

RESILIENCE THROUGH DIGITALIZATION IN ORGANIZATIONS

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ABSTRACT

In an increasingly challenging post-pandemic era, entrepreneurs from all over the world are forced to remodel their businesses so that they can meet the new needs of customers. The current paper aims to illustrate what is at the basis of the fundamental change in the way clients have formed their new expectations and what is the approach taken by organizations to remain relevant in the new dynamic environment. Digitalization, considered to be the term that encompasses several concepts regarding the transition to the online business environment and the automation of work processes, will be the main pillar of reference in terms of how organizations are forced to transform. The purpose and importance of Digitalization has become a topic of interest for all organizations, regardless of the activity sector in which they operate. The impact of the pandemic on the business environment led to an assiduous need to adapt to the new conditions. Questions were raised regarding the future of humanity in a climate that tends to be based on digital solutions. The impact of advanced technology in the business environment is seen as resilience in a climate with complex threats on different levels. This study considers demonstrating the importance of resilience within organizations as the engine that makes change happen in crisis situations. Research in the field claims that companies can gain resilience by preparing with complete IT systems, to respond quickly and efficiently in situations of crisis, shock or instability. Even more, there are theories that claim that the state of normality, as perceived by organizations, is not one of peace and stability, but of continuous change and adaptation.

KEYWORDS: *business resilience, cultural shift, digital technology, digital transformation, post-pandemic era.*

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1. INTRODUCTION

The COVID-19 pandemic has truly revolutionized the speed with which businesses have migrated to Digitalization. No aspect of the business remained immune to the changes caused by the pandemic, so massive changes were registered, accelerated by up to 400% compared to the organically expected time (LaBerge, O'Toole & Smaje, 2020).

Over time, various definitions have been offered for the concept of Digitalization. The first time this concept was incorporated was by Gottfried Wilhelm Leibniz, in the 17th century, who translated Arabic numbers into a binary string. Until the advent of the Internet, the concept of Digitalization referred exclusively to the way in which information could be entered into a computer. Currently, it refers to a multitude of aspects in a company: from the infrastructure upgrade, the automation of processes, and to the way of relating with partners, clients, and suppliers (WEF, 2016).

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Also, many academic institutions constantly contribute to the attribution of new terms and digital business models. For example, MIT has developed a framework based on 3 principles (content, customer experience, and platform) that organizations should take into account when developing a business digitalization strategy (Weill & Woerner, 2013).

In the post-pandemic context, there are increasingly high expectations for companies to become more efficient, reduce costs and perform, to remain relevant in the context of unavoidable changes. The digital transformation of the company requires a structured approach, which must take into account all internal and external elements. The purpose and vision of the organization is the starting point of the digitalization strategy. Later, derived from the final goal, multiple objectives can be extracted so that they can be analyzed in part and suitable work processes can be created. The purpose and vision, followed by goals, which are divided into multiple objectives, lead to a unified, centralized perspective in a single database.

The digital transformation also entails rethinking the way in which information is interconnected with other elements. Thus, a clear categorization and an association between components will provide an automation of the processes. This approach gives a digital strategy which this time is based on real data, collected and understood, which then lead to data-driven actions, instead of some based on experience or intuition.

Digitalization offered companies the chance to be much more competitive, being more efficient with the help of software solutions, which led to the elimination of other market players, which did not adapt. The average lifetime of an organization was expected in 1920 to be 67 years (Coase, 1937). In 2016, estimates supported an average lifespan of a business of 10 years (Iyengar, 2016). Technology, over time, has played a decisive role in removing many companies from the market. On the other hand, it made room for new organizations to innovate.

The certainty is that technology fundamentally changes, not only business but also the everyday life of individuals, and some researchers claim that it changes faster than we can assimilate it. That's why, according to the studies, society started to develop new norms so that it can face these changes. Thus, Digitalization has created both organizational, historical and political changes, but also cultural and compartmental changes (Rowles & Brown, 2017, pp. 10-12).

One can argue about the positive aspects generated by the pandemic in the business environment, and that is represented by accelerated digitalization. The fact that Digitalization has escalated brought to people's attention the newest technologies such as: Cloud, Artificial Intelligence (AI), Machine Learning (ML), Blockchain, Crypto and others (Pandey et al. 2020).

Due to the fact that the digital infrastructure before the pandemic was underdeveloped, the time limit for adaptation and implementation during the pandemic was a real challenge for companies. In addition, the need for massive investments in technology in a period of crisis is not the ideal scenario for any economy or organization (Singh & Pathak, 2022).

Ever since the beginning of the pandemic, society at the global level has found itself going through a multitude of crises, both economic, social and medical. If we refer to the COVID-19 pandemic, following its generating factors, we turn our attention to China.

More than 60 years ago, President John F. Kennedy made a remark about the way the word "crisis" is formed in Chinese, arguing that it contains two elements: danger and opportunity (Senate Files, 1959). Although it was later demonstrated that the word was not completely and correctly interpreted (Mair, 2009), the motivation was interesting and applied to times of crisis.

The danger thus took different forms, both economic, social and medical. The present paper will focus on the economic axis. According to the results obtained following the analysis carried out by Demmou et al. (2021), companies' profits recorded potential decreases of 40-50% following the COVID-19 crisis.

Another risk predicted by the researchers refers to the insolvency of the companies, due to increased costs for supply, but also delayed payments (Stef & Bissieux, 2022).

The other side of the coin is represented by the opportunities that a crisis creates in the business environment. According to the study carried out by McKinsey & Company (2020), over 70% of respondents believe that the pandemic will create new opportunities for significant growth.

Resilience, depending on the context, attracted multiple definitions. Being an interdisciplinary term, it has been studied in several fields, such as psychology, engineering, and management. If we look through the prism of success in business, we call resilience the ability to adapt to change and face adversity. Also, the quality of resilience stands out especially in difficult periods of transition or crisis. The question can be raised "Where does resilience come from and where do we get it from?" (Ovans, 2015). In a study performed by Bond and Shapiro (2014) regarding the source of resilience, over 90% of respondents believe that resilience comes from within themselves, while only 12% believe that resilience comes from their organization.

2. THE MAIN IMPLICATIONS OF THE PANDEMIC THAT FORCED DIGITALIZATION IN ORGANIZATIONS

2.1 The need to work remotely and in collaboration

During the lockdown caused by the pandemic, organizations were put in the situation where they had only three options: to continue the activity in the office (thus endangering the health of the employees), to close the activity completely, or to offer the employees the option to work remotely. The majority chose to find collaborative work solutions, in a remote or hybrid system (Statista Search Department, 2022).

Experts support a significant increase in productivity in the case of remote work but also a decrease in the level of stress. Other benefits could consist of: decongesting traffic and thus wasted time on the road, but also a better work-life balance (Ipsen et al. 2021). According to research, between 20-25% of employees in highly developed countries can work remotely without negatively affecting productivity (McKinsey Global Institute, 2022). An increase of up to five times compared to the pre-pandemic period opens up a real possibility of large-scale change in the way professional activity will take place in the future. As a result, we can consider open the hypothesis of migration of many employees from the metropolitan area of the cities to the suburbs or more isolated cities.

On the other hand, although the majority of activities can be carried out remotely, there is added value offered in the physical presence scenario for the following skills: collective brainstorming sessions, negotiation activity, giving and receiving feedback and interpreting gestural and facial signals. Scholars have also reported disadvantages such as: isolation syndrome, role ambiguity and lack of social interaction (Stich, 2020).

Another challenge that organizations encountered in the process of moving from the traditional way of working to the one in the remote system was related to the allocation of technological resources. Those who felt this provocation the most are from the category of small and medium-sized organizations, having to allocate financial resources to be able to provide technical support to their employees (Hopkins & McKay, 2019). In addition to the purchase of the mandatory equipment, the companies had to invest in SaaS software solutions such as those for ensuring remote video communication and project management.

Project management software systems were used intensively during the covid-19 period and later, due to the advantage offered by having as their main functionality the real-time verification, by all team members, of the evolution and progress of a project, task or order. Thus, the need for direct contact to check the status was eliminated.

2.2 The need to display products and services in the online environment

The changes can be seen both within the companies and also in the way consumers choose to make purchases. Due to the pandemic, since access to physical stores was restricted, consumers turned to

the online environment so that the interaction was mainly carried out with the help of online platforms.

Also, in response to the new trend regarding purchases made online, organizations have focused on bringing (or transforming) digitally enhanced products into their portfolio.

Table 1. The average percentage share of products and services that are partially or completely digitized

	Global	Asia-Pacific	Europe	North America
2017	20	22	18	25
2018	20	19	19	25
2019	36	32	32	41
2020	58	53	55	65

Source: adapted from McKinsey & Company (2020)

This issue is of major importance because the coming of the pandemic helped companies to make decisions to expose their products/services in the online environment when it was probably not on their priority list. Seized by the impression that their customers do not necessarily make their purchases online, they lost sight of a major part of the population: the generation that "grew up digitally". This generation comes with new principles and has different sets of expectations regarding the products they consume: "they expect plenty of choice and high-speed service" (Tapscott, 2009, pp 185-187).

2.3 The need for fast data analysis

In recent years, the market has been in a continuous change, accelerated majorly compared to the tempo we were used to before. The need to respond quickly to market demands is a defining element for survival in the business environment.

A set of information is the basis for making a correct decision, including data prior to the decision-making moment, predictions, forecasts, signals received from the market, the political situation. A large part of this data can be easily extracted from a technological system if the company already has such software/platform.

Efficiency and speed in deciding are much more likely in the context of such a solution. The ultimate goal is to receive the signals from the market and to be flexible enough to respond quickly (Brown, 2019, pp. 14-17).

Going through a period in which the predictability of future events was low, the need for real-time data analysis tools increased. Collecting and structuring data manually is a significant time and energy consuming procedure. In a period of increased instability, costs represent variables that must be updated very often. The technological systems available have given organizations the opportunity to have access to reports based on real-time data.

2.4 The need to control and supervise the work performed by employees in the remote system

Remote work has come with another challenge for managers and entrepreneurs. The acute need to use digital systems to track time activity and the evolution of tasks was felt especially in the context where employers did not experience the same level of supervision compared to the period in which they carried out activity from the office.

The vast majority of employees did not work remotely until the COVID-19 pandemic, which made this change in the work environment a serious challenge (Parker, K., et al. 2022). Employees, working in a family setting, were the subjects of potential distractions from their professional activity. In this sense, some companies have developed internal codes of ethics regarding tracing and surveillance (Eyre & Zhou, 2022).

2.5 The need to have secure IT systems in the context of remote work

A significant threat was represented by data security in the context of remote work. Employees who work from environments other than the office, can access unsecured wifi networks or leave the computer in a place where other people can have access, and thus the company's data, as well as those of affiliated customers, can be violated. In this sense, some companies have created training programs aimed at educating employees about security procedures.

According to the studies carried out by Forrester Research (2021), more than half of the correspondents consider that their organization has provided them with education regarding security policies.

In this context of increasing presence in the online environment, we can say that malpractices can also advance and translate into crimes of the type: fraudulently obtained information, phishing, data manipulation and many others. In order to minimize the chances of such attacks, along with preventive education, cyber security studies are also carried out (Lee, 2020).

3. CHALLENGES IN THE FIELD OF DIGITALIZATION

3.1 Choosing the right technological tools

Digital transformation can take various forms, both within the organization and in the way customers perceive the company. A great variety of IT systems are available today as a viable option for organizations, depending on their needs.

If in the past the general concept was that computer systems were rather within the reach of large companies, especially because of the very high costs, including for hardware systems, today SaaS-type solutions (Software as a service) come with a massive reduction in costs, no longer investments in technological equipment being necessary.

Choosing the right tools in a digitalization process is an important step for the company, from the perspective of knowing its own activity and aligning working methods with the company's goals. From collaborative suites, remote communication platforms, CRM, ERP systems, to employment or accounting tools, all can bring value to the organization. Technology allows companies to use high-performance digital systems to optimize their working time, centralize information, build high customer retention and many other aspects.

However, being such a wide beach, most of the time companies are forced to go through a complex process to choose the right solution. In this sense, the researchers recommend conducting an internal audit, so that the digitalization strategy can be defined, the organization's capability in terms of technology, the existing infrastructure and the availability to change (Ganev, 2018). In order to improve the certainty rate of success and to eliminate or minimize the risk, both the capabilities of the company and the human resource must be taken into account, but more importantly the setting of an objective so that the architectural design of the chosen solution meets the entity's needs.

3.2 Implementation processes

Some key elements play a significant role in the implementation of digital solutions, among them: the availability of involvement of managers, the degree of effort that users must perform in operating the solution, consumer perception, resistance to change, the conditions facilitated by the organization, and many others.

An important element that software developers and architects have in mind when building a digital solution refers to the term "user acceptance". In order to ensure this acceptance of the technology proposed to the user, strategies are applied even from the early development and implementation stages. All the above perspectives are united, together with others, in a model: The unified theory of acceptance and use of technology (UTAUT) according to Williams et al. (2015).

The impact of digitalization is in most cases a generator of benefits and added value. If we discuss the benefits, they are placed at the generic level, on four lines, as illustrated by Sharp and Johns.

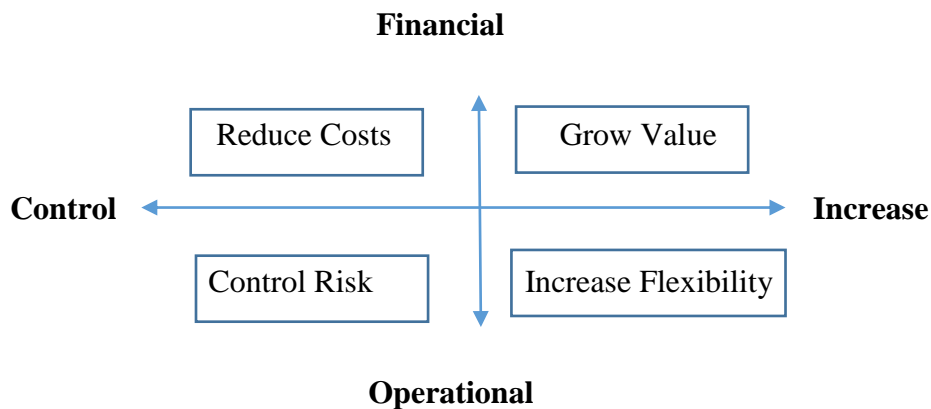


Figure 1. Generic benefits

Source: adapted from Sharp (2016, p.72)

4. RESILIENCE STRATEGIES USED IN THE PANDEMIC ERA

Specialists argue that emotions are not constructive in the context of rapid response to shock and change, so that resilience within the organization can appear when a technological system is established, so that the negative emotions that can appear following a major stress do not influence rational decision-making.

Many companies have responded to the crisis caused by COVID-19 through Digitalization, demonstrating increased resistance and adaptation to social-political conditions.

For instance, IKEA, the big furniture retailer, had an interesting approach. In an interview given by the company's Chief Digital Officer in 2020 claimed that the organization experienced new peaks of online sales, the volume doubling during the lockdown period. An acceleration of the digital transformation took place in a few months, a process that normally would have taken several years. The list of transformations carried out by the big retailer also includes the implementation of a "Click & Collect" technological system, which allows users to order products and pick them up on the same day, without the need for human interaction. In addition, a large part of the Ikea staff worked remotely, the company implementing collaborative work systems and automating repetitive tasks. Also, IKEA created opportunities based on people's need to stay at home during the pandemic. In addition to the campaigns urging people to stay at home, the retailer relied on the concept of the consumer's need to invest in his home. Thus, with the urge to create a home that offers more flexibility, IKEA came up with products that meet these requirements (The Life at Home Report, 2021).

Not even public sector organizations were immune to the impact of the pandemic, but, in the case of hospitals, the situation was even more pressing.

The British National Health Services (NHS) exceeded any expectations regarding the response to the social-economic-health crisis generated by COVID-19. Although before this crisis, the group was considered to be quite resistant to change, during the crisis the response was not only quick, but also fundamental. As reported by Raconteur (2020) many hospitals belonging to the group were completely reconfigured, in a very short time. The changes and implementations made would usually last several years (Selby, 2020).

In addition to private organizations and public institutions, an exemplification of resilience is also required at the country level. We will take as an example the first country where the COVID-19 virus was first identified, namely China. According to the study by Lin et al. (2021), China applied

a successful outbreak response, which gave it the status of a country that managed to overcome the challenges launched by the pandemic (World Health Organization, 2020).

The model of the Chinese government to combat the covid-19 pandemic included five mechanisms, which were based on two fundamental values: "The paramount of life" and "Solidarity". The purpose of the model was built around the idea of medical protection of the individual, but also attention to public health and safety (Ning & Ren, 2020).

5. CONCLUSION

The interplay between digitalization and resilience is extremely tight, almost building a causal relationship. The intention of the paper is to present at the theoretical level in broad terms the main effects of the pandemic on the economic environment, from the perspective of Digitalization. Resilience comes as a characteristic of the potential for development and adaptation, especially in the technological context. The work incorporates insights according to the impact of digital transformation, offering relevant guidance for companies, so that they can consider the main points of interest and anticipate the necessary steps in Digitalization.

In the context of a crisis, a digitalized company will exercise resilience much more effectively, having technological solutions available. Software solutions integrated into companies have the ability to promptly detect the impact of changes and can generate the advantage of responding quickly to the requirements of change (Mehedintu & Soava, 2022).

Many specialists argue that digitalization is no longer a matter of option but rather a mandatory element for survival in the current business environment.

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REFERENCES

- Bar, Am., J., Furstenthal, L., Jorge, F. & Roth, E. (2020). *Innovation in a crisis: Why it is more critical than ever, Prioritizing innovation today is the key to unlocking postcrisis growth*. McKinsey & Company, Exhibit 2.
- Bond, S. & Shapiro, G. (2014). *Tough at the top? New rules of resilience for women's leadership success*. Business sake consulting ltd & Shapiro consulting ltd, sponsored by nationwide building society & Vodafone.
- Brown, A. (2019). *Delivering Digital Transformation: A manager's guide to digital revolution*. De Gruyter., p. 14-17.
- Brown, T. & Rowles, D. (2017). *Building Digital Culture: A practical guide to successful digital transformation*. Kogan Page Limited.
- De, R., Pandey, N. & Pal, A. (2020). *Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice*. International Journal of Information Management doi: 10.1016/j.ijinfomgt.2020.102171.
- Demmou, L., Calligaris, S., Franco, G., McGowan, M. & Sakha, S. (2021). *Insolvency and debt overhang following the covid-19 outbreak: assessment of risks and policy responses*. Organisation for Economic Co-operation and Development, Economics department working papers no. 1651, p. 8. <https://doi.org/10.1787/18151973>.
- Eyre, P. & Zhou, Y., M. (2022). *Ethical, Legal Considerations for Remote Work*. NDIA's Business & Technology Magazine.

- Forrester Research (2021). *Security At The Forefront: A Spotlight On Zero Trust*, p. 10.
- Ganev, P. (2018). *How to choose the appropriate digital marketing tool*. Global Business & Economics Anthology.
- Hopkins, J., L. & McKay, J. (2019). *Investigating 'anywhere working' as a mechanism for alleviating traffic congestion in smart cities*. Technol. Forecast. Soc. Change. 142, 258-272. <https://doi.org/10.1016/j.techfore.2018.07.032>.
- Hunter, P. (2018). *Remote working in research*, *Embo Reports*. <https://doi.org/10.15252/embr.201847435>.
- Ipsen, C., Van Veldhoven, M., Kirchner, K. & Hansen, J., P. (2021). *Six Key Advantages and Disadvantages of Working from Home in Europe during COVID-19*. Int J Environ Res Public Health.13;18(4):1826. doi: 10.3390/ijerph18041826.
- LaBerge, L., O'Toole, C. & Smaje, K. (2020). *How COVID-19 has pushed companies over the technology tipping point—and transformed business forever*. McKinsey & Company.
- Lee, A., C., (2020). *COVID-19 and the Advancement of Digital Physical Therapist Practice and Telehealth*. Physical therapy, 100 (7), 1054-1057.
- Leibnitz, G. (1703). *Explication de l'arithmétique binaire, qui se sert des seuls caractères O et I avec des remarques sur son utilité et sur ce qu'elle donne le sens des anciennes figures chinoises de Fohy. Mémoires de mathématique et de physique de l'Académie royale des sciences*. Académie royale des sciences, ffads-00104781.
- Lin, X., Rocha, C., N., Shen, X., Ahmadi, A. & Lucero-Prisno, D., E. (2021). *Challenges and Strategies in Controlling COVID-19 in Mainland China: Lessons for Future Public Health Emergencies*. Journal of Social Health, 4(2).
- Mair, V. (2009). *How a misunderstanding about Chinese characters has led many astray*. <http://pinyin.info/chinese/crisis.html>.
- Mckinsey Global Insitute (2022). *Remote work and virtual meetings are likely to continue, albeit less intensely than at the pandemic's peak*.
- Mehedintu, A. & Soava, G. (2022). *A Structural Framework for Assessing the Digital Resilience of Enterprises in the Context of the Technological Revolution 4.0*. Electronics, 11,2439. <https://doi.org/10.3390/electronics11152439>.
- Ning, R., Ren, R. & Nkengurutse, G. (2020). *China's model to combat the COVID-19 epidemic: a public health emergency governance approach*. Global Health Research and Policy, 5:34. <https://doi.org/10.1186/s41256-020-00161-4>.
- Ovans, A. (2015). *What Resilience Means, and Why It Matters*. Harvard Business Review.
- Papers of John F. Kennedy (1959). Pre-Presidential Papers. Senate Files, Box 902, "United Negro College Fund, Indianapolis, Indiana, 12 April 1959." John F. Kennedy Presidential Library.
- Parker, K., Horowitz, J., M. & Minkin, R. (2022). *COVID-19 Pandemic Continues To Reshape Work in America*. Pew Research Center.
- Selby, I. (2020). *COVID-19: The perfect storm for digital acceleration*. Cima Global, <https://www.cimaglobal.com/Members/Insights/2020-CIMA-Insights/COVID19-The-perfect-storm-for-digital-acceleration/>.
- Sharp, M. & Johns, E. (2016). *Digital Transformation; The significant 7 imperative for delivering successful change in complex IT projects*. 10-10-10 Publishing.
- Singh, C. & Pathak, P. (2022). *Digital Infrastructure Management-Challenges and Opportunities in Post Covid Era*. Cardiometry 596 (23), 593-596.
- Statista Search Department (2022). *Future trends in remote work worldwide from 2020 to 2022*, [Infographic].

- Stef, N. & Bissieux, J., J. (2022). *Resolution of corporate insolvency during COVID-19 pandemic. Evidence from France*. International Review of Law and Economics, 70, 106063. <https://doi.org/10.1016/j.irle.2022.106063>.
- Stich, J. (2020). *A review of workplace stress in the virtual office*, *Intelligent Buildings International*, 12:3, 208-220, DOI: 10.1080/17508975.2020.1759023.
- Tapscott, D. (2009). *Grown Up Digital : how the net generation is changing your world*. Mc Graw Hill, 185-187.
- Weill, P. & Woerner, S. (2013). *Effectiveness of content, experience, and platform by industry, Assessing Performance and Value*, MIT Center for Information System Research, NO. XVIII-7.
- Williams, M., D., Rana, N., P. & Dwivedi, Y., K. (2015). *The unified theory of acceptance and use of technology (UTAUT): a literature review*. Journal of Enterprise Information Management, 28(3), 443-488. <https://doi.org/10.1108/JEIM-09-2014-0088>.
- World Economic Forum (2016). *Digital Transformation of Industries Demystifying Digital and Securing \$100 Trillion for Society and Industry by 2025*.
- World Health Organization, (2020). *Report of the WHO - China joint Mission on coronavirus disease 2019 (COVID-19)*; Retrieved Octobre 20, 2022, from <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-oncovid-19-final-report.pdf>.