Technology***, International University of La Rioja, Spain, 2019, pp 1-19.

ensures that cloud computing resources are managed effectively and aligned with the organization's overall objectives.

4-Robotic Process Automation (RPA):

IEEE (Institute of Electrical and Electronics Engineers) Corporate Advisory Group defines RPA as the use of a "preconfigured soft- ware instance that uses business rules and predefined activity choreography to complete the autonomous execution of a combination of processes, activities, transactions, and tasks in one or more unrelated software systems to deliver a result or service with human exception management"[(1)]. In other words Robotic Process Automation (RPA) refers to the practice of using computer programs as a "virtualized workforce" to carry out tasks formerly performed by humans at a computer terminal[(2)].

Digitalization is no longer a marginal phenomenon. ITs constantly evolve and bring about new products and opportunities. Thus, today's business environments face continuous digital transformation leading to multifaceted information systems (IS) topographies. Within digital transformation, neither automation nor robotics are new developments. In the past few years, robotic process automation (RPA) has drawn much corporate attention concerning automation initiatives. RPA is interesting to companies that pursue an operational excellence strategy, although RPA's use should not be limited to this strategy.

Within digital transformation, which is continuously progressing, robotic process automation (RPA) is drawing much corporate attention. RPA is a popular topic in the corporate world, it is important to know that RPA initiatives that succeed provide value to the business and operational teams via the use of a digital workforce. Therefore, the owners of business functions are in the greatest position to lead the way and identify the areas of concern that may be addressed via technological enablement with RPA. Teams in charge of company operations are given complete leeway to assess the effects of potential changes to staffing levels and make decisive moves in response.

Robotic Process Automation (RPA), a fast-evolving automation technology that bridges the gap between Artificial Intelligence (AI) and Business Process Management (BPM), enables business organizations to now automate high-volume activities. The actions of a human user on a computer's interface may be recorded using robotic process automation (RPA) tools, enabling a software robot to perform those activities in the user's place. Ease-of-use and adaptability allow companies to conceive and implement RPA (agile) projects. Organizational and IT strategy,

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(1) Hofmann Peter, ***Robotic Process Automation***, Institute of Applied Informatics, University of Leipzig, Germany, 2019, p 100.

(2) Bhattacharyya Siddhartha and Banerjee Jyoti Sekhar, ***Confluence of Artificial Intelligence and Robotic Process Automation***, Bournemouth University, United Kingdom, 2023, p 1.

governance structures, and management systems therefore must address both the direct effects of RPA processes and their indirect impacts on firms[1].

5- Smart Contracts:

As observed, there exists a multitude of definitions for the term "Smart Contract," and a consensus definition has yet to be established. Over twenty years ago, Nick Szabo provided a renowned definition of smart contracts as "a computerized protocol that executes the terms of a contract"[2]. In other words, it is "decentralized agreements built in computer code and stored on a blockchain". He argued that the primary objectives of smart contract design are to fulfill common contractual conditions, minimize both malicious and accidental exceptions, and reduce the reliance on trusted intermediaries. Additionally, smart contracts aim to achieve economic goals such as reducing fraud loss, arbitration and enforcement costs, and other transaction expenses.

Considering that smart contracts are run digitally, the transactions within the smart contract are all done automatically, using a blockchain. It does this according to the terms agreed upon within the smart contract itself. This holds two important properties: firstly, that it is "immutable", meaning that once a smart contract is created and agreed upon, it cannot be changed, so that nobody can actually find loopholes or change/disagree with the contract itself; and secondly, it is "distributed", meaning that everything has to be validated by everyone within the network for decisions to be made[3].

Through the age of digitalization, there lies an opportunity to connect the businesses in a more trusted manner as well as increasing efficiency by automating contracts for a reduction in risk management in business operations[4]. The implementation of the outset smart contract model would ensure that business organizations are able to execute millions of contractual clauses without the necessity of human intervention and thus reducing work pressure on employees and administration leading to better business management and governance.

B- Governance Models Adoption

Corruption in Lebanon is widespread at all levels of society. Political parties, public administration, the parliament, and the police are perceived as the country's most corrupt institutions. In the 2019 Corruption Perceptions Index, Lebanon ranked 137th out of 180

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[1] Hofmann Peter, Samp Caroline and Urbach Nils, ***Robotic Process Automation***, Institute of Applied Informatics at University of Leipzig, Germany, 2019, p 100.

[2] Hillbom Erik, Tillstrom Tobias, ***Applications of Smart-Contracts and Smart-Property Utilizing Blockchains***, Chalmers University of Technology, Goteborg, Sweden, 2016, p 4.

[3] Almatarneh Akram, ***Blockchain Technology and Corporate Governance: The Issue of Smart Contracts - Current Perspectives and Evolving Concerns***, American University in Dubai, UAE, 2020, P 99.

[4] Nzuva Silas, ***"Smart Contracts Implementation, Applications, Benefits, and Limitations"***, Jomo Kenyatta University, Kenya, 2019, p 74.

countries[1].Governments and the private sector have failed to combat corruption over the last few decades. Enhancing proactive transparency and adopting governance models are effective ways to fight corruption and instill a culture of trust in the public and private sectors. Digital transformation and its implementation through governance models that go beyond the use of ICT can be an effective solution to corruption in institutions facing the recession and economic crisis in the country. The efficiency of this policy, promoting an open and digital government, is conditional and depends on several institutional and administrative reforms that need to be implemented to promote good governance and revive economic growth in Lebanon.

For nearly five years, Lebanon has been assailed by the most devastating, multi-pronged crisis in its modern history. The unfolding economic and financial crisis that started in October 2019 has been further exacerbated by the dual economic impact of the COVID-19 outbreak, and the massive Port of Beirut explosion in August 2020. Of the three crises, the economic crisis has had by far the largest (and most persistent) negative impact. In the spring of 2021, Lebanon Economic Monitor found that Lebanon's economic and financial crisis ranks among the worst economic crises globally since the mid-nineteenth century. Nominal GDP fell from close to US$52 billion in 2019 to an estimated US$23.1 billion in 2021. The expanded economic contraction has led to a marked decline in disposable income. GDP per capita dropped by 36.5% between 2019 and 2021, and Lebanon was reclassified by the World Bank as a lower-middle income country, down from upper middle-income status in July 2022[2].

In response to this downturn in the economy, France organized the CEDRE conference in 2018, aimed at fostering economic development and reform through enterprises. The conference aimed to boost the Lebanese economy by providing support for its growth and resilience. It formed part of a general strategy for reform and infrastructure investment, accurately crafted by the Lebanese authorities involved. Furthermore, in 2018, Lebanon engaged the services of management consulting giant McKinsey & Co. to assist in the renovation of its economy and address various vulnerabilities within it. The objective was to devise a robust strategy capable of steering Lebanon through its financial challenges, particularly its notably high debt-to-GDP ratio.

The economic downturn, along with the outcomes of the CEDRE conference and the recommendations from the McKinsey report, created significant pressure on Lebanese legislators to enact amendments to the commercial law. These revisions aimed to introduce, modify, or abolish various concepts and principles to support the recovery and growth of the Lebanese economy and business sector. Additionally, the amendments were intended to enable Lebanon to adapt to new technological advancements and developments in the economic sphere.

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[1] Dagher Leila and Nehme Raoul, ***Can Lebanon's Economy Be Saved? A Plan for Revival***, American University of Beirut, Lebanon, 2020, p 4.

[2] https://www.worldbank.org/en/country/lebanon/overview

As a result, Lebanon entered the digital age on October 10, 2018, when it passed the Electronic Transactions and Personal Data Law no. 81/2018, which governs writing and evidence through electronic means, electronic commerce, and personal data. Following this milestone, on March 29/2019, the Lebanese parliament convened and passed Law No. 126 and its subsequent amendments, alongside the addition of new provisions and modifications to the Code of Obligations and Contracts. This legislation was officially published in the official gazette No. 18 on April 1/2019.

Lebanon's adoption of Laws 81/2018 and 126/2019 will have a favorable impact on the company's formation and performance. On the one hand, these laws make the formation of a corporation easier and safer, both in terms of registration and contributing to corporate capital. In addition, they enhance the company's performance by improving the working of its various organs, particularly the general meetings and the auditors. Furthermore, relying on these laws, will make numerous corporate activities, operations, and transactions more efficient and safer.

1-Compliance with Law No. 81 of 10 October 2018

On October 10, 2018, Lebanon entered the realm of modern business practices by enacting an e-transactions and data protection law, designated as Lebanon Law No. 81/2018. This step is not a perfect one since the law is still new and the key is in the implementation. However, this law is considered an important step in adopting a digital transformation policy in the business world and other services, whether at the level of state administrations or private companies. Prior to this legislation, electronic documents and signatures were only considered provisional evidence subject to judicial discretion, and data protection was not addressed within the Lebanese legal framework. This Law is noteworthy for formally recognizing the validity and enforceability of electronic documents and signatures. Moreover, it establishes a regulatory framework for e-commerce and establishes safeguards for personal data [(1)].

In article 1 the law gave an accurate definition to Writing, Electronic Documents, Signature, Service Providers, Electronic Commerce, Bank Card, Electronic Money, Network Service Provider, Data Host, Traffic Data, Domain Name, Personal Data, Processing of Personal Data, Personal Data Subject, Personal Data Processor and Personal Data Recipient[(2)]. These definitions form the base of adopting Digital technologies which enhance governance models adoption through a legal frame work.

[(1)] Chedid Elias, New Lebanese Law on e-transactions and Data protection, https://www.dentons.com/en/insights/alerts/2019/january/21/new-lebanese-law-on-etransactions-and-data-protection#:~:text=With%20the%20enactment%20of%20new,with%20a%20data%20protection%20law, 2019 , [Accessed 14/4/2024]

[(2)] Law No. 81 Relating to Electronic Transactions and Personal Data, The Official Gazette, Lebanon, 2018, https://smex.org/wp-content/uploads/2018/10/E-transaction-law-Lebanon-Official-Gazette-English.pdf

Law No. 81/2018 introduces fundamental definitions for both writings and signatures. This law legalized electronic writings and signatures in its article 4. The latter article provides that "electronic writings and signatures shall have the same legal effect as the writings and signatures made on paper or any other medium, provided that the person producing them is identifiable and that they are organized and stored in a way that preserves their safety. Any electronic writing that does not meet the criteria above shall be considered as introduction of written evidence

As articulated in Article 4 of the law, "electronic writings and signatures shall have the same legal effect as the writings and signatures made on paper or any other medium," subject to the fulfillment of two parallel conditions[(1)]:

- the person producing the documents is identifiable; and
- the documents are organized and stored in a way that preserves their safety, which we will be detailing thereafter.

Article 7 of Law No. 81/2018 addresses a significant legal aspect concerning the evidentiary value of electronic documents and signatures. It stipulates that: The electronic document shall be accepted as evidence and is deemed to have the same significance and power of proof as the written paper-based document, provided that it is possible to identify the person issuing the document and that the latter is organized and stored in a way that ensures its integrity. Conversely, if an electronic document fails to meet these criteria, it will be treated as the introduction of written evidence[(2)].

Furthermore, Article 10 of Law No. 81/2018 maintains the requirement for multiple copies of documents, as outlined in Article 152 of the Civil Procedure Law which says: The multiple copy rule is deemed satisfied when the ordinary document is organized as per the reliability requirements herein, and when each party's mechanism allows to obtain or access a copy of the document. This requirement is considered fulfilled when the electronic document is organized according to the reliability standards specified in Lebanon Law No. 81/2018, and when each party's method allows for obtaining or accessing a copy of the document.

This law constituted a pivotal turning point at the level of business law in Lebanon, as this law came to constitute a turning point in creating the legal basis for adopting electronic transactions and embracing companies' attempts to dive into the world of Digital Transformation, which will greatly enhance the path of corporate governance, develop their work, ride the wave of global economic digital development and keep up with it.

[(1)] Tohme Law Firm, https://tohmelaw.com/publications/lebanon-e-transactions-law, 2018, [14/4/2024]
[(2)]Chedid Elias, New Lebanese Law on e-transactions and Data protection, https://www.dentons.com/en/insights/alerts/2019/january/21/new-lebanese-law-on-etransactions-and-data-protection#:~:text=With%20the%20enactment%20of%20new,with%20a%20data%20protection%20law, 2019, [30/5/2024]

2-Compliance with Law No. 126 of 29 March 2019

Technology evolves faster than the law, that is why legislations concerned with preserving the attractiveness of their corporate law are actively considering the numerous consequences at the intersection of implementing technologies in corporations, as well as the potential need for legislative reform. Lebanese law is one of the legislations concerned by the renewal of its corporate law. Indeed, the goal to modernize Lebanese corporate law is reflected in the most recent reform, which took place with the passage of Law no. 126/2019, which introduced electronic tools into the legislative arena to aid in the establishment and operation of companies.

Technological advancements and the introduction of new standards, notions, and principles in global business sectors have helped concerned economies grow, develop, and thrive. This progress has caused the Lebanese economy to lag behind in terms of business development and growth. Although Lebanon has faced significant political and security instabilities that have hampered its economic growth and the development of its businesses, the necessity for amendments became evident. These amendments were introduced with the conditions of fighting corruption in the public and private sector, reducing the budget deficit, and reforming the legal structure to encourage business sector development and alignment with the advancements in the international business sector.

In 2019 Lebanese parliament voted law number 126/2019 amending the Lebanese overland commercial law. This amendment introduced lots of concepts to the Lebanese commercial law, and modified or removed some others. This amendment aimed at adhering technological advancements concerning corporates and consequently targeting the Lebanese business sector its competitiveness and thus its position in comparison to international standards[(1)].

There is no doubt that the decisions of the CEDRE conference contributed to accelerating the legislative process to modernize Lebanese commercial law, aligning it with contemporary commercial laws. These efforts aim to encourage investment and attract investors by introducing digital application mechanisms and promoting principles of governance and anti-corruption. These amendments are part of the effort to make commercial and other records more public to enhance transparency and facilitate access to essential information related to the financial status of commercial companies.

The most important paragraphs that dealt with the application of technological techniques appear in the following articles[(2)]:

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(1) Lebanese Republic, the official gazette no 18, 2019, pp 1282-1338.

(2) Chemaly Frederic, Lebanese Code of Commerce: Amendments of Law no. 126/2019, https://www.slideshare.net/FredericChemaly/lebanese-code-of-commerce-guide-to-amendments-2019-144133928, 2019, pp 1-12.

- Article 101 says: Audit publications can be done online as decreed by the Minister of justice, subject to become publishable on the commercial registry website within 2 years of this law.
- Article 156 articulates: Quorum to the board is 50%. It may maybe have stipulated in the bylaws that attendance maybe remote through audiovisual technologies, as defined by the minister of justice, so long as the telecommunication means is reliable. This type of attendance is not acceptable for matters related to annual financial statements, or other matters stipulated in the bylaws. Content of the call shall be recorded as kept as integral part of the meeting
- Article 181 talks about General assembly attendance and representation articulates: Representatives of shareholders should be shareholders themselves, unless the bylaws stipulate otherwise; It may be stipulated in the bylaws that attendance may be remote through audiovisual technologies, as defined by the Minister of Justice, so long as the telecommunication means is reliable, Content of the call shall be recorded as kept as integral part of the meeting.
- Article 182 talking about General assembly attendance articulates: attendance sheet of the general assembly gathers present, represented and connected remotely.
- Article 197 talking about General assembly access to information articulates: share and bond holders have the right to access reports at the head office or electronically.
- Article 199 talking about General Assembly Majority articulates: Decision at the general assembly is taken at majority of present, represented or connected remotely.
- Article 204 talking about extraordinary general assembly majority articulates: Decisions at extraordinary general assembly is taken at 2/3 of present, represented or connected remotely.

Lebanon's legal landscape underwent significant modernization with the enactment of Law 81/2018 and Law 126/2019, marking pivotal milestones in the digital transformation of businesses. In order to adapt the Lebanese financial markets to the developments of the new global economic systems. Despite the delay in this step by the Lebanese legislator, it was necessary to awaken to introduce amendments to the Lebanese Commercial Law in order to correct its provisions more in line with the digital transformation occurring in the modernized commercial field. Ultimately, the combined effect of these laws is to propel Lebanon's businesses towards a more efficient, agile, and competitive digital future.

Part Two: Implications of Digital Transformation in Corporate Governance

Corporate governance is undergoing a quiet, but quick transformation. The rise of digital technologies is forcing companies to not only reconsider existing business models, but also how they organize themselves and structure firm governance. Digital technologies are disrupting the business form, and describing the new business "ecosystems" that are emerging to replace the modern corporation. In a networked age, all businesses need to "go digital." Companies need to become innovation machines, and this means that every firm needs to become a "tech" and a "media" company. If they do not, younger and more agile competitors better attuned to the realities of the new digital world will replace them. For incumbents, the risks are existential. Established firms must adapt to the new digital environment by embracing the ecosystem model, or they will die.

Digital transformation drives organizations towards fundamental change in the organization, strategy, organizational structure, and in the distribution of power. Therefore, organizations must redesign their strategy, organizational structure, allocation of power and initiate an innovation process related to new leadership methods. It is certainly a challenging learning process with each leader and each organization to adapt to the digital transition. On the other hand, digital transformation can be applied at both organizational and individual levels, which is a great advantage, so organizations need to change operating modes, leaders need to proactively absorb and adapt. To achieve efficiency in the digital age became a popular phenomenon.

The rapid development of new technologies and new models of business are having a significant impact on the companies' operations, and create value for organizations. Moreover, the digital transformation may not only push to innovation of products, but also promote the organizational setting and processes. Digital transformation creates higher opportunities for the company for investment and cross-border business initiatives, by channelizing faster information with shareholders and stakeholders, and encouraging higher participation.

Corporate governance creates better relations between the board and the shareholders. Digital Transformation also provides a platform between the companies and shareholders to communicate, and take decisions electronically. Technological innovations provide effective corporate governance practices, and the higher resource allocation for economic performance and development. When the company introduces new technology into the boardroom, there is a positive impact on the top management's strategic decision-making and business setting. The board needs to develop the process to manage challenges and opportunities, and to evaluate risks associated with technological innovation. The board members need to integrate and assimilate it. The right integration of digital innovation into boardroom will take the lead.

Digital Transformation strategy is optimized to create optimal corporate governance. Given the threats and opportunities of the external dynamic environment, strategic implementation of digital technologies in organizations is constantly looking for new competitive advantages that should be used, as well as dangers that should be avoided. An increasing number of companies build competitive advantages by joining new ecosystems with partners in order to propose combined innovative offers to consumers. Integrated corporate and technological strategy becomes a guarantee of organizational flexibility and thus enhancing corporate governance, stability and innovation. At the same time, the transition to a flexible process of strategic management of business units through the use of technological tools allows companies to regularly analyze, anticipate and monitor the effectiveness of strategy development and implementation.

Digital transformation is becoming a popular trend, becoming an indispensable choice for any organization, regardless of size, whether in the public or private sectors. However, changing the argument has many advantages and opportunities, but also many difficulties and challenges, especially for slow and developing countries, because of the limited infrastructure system, laborers lack skills to work in digital networks, leading cadres have not yet adapted to the digital transformation process. However, the responsibility of the leader is to lead the organization to grow, to overcome the challenges posed by digital transformation, leaders first need to equip themselves with full awareness about digital transformation, equipping qualified workers with working skills in a digital environment, and proactively receiving and absorbing the achievements of digital transformation and being ready to face immediate complex issues.

The technological revolution is transforming the world at an unprecedented rate, it is rapidly changing the way organizations at all levels operate, the way people connect and exchange information, and the way they interact with partners in the public as well as the private sector. Governments need to have the right policy framework, leadership in both public and private sectors need digital transformation leadership skills and build the right infrastructure to capture the immense value created by digital transformation, responding promptly to the challenges of the future. A successful corporate in the digital age is the corporate with a digital transformation mindset, who will make it able to recognize and take advantage of opportunities to make informed, timely decisions to adjust strategy when risks are detected, making an important contribution to the optimal development of the organization and its function.

The implications of digital transformation on corporate governance doesn’t only affect transparency, accountability and sustainability, it also improves organizational resilience which refers to the firm’s ability to effectively absorb, develop situation-specific responses to, and ultimately engage in transformative activities to capitalize on disruptive surprises that potentially threaten organization survival. This resilience by itself is the best explanation of benefiting from opportunities and avoiding the challenges.

Chapter One: Opportunities of Digital Transformation in Corporate Governance

Within the recent years, the concept of "digital transformation (DT)" reached a solid and high position in the discussion of leading elements that influence the development and survival of contemporary organizations. Corporates that properly avoid the threats and seize the opportunities have a chance to achieve better than average governance rates, securing their position on existing and facing unexpected adversities. It is, therefore, important to build the understanding of digital transformation as a motivation for introducing beneficial changes to corporate governance, strategies and behaviors. However, the questions arise: how has this digital transformation impacted the structure and functioning of businesses, and what implications does it hold for existing regulatory frameworks, particularly those pertaining to corporate governance? Moreover, what role will current and forthcoming technological advancements, such as distributed ledger technologies, more sophisticated automation, and artificial intelligence, play in potentially disrupting ongoing discussions surrounding corporate governance?

Corporate governance is a dynamic process, that will continue to evolve with the advancement of technology, digital transformation is a typical example[(1)]. The definition of digital transformation is "the process of using digital technologies to create new - or modify existing - business processes[(2)] " It is fundamentally a method of introducing new technologies like artificial intelligence (AI), big data, machine learning and other tools into corporate governance[(3)].

Digital transformation brings "exponential technological growth[(4)]" which leads to the deep integration of technology with corporate governance and alongside affects the organization and operation of a business. Specifically, digital transformation brings fast-moving consumer demands, and then need digital technologies especially AI to engage in corporate governance, which transforms the company's organization. Furthermore, digital transformation disruption of the current structure of corporate governance, brought about a decentralized structure, with businesses operating as an opening and inclusive platform.

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(1) Chukwunonye Emenalo, ***Corporate Governance Systems as Dynamic Institutions: Towards a Dynamic Model of Corporate Governance Systems'***. African Journal of Business Ethics, 2014, p 6.
(2) Mikkel Flyverbom, Ronald Deibert and Dirk Matten, ***The Governance of Digital Technology, Big Data, and the Internet: New Roles and Responsibilities for Business'***. Business & Society, 2017,p 58.
(3) Colin Mayer, . 'Future of the Corporation'. The British Academy, https://www.thebritishacademy.ac.uk/programmes/future-of-the-corporation/, 2018, Accessed 15th April 2024.
(4) Mark Fenwick, Joseph A McCahery and Erik PM Vermeulen, , The End of 'Corporate' Governance: Hello 'Platform' Governance | European Business Organization Law Review (springer.com),2019, Accessed 15th April 2024.

A well-performing business is one that is known to utilize its resources in the most efficient way possible, and which can align itself with its strategic business objectives[1]. It is very important for an organization's managerial and executive staff to understand the importance of the high performing organizations and to create a strategy that can capitalize on various business concepts and initiatives which are helpful in helping the organization achieve positive business growth.

Corporate governance requires a new digital approach to realize its potential. Speed, flexibility, and effectiveness must be combined. The digital tools leverage the opportunities of governance systematically to deliver the targeted value. This includes data about the performance of a process as well as about its compliance with the process design and related compliance requirements[2]. The process of governance in a digital environment can use this data to increase its effectiveness. This enables the necessary speed and flexibility in adjusting digital processes and frees up time to deal with people-related and environment-related topics that cannot be automated. The resulting agility is a main benefit of digital transformations.

A digital business environment provides opportunities to move corporate governance to the next level enabling improved performance of operational business processes. Corporate governance must go through a digital transformation itself, lever-aging appropriate tools, such as process mining or dynamic process modeling and simulation, to meet those needs of a digital environment, the result is a digital process governance. Leveraging the opportunities, operational digital processes provide -by applying appropriate digital tools - a high advancement. Thus a digital process governance becomes a value-driven, tool-enabled, and people-centric.

Digital transformation has been recognized as a necessary strategy in facilitating corporate agility[3], the enhanced information flow provided by digital transformation contributes significantly to corporate governance. Information stands as one of the most critical components of business performance, necessitating its availability for viewing, discussion and if necessary editing by all interested parties. To succeed in digital transformation, leading companies focus on two complementary activities: reshaping customer value propositions and transforming their operations using digital technologies for greater customer interaction and collaboration[4].

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[1] Tukker Arnold, & Tischner Ursula, ***New business for old Europe: product-service development, competitiveness and sustainability: Routledge***, USA, 2017, p 50-53.
sustainability: Routledge.

[2] Kirchmer Mathias, Digital Transformation of Business Process Governance, https://www.scheer-americas.com/fileadmin/scheer/Dokumente/Whitepaper/Scheer-Americas-Digital-Transformation-of-Business-Process-Governance.pdf, 2022, p 5, Accessed 2nd june 2024.

[3] Li, H, Wu, Y, Cao, D & Wang, Y 2021, ***'Organizational mindfulness towards digital transformation as a prerequisite of information processing capability to achieve market agility'***, Journal of Business Research, vol. 122, pp. 700-712.

[4] Berman Saul, ***Digital transformation: opportunities to create new business models, Strategy & Leadership***, Vol. 40 Issue: 2,University of Texas, USA, 2011, p 17.

In addition, the abundance of technical tools and their ease of communication with each other without the need for traditional architecture is operationalized to establish a great cross-communication at a record speed. This will definitely lead to a high-level identification of the company's main, cross-functional process, clarity on the goals to frame the definition of key performance indicators of the business leading to enhancing accountability and ownership for the management of the corporate processes, combined with the appropriate empowerment, control and guidelines. Moreover, management of the knowledge about processes to achieve the necessary transparency enabling fast well-informed decisions and related actions will be critical.

Today, a new generation of digital technologies, represented by big data, artificial intelligence, cloud computing, and mobile connectivity, is advancing rapidly, and the world is accelerating its transition into the digital age[(1)].This drives fundamental changes in management models and information structures, providing a more transparent information environment for the overall operation and details of enterprises.

Corporate governance and Internal Control Mechanisms (ICM) which are enhanced by digital tools have emerged as a focal point to any digital transformation journey, driven by their fundamental importance in fostering organizational transparency, accountability, and sustainability[(2)]. Effective corporate governance is not merely about compliance with regulations but entails a proactive commitment to ethical leadership and responsible decision making. For a successful enterprise, if it wants to achieve future stable economic development, it needs to consider the impact of sustainable development in three aspects: Environment, Society and Governance which is referred to (ESG). Digital transformation has brought a new revolution to the development of the manufacturing industry[(3)].

The symbiotic relationship between corporate governance and internal control mechanisms lies at the heart of any digital transformation oversight and risk management. Effective corporate governance is required for corporations to successfully navigate obstacles and implement digital transformation initiatives. This necessitates a thorough risk management plan that focuses on identifying, evaluating, and reducing the risks related to digital transformation. Internal audit functions are crucial in this respect since they provide unbiased, independent assurance and advisory services that aim to enhance an organization's operations. Internal auditors may help firms in detecting possible weaknesses, upgrading risk management techniques, and improving

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[(1)] Zhigana Li, Bingyaun Xie, Ximing Chen and Qilong Fu, ***Corporate digital transformation, governance shifts and executive pay-performance sensitivity***, Vol 92, 2024.

[(2)] Yunus Magnite Shufia, ***Fortifying Transparency: Enhancing Corporate Governance through Robust Internal Control Mechanisms***, Universitas Ottow Geissler Papua, Indonesia, 2024, p 74.

[(3)] Yang Qin and Shanyue Jin, ***Exploring the Impact of Digital Transformation on Manufacturing Environment, Social Responsibility, and Corporate Governance Performance: The Moderating Role of Top Management Teams***, Gachon University, South Korea, 2024, p 2.

their overall resilience and sustainability by assessing the efficacy of risk management, control, and governance systems[1].

The literature on governance generally perceives the audit as a governance mechanism to avoid potential conflicts between shareholders and managers and to ensure the disclosure of reliable accounting information. However, the quality of the audit must be ensured. Indeed, the financial scandals of the beginning of this decade such as Enron or Tyco, disseminated the doubt regarding the audit' relevance and quality. Despite the new governance methods introduced by digital technologies, audit quality remains the main concern and the best governance mechanism highlighting the importance of implementing digital transformation to provide regulators with the necessary modifications that need to occur for audit standards[2].

When talking about digital transformation and opportunities of governance, dynamic capabilities come to the mind. Dynamic capabilities which are "the capacity of an organization to create, extend or modify its resource base within organization", are maintained through underlying processes of sensing, seizing, as well as reconfiguring and orchestrating assets which take place in teams (such as boards) and among individuals. Sensing refers to the recognition of opportunities before they occur and identifying competitive threats. Seizing is about responding to opportunities and threats that have been sensed. Reconfiguring and orchestrating assets is about enhancing, combining, and configuring firm assets on different levels of the organization.

In the digital era, the forms in which sensing and seizing takes place are changed as technology allows for new opportunities in transforming data into information. It addresses how organizations direct their resources and capabilities to achieve a sustained competitive advantage in environments significantly impacted by new technologies. The theory perfectly suits our purpose as dynamic capabilities have been argued to be especially relevant in environments exposed to the threats and opportunities associated with rapid technological change and development[3].

The digitalization of corporate governance has a number of strong advantages that undeniably make it especially important in the modern realities of the business vision. An enterprise may reach a new development level and achieve serious competitive advantages in comparison with competitors with its help. Proper use of all these opportunities will lead to the rapid establishment and strengthening of positions in a digital business environment.

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[1] Sarkis Christine and Noman Ahmad khan, ***Evaluating the role of internal audit in strengthening corporate governance and mitigating digital transformation risks***, University of Gavle, Sweden, 2023, p 6.
[2] Manita Riadh, Elommal Najoua, Baudier Patricia and Hikkerova Lubica, ***The Digital Transformation of External Audit and its Impact on Corporate Governance***, NEOMA Business School, France, 2020, p 1.
[3] Bankewitz Max, Aberg Carl and Teuchert Christine, ***Digitalization and Boards of Directors: A New Era of Corporate Governance?***, University of Witten, Germany, 2016, p 59.

Another way digital transformation affects the organization and operation of a business is by dismantling the conventional centralized, hierarchical structure of businesses and replacing it with a decentralized structure because it includes some extremely disruptive elements. Digital transformation, therefore, undermines the "old corporate world" of centralized authority, resulting in business decentralization and disintermediation. The decentralized structure allows for a faster flow of information, and enterprises can operate and organize as open and inclusive "platforms"[(1)]. Initially, a decentralized structure enables businesses to respond to market developments more swiftly. Specifically, the old centralized businesses have a bureaucratic structure, which impedes the transmission and exchange of information[(2)].Shareholders and stakeholders can better understand how directors utilize their investments, thereby reducing investment risk and protecting their interests.

The potential of digital transformation and digital technologies is important for environmental, economic and social sustainability in businesses and can be applied in various industries. The development of digital technologies is key to environmental sustainability, as well as serving as a catalyst for companies, for example, where digital technologies: reduce pollution and emissions, improve energy efficiency, degrade the environment, lead to better resource allocation and efficiency. Digital transformation overlapping corporate governance can reduce the carbon risk level of enterprises by enabling emission reduction and efficiency enhancement, optimizing supply chains, and fostering green technology innovation. This effect is more pronounced in companies where environmental regulations are strong, industry competition is fierce, and there is a focus on digital transformation

The application and use of digital technologies can have a positive impact on companies in: saving money, reducing greenhouse gas emissions, identifying products offering excellent energy efficiency, reducing the cost of consumables and public services, increasing profits, taking business to the next level, facing competition with new ones technologies, the offer of new services, the simplification of the flow of operations, innovation, the increase in organizational performance, the transition from the old business approach to the digital, the development and creation of new skills and the indirect maintenance of labor markets[(3)].

To gain and sustain a competitive advantage, modern businesses must adapt and absorb new technologies. Building a distinguishing performance for the organization is the foundation for gaining a competitive edge. The implementation of Digital transformation can improve the

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[(1)] Fenwick Mark, ***Fintech and the Financing of Entrepreneurs: From Crowdfunding to Marketplace Lending***, Kyushu University, Japan, 2017, pp 23-33.

[(2)] Sama Linda, Stefanidis Abraham and Casselman Mitch, ***"Rethinking Governance for the Digital Era: The Role of Stewardship"***, 2021, pp 10-15.

[(3)] Bednarčíková Diana and Repiská Radka, ***Digital Transformation in the Context of the European Union and the Use of Digital Technologies as a Tool for Business Sustainability***, University of Economics in Bratislava, Slovakia, 2021, p 9.

company's financial performance, innovation activities, and inventory returns. In addition, the adoption of Industry 4.0 has a positive effect on the degree of information transparency in the company. Digital transformation technologies will certainly lead to the development of supply chain management performance. Furthermore, by enabling process integration, digitization, automation, and the creation of new analytical capabilities, these technologies enable huge gains in performance within particular supply chain operations such as procurement, production, inventory management, and retail[(1)].

Through digital transformation, which can generally be understood as the "disruptive implications of digital technologies" many new businesses have spawned leading the path for Digital Entrepreneurship as a "Game Changer", this entrepreneurship can transform whole industries and scale solutions in a quicker and more agile way than other economic approaches. It is not only one of the "transversal key competences applicable by individuals and groups", but also a key driver for economic growth at the heart of national advantage and good governance[(2)].

A-Modern Business Dynamics

Doing business in the market today is impossible without new and modern technology, which is one of the key resources by which companies achieve a sustainable competitive advantage. Digitalization and digital transformation of business includes a number of information and communication technologies (ICT) that are built into business processes and which make it easier for management to do business but also ensure market recognition. Globalization of business affects the expansion and easier access to markets, whereby the management of the company must find new ways and methods of doing business, where the digital transformation of business and new digital and information-communication technologies have an effect on growth and competitive advantage. The ability of an organization to transform its business towards digitalization and application of new digital technologies largely depends on the management of the company and a clear digital strategy as an essential part of the corporate business strategy.

The digital transformation of business affects the business of all companies and all industries involved in the global market, which greatly facilitates business and there are ways to do business much more efficiently, better and faster. Digitalization and digital transformation of business facilitate access to new knowledge and capital, accelerate the transfer of new knowledge and technologies, paving the way to create and influence business specialization and increase profitability.

[(1)] Alathamneh Farah and Shelash Al-Hawary Sulieman, ***Impact of digital transformation on sustainable performance***, Al al-Bayt University, Jordan, 2023, pp 912-918.

[(2)] Soltanifar Mariusz and Hughes Mathew, ***Digital Entrepreneurship Impact on Business and Society***, Loughborough University, United Kingdom, p 306.

Modern businesses need to know and be able to adapt business needs to the challenges of the modern market, i.e. they should have the ability to adapt and transform business to the digital needs of the market. Digital business transformation means recognizing, implementing and use of new technology to develop new business models, systems and platforms that will result in higher levels of efficiency and productivity, but also to create and ensure a sustainable competitive advantage in the market.

There are a large number of tools and techniques of modern digital technologies in the market that can affect the improvement of business performance, make the company recognizable, ensure long-term relationships with market stakeholders. Among the many tools of modern digital technologies are certainly social media, a tool whose growth in implementation and use is visible to both individuals and the business world, thus ensuring greater visibility, greater availability, interactivity with the market and stakeholders, which ultimately leads to the creation of loyal consumers and a sustainable competitive advantage.

1-Evolving audit as a governance mechanism

The audit must develop for three basic reasons. First, because it is intended mainly by shareholders, that consider the audit as a service providing them with reasonable insurance. Second, because the audit report prepared several months later to the end of the fiscal year, is based on historical statistics. Finally, because the audit report is standardized, thus it does not meet the specific needs of its actual or potential users, to help future decision making. Digital Transformation can significantly impact the way of doing business in all areas of activity including audit firms. In order to stay competitive and stand out from other companies, audit firms must evolve their business model and service offer by acquiring innovative technology to propose digital solutions. Therefore, Digital Transformation should change the way auditors will handle audit activities by providing additional insights to answer customer's needs.

Traditionally, auditing has three roles as a governance mechanism: monitoring, information and insurance roles. The monitoring role consists of reduce agency costs by controlling the quality of the accounting information produced by managers and by limiting their discretionary powers. Through the information role, the auditor should verify the reliability and fairness of the accounting information that is the basis for any decision making by shareholders and other stakeholders. Finally, the role of insurance does not address the problem of information asymmetry between shareholders and managers, but risks that can be transferred by managers to other entities to hide the financial situation of the company.

Audit quality remains the main concern of the stakeholders, the effect of digital transformation on audit’s business is to recognize how it can improve the role of audit as a governance instrument. Digital technology is impacting at many levels the audit firms particularly the audit role as a governance mechanism. To reach their objectives, audit firms can use new digital technologies to computerize data processing and limit human interference. Digital

Transformation will improve the audit consequence by allowing audit firms to extend their offers by suggesting new services, then it will also increase the audit quality mainly by scrutinizing all data's customer. Finally, with the digital transformation a new auditor profile arises, enabling the culture of innovation within audit firms by moving from the paper-age to digital management of the information, digital transformation is impacting the way audits are conducted[(1)].

2-Stock liquidity / Market Performance

The advancement in technology and economic growth, which are brought about by digital transformation in businesses, will certainly impact their performance in the capital market. The businesses' digital transformation can significantly improve stock liquidity. From the perspective of corporate governance, the digital transformation of businesses can improve stock liquidity by three mechanisms: easing financing restrictions, improving the quality of internal control, and improving information disclosure. The digital transformation of businesses, combined with a high level of financial technology, developed financial markets, and policy guidance, has a significantly greater effect on improving stock liquidity, additionally it can lower the risk of a stock price crash and enhance the accuracy of analysts' forecasts[(2)].

According to the corporate governance theory, information irregularity inside and outside the corporation leads to high adverse selection costs and prevents the stock market's performance. However, by expanding financing channels and improving capital structure and share capital structure, corporations can enhance information transparency and market recognition and ease financing restrictions, which are useful to improving stock liquidity. Current research suggests that enterprise digital transformation can effectively reduce financing restrictions.

First, the digital transformation of enterprises improves corporate information transparency, operational efficiency, and quality of risk control. It reduces the information and decision-making costs and valuation risk of stakeholders, makes obtaining financial support from external shareholders and creditors easier, and curtails financing constraints.

Second, enterprise digital transformation can help the whole supply chain regulate the value creation mode according to demand, shatter spatial boundaries, strengthen supply chain cooperation, enhance commercial credit support from suppliers and customers, and reduce financing constraints.

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(1) Manita Riadh, Elommal Najoua, Baudier Patricia and Hikkerova Lubica, ***The digital transformation of external audit and its impact on corporate governance***, NEOMA Business School, France, 2020, pp 1-10.

(2) Liu Hui, Zhu Jai and Cheng Huijie, ***Enterprise Digital Transformation's Impact on Stock Liquidity: A corporate Governance Perspective***, Published: March 20, 2024, https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0293818

Third, the innovative behavior of enterprise digital transformation helps attain direct or indirect financial subsidies from the government. The certification effect of government subsidies helps transmit positive signals, obtain more social financial support, and ease the enterprises' financing constraints.

Fourth, the digital transformation of enterprises will transfer more high-quality information to the market, improve the transparency and disclosure quality, reduce the information asymmetry between enterprises and creditors and potential investors, also it reduces the financing costs and obstacles of enterprises. At the same time, the enterprise digital transformation to build digital management system greatly improve the enterprise internal information processing ability and information transparency, provide information support for management decision, enhance enterprise financial decision-making ability and financial operation efficiency. The continuous reduction of corporate financing constraints enhances stock price information efficiency and investment efficiency, boosts market depth and corporate goodwill, and reduces bid-ask spreads and adverse selection costs, thus improving stock liquidity.

3-Strategic Imperative: Cultivating a Digital Culture

Digital transformation has become a strategic imperative on leadership agendas, the term "transformation" rather than "change" emphasizes that an organization's digital transformation goes far beyond functional thinking and holistically considers the "comprehensiveness of actions" that must be taken to exploit the opportunities or avoid the threats that stem from digital technologies. The development of today's information society involves the digital transformation of business processes with the intensive use of digital technologies, forming new requirements including a new level of digital skills and knowledge among the enterprise personnel. Changes in the organizational culture lead to a growing demand for specialists in the field of information and communication technologies (ICT), and to modernization of the education system[(1)].

In order to achieve a competitive advantage, modern companies should develop a well thought-out information policy, have their information priorities clearly identified, establish a corporate culture that takes into account information moments, and have highly-qualified employees able to carry out assigned tasks of informational nature. The term "information proficiency" has been introduced into scientific circulation, which means the company's ability to optimally and systematically use the information to achieve strategic goals - this is a way of combining the company's information skills with those advantages that are provided by electronic forms of exchange.

Companies must draw attention to the need of forming a so-called "knowledge creating company." It implies that companies should quickly produce new methods of control and

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[(1)] Trushkina Nataliia, Abazov Rafis, Rynkevych Natalia and Bakhautdinova Guzelya, ***Digital Transformation of Organizational Culture Under Conditions of the Information Economy***, Virtual Economics, Vol. 3, No. 1, 2020, p9.

management that are in line with changes in modern economic life, apply advanced technologies, and provide close communication links among various departments of the company and a common cognitive basis for the company employees' interaction.

Companies should pay a significant attention to the organizational culture by identifying factors influencing the enterprises' effectiveness and competitiveness and interdependences between organizational culture and financial results by elaborating how the use of ICT (Information and Communication Technology) impacts organizational culture development, including the improvement of personnel management system. Many international studies suggested that at least 30 professions will vanish within a decade. But instead of disappearing professions, there will emerge 186 new professions that will require a qualitatively new level of knowledge, that is, the digital one[(1)].

Studies conducted by international organizations UNECE (the United Nations Economic Commission for Europe) indicate that one of the most significant obstacles to successful digital transformations is an absence of corresponding organizational culture and the unwillingness of personnel (including managers at various levels of management) to work in new conditions[(2)]. Thus, CGI (Conseillers en Gestion et Informatique) Global 1000 research, conducted in 2016 by the CGI Group, showed that a key barrier to digital transformation is a change in the organizational culture through overcoming the company employees' resistance[(3)].

Personnel is the central element of digital transformation. In order for the company employees to understand the goals of digital transformation, firms should provide their employees with digital training and education. Such training should, in fact, become a prerequisite for effective digitization of the company's business processes. Enterprise executives should develop and implement programs for digital skills training of staff, using opportunities for distance learning, partnership with academic institutions, universities, and innovative start-ups, as well as various other forms of organizational culture development. The main path of successful transformational changes in the digital era is to bridge gaps between the required special digital skills and those currently held by the company's personnel. In addition, the use of ICT (Information and Communication Technology) allows cutting the cost of personnel management by reducing risks in selecting personnel, efficient distribution of human resources, automation and optimization of HR processes, and rational investment in employees' self-development; and thereby effective use

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(1) The Changing Nature of Work, https://thedocs.worldbank.org/en/doc/923491519602595879-0050022018/original/2019WDRConceptNoteFeb25.pdf , World Development Report 2019 , pp 1-56.
(2) Trushkina Nataliia, Abazov Rafis, Rynkevych Natalia and Bakhautdinova Guzelya, ***Digital Transformation of Organizational Culture Under Conditions of the Information Economy***, Virtual Economics, Vol. 3, No. 1, 2020, p14
(3) Norton Jerry, Capital markets: Top 4 barriers to digital transformation, https://www.cgi.com/en/blog/banking-capital-markets/capital-markets-top-4-barriers-to-digital-transformation, 2019, Accessed 24th April 2024.

of ICT contributes to transforming traditional organizational culture to a successful digital culture that meets today's business requirements.

3-Digital Marketing Evolution

Digital transformation influences the use of digital marketing in business, determining the impact of this concept on promotion and brand positioning, i.e. electronic business development through electronic services. This facilitates the integrated analysis of the context of electronic business, thus providing innovative and value-creating. The development and widespread use of technology and Internet technologies have transformed the way society communicates, both in daily and professional life . The same applies to the business of companies operating in modern (digital) conditions. The Internet has become a key component – or, one could say, a strategic weapon – in that it represents one of the most significant technologies of the 21st century. On the other hand, in rapidly evolving business environments, precise analysis and accurate planning can be key to the selection of the "right" strategies for IT investment and the implementation of any new technologies since new corporates are digitalizing their capabilities in order to distinguish themselves from their competitors. Digital transformation constitutes an evolutionary process, changing our ways of life and the ways in which we do business through digital technologies; primarily through the implementation of new technological solutions based on Internet services and modern information technologies[(1)].

Technologies are essentially shifting the producer– consumer relationship. The significance of digital (online) marketing is currently increasing and, as such, we can observe changes in the ways people communicate as well as the ways in which companies communicate with their customers. The last several years have also seen a dramatic increase in the amount of time and money consumers spend online. In such modern business conditions, which are characterized by strong competition and highly sensitive customers, digital marketing has become increasingly important. Through digital marketing and media, consumers can access information at any time and in any place. Digital marketing has been gaining more and more importance and it is evident that its development and its use provide numerous benefits for companies, such as greater market presence, cost reductions, measurability of results, personalization, openness, and better communication. Understanding the Internet's impact and its potential impact on major aspects of business can result in better marketing programs and sustainable marketing strategies[(2)].

[(1)] Melovic Boban, Jocovic Mijat, Dabic Marina and Bakovic Tamara, ***The Impact of Digital Transformation and Digital Marketing on The Brand Promotion***, positioning and electronic business in Montenegro, https://www.researchgate.net/publication/347206494_The_impact_of_digital_transformation_and_digital_marketing_on_the_brand_promotion_positioning_and_electronic_business_in_Montenegro, 2020, Accessed 24th April 2024

[(2)] Berman Saul, ***Digital Transformation: Opportunities to Create New Business Models***, Strategy & Leadership, Vol. 40 Issue: 2, University of Texas, USA, 2017, pp 16-22.

On the other hand, consumers, as the main objects towards which marketing strategies are directed, face facilitated interaction, which makes them more active participants than ever when it comes to decision-making processes regarding their needs for products and services. When it comes to increasing customer numbers, the advantage of the Internet as a communication medium likewise lies in the fact that it allows us to target the conveyed information towards a specific audience segment. Additionally, one of the most important benefits of digital communication is the ability to support feedback, interactivity, and responses - a factor that provides vital information on customers and can be used to fine-tune communications.

4-Digital Supply Chain Revolution

"The supply chain is a network of producers and distributors that supply raw materials, convert them into intermediate goods and final products, and distribute final products to customers"[(1)].

Digital transformation in supply chain management enables businesses to gain a competitive advantage by using their resources more efficiently, making every stage of their supply chain brighter, more transparent and more efficient, closer to customer needs, and increasing the quality of decision-making. Besides, it ensures that the supply chain will become increasingly flexible and have efficient new business models shortly.

Supply Chain Management (SCM) has been integrated with the developing information systems since the end of the 1990s and has become an approach aiming to increase customer satisfaction. In this period, sharing information technologies and information simultaneously with all supply chain members bring SCM activities to a more transparent and reliable level. The emergence of fragmented and globally dispersed supply chains has laid the foundation for various forms of inter-organizational governance that utilize contractual and relational mechanisms to balance interdependencies and individual interests in a way that allows effective collaboration and control for improved performance[(2)].

In the changing world, competition among companies is not mentioned anymore, competition is now experienced between supply chains in which companies are involved. Links between supply chain members are significant and need to be managed successfully. At this point, digital transformation is vital as it increases the connection between the members of the supply chains and enables the supply chain to be managed more successfully.

The 4th Industrial Revolution- which is referred to “Industry 4.0”- is expressed as the digitalization of industrialization or physical production and cyber technologies through new

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(1) Lee Hau and Billington Corey, ***The Evolution of Supply-Chain-Management Models and Practice at Hewlett-Packard***, 1995, p 66.

(2) Barbieri Pierluigi, Ellram Lisa and Formentini Marc, ***Emerging Research and Future Pathways in Digital Supply Chain Governance***, International Journal of Operations & Production Management, University of London, United Kingdom, 2021, pp. 1021-1034.

technologies. With the digital transformation of the supply chain, a more advanced automation and inter-system integration application is realized. In this way, all machines and equipment in production are coordinated over the internet and sensors to make production simultaneously. In this process, all necessary data are stored with the cloud system. Therefore, Industry 4.0 creates a transformation that changes the entire supply chain and business models.

As the digital transformation of supply chain management continues to evolve, ongoing research and adaptation are crucial for organizations to stay competitive and resilient in the digital era. The pace of technological innovation and disruption requires organizations to continuously monitor emerging trends, evaluate their implications, and adapt their strategies and operations accordingly[(1)].

B-Stakeholder Engagement

The term 'Stakeholders' covers a broad body of people and groups from customers and suppliers to governance bodies and staff. However, they are recognized because the corporate would like their support or neutrality on an issue for which the corporate seeks strategic and sometimes operational outcomes required for the successful delivery of the corporate's strategic objectives and targets[(2)].

A stakeholder model of corporate governance promises to solve many corporate and societal problems. Firms that focus on stakeholder needs instead of only shareholder interests will engage in more CSR (Corporate, Social, Responsibility) and ESG (Environmental, Social and Governance) activities. They may become more innovative and resilient, have better customer and employee relationships, commit less fraud, enjoy a lower cost of capital and greater access to finance, have lower risk and perform better. A stakeholder focus can improve corporate short-termism and even income inequality and climate change[(3)].

A stakeholder engagement can be defined as: "the practices an organization undertakes to involve stakeholders in a positive manner in its activities"[(4)]. While stakeholder engagement often assumes that negotiations will be adversarial, digital technologies within the context of digital transformation approaches interpret stakeholder engagement as a creative opportunity to

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(1) Adama Henry, Popoola Oladapo, ,Chukwuekem David and Akinoso Emmanuel, ***Economic Theory and Practical Impacts of Digital Transformation in Supply Chain Optimization***, International Journal of Advanced Economics, Volume 6, Issue 4,2024, p 103.

(2) Smith Paul, ***Stakeholder Engagement Framework***, Information and Security: An International Journal, Vol 38, 2017, p 35.

(3) Karpoff Jonathan, ***On a Stakeholder Model of Corporate Governance***, University of Washington and ECGI, USA, 2021, p 1.

(4) Viglia Giampaolo and Pera Rebecca, ***The Determinants of Stakeholder Engagement in Digital Platforms***, Universita Degli Studi Di Torino, Italy, 2024, p 3.

engage in more collaborative and effective interactions especially within the advent of the new technological tools.

Stakeholder engagement has recently risen on the agenda of marketing studies mostly due to the introduction of digital technologies. The overlap between business, society, management and digital transformation literatures is evident, as the literatures of both disciplines focus on similar issues, exemplary focal issues include the relationship between CSR and stakeholder engagement. The emotional aspects that stem from feelings of gratitude, empathy and trust, are central for consumers engaging in the community. This picture is rather different in the stakeholder territory where multi-stakeholders mainly engage with the focal organization because of goal-directed behaviors such as accomplishing some pre-determined purpose. In general, the need for understanding is considered to be higher in stakeholders with respect to regular customers. Compared to consumers, multi-stakeholders are more functional and rational in their effort allocation, focusing on activities that are means to achieving an end.

The importance of stakeholder engagement in crucial organizational activities, such as value creation, strategic planning, decision-making, innovation, learning, knowledge creation, accounting and reporting as well as corporate social responsibility (CSR) and sustainability reveals how stakeholder activism in a digitalized world influences organizational activities, strategic management, stakeholder integration as well as societal benefits.

Enhancing stakeholder engagement in digital transformation initiatives require robust process and people-focused foundations in order to be successful and sustainable. The strategies and blended solutions can include a wide range of permutations between the change management, knowledge management, and performance improvement domains. Organizations can achieve digital transformation while driving deeper engagement and better results for the business. Rebalancing mind and machine, platform and product, and core and crowd represent the future of the work and organizations[(1)].

1-Enhanced Communication and Transparency:

Stakeholder involvement and transparency are strongly interrelated. Stakeholder involvement is key to strengthening transparency, while transparency is necessary for effective stakeholder involvement. Scholars identify transparency as one of the general principles for effective engagement, since transparency acts as an enabler for deliberative and participatory democracy. Stakeholder engagement is enhanced when stakeholders have the opportunity to participate in discussions and the ability to access to information.

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(1) Robu Daniela and Lazar John, ***Digital Transformation Designed to Succeed: Fit the Change into the Business Strategy and People***, The Electronic Journal of Knowledge Management, Vol 19, Issue 2, 2021, p 147.

Engagement of stakeholders in the “upstream” and “downstream” stages of governance and policy processes shapes the impact of transparency and accountability initiatives. Transparency is key to enhancing stakeholder engagement in corporate governance, and conversely, stakeholder involvement strengthens transparency. Transparent communication is expected to improve trust between stakeholders and corporates. Effective stakeholder involvement, continuous communication, and a proven track record of transparency—facilitated by digital platforms—are crucial for establishing and maintaining stakeholder trust, especially at the onset of any crisis [(1)].

Ongoing stakeholder engagement in corporates, facilitated by digital technologies, ensures financial sustainability and fosters the collaboration necessary to achieve both shared and individual goals. It helps overcome cultural resistance to what is fundamentally a significant transformation in the management process. Additionally, it strengthens advocacy activities, ensuring that the public and policymakers are aware of the benefits of information exchange and current activities at the community level. It is important to note that while digital transformation should address all key areas of consensus, it must also remain flexible to accommodate future elements that can impact stakeholder engagement and progress.

Transparency from the very beginning of any organizational project is critical to retaining stakeholder engagement. The best way to achieve transparency is to centralize information by coordinating and tracking day-to-day activities[(2)]. This can be achieved by building active communication channels to disseminate information in multiple ways, such as providing 'self-service' access to status updates and employing bidirectional mechanisms to communicate stakeholder-specific benefits, foster the exchange of ideas, and negotiate compromises.

Like Stakeholder Engagement, effective, consistent and coordinated communication is essential to the success of the organization’s strategic objectives. Communication is integral to the execution of Stakeholder Engagement and includes the communications activities of Communications Office staff and the need for leadership at all levels in the organization to participate in communicating effectively as line managers (internally) and ambassadors of the organization (externally). The communications team will focus their effort on supporting external Stakeholder Engagement to achieve strategic outcomes and effects. Line manager communications will need to ensure the majority of internal engagement with staff is focused toward achieving the same ends as Stakeholder Engagement, ultimately the successful delivery of the organization’s strategic objectives and targets[(3)].

[(1)] Perko Tanja and Turcano Catrinel, ***Transparency and Stakeholder Engagement in Nuclear or Radiological Emergency Management***, Belgian Nuclear Research Centre, Belgium, 2020, p 244.
[(2)] Burchell Leigh, ***Best Practices for Community Health Information Exchange***, the Center for Community Health Leadership, USA, 2010, p 30.
[(3)] Smith Paul, ***Stakeholder Engagement Framework Information and Security***, An International Journal, Vol 38, 2017, p 39.

2-Data-Driven Decision Making (DDDM):

Decision making process usually is based on a series of factors which suggest an action to a direction or another. Majority of businesses recognize the value of data in this process. From the digital transformation perspective, we have increasingly better capabilities to utilize in ranking data according to its accuracy, reliability, source and other factors. This leads to better decisions for businesses which are onboarding data into their marketing operations. The field of data driven marketing is growing as businesses are starting to understand the benefits of real time data analytics which describe the markets activities more accurately than slower traditional methods due to the advent of technological tools[(1)].

Data-driven decision-making (DDDM) refers to the process of making decisions based on the analysis of data, rather than relying solely on intuition, experience, or unreliable evidence. As the availability of data has increased dramatically in recent years, DDDM has gained prominence in various sectors, including business, government, and non-profit organizations. Big data decision-making is a subfield of DDDM that focuses on the analysis of massive volumes of structured and unstructured data to derive actionable insights for strategic and operational goals. The emergence of big data has amplified the potential benefits of DDDM, as organizations can capitalize on the wealth of information contained in big data to drive better decision-making. Tools and techniques used in big data decision-making include data mining, machine learning, and data analytics. Studies have demonstrated the potential advantages of big data decision-making, such as improved efficiency, enhanced customer understanding, and increased innovation[(2)].

Investigating the impact of data-driven decision making on Stakeholder Engagement is crucial for understanding the effectiveness of data-driven decision making strategies in business since it leads to improved Stakeholder Engagement and satisfaction when used in a collaborative manner involving Stakeholders in the data analysis process resulting in satisfactory results, increased trust and collaboration between the corporate and its surroundings.

One of the biggest opportunities for policy making in any corporate is to tame the way of administration managing to fit with the stakeholders' engagement in order to achieve the best interest of the company the community and the environment equally. Since the field of business is focused on learning, knowledge development, and making the right decisions, the potential of DDDM becomes a must as it becomes a professional tool to adapt the rapid variables concerning businesses and stakeholder engagement. Since DDDM is defined as using science to drive

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[(1)] Lahtinen Ville, ***Data Driven Digital Business Transforming business models through emerging technology***, Master thesis, published 2019, Metropolia University of Applied Sciences, Finland, 2019, 43 pages.

[(2)] Rovolisa Georgios and Habibipour Abdolrasoul, ***When participatory design meets data-driven decision making: A literature review and the way forward***, Luleå University of Technology, Sweden,2023 ,P 112

decision making, meaningful stakeholder engagement nowadays is one of the core ideals defining contemporary business programs[1].

3-Collaborative Tools and Platforms:

Successful corporations try to organize their partner relationships in a network, in which the principles of trust and reciprocity prevail. By definition, a network is a collaborative structure, which depends neither on the market nor on the hierarchy. In decentralized digital platforms stakeholders inclusively interact, promoting cooperation and sustainability. To the extent that network properties can be mathematically measured, governance issues may be quantified and traced with recursive patterns of expected occurrences[2].

Collaborative Tools and Platforms such as social media provide new opportunities for stakeholder groups to be informed, identify common interests, express and share opinions and demands, organize, and coordinate interventions. Therefore, these digital tools could be expected to increase stakeholder engagement in corporate affairs and facilitate good governance. Collaborative Tools and Platforms do in fact increase stakeholder engagement in corporate governance since they have become the coordinating tools for nearly all of the world's business operations by not only making stakeholders engagement in decision logistically feasible, but also supporting deliberative processes by providing access to a wide range of information and online conversations[3].

Information Technology enables the combination of competences, capabilities, and knowledge. More specifically, social media can reflect real-world actions and practices that were started offline or they can actively represent a first initial pump priming for future real-world actions. These platforms are fruitful when stakeholders are interrelated as players, in that they can form a coalition for strengthening knowledge. The modality the information is made available is relevant, on the one hand social media extend networks by expanding the widespread and interrelations, on the other hand, to avoid energy and time dispersion and allow effective encounter moments, social media platforms might offer spaces with restricted access[4].

Collaborative Tools and Platforms allow for more dynamic social uses of the web, it make it easy to find like-minded users and associate with peers sharing similar views thus forming composite stakeholders which in turn support the cooperation and coordination of interest groups, leading to create a social capital which refers to the features that enable people to act

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[1] Abraham David, ***Community Quality-of-Life and Well-Being***, Purdue University, USA, 2020, p 202.
[2] Visconti Roberto, ***Combining Network Theory With Corporate Governance: Converging Models for Connected Stakeholders***, Vol 17, Issue 1, Università Cattolica del Sacro Cuore, Italy, p 2.
[3] Hoffmann Christian and Lutz Christoph, ***The Impact of Online Media on Stakeholder Engagement and the Governance of Corporations***, University of St. Gallen, Switzerland, 2015, p 1.
[4] Viglia Giampaolo and Pera Rebecca, ***The Determinants of Stakeholder Engagement in Digital Platforms***, Universita Degli Studi Di Tsorino, Italy, 2018, p 3.

collectively, thus leading to enhancing corporate governance by boosting social interactions and providing efficient ways of resource sharing and exchanging highly valued content.

4-Corporate Social Responsibility (CSR) Initiatives:

The use of the term "social responsibility" refers to the concept of incorporating stakeholders and their interests in how companies are run. Social Responsibility refers to business persons' decisions and actions taken for reasons at least partially beyond the firm's direct economic or technical interest. Such responsibility has two aspects: "a broad obligation to the community with regard to economic developments affecting the public welfare" and an obligation "to nurture and develop human values"[(1)].

Nowadays, an increasing focus lies on a firm's ESG performance (environmental, social, governance). The responsibilities of firms reach further than solely those of their shareholders. Firms are considered to bear responsibilities in an increasing array of topics concerning environmental, social, and governance issues. If a firm fail to meet its responsibility on these topics, it is considered to be an ESG controversy. The increasing interest in ESG controversies related topics by firms can be explained. Firstly, society is demanding firms to act in a more responsible way concerning ESG related issues because ESG issues have a high impact on society and social issues are partly caused by these firms. Secondly, ESG issues and how firms handle these issues might influence their ability to maximize profits. Taking ESG controversies into account is of key importance because good ESG controversies performance is considered to have an influence on firm value[(2)].

Stakeholder engagement is a milestone corporate social responsibility (CSR) policy because it allows one party (the organization) to interact with another (the stakeholder) in a two-way dialogue in which the engager and engaged mutually learn from such contacts, deeply revising their expectations and preconceptions. In this sense, stakeholder engagement is a powerful tool of dialogic communication and accounting that offers interactive mutual learning processes that are capable of promoting transformative action and social change[(3)].

CSR and ESG engagement allow companies to reduce firm risk, and engaging in various strategic and socially responsible CSR and ESG programs enhances corporate image. Stakeholder engagement has multiple values: it is a CSR and ESG instrument and a tool of good governance. It is also considered to be a key element in the preparation of sustainability reports.

[(1)] Pollman Elizabeth, ***Corporate Social Responsibility, ESG, and Compliance***, University of Pennsylvania Carey Law School, USA, 2019, p 2.

[(2)] Wiendels Thomas, ***The Relationship of ESG Controversies Performance and Firm Value***, Master Thesis, published 2021, Nijmegen School of Management, Radboud Universiteit, 2021, 46 pages.

[(3)] Leopizzi Rossella, ***Stakeholder Engagement***, University of Bari, Italy, p 4.

Stakeholder engagement may be a factor that influences the relationship between ESG controversies performance and firm value[1].

5-Risk Management and Compliance:

Organizations face an increasingly challenging and complex environment in which to undertake their activities. It is within this increasingly uncertain environment that organizations are required to deliver higher stakeholder expectations, whilst fulfilling greater corporate governance requirements in relation to ethical and social responsibility. Successful risk management, including the protection of corporate reputation, continues to be a business imperative for all organizations. A successful risk management initiative enhances the ability of an organization to achieve objectives and ensure sustainability, based on transparent and ethical behaviors[2].

Stakeholders increasingly expect that organizations will assess and manage risk in all areas of business activity including the area of corporate social and environmental responsibility. The need for organizations to face previously unforeseen, and potentially unforeseeable risks in uncertain and ever changing environments has accelerated with rapid advances in information and industrial technology. In applying the risk management standard, organizations are expected to engage with stakeholders to identify and assess risks in all aspects, including risks of a social and environmental nature[3].

Operational risks are the root cause for many of the (large scale) financial failures in corporates. The operational risks are not new: human mistakes, fraud, theft, process failures, system errors and external hazards, such as fires and floods, have been around for decades. However, the impact of operational risks was most often relatively insignificant. In contrast, recent trends such as globalization, global internet connectivity, and digital technologies, have made operational risks more significant than ever before. With increasing requirements, complexity and volume of risks, information systems are believed to provide benefits for risk management activities[4].

With increasing requirements, complexity, and volume of risks, information systems provide benefits for integrating risk management activities and optimizing risk management performance. Information systems and technologies can support the improvement of operational risk management processes. The recognition of performance management systems as a set of technologies from the information systems domain is suitable for application to support the

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[1] Pollman Elizabeth, ***Corporate Social Responsibility, ESG, and Compliance***, University of Pennsylvania Carey Law School, USA, 2019, p 4.

[2] Hopkin Paul, ***Fundamentals of Risk Management Understanding, Evaluating and Implementing Effective Risk Management***, 4th Edition, published in the United States, Kogan Page Limited, 2018, p 15.

[3] Horner Claire and Wilmshurst Trevor, ***Stakeholder Engagement and the GRI: Implications for Effective Risk Management***, Corporate Ownership & Control Journal, Vol 13, Issue 3, 2016, p 210.

[4] Chernobai Anna, Rachev Svetlozar and Fabozzi Frank, ***Operational Risk: A Guide to Bassel II Capital Requirements Models and Analysis***, Published by John Wiley & Sons, Inc., Hoboken, New Jersey, USA, 2007, p 12.

operational risk management process. In recent years, this recognition is supported by consulting firms, who state Business Performance Management and its supporting technologies could provide effective support for risk management processes[(1)].

Chapter Two: Challenges of Digital Transformation in Corporate Governance

Businesses services continue to develop in line with the increasing needs of the digital technologies so that they require complete services. These services can be achieved with Good Governance which functions to improve services optimally to provide satisfaction to stakeholders. In some conditions, it is not easy to meet the needs of such a complete service so there is a need for efficiency in services through the ease of information flow within the institution's internal and external to the wider community. Therefore, there is a need for a transformation that facilitates good governance through digital transformation.

Digital technologies rank first among the factors that can promote the growth of modern economies. Digital technologies are changing people's lives: the way they operate, socialize, communicate, and educate. In short, these technologies are changing everything around us. Consequently, companies are obliged to follow these changes and adapt to the new environment if they want to keep and consolidate their market shares and avoid the risk of disappearance. However, the changes companies need to make can be partial or far-reaching[(2)].

Digital Transformation is one of the major challenges for businesses, which are now obliged to engage in this transformation which requires changes at several levels such as the Business Model which should be more disruptive, the Business Processes reinvented since the offer is now increasingly digitalized without forgetting the Customer Journey in the presence of a new type of consumer who is more connected, more mobile, and more demanding. Forced to face this situation, digital transformation can be considered a source of anxiety for top management, because they must reshape their old working methods and redefine many parameters of their strategies such as teamwork, relationships with all stakeholders, organizational culture, creativity, and innovation[(3)].

However, there are several obstacles to implementing Digital Governance in improving the services and capabilities of corporates. The challenges in implementing digital governance include the capacity and authority of institutions in implementing services, thus requiring some improvement in the quality of the resources needed to improve and innovate these services. There are limitations related to conflicts of interest linked to the implementation of digital

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[(1)] Weeserik Bram and Spruit Marco, ***Improving Operational Risk Management Using Business Performance Management Technologies***, https://doi.org/10.3390/su10030640 , 2018, [Accessed 15/6/2024].

[(2)] Dahlman Carl, Mealy Sam and Wermelinger Martin, ***Harnessing the Digital Economy for Developing Countries***, OECD Development Centre, Vol 334, 2016, p 8.

[(3)] Bauer Hendrik, ***The Digital Customer Journey in the Automobile Industry***, Master thesis ,published 2018, Faculty Of Business Administration, Seinäjoki University of Applied Sciences, 2018, 60 pages.

governance which have an impact on technical disparities and policy conflicts that result in ambiguity in the application of standard operating procedures.

In addition, the application of digital governance does not necessarily facilitate solutions and guarantees for improving the ease of information processing, but there are also challenges in data acquisition and transformation in aspects of digital technology implementation where the data plays an important role in improving these services. Therefore, it is necessary to study more in-depth related to the implementation of digital governance and the various limitations that become obstacles to its use so that it can produce an increase in institutional performance to be of higher quality.

Technical issues rising from digital transformation are obvious. The success of the digital transformation process is directly linked to the company's ability to master and align technologies and their uses with the overall strategy and the resulting objectives. Likewise, other keys to success are added to these skills, such as professionalism in collecting and processing data from internal and external flows, or even access to the skills required for this change, or even the establishment loyalty and retention programs for them. Behind all these challenges lies a major problem: the governance of change, more concretely, of digital transformation. Certainly, the main objective is the improvement of value creation processes through new technologies, while mastering risk management and performance techniques[(1)].

Digital technologies have revolutionized management science. Old theories inherited from previous centuries are no longer useful or at least they need to be revisited and updated. Likewise, working practices within companies as well as modes of governance are being renewed day after day, at an accelerated pace. Big Data, Blockchain, Internet of Things, are now assets of tangible and intangible nature that must be considered all like the former assets of the company. Academics urgently need to find the appropriate means and techniques to manage these assets. Certainly, these are important assets which are not yet sufficiently valued by the markets[(2)].

Companies in business sector face a range of challenges in deploying and managing digital transformation within the context of corporate governance. The challenges can be organizational, strategic, cultural or managerial. The emergence of technical platforms and big data analytics bring profound changes in organizational structures, firms' strategy and management processes and require new frameworks to analyze and understand complex patterns of competition and

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[(1)] Bounfour Ahmed, Fernandez Valerie and Waller Emmanuel, **Cloud computing and organizational design: towards a comprehensive research agenda**, https://www.cairn.info/revue-systemes-d-information-et-management-2015-4-page-3.htm , 2015, [Accessed 17/6/2024].

[(2)] Ben Hadj Hassine Amine, ***The Challenges of Digital Transformation: Case of Tunisian Companies***, Quantitative Economics and Management Studies, Vol. 2, No. 5, 2021, p 283.

administration. Intermediating the role of technical platforms between a set of administrative concepts and its relation with both stakeholders, shareholders and operations to translate the accessed, structured, analyzed data into value creating services[(1)].

Related privacy issues require new internal organizational structures and innovative types of management. Digital transformation is associated with challenges to develop viable business models and constantly experiment and iterate the new business model ideas. The managerial issue is which parts of the current business model can be stabilized, if any, and which parts needed to be kept agile and adaptable. Moreover, companies must find a scalable way to implement their digital transformation strategies and ensure that they can transform their innovation into new revenue streams as part of the business model.

In addition, there are weaknesses that undoubtedly should be taken into consideration, since they may lead to the specified list of threats. It is relevant to bear in mind the process of digital transformation of corporate governance. These weaknesses and threats may become decisive advantages for competitors in fierce competition, using which they can seriously do harm and increase their market share as a result. Weaknesses include not all employees being ready to change and use digital technology, additional costs for digitalization organization, the need to involve qualified workers with information systems skills, the need to upgrade production assets, including automated and robotic complexes, and staff training in new information technologies and methods of working in the information environment. Threats include cybercrime, the rapidly changing world of digital technologies, regulator problems (public or private), change of corporate culture, control of ethical responsibility, corporate blackmail, and, as a result, market manipulation[(2)].

Adopting or even thinking about Digital Transformation in Corporate Governance highlights the importance of developing digital culture and skills before investing in digital infrastructure and technology in a moderately innovative macro region. Companies should alter their vision before reconfiguring their business models, invest in smart working and establish contacts with start-ups. Corporates should mainly invest in digital education and partnerships, while, in terms of education and training organizations, it suggests providing digital skills to several shareholders and stakeholders[(3)].

[(1)] Nahrkhalaji Shafiee, ***Challenges of Digital Transformation: The case of the Non-Profit Sector***, https://doi.org/10.1109/IEEM.2018.8607762, 2019, [Accessed 15/6/2024].

[(2)] Ziniuk Mykola, Dyeyeva Nataliya, Bogatyrova Kateryna, Melnychenko Svitlana and Fayvishenko Diana, ***Digital Transformation of Corporate Governance***, PhD thesis, published 2022, the Department of Management, State University of Trade and Economics, Ukraine, .2022, 310 pages

[(3)] Brunetti Frederico, Matt Dominik, Bonfanti Angelo and De Longhi Alberto, ***Digital Transformation Challenges: Strategies Emerging from a Multi-Stakeholder Approach***,

The business model scalability enables the company to find a way to go to market, create value for new stakeholders and transform the value into real cash flows based upon a new revenue model. Companies need to shift from product to service based business models which means that uncertainties will emerge, and complexities need to be acknowledged. Furthermore, the value of the new digitally-based service for a user may be more or less difficult to perceive and evaluate when going through a digital transformation.

No doubt, the digital transformation is imposing numerous challenges and we can in no way ignore the voices that warn about structural risks such as, for example, the destruction of jobs, or the security and protection of personal data or even the problem of transparency linked to the use of big data in companies of the future, which presupposes the establishment of a climate of trust in a hyper connected environment. Moreover, these data are considered as the Black Gold of the 21st century and the new intangible asset of the company of the future. However, if the digital transformation imposes a new social contract between the company and its environment, it also implies new ethical, regulatory, and legal constraints that top management must imperatively take into account. Nowadays, the concept of corporate social responsibility, like many other paradigms, is outdated. From now on, it is about the digital responsibility of the company(1).

Except for the firms operating in the Communication and Media sector, other companies raise the problem of the shortage of specialized skills in digital technology as well as the lack of knowledge of digital tools. Regarding the risks and challenges of digital transformation, it is noted that all corporates consider that the main obstacles to the implementation of digital projects can be summed up in the omnipresence of a traditional corporate culture, including the values are old-fashioned and out of date. The resistance to change can cripple any digital transformation process. Likewise, unanimously, regulatory barriers are also seen as the primary obstacles to digitization(2).

Despite the apparent benefits of the digital transformation, potential drawbacks also exist. A serious risk is unfolding of a growing digital divide between developed and emerging economies as well as within emerging countries between cities and rural areas and between educated and non-educated. Whilst digital technologies are spreading around the world faster than ever, their widespread penetration within countries after their initial adoption is slowing down. Digitalization and automation in both advanced and emerging economies also could contribute to

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https://www.emerald.com/insight/content/doi/10.1108/TQM-12-2019-0309/full/html, 2020, [Accessed 15/6/2024].

(1) Brynjolfsson Erik and McAfee Andrew, ***Big Data: The Management Revolution***, Harvard Business Review, https://tarjomefa.com/wp-content/uploads/2017/04/6539-English-TarjomeFa-1.pdf, 2012, [Accessed 17/6/2024].

(2) Ben Hadj Hassine Amine, ***The Challenges of Digital Transformation: Case of Tunisian Companies***, Quantitative Economics and Management Studies, Vol. 2, No. 5, 2021, p 285.

the re-shoring of production and thus amplifying the trend of premature deindustrialization across the developing world. Finally, developing countries are likely to find themselves digitalizing in a world where global regulatory standards are set largely by the advanced countries[1].

Also while digital transformation creates new jobs, it may also destroy some old ones, and alters the composition of existing jobs. It contributes to skill biased technological change, a major cause of rising inequality in labor income. Such disruption in the labor market has raised concerns that digitalization might both bring about jobless growth and worsen existing disparities in the income distribution.

Digital platforms have also instigated debates around market concentration, equal access and adequate competition, things that are far from being new to the overall communication industry. Transnational data flows that cut across national jurisdictions raise issues around data ownership and privacy. Governments' and businesses' increasing reliance on digital systems also leaves them more vulnerable to attack: the threat of cyber terrorism is real.

Digital transformation poses particular challenges for developing countries. Maximizing the benefits of the digital economy depend on a basic level of information communication technology ICT infrastructure that many emerging economies still lack. Furthermore, digitalization is far more advanced in technologically advanced countries: many developing countries will be "takers" of technological and regulatory developments in the rest of the world. This is not a cause for pessimism, however. Emerging economies have the most to gain but also the most to lose from digitalization because they are often further from the technological frontier than advanced countries. As such, developing countries need to engage in strategic planning to maximize the development impact of digitalization. Countries that fail to do so run the risk of falling behind in their international competitiveness and may find it increasingly difficult to improve the wellbeing of their populations[2].

Digital transformation requires a strong, secure, and flexible digital network infrastructure. Recent cyber security incidents risk harming the sustainability and quality of corporate services, endanger national security and undermine economic growth, while most of the emerging countries are not fully prepared to deal with cyber security threats caused by the dispersion of

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[1] Dahlman Carl, Mealy Sam and Wermelinger Martin, ***Harnessing the Digital Economy for Developing Countries***, OECD Development Centre, Vol 334, 2016, p 5.

[2] Thanh Nguyen Hai, Quang Nguyen Van and Mai Nguyen Thi Tuyet, ***Digital Transformation: Opportunities and Challenges for Leaders in the Emerging Countries in Response to Covid-19 Pandemic***, Emerging Science Journal, Vol. 5, 2021, p 28.

resources, even struggling with the development of a digital economy. On the other hand, for a long time, employees often work according to their habits and do not want to be managed[1].

Another difficulty comes from the board of directors, a successful board in digital transformation who has a progressive mindset and is able to maintain the relevance of organizational capabilities in an ever-changing context must possess exceptional qualities, all of which begin with a solid knowledge of digital and new technologies. Another difficulty is that they must have the ability to think strategically, to have a wide influence, to have knowledge and leadership capabilities, and especially to have digital knowledge to improve the performance of the organization, to exploit technology trends such as innovation opportunities, digital leadership skills. The new board of directors should be characterized by strategic leadership, business knowledge to add value to the organization, and digital comprehension to exploit technology trends.

In the digital age, the business world is changing. Activities have become dematerialized, moving away from old working methods in favor of IT solutions and digital tools. Such a change may have provoked resistance and mistrust for some companies. Faced with this embarrassing situation, one can often find managers intimidated by the scale of the task, work teams hesitant to give up their old ways of working or who are simply afraid of change. So many psychological brakes that can sometimes slow down the implementation of innovative and effective solutions. However, good change management can overcome all these problems and take full advantage of the opportunities that this transition can present. Indeed, if the technological challenges are quite clear for most decision-makers, the challenges relating to the field of economics, or even management and social sciences should not be underestimated.

A-Data Privacy Concerns

In recent decades the nature of information technology IT security incidents has changed, from isolated attacks on information systems to intentional, targeted and sophisticated cyber threats at individual, institutional or even national level. Interconnected capabilities of digital technologies bring many benefits, but also introduce a host of new vulnerabilities with far reaching implications. Even so it is common to use both terms interchangeably, cyber security differ from information security. While in information security era it was enough to conduct basic protection from 'common' attacks, in cyber security era organizations need to implement smart, innovative and efficient controls to detect and prevent advanced and emerging cyber-attacks[2]. Cyber security activities should no longer be solely the responsibility of IT departments or assigned individuals, but institution-wide efforts with all employees engaged. As digital technologies are strategically aligned with business strategy, the same should be done with cyber security. Basic

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[1] Dahlman Carl, Mealy Sam and Wermelinger Martin, ***Harnessing the Digital Economy for Developing Countries***, OECD Development Centre, Vol 334, 2016, p 28.

[2] Syarief Elza, ***Security Concerns in Digital Transformation of Electronic Land Registration: Legal Protection in Cybersecurity Laws in Indonesia***, International Journal of Cyber Criminology, Vol 16, 2022, p 36.

protection is efficient, but there are still rooms for improvements in taking a collective ambition towards holistic cyber security governance and applying more advanced controls.

If aligned with strategic objectives and used simultaneously, different, independently developed and ready-to-use digital technologies - such as cloud computing, mobile technology, sensors, Internet of Things (IoT), big data, cognitive technologies (AI), augmented reality (AR), robotics, addictive manufacturing, drones and others - have the ability to extract information form physical devices (data on sensors about condition of physical device), disseminate it quickly (using mobile technologies), store it on cloud, analyze it instantly (using big data and advanced analytics), thus, integrating products, services and processes, and making disrupting impact on established business models[(1)]. While information technology (IT) initiatives are more internally focused, mainly with the objective of aligning with current business process, digital technologies are externally oriented, connecting devices, enabling excellent digital services and enhanced customer experience. On the other hand, these initiatives will expose them to wide range of new risks - cyber security risks. As companies are increasingly using novel digital technologies to foster innovation, the nature of IT security incidents is changing and prevailing to more externally oriented and sophisticated threats.

Although, characteristics of information system (IS) security incidents and associated risks have dramatically changed in recent decades, it seems that IS and underlying IT and digital technologies are still mistakenly regarded as a separate organization of the business and thus a separate risk, control and security environment. Ten years ago an IS security incident could cause minor 'technical' problems, today we are faced with wide range of advanced, intentional cyber-attacks that may cause massive incidents, large direct and indirect costs and affect corporation's competitive position and strategic goals. In addition to impact on companies, due to interconnectivity of digital technologies, cyber security incidents can have very negative impact on individuals (phishing attacks, identity theft) and at national and state level (state-sponsored attacks, organize crime groups, exploiting vulnerabilities on 'smart' devices to gain access to data, control systems, or critical national infrastructure), which was not so likely to happen some ten years ago, in so called 'information security' era.

As cyber incidents are targeted, sophisticated and difficult to detect and prevent, we need more holistic approach in governing them. The main objective in managing cyber security is to carefully design and implement basic protection to prevent common attacks, but also, innovative, smart and sophisticated security controls to detect and respond to advanced and emerging threats. There is a wide range of interdisciplinary intersections between cyber security and artificial intelligence (AI). On one hand, AI technologies, such as deep learning, can be introduced into

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[(1)] Spremić Mario, ***Cyber Security Challenges in Digital Economy***, Proceedings of the World Congress on Engineering Journal, Vol 1, 2018, p 5.

cyber security to construct smart models for implementing malware classification and intrusion detection and threating intelligence sensing. On the other hand, AI models will face various cyber threats, which will disturb their sample, learning, and decisions. Thus, AI models need specific cyber security defense and protection technologies to combat adversarial machine learning, preserve privacy in machine learning, secure federated learning, etc.

Cyber security can simply be defined as security measures being applied to computers to provide a desired level of protection. The issue of protection can be defined using the acronym (CIA) for Confidentiality, Integrity, and Availability. Confidentiality refers to the property that data should only be viewable by authorized parties. Integrity refers to the principle that only authorized users are allowed to change data, and that these changes will be reflected uniformly across all aspects of the data. Availability refers to the principle that data and computer resources will always be available to authorized users[(1)].

The current lack of Governments' support for security on the Internet is forcing businesses to rely on their own personal security measures to protect themselves from cybercrimes, however this is not sufficient in ensuring that cyberspace is a safe haven[(2)]. The elimination of cyber security risks isn't possible without an effective cyber security strategy. Since the concept of management is not sufficient, the implementation of this strategy is possible with cyber governance, which includes all stakeholders in the management processes. This emphasizes the importance and necessity of cyber governance in ensuring cyber security.

1-Increased Exposure to Cyber Threats due to Digital Transformation

The massive growth of technology in all domains, especially information and communication technology, the diversity of electronic content and services, the presence of artificial intelligence, the Internet of Things, cloud computing and other technological procedures, have led to positive industry development and enhanced interaction between companies and clients. At the same time, the emergence of cyber threats and risks, the development of malicious software that seeks to destroy, manipulate or exploit data, and the development of spying and data theft mechanisms has also emerged[(3)]. Cyber security is one of the challenges that many businesses face during the development of hacking operations, malicious software, and technologies that contribute to making gaps in computer networks.

Companies work to deliver their services through websites or mobile applications, and this leads to publishing information on the internet while preserving the privacy of users. Therefore, these

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(1) Eunice Odero, Bundi Dorothy and Omari Omosa, ***The Impact of Cyber Attacks on E-Businesses***, International Journal of Computer Science and Network, Volume 8, Issue 4, 2019, p 255.

(2) The previous reference, p 355.

(3) Mijwil Maad, Filali Youssef, Aljanabi Mohammad, Bounabi Mariem and Al-Shahwani Humam, ***The Purpose of Cybersecurity Governance in the Digital Transformation of Public Services and Protecting the Digital Environment***, Mesopotamian journal of Cybersecurity, Vol. 2023, 2023, p 5.

verses tempt many unauthorized people to try to access, steal or manipulate this data. Therefore, companies or institutions should evaluate the performance of their applications, find technical ways to protect them, and take appropriate decisions in updating them and eliminating existing defects. The absence of cyber security governance in companies leads to a lack of confidence in their applications and services, because relying heavily on artificial intelligence techniques in developing the digital environment and preserving data have the ability to study the behavior of unauthorized persons and malicious programs which may lead to reversed results.

The digital age has ushered in a wide range of cyber security threats that exploit vulnerabilities in technology, processes, and human behavior. The worldwide availability of the internet allows cyber-criminal attackers in today's interconnected digital world launching cyber threat attacks to cyber and physical systems worldwide from anywhere, at any place and at any time. Understanding these threats is crucial for developing effective countermeasures for the best results of the company.

2-Persuasive Technologies Nudging to Manipulate Individual Decisions

Personal data of all kinds are now being collected by many companies, most of which are not well-known to the public. While we surf the Internet, every single click is recorded by cookies, super-cookies and other processes, mostly without our consent. These data are widely traded, even though this often violates applicable laws. By now, there are about 3,000 to 5,000 personal records of more or less every individual in the industrialized world. These data make it possible to map the way each person thinks and feels. Their clicks would not only produce a unique fingerprint identifying them, they would also reveal how they also feel. Their google searches would furthermore reveal the likely actions they are going to take next, predicting future individual behavior based on the data available about each person[(1)].

Personalized advertisement is in fact trying to manipulate people's choices, based on the detailed knowledge of a person, including how he/she thinks, feels, and responds to certain kinds of situations. These approaches become increasingly effective, making use of biases in human decision-making and also concealed messages. Such techniques address people's sub-consciousness, such that they would not necessarily be aware of the reasons causing their actions, similar to acting under hypnosis.

Technology mediates a consumer's interactions with the market, which allows marketers to record detailed information about the consumer's online interactions and allows marketers to design every aspect of the interaction with the consumer. This control extends to both the physical and virtual interface where the interaction occurs. Marketers exploit consumers in a way called "Drip Pricing". Drip pricing aims to exploit the behavioral drivers of vulnerability by

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[(1)] Helbing Dirk, ***Societal Economic Ethical and Legal Challenges of The Digital revolution***, https://arxiv.org/pdf/1504.03751, 2015, [Accessed 18/6/2024].

showing consumers only part of the price up front, with the additional costs and charges being shown at later stages. In this way 'drip pricing" exploits the commitment principle, which pressures consumers to make subsequent decisions that are consistent with decisions they have already made[1].

Manipulating people's choices is also increasingly being discussed as policy tool, called "nudging" or "soft paternalism"[2]. Here, people's decisions and actions would be manipulated by the programmer through digital devices to reach certain outcomes, e.g. environmentally friendly or healthier behavior, or also certain results. Manipulators intentionally alter the contexts in which their targets make decisions. But, unlike those who persuade or coerce, manipulators do so without the target's conscious awareness. The hiddenness of manipulation challenges both conditions of autonomy-competency and authenticity. Because manipulates are unaware that features of their choice environments have been intentionally designed to influence them, their capacity to competently deliberate is undermined, yielding decisions they cannot endorse authentically as their own[3].

3-Regulatory Frameworks and Compliance

With the rapid development of the digital economy, there is a need to create coherent, global, and comprehensive legal safeguards, including reliable guaranties of legal protection regulating the use of digital technologies in order to minimize digitalization risks and to legitimize new assets, both tangible and intangible. International organizations and states are actively developing strategies to adapt laws on the use of modern digital technologies. The main problems, however, are that, on the one hand, the proposed strategies are sectorial and address only certain aspects of digitalization, and, on the other hand, the solutions often aim at pursuing a political agenda at the expense of a coherent forward-looking global legal strategy[4].

The pressure to innovate may lead organizations to overlook or compromise security measures, potentially exposing them to vulnerabilities and regulatory non-compliance. The urgency to adopt the latest innovations may sometimes outstrip the ability to implement robust security protocols. The decentralized nature of blockchain poses challenges in terms of jurisdiction and legal accountability. Legislators must work in finding a compromise which balance between the benefits of technological tools and the urgent need of transparency which is an urgent need for

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[1] Spencer Shaun, ***The Problem of Online Manipulation***, Vol. 2020, University of Illinois Law Review, USA, 2020, p 974.

[2] Sunstein Cass and Thaler Richard, Ph.D, ***Nudge: Improving Decisions About Health Wealth and Happiness***, 2008, United Kingdom, Penguin Group, 2009, p 15.

[3] Susser Daniel, Roessler Beate and Nissenbaum Helen, ***Online Manipulation: Hidden Influences in a Digital World***, Georgetown Law Technology Review, P 38.

[4] Sidorenko Elina and Von Arx Pierre, ***Transformation of Law in the Context of Digitalization: defining the correct priorities***, Digital Law Journal, Vol 1, published 2020, P 26.

regulatory overlook, as technology becomes integral to almost every process in corporate administration, regulators are grappling with issues to accountability, transparency, and bias.

Cybercrime threats, global corruption and rapid technological change are challenges for companies implementing digital technologies. Companies must meet compliance standards to ensure that the organization's activities comply with existing regulations. Compliance standards should be understood as both compliances with legal requirements and also ethical standards. Compliance means fulfilling all the obligations of the organization. Requirements that the organization must meet include applicable law (laws, ordinances, etc.) - and there is little freedom in this regard. Besides, the organization must meet various voluntary obligations, such as industry or organizational standards, codes, principles of good governance, as well as social and ethical norms recognized in the organization(1).

Currently, many challenges cannot be tackled due to the lack of an internationally recognized comprehensive legal framework. It is imperative to find answers to a number of strategic questions, such as the legal nature of new digital technologies and their products, the possibility of adapting traditional legal instruments to new legal phenomena, or the development of a unified approach to the legal regulation of the digital economy at the interstate level, amongst others. Unfortunately, these issues are not currently being addressed either by the scientific community or by international organizations. In this regard, it is more urgent than ever to develop a single theoretical framework for digital legislation and choose a vector for its development. Future international and national legislations shall set legal guarantees for the development of digitalization and at the same time minimizes its risks(2).

The slow pace of legislative response to digital technologies imposes many challenges. The pacing problem facing the legal system has at least two dimensions. First, many existing legal frameworks are based on a static rather than dynamic view of society and technology. Legal institutions are slowing down with respect to their capacity to adjust to changing technologies. This problem applies across the board to legislatures, regulatory agencies, and the courts. The legislative process is notoriously slow. The legislative process is also heavily determined by the scale of relevant political and ideological structures, which in many cases are smaller than the increasingly global technological enterprise. Regulatory processes have become slower at the same time that science and technology are speeding up. These dynamics of legislative, regulatory and judicial legal actors all suggest that the law may have problems keeping pace with exponentially changing technologies.

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(1) Habrat Dorota, ***Legal Challenges of Digitalization and Automation in the Context of Industry 4.0***, ScienceDirect Journal, Vol 51, 2020, p 939.

(2) Sidorenko Elina and Von Arx Pierre, ***Transformation of Law in the Context of Digitalization: defining the correct priorities***, Digital Law Journal, Vol 1, published 2020, p 27.

Despite the fact that several strategies for the development of "Digital Law" are being worked out at the level of international organizations, neither in theory nor in practice is there a single understanding of the legal nature of digital technologies and the foundations of their legal regulation. There is insufficient consideration of the technical aspects of digital technologies, as well as the need to develop — at the international level — a unified legal strategy for civil and intellectual law regarding digital technologies. It stresses the need for legislative mechanisms to address the risks associated with the mass use of inexpensive smart devices, gaps in information decryption, etc. It is important to emphasize that, according to experts, the priorities for law transformation include: involving technical experts in the legislative process, updating domestic legal acts on cybercrime, and developing legal mechanisms to control transnational crime.

B-Challenges in Lebanon

The economy in Lebanon survives on an aging infrastructure, heavily damaged during the civil war, and after the July 2006 war. One of the biggest obstacles facing the Lebanese industry in their expansion path is the infrastructure deficit[(1)]. Since 17 October 2019, Lebanon has witnessed a massive protest movement, known as the October Protests. It reflected widespread discontent with the ruling political elites and parties that have governed the country since the end of the civil war in the late 1980s early 1990s. These protests, though did not last long, marked by anti-government sentiments and opposition to traditional parties. These protests were triggered by unprecedented economic meltdown that started in 2009 and peaked in 2019, described as a once-in-a-century catastrophe. The 2019 economic crisis has been deemed by the World Bank as one of the most severe crises to the extent that it is labeled as an "unprecedented economic catastrophe". This crisis has exerted great pressure on state institutions, posing a significant threat to the foundations of the Lebanese state.

Lebanon's political leaders did not address the economic crisis or implement necessary reforms, as recommended by the International Monetary Fund (IMF) and the international community. This delay in undertaking structural adjustments, combating corruption and addressing failing public services has hindered the disbursement of funds promised at the CEDRE Conference, totaling around 11 billion Euros. This structural dysfunction is rooted in Lebanon's consociation political system, characterized by challenging cooperation among heterogeneous sectarian groups, leading to continuous internal conflicts and political deadlocks[(2)].

The COVID-19 pandemic, along with lockdowns, and the Beirut port explosion on 4 August 2020, have deepened the economic woes, pushing over half the population below the poverty line. The World Bank noted that cash economy has been growing since the economic crisis began

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(1) Ghalayini Latife and Saade Fabienne, ***Modeling and Forecasting the Infrastructure Investments Needs in Lebanon***, Journal of Economics and Business, Vol.2, 2019, p 845.

(2) Dandashly Assem, ***Lebanese Crisis: A Multifaceted Descent Into State Failure The 2019 Crisis And Its Aftermath***, Aula Mediterrania Programa Interuniversitari de l'IEMed, Vol 154, 2024, p 1.

in 2019, due to the "systemic failure of Lebanon's banking system and the collapse of the currency. According to the international institution, the cash economy "heightens the risk of money laundering, increases informality, and prompts further tax evasion"[1]. Among the most significant and deeply rooted structural obstacles to be addressed are the following: a rentier economy focused on low value-added products, a constrained business enabling environment, significantly damaged financial and real sectors, insufficient infrastructure investments, and, last but not least, rampant corruption and weak governance.

One of the main sets of reforms should target the business environment, to attract investment as well as help existing businesses perform better. Lebanon ranks as one of the least competitive economies in the world, not only among Arab countries. According to the Ease of Doing Business 2020 rankings, Lebanon ranks 143rd out of 190 economies and 15th among the 20 MENA (Middle East and North Africa) countries[2]. In fact, since 2013, only one reform was implemented, adopting the laws of 81/2018 and 126/2019, while on average each MENA country has implemented 13 reforms since 2013. The World Economic Forum ranks Lebanon 88th out of 141 countries surveyed.

The World Bank recently released its Lebanon Economic Monitor (LEM) Spring-2023 report titled "The Normalization of Crisis is No Road for Stabilization" in which it estimated the size of Lebanon's cash economy for the years 2021 and 2022. According to the World Bank, the cash economy in Lebanon came into existence amid the financial and economic crisis and the loss of confidence in the Lebanese banking sector, noting that the majority of financial transactions are being settled in cash and lines of credit offered by the banking sector are becoming fully cash-collateralized[3].

The World Bank mentioned that estimating the size of the cash economy is necessary to understand the nature of transactions and assessing the possible ramifications of a pervasive cash economy on the behavior of fiscal & monetary policy. More specifically, the report noted that a growing cash economy implies that fiscal policy is less powerful, stating that on the one hand a pervasive cash economy would be disadvantageous for tax buoyancy, and that on the other hand it creates incentives for tax avoidance. The World Bank added that the monetary policy becomes less effective as cash transactions replace banking transactions.

([1]) Hage Boutros Philippe, ***Cash economy worth $10 billion in Lebanon***, https://today.lorientlejour.com/article/1337755/cash-economy-worth-10-billion-in-lebanon.html, 2023, [Accessed 25/6/2024].

[(2)] Pragluski Bill, ***Comparing Business Regulation in 190 Economies***, Doing Business 2020, World Bank https://openknowledge.worldbank.org/handle/10986/32436, 2020, [Accessed 25/6/2024].

[(3)] Choueiri Fadlo, Abi Haidar Jad and Moukarzel Marc, ***The World Bank Estimated The Size of Lebanon's Cash Economy at 45.7% OF GDP IN 2022***, https://economics.creditlibanais.com/Article/211627#en, 2023, [Accessesd 25/6/2024].

Despite the issuance of some laws such as Law No. 81/2018 on Electronic Transactions and Personal Data, Law No. 126/2019 amending the Land Trade Law, and recently the issuance of implementing decrees for electronic signature, Lebanon lacks modern and comprehensive legislation governing the digital sector, including issues such as data privacy, cybersecurity, and e-commerce. A clear and enabling legislative and regulatory environment is needed to foster innovation and investment in digital technologies[(1)].

Furthermore, Lebanon's infrastructure, including internet connectivity, the lack of a fiber optic network and electricity supply combined with expensive fees, is inadequate and unreliable in many areas. This lack of robust infrastructure hinders the adoption and effectiveness of digital solutions. There is also a significant digital divide in Lebanon, with disparities in access to technology and digital knowledge between urban and rural areas, as well as between socio-economic groups. Bridging this gap is critical to ensuring equal participation in digital transformation[(2)].

Moreover, Lebanon's political landscape is often characterized by instability and frequent changes in government. This instability hinders the long-term planning and implementation of digital transformation initiatives. Also Lebanon has recently been suffering due to the economic crisis from a shortage of expertise and skills with experience in areas such as Software development, data analysis, and cybersecurity due to a result of brain drain resulting from immigration caused by the economic crisis.

1-Law 81/2018 challenges

Lebanon’s Law 81 on Electronic Transactions and Personal Data, drafted in 2005, was finally passed in 2018, with little changes made to reflect the current times. The law does not address ‘smart cities’, social media platforms, Artificial Intelligence, or metadata, since these did not exist in 2005, nor does it adequately address cybersecurity. Furthermore, the law only recognizes paper-based transactions.

Lebanon's current data protection law – Law No. 81 of 2018 on Electronic Transactions and Personal Data – includes provisions designed to protect personal data but only to a certain extent. The Lebanese legislature pays little attention to the protection of personal data, as the combination of the law on the regulation of electronic transactions with the law on the protection of personal data shows that the legislature sees personal data only from the perspective of

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[(1)] ***Digital Transformation in Lebanon – Reality and Challenges***, https://www.unescwa.org/sites/default/files/event/materials/Speech%20by%20OMSAR.pdf, [Accessed 26/6/2024].

[(2)] Merhej Karim and Baroud Maysa, ***The Digital Economy as an Alternative in Lebanon: Focus on micro, Small, and Medium Enterprises***, http://data.infopro.com.lb/file/Digital%20Economy%20as%20an%20Alternative%202020%20AUB.pdf, 2020, [Accessed 27/6/2024].

economic opportunity. The title of the law itself even includes the phrase "personal data" instead of "protection of personal data".

Six years after the adoption of the law, the Lebanese Ministry of Economy and Trade, which is responsible for implementing the law, has not issued guidance on how to submit requests for processing personal data. This lack of action on the part of the Ministry undermines the object and purpose of the law. The law contains several provisions that allow public bodies to access personal data without providing any clear criteria regarding what personal data can be accessed. For example, the Ministry of Communications can collect any data it wants with the help of Lebanon's only telecommunications providers, Alfa and Touch (both government-owned), and share this data with other government agencies without users' consent.

Law 81/2018 on "Electronic Transactions and Personal Data" does not provide the basic principles protecting privacy and digital rights. The percentage of commitment to it is very limited and is violated by all parties, whether it is official or non-official, specifically by political forces and figures in electoral campaigns. The law serves to concentrate powers in the hands of the government, fails to protect the personal data of citizens and residents, and does not provide many of the standards and guarantees adopted in international data protection legislation)1(.

Furthermore, this law cannot be considered a law on the protection of personal data, but rather a law that regulates this protection within the law "Electronic Transactions and Personal Data". The provisions governing this protection are outdated and ineffective to ensure the protection of private data at this time, nor do these provisions take into account the essence of this law, which is the principle of "autonomy of the individual", since the current law does not explicitly require the consent of the subject of a personal nature to process his data. Therefore, it is necessary to adopt a special law for the protection of personal data that enshrines this right and protects it from any violations in line with this principle and with the best standards in this field.

MSMEs (Micro, Small, and Medium Enterprises) and start-ups face additional legislative hindrances due to outdated laws dealing with taxation and the risk for digital fraud, as well as regulatory issues related to financing. Other missing or outdated laws include the Competition Law, Code of Commerce, and the Insolvency Law, while dispute settlement procedures are ineffective and inaccessible, and e-payment systems are lacking a regulatory framework. Online consumers are also unprotected by the Consumer Protection Law, which does not cover e-commerce. Various ministries have not yet taken the steps to implement the law nor have the necessary implementation decrees been passed; in addition, there seems to be a lack of

)1(Samir Kassir Foundation, ***New proposal to amend Law 81/2018 on the protection of personal data***, https://nhrclb.org/archives/1562, 2024, [Accessed 27/6/2024].

awareness about the law at the level of the public prosecutor, as well as among government entities[1].

One of the significant issues hindering the effective implementation of this law is the incomplete appointment of all members to (COLIBAC) which is The Lebanese Accreditation Council that is located within the Ministry of Industry in Lebanon. (COLIBAC) plays a crucial role in the implementation of the law regarding the approval of electronic signatures for official bonds and transactions. Article 6 of the electronic attribution proposal specifies the necessity of using electronic signature and authentication service providers accredited by COLIBAC or by recognized European bodies, in accordance with the European system. This lack of full appointments impedes the council's ability to function properly and fulfill its role in accrediting electronic signatures, which is essential for the legal recognition and acceptance of electronic transactions and bonds in Lebanon[2].

In addition the law stipulates that The Lebanese Accreditation Council (COLIBAC) in order to issue or renew an accreditation certificate, the Board shall consider the following criteria: "Infrastructure and technical measures for the protection of electronic writing or organizational and human resources procedures put in place by the authentication service provider, which must conform to international standards"[3], which in the law itself doesn't support this article since the law pays little attention to the protection of personal data.

2-Digital Entrepreneurship Challenges

Due to the current economic crisis in Lebanon and the weakness of infrastructure, particularly in the transportation, telecommunications, and electricity sectors, along with a lack of modern legal frameworks that align with global standards, digital entrepreneurship has become vulnerable and faces high risks of failure amidst continuous and radical technological innovations.

While the above-mentioned challenges to digital entrepreneurship can persist when entrepreneurs operate in Lebanon, the country's status as a developing nation adds additional complexities that may create new challenges not usually encountered in developed countries. Indeed, developing contexts are hurdled by the presence of institutional voids, with the state having low law enforcement capacity, and low generalized trust within society. In Lebanon, the institutional

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[1] Merhej Karim and Baroud Maysa, ***The Digital Economy as an Alternative in Lebanon: Focus on micro, Small, and Medium Enterprises***, http://data.infopro.com.lb/file/Digital%20Economy%20as%20an%20Alternative%202020%20AUB.pdf , 2020, [Accessed 27/6/2024].

[2] Eid Maya, ***Decree of Attributions and Electronic Signatures in Lebanon... The lesson is in the application***, https://maharat-news.com/E-Signature_Lebanon, 2024, [Accessed 27/6/2024].

[3] ***Law No. 81 of 10/10/2018 Electronic transactions and personal data***, Lebanon, https://www.bdl.gov.lb/CB%20Com/Laws%20And%20Regulations/Laws/Law_81_AR%C2%A72572_1.pdf, Article 22, p 536.

voids in state administrations, which are defined as weak or non-functioning mechanisms are clearly reflected on digital entrepreneurship whether these voids were internal or external[1].

First and foremost, the organizational structure and IT infrastructures of the firms would be taken into account to implement digital technologies in the firms. Some firms in Lebanon especially small and medium corporates are reluctant to make a change to digitalization due to financial shortage, high expenses on human resource (in digital technologies) recruitments, IT infrastructures facilities are not supporting the digital technologies. This has formed a barrier for firms to move into digital entrepreneurship platforms era and will limit the firms' potential to expand and grow[2].

Moreover, small businesses may not benefit from ICTs due to their lack of knowledge, skills, and resources necessary to excel in the world of digital entrepreneurship. The adequacy of ICT skills such as the number of local content creators and communication and software engineers is an important factor in the level of adoption of technology in entrepreneurship. Furthermore, the adequacy of technical support also plays a role in determining the level of technological incorporation.

In developing countries like Lebanon, ownership of companies is concentrated within family hands, therefore ownership concentration affects how owners, labor, and management interact with each other. The existence of wealthy families is well noted in the Middle East, Latin America, Northern Africa, and Asia. This leads to family firms being the predominant organizational, and the latter are not only concerned with financial returns, but also with nonfinancial benefits such as the family's identity and preserving family influence in the business[3].

In the context of digital entrepreneurship, corporate governance levels refer to the extent to which top management leads and organizes a business through incorporating technology and e-commerce ideas and projects. Creating a family supportive environment in which corporate digital entrepreneurship can thrive therefore becomes a double-edged sword. On one hand, digital entrepreneurs may have easy access to family wealth to pursue their entrepreneurial endeavors, but on the other hand they may be faced with family seniors that are reluctant to fund such unknown and uncertain entrepreneurial path.

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[1] Samara Georges and Terzian Jessica, ***Challenges and Opportunities for Digital Entrepreneurship in Developing Countries***, American University of Beirut, Lebanon, 2021, p 289.
[2] Qian Qiu Cai and Mok Mandy, ***The challenges and solutions for digital entrepreneurship platforms in enhancing firm's capabilities***, International Journal of Business and Management Studies, Vol 16, 2021, p 22.
[3] Samara Georges and Terzian Jessica, ***Challenges and Opportunities for Digital Entrepreneurship in Developing Countries***, American University of Beirut, Lebanon, 2021, p 290.

Labor relations are essential to optimizing human capital and predict whether or not employees in organizations will have the necessary knowledge and skills to engage in strategic activities. More fragmented labor syndicates result in higher employee turnover rate and flexibility, thus making labor less efficient and effective and shifting the organizing principle to political and/or family connection-based foundations[(1)].

Furthermore, technical knowledge is considered as human capital resource. Particularly in the developing context, acquiring knowledge on digital selling tools and technologies is necessary in developing an online presence and effective communication with Web site developers, industry professionals, and tech-support providers. The level of technical knowledge and resources acquired can be contingent on the availability of a qualified workforce capable of providing digital businesses with the required human capital support. Furthermore, the level of knowledge capital within a nation determines how productively organizations engage with employees. This means that entrepreneurs in developing countries might have to incur the additional cost of recruiting expert-level employees. The low level of ICT awareness among staff members refers to the low level of awareness of e-commerce potential, which could be due to the lack of long-term strategic planning[(2)].

From a cultural perspective, in developing countries, societal perspectives on gender play an important role in the credibility and validation of women's resources, which create disadvantages to their entrepreneurial success. Even in the digital workspace and in terms of professional qualification, women face sexism and hostility. There is a disadvantaged stereotype about femininity and beliefs about technological competence. Other views on race and social class demonstrate how in advanced Western countries, white elite and upper middle-class males dominate positions of power; so, whiteness and masculinity form the "ideal" entrepreneurial type and consider to be intangible resources to entrepreneurial legitimacy[(3)].

The role of social capital refers to the degree to which members of society trust other members, also known as the level of generalized trust. Trust plays an important role in a country's economic activity. The lack of generalized trust implies that individuals and organizations depend on informal networks that are centered on more specific trust, such as family ties. When applied to digital entrepreneurship, market e-readiness refers to the company's, customers' and suppliers' willingness to conduct business electronically. Supporting industries e-readiness

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[(1)] Lengnick-Hall Mark and Lengnick-Hall Cynthia, ***Human Resource Management in the Knowledge Economy***, Berrett-Koehler Publishers , USA, 2003, p 65.

[(2)] Marimuthu Maran, Arokiasamy Lawrence and Maimunah Ismail, ***Human Capital Development and its Impact on Firm Performance: Evidence From Developmental Economics***, The Journal of International Social Research, Vol 2, 2009, pp 1-8.

[(3)] Ayorkor Sallah Cynthia and Livingstone Divine Caesar, ***Intangible Resources and the Growth of Women Businesses Empirical Evidence From an Emerging Market Economy***, Journal of Entrepreneurship in Emerging Economies, Vol 12, 2019, pp 329-355.

consists of the assessment of the development level and cost of support-giving institutions such as IT, telecommunications, and financial ones, whose activities might influence e-commerce adoption and initiatives in developing countries. Hence, trusting a business partner through an e-platform may be a significant factor affecting digital entrepreneurship in developing countries[1].

Given that the level of corruption in developing countries is high, people often question whether a business is reliable, safe to deal with, or will accomplish the task given at hand. Trust is built upon "long-term experience of social organization, anchored in historical and cultural experiences." This especially applies to Lebanon, where corruption is prevalent and has consequences on the trust of the government, in business, and in society.

From the digital entrepreneurship perspective, instead of being a neutral space where all stereotypes differences, or labels are eradicated, the online environment shows to be reflecting social inequalities among aspiring entrepreneurs. Therefore, citizens might find it difficult to trust the validity and fairness of systems in society. Additionally, the importance of social and human capital gathered in previous higher status employment challenges the idea that just about "anyone" can start a credible online business with minimal investment.

Another challenge facing digital entrepreneurship in Lebanon is funding. We all know that The state can either be a barrier to digital entrepreneurship by imposing heavy regulations and bureaucracy, or a supporter, by providing financial support which is not the case in Lebanon especially during its current economic crisis. Promote access to finance for start-ups and scale-ups, and strive for a culture where it is ok to try-fail-and try again, which is very important as many successful digital enterprises have come about following many failed attempts. This is also important in a broader context of innovation, as thriving innovation has to come with a degree of acceptance of failure which is not the case in Lebanon whose contemporary crisis is hindering this issue[2].

Moreover, Customer Expectations plays a pivotal role hindering digital entrepreneurship adoption since the Lebanese are accustomed to purchasing items in physical stores, having the experience of trying things on, and using their senses. Virtual purchasing is still a somewhat foreign concept, contrary to that prevalent in developed countries. This could be due to cultural differences nested therein.

In Lebanon, there isn't a law or database that protects e-commerce leaving the digital entrepreneur unprotected. Nobody can complain about the mishaps or errors that occur in the online world in Lebanon. Additionally, there is a lack of protection for consumers in e-

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[1] Welter Friederike and Smallbone David, ***Exploring the Role of Trust in Entrepreneurial Activity***, University of Siegen, Germany, 2006, p 467.

[2] Van Welsum Desirée, ***Enabling Digital Entrepreneurs***, World Bank Group, 2016, pp 7-8.

commerce. “if you receive a broken or malfunctioning product, there is nothing you can do about it.” As a result of the absence of law for digital entrepreneurship, there isn’t a syndicate for e-commerce in Lebanon. This absence indicates that there are no forces that can instill pressure on the government for the declaration of the rights of digital entrepreneurs, such as protection laws or services[1].

In addition, challenges range from cultural differences to a lack of an online payment system and the deficiency in digital infrastructures for online business transactions. “in developed countries such as the U.S., vendors communicate and sign contracts with the e-commerce platforms via email, whereas in Lebanon, a hard copy version of the contract with a customer is needed. This consists of a lengthy process of going to lawyers, making the contract official, and giving them commission; thus, increasing the probability of customers backing out of their online purchase.”

Moreover, Lebanese banks has prohibited PayPal (the most popular online payment and monetary transaction system), and that the only payment system available in Lebanon is “Ariba,” which takes 3% commission on each transaction, when it should only be taking 0.5%, again hinting at corruption disrupting business affairs.

Conclusion

The journey through the intricacies of digital transformation in corporate governance has unveiled a landscape that is as complex as it is promising. Traditional governance approaches are evolving to drive corporate transformation in this digital era and changing the nature of establishing and running a business. Today we are learning that new digital firms, embracing the digital transformation, are able to speed up and automate decision making processes, and build more agile, collaborative communities among internal resources, suppliers, customers and external experts. Consequently, the traditional view of corporate governance may no longer be valid in today’s digital transformation. This conclusion will encapsulate the key themes discussed in the chapters, highlighting the significant opportunities and challenges that digital transformation brings to corporate governance, with a particular focus on Lebanon.

The first part of the dissertation focuses on understanding digital transformation in corporate governance. It begins by exploring the definition and scope of digital transformation, describing it as the integration of digital technology into all areas of a business, which fundamentally changes how organizations operate and deliver value to customers. This part discusses the evolution of digital technologies and their impact on corporate governance practices, emphasizing improvements in transparency, accountability, and efficiency.

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[1] Samara Georges and Terzian Jessica, ***Challenges and Opportunities for Digital Entrepreneurship in Developing Countries***, American University of Beirut, Lebanon, 2021, p 292.

Furthermore, this part delves into emerging digital governance technologies such as blockchain, AI, and big data analytics. It examines how these technologies are transforming governance structures and how new governance models are being adopted, particularly in compliance with Lebanese Law No. 81 of 10 October 2018, which pertains to electronic transactions and personal data. The document highlights the influence of these technologies on corporate governance, providing insights into the challenges and opportunities presented by digital transformation.

Law 126/2019 represents a landmark in Lebanon's corporate governance framework, significantly enhancing transparency, accountability, and shareholder rights. This amendment to the Lebanese Code of Commerce promotes efficiency and modernization by integrating digital transformation goals. By fostering the adoption of digital tools and technologies, the law aims to create a more secure and transparent corporate environment, pivotal for Lebanon's economic advancement.

Part Two of the dissertation delves into the implications of digital transformation in corporate governance. It explores both the opportunities and challenges that arise as organizations integrate digital technologies into their governance structures.

The first chapter of Part Two highlights the various opportunities that digital transformation presents for corporate governance. One significant opportunity is enhanced stakeholder engagement. Digital tools and platforms enable more effective communication and interaction between companies and their stakeholders, including shareholders, employees, customers, and regulators. This improved engagement leads to better transparency and accountability, fostering trust and loyalty among stakeholders.

Moreover, digital transformation supports modern business dynamics by making organizations more agile and responsive to changes in the market environment. With digital tools, companies can more easily gather and analyze data, allowing for informed decision-making and strategic planning. This adaptability is crucial in today’s fast-paced business landscape, where companies must be able to pivot quickly in response to new opportunities or challenges.

Digital transformation also facilitates innovation within corporate governance. By leveraging emerging technologies such as artificial intelligence, blockchain, and data analytics, organizations can develop new governance models that enhance efficiency and effectiveness. For instance, blockchain can provide secure and transparent record-keeping, while AI can assist in risk management and compliance monitoring. These innovations help companies stay ahead of the curve and maintain a competitive edge.

Despite the numerous opportunities, digital transformation also presents several challenges for corporate governance. One of the primary challenges is data privacy concerns. As companies collect and store vast amounts of data, they must ensure that this information is protected from

breaches and unauthorized access. This requires robust cybersecurity measures and compliance with data protection regulations, which can be complex and resource-intensive.

Another significant challenge is the digital divide, particularly in regions like Lebanon. The dissertation discusses the specific obstacles faced by companies in Lebanon as they strive to adopt digital transformation. Limited infrastructure, lack of skilled labor, and insufficient regulatory frameworks are some of the barriers that hinder the effective implementation of digital technologies. These challenges necessitate targeted efforts to build digital capacity and create an enabling environment for digital governance.

Furthermore, the rapid pace of technological change means that organizations must continuously adapt their governance structures and processes. This requires ongoing investment in technology and training for board members and executives to keep up with the latest developments. Resistance to change within organizations can also be a barrier, as traditional governance practices may be deeply entrenched.

The implications of digital transformation in corporate governance are profound and multifaceted. On one hand, digital technologies offer significant opportunities for enhancing stakeholder engagement, improving business agility, and fostering innovation in governance practices. On the other hand, they also pose challenges related to data privacy, the digital divide, and the need for continuous adaptation.

For organizations to successfully navigate this digital transformation journey, it is crucial to strike a balance between leveraging the benefits of digital technologies and addressing the associated challenges. This requires a strategic approach that involves investing in the right technologies, building digital skills, and fostering a culture of innovation and adaptability.

In regions like Lebanon, special attention must be given to overcoming the unique obstacles that impede digital transformation. This includes enhancing infrastructure, developing regulatory frameworks, and providing support for digital skills development. By addressing these challenges, companies can unlock the full potential of digital transformation and achieve sustainable growth in the digital age.

Ultimately, digital transformation is not just about technology; it is about rethinking and reshaping corporate governance to thrive in a digital world. Organizations that embrace this change and proactively address the challenges will be well-positioned to lead in the era of digital governance.

The Lebanese experience with digital transformation in corporate governance is shaped by unique challenges and opportunities. The country's ongoing economic crisis underscores the urgent need for modernization and reform. As Lebanese businesses navigate this complex

landscape, they must balance the imperatives of digitalization with the principles of good governance.

Recent governmental initiatives, such as the formation of a ministerial committee to coordinate digital transformation efforts, highlight the importance of a cohesive strategy. The development of a comprehensive digital transformation strategy by the Office of the Minister of State for Administrative Reform (OMSAR) and the creation of the Ministry of State for Technology and Investment are critical steps towards fostering a encouraging environment for digital governance.

However, Lebanese companies must also compete with entrenched traditional practices and resistance to change. Overcoming these barriers requires a concerted effort to promote the benefits of digital transformation and build capacity within organizations. By leveraging insights from international reports, such as the McKinsey report and the CEDRE Conference recommendations, Lebanese businesses can adopt best practices and align their governance frameworks with global standards.

As digital transformation continues to reshape the corporate governance landscape, it is imperative for businesses to adopt a forward-thinking approach. This involves not only embracing digital tools and technologies but also fostering a culture of innovation, agility, and ethical responsibility. By doing so, companies can navigate the complexities of digitalization while upholding the principles of transparency, accountability, and sustainability.

In conclusion, the interplay between digital transformation and corporate governance presents both opportunities and challenges. For Lebanese businesses, this dynamic offers a pathway towards modernization and resilience in the face of economic adversity. By harnessing the potential of digital technologies and addressing the associated challenges, companies can enhance their governance practices, foster stakeholder trust, and contribute to sustainable economic growth. The journey towards digital maturity is essential for thriving in an increasingly interconnected and digitized world, and it requires a holistic approach that integrates technological, regulatory, and ethical considerations.

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