



The Role of Business Intelligence in Digital Transformation

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Abstract An organization might be empowered to make evidence-based decisions with the use of business intelligence. Data that is trustworthy, comprehensive, and organized will be in the possession of a company that uses a successful BI strategy. With the use of business intelligence, stakeholders can assess the health of their organization and be alerted to possible problems and chances for improvement based on previous trends. Organizational operations and consumer interactions have been utterly transformed by digital transformation, which has become a major change agent across numerous industries. In order to explore and evaluate the ways in which the introduction of digital technology has transformed the job description and approach to business analysis, the goal of this research is to investigate what has changed. Finding and explaining business needs, soliciting requirements, and suggesting ways to enhance business operations are the traditional steps in business analysis. New possibilities and challenges have arisen for business analysts due to the proliferation of digital technologies such as artificial intelligence (AI), cloud computing, big data analytics, and the internet of things (IoT). Within the framework of digital transformation, this study will explore how the function of business analysts is changing. In this article, we'll take a look at how digital technologies have changed the job description, scope, and tools used by business analysts. Taking into account the necessity for improved technical understanding and flexibility in the digital age, this study will also investigate how digital transformation affects the skill sets and competences needed for business analysts. In addition, the research will look at how digital transformation has changed the ways in which business analysts communicate and work together. It is critical to comprehend how digital transformation has altered stakeholder involvement, information exchange, and decision-making procedures in light of the proliferation of remote work and virtual teams.

Keywords Business Intelligence, Digital Transformation, Artificial Intelligence

Introduction

Institutions, organizations, and society as a whole are all undergoing transformations as a result of digitalization and the innovation that it generates. According to Wirtz et al. (2022) [1], the present business model is quickly becoming outdated due to the disruptive changes brought about by digitalization's emphasis on organizations.

The role of digital technologies in creating and sustaining disruptions at the industrial and societal levels is highlighted by Astrom et al. 2022 [2]. Companies respond to these changes in the market by developing strategies and implementing new digital technologies that alter the value generating processes they relied on before. This can only be achieved if they overcome the obstacles to digital transformation (DT) and make the necessary structural changes. In light of these changes, the companies with prominent profiles in DT literature are the ones that formulate long-term plans.

A customer's expectations and behavior can be drastically altered by digital technologies (Vial 2019) [3]. The client becomes an integral part of the dialogue that happens between a company and its stakeholders when these technologies are used. Customers' views of their own reliance on the firm to whom they may negotiate have shifted, and they now have higher expectations for the services the business may offer. With the help of IT and organizational change, businesses are shifting their focus from internal processes and the supply chain to external customers who have digital connections. There is still the possibility that digital technologies will cause a shift in the competitive landscape.



The usage of platforms, also known as peer-to-peer (P2P) in the financial sector, has the effect of redefining existing marketplaces, which has resulted in the emergence of the sharing economy and made it easier to trade digital products and services. Nowadays, competition isn't confined to the real world; it has evolved into a virtual one, where information travels at a faster pace and with fewer limitations than in the real world, and where the once-significant barriers to entry are now moot. Subscription services for music provided by companies that were never before involved in the industry have supplanted actual objects in the music sector, illustrating this trend.

Music subscription services have replaced physical commodities. According to Bouncken et al. 2021 [4,] businesses have the ability to utilize digital technologies not just to initiate new processes but also to enhance existing processes that are associated with their supply chains and their surroundings. Additionally, they can use these technologies to establish new business models.

In order to fill knowledge gaps and find new research directions, this study aims to learn more about digitalization in the firm's most developed areas. Given the increasing impact of digitization on enterprises, this is necessary. To achieve this, we conducted a Systematic Literature Review (SLR) for two reasons: (1) to ensure objectivity by following an adjusted protocol that guided data curation and analysis (Kraus et al., 2022) [5]; and (2) to keep up with the latest advancements in the field, a high-quality review paper should follow a well-established methodology for the systematic selection and analysis of papers (Snyder, 2019). [6].

The study consists of three distinct parts: stating the research's aim, outlining the research's methodology, and finally, reporting the findings. This is comparable to earlier studies mentioned in the bibliography and the latest SLR by Chaudhary et al. (2021) [7]. Trustworthiness and standing in the marketplace have long been associated with family-run enterprises. The current research offers evidence that backs up the relevance of trust and reputation on the long-term financial success of family businesses, which is rather intriguing. Trust and reputation in family businesses have not been adequately evaluated, despite the increasing focus on the topic. This study aims to identify current research trends and prospective future research possibilities by conducting an in-depth analysis and evaluation of past research on trust and reputation in the context of family companies.

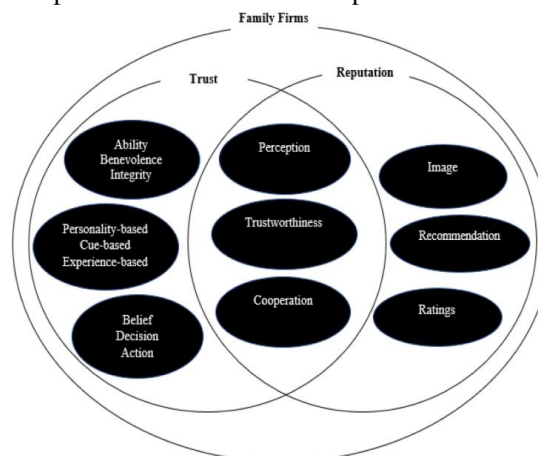


Figure 1. Developing a foundation of credibility and trust

They put out the idea that family businesses are seen as trustworthy because of the trustworthy ties they have with their business stakeholders. When everything is said and done, reputation is a representation of the overall perceptions that stakeholders, both internal and external, hold toward a family business. Everyone from present and future workers to consumers, investors, and even the broader public are considered stakeholders. An illustration of the conceptualization of trust and reputation may be found in Figure 1. These research issues are addressed using the SLR methodology in order to identify and to integrate the current knowledge in order to conduct a critical analysis of it and to develop ideas (Ribeiro-Navarrete et al. 2021) [8]. Using this time-tested approach allows for the creation of results that are reliable, resilient, and reproducible. The fact that it seeks to fill up knowledge gaps in established areas by further research makes it a good fit for our objective. Our goals are really congruent with this one. We reasoned that the most mature areas of the business to assess for digitization opportunities were management, marketing, and accounting and finance.

A. Theoretical framework

In addition to facilitating digitization (Teubner and Stockhinger 2020) [9], digital tools like SMAC (Social, Mobile, Analytics, and Cloud) provide opportunities for companies to alter their operations. According to Chan



et al. (2022) [10], a corporation can gain market awareness and build links with its actors using social networks. In contrast, mobile networks not only link different players in the corporate ecosystem, but they also offer learning possibilities and constant, anywhere access to information. Accessibility, storage, and the interchange of pertinent information, as well as monitoring of work flow and distant collaboration, are all benefits brought about by the cloud. In conclusion, analytics makes it easier to comprehend the requirements of both businesses and their customers, as well as to recognize possibilities and trends in the market, as well as to recommend and provide services and to communicate in a tailored manner.

Therefore, digital technologies are easily accessible to the company, and they have the potential to improve the efficiency of the company in ways that are profitable. However, in order for this to occur, the implementation of these technologies must be accompanied by the development of innovative business models or the transformation of the conventional model. In spite of this, there is a requirement for additional research to be carried out on the impact that new technologies have on the decision-making process of the organization (Troise et al. 2022) [11] as well as on the personal privacy of the employees. Despite the fact that SMAC technologies are the primary impetus behind digitalization, it is essential to keep in mind that this is not only a technological advancement but also a societal and economic one. The interaction between digital technologies and the social and institutional processes that transform these technologies into infrastructure technologies and have an impact on society and the economy is referred to as "digitization."

The term "digitization" is used to describe this interaction. Because of this contact, breakthroughs have been made in areas such as communication, mobility, speed, virtualization, the elimination of frontiers, interconnections, market transparency, and competitiveness. A technical procedure that involves coding similar information in a digital format is referred to as digitization. On the other hand, digitization is a technology. The material that has been digitalized is guaranteed to be programmable, traceable, and communicative if this approach is followed by [12] Quach and colleagues for the year 2022. Because it entails less fundamental adjustments than digitalization does, it should not be mistaken with digitalization. You should avoid getting the two confused. It is a phenomenon that is created by technological advancements. Despite this, digitalization can be found anywhere in the center of digitization and digital transformation.

According to Alzamora et al. 2021 [13], digital transformation (DT) brings about significant organizational shifts that are brought about by digital technology. As a result, these shifts bring about significant changes in corporate strategy and routines. On the other hand, digitalization is linked to significant alterations within sociotechnical structures. These alterations are reconfigured by calling into question the assumptions that underpin the creation and utilization of digital technology. As a result, DT is inextricably linked to the subject of organizational change, which can be defined as a "difference in form, quality, or state over time in an organizational entity." Take a look at Hanelt et al. (2021) [14] for more information regarding the application of DT in the field of management.

Review of the Literature on Digital Transformation

In the contemporary day, the phrase "digital transformation" (DT) is getting more and more attention as a topic of conversation in both academic and practitioner circles respectively. You can observe that the degree of interest has increased from one to one hundred in the six years that have passed between 2013 and 2019 by conducting a simple search on Google Trends. This increases the amount of interest that has been generated. The number of papers, conference panels, and special issues that have been published in academic publications has also increased. This is in addition to the fact that there has been a rise in the quantity of papers. Additionally, with regard to its strategic significance (Singh et al., 2020) [15], the appointment of a chief digital officer (CDO) enables enterprises to make a decision on a key function that is accountable for their digital transformation strategy. This decision must be made before the CDO can be appointed. Despite the fact that chief financial officers (CFOs) have recently found their way into the executive suites of corporations all over the world, the body of research that is now available does not provide any insights into the specific circumstances that led to the formation of CDOs themselves. We propose theoretical ideas that explain how the decision to centralize digital transformation duties might be related to the urgency of the transition and the requirements for coordination. These ideas are based on the fact that the digital era is unique, which serves as a basis for our discussion. According to empirical assessments based on a panel data set consisting of 913 organizations from the United States and Europe, the presence of a chief digital officer (CDO) can be predicted by the urgency of



the change and the demands for coordination. An additional examination into the moderating effects of time reveals that as time passes, the influence of transformation urgency becomes less substantial, while the effect of coordination needs on CDO existence gets more significant. This is the conclusion reached by the investigation.

The fact that digital transformation (DT) is having an effect on managers in a wide range of businesses and contexts and presenting them with problems is now general information (Benner and Waldfoegel, 2020; [16]). Digitization has led to a decrease in the costs connected with the creation of movies, which has made it possible for new distribution channels to emerge. These channels are able to sidestep the high expenditures that are associated with theater distribution. It is no longer necessary for movies to be "blockbusters" at the box office in order for them to attain financial success. Since expenses have fallen, this requirement is no longer necessary. In this paper, we analyze whether or not the introduction of digitalization has led to an increase in the production of films with smaller costs that are not meant for release in cinemas. Specifically, we look at whether or not this has occurred. A substantial number of films with a low budget have been released as a result of the process of digitalization. These films receive little attention from the commercial sector, which is why they are referred to as the "long tail." On the other side, we also noticed an increase in a new type of films that have budgets ranging from one hundred thousand to ten million dollars and are aimed at smaller audiences through new digital distribution platforms. These films have been gaining popularity.

The implementation of digitalization has resulted in an increase in the "middle-tail" that we witness. Because of the rapid development of digital technologies and the enormous amount of data that is gathered by devices and applications on a daily basis, businesses are increasingly being compelled to fundamentally restructure the business architecture through which they produce and appropriate value. This is a result of the fact that the amount of data that is acquired by these technologies is enormous.

In spite of this, businesses might not be able to derive any benefits from digital transformation since there is a mismatch between the process of strategy formulation and the process of strategy implementation. This article proposes a framework that can assist businesses in implementing their digital transformation strategy and, as a result, renovating their business model. The methodology is offered by means of an analysis of three case studies of businesses that have successfully implemented digital transformations in their corporate operations. ABB, CNH Industrial, and Vodafone are the corporations that fall into this category. the research conducted by Correani et al., 2020) [17].

Businesses have been further pushed to take action as a result of the challenges associated with the COVID-19 outbreak. This has been accomplished by increasing their knowledge of the necessity to speed up DT (for example, McKinsey, 2020[18]). CEOs are being forced to consider some challenging options as a result of the problematic economic outlook and the ongoing uncertainty. Some people are minimizing their expenses, pulling back, and concentrating on weathering the storm. Others, on the other hand, are taking significant action in order to guarantee that when the crisis is over, they will be stronger than they are with us right now. Those that are able to behave with a through-cycle attitude will be in the best position to accelerate out of the slump, according to two pieces of research and experience. When it came to cumulative total returns to shareholders (TRS), the top quintile of companies was over twenty percentage points ahead of their competitors as they moved into the recovery phase during the recessions that occurred in 2007 and 2008.

A speedier creation of digital or digitally enhanced offerings is perhaps even more startling than the previous one. It appears that the rate at which businesses are generating these products and services has increased, on average, by seven years across all regions, according to the findings. Exhibit 2 demonstrates that the gap is significantly higher in developed Asia, which is ten years ago. Before and during the pandemic, respondents had a portfolio that had a similar assortment of digital products, according to their reports. It is possible that during the crisis, businesses have refocused their offers rather than making significant jumps in product development in a short period of time (strategy&, 2020) [19].

On the other hand, the enormous and varied body of research on DT is plagued by a lack of clarity regarding the precise nature of DT (Warner and Wager, 2019) [20] and the breadth of its application (Wessel et al., 2020) [21]. This is a problem because DT is a relatively new type of research. Our investigation into the manner in which established organizations that operate in traditional industries build dynamic skills for digital transformation is a component of our qualitative research project that we are conducting. To facilitate significant enhancements to businesses in order to improve the customer experience, streamline operations, or develop new business models, the term "digital transformation" refers to the utilization of emerging digital technologies such as mobile, artificial intelligence, cloud, blockchain, and Internet of things (IoT) technologies. These technologies are used to facilitate digitization.

As part of our efforts to make sense of digital transformation, we came to the realization that executives in different business circles use the phrase in a manner that is not consistent when describing different activities that involve strategizing and organizing. In addition, the use of the phrase as a background for the investigation of strategic transformation has only garnered a small amount of attention from academics.



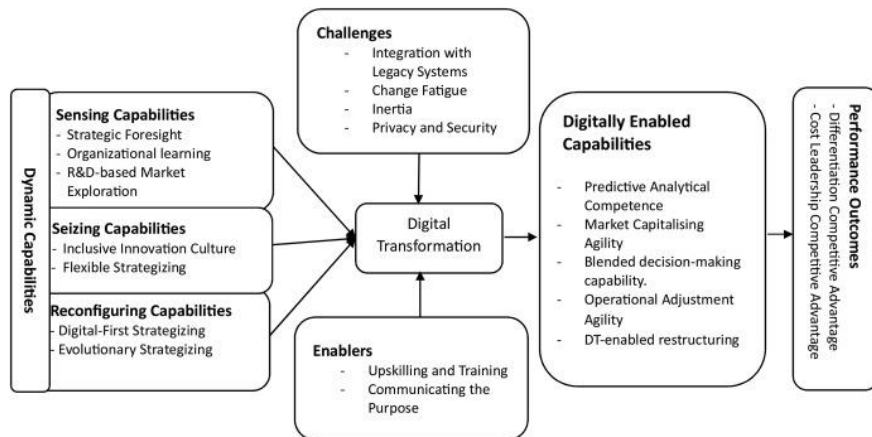


Figure 2: A theoretical model outlining the view of digital transformation in SMEs from the dynamic capabilities perspective

According to the theoretical model, SMEs can obtain better performance results through digital transformation since it grants them new capabilities. Capabilities that come under this category include the following: the ability to make blended decisions, operational adjustment agility, market capitalizing agility, and DT-enabled restructuring. These skills can help SMEs stand out from the competition by differentiating their offerings and achieving cost leadership. The conceptual framework is illustrated in Figure 2. The few meta-analyses and systematic reviews that do exist tend to be narrow in scope or come from domains unrelated to management (e.g., Vial, 2019) [22].

Modern businesses are impacted by and must adjust to the ever-expanding digital technology landscape (Correani et al., 2020) [23]. This landscape is characterized by the combination and interconnection of an endless number of distributed information, communication, and computing technologies. Despite the haziness surrounding the phenomenon, this is a recurring element in the ongoing argument. The phenomenon is so closely related to organizational change, which is a "difference in form, quality, or state over time in an organizational entity." When digital technology is widely used, it causes and shapes changes in an organization. This change is called digital transformation (DT). Theoretically, this viewpoint allows us to account for DT and its management in corporate practice by drawing on the rich and diverse body of information linked to innovation and organizational transformation.

The new digital infrastructures are not reserved for companies alone; they are accessible, flexible, and ready to be used by everyone. Reason being, their utility extends far beyond the realm of business. Consequently, it seems that many prior studies on organizational transformation, such as those pertaining to the implementation and exploitation of business IT systems, have been inadequate. Finally, it seems that the impacts of digital transformation (DT), which involves bringing new digital business models to non-digital industries, go beyond those of previous stages of IT-enabled change, which were usually linked to practice level changes and slower changes within businesses. Wessel et al. (2020) and other recent studies have come to the same conclusion: DT is different from other IT-related organizational transformations; hence, it is not feasible to give a thorough explanation using existing theoretical models.

Furthermore, if we were to relate DT to the existing body of knowledge on organizational change, we would be able to provide better informed advice on how to properly manage DT in business practice, particularly with relation to strategy and organizational transformation. Consequently, our objective is to elucidate the boundary conditions using both phenomenological and inductive methodological approaches. Numerous role models who have used this approach for different topics and made significant theoretical contributions to management literature have shown that a literature review is one technique to achieve this goal (Post et al., 2020) [25]. Similarly, adaptations to company strategies or product designs may be necessary in different situations due to new digitalized consumer expectations or social behaviors. This is because, from the consumer's point of view, emerging technologies may indirectly influence these factors. Furthermore, technology structuration theories may be helpful in determining how digital technology interactions affect organizational change. Nevertheless,



these theories need to be updated to account for the potential impact of external participants who bring new rules, values, and resources to the table when they collaborate through shared digital technology.

A. Managerial Implications

In addition to the previously mentioned research implications, this study provides valuable insights into management practice about organizational strategy and change. Although DT has risen to prominence on leadership agendas in recent years, some scholars have questioned why relevant changes are often only made in times of crisis (e.g., Hinings et al., 2018). [26].

New digital methods of collaboration (e.g., through Slack or Zoom), service delivery (e.g., through the adoption of AI and robotic process automation), and customer relationship management (e.g., through harnessing digital channels) are being imposed by regulatory measures to contain the virus's spread (KMPG, 2020). An example of this is the present COVID-19 epidemic, which demonstrates both the opportunity and the need for adaptable organizational structures.

This is indeed [27]. Moreover, the COVID-19 pandemic's developments and challenges highlight the precarious nature of enterprise-based digital business ecosystems. As an additional point of interest, they demonstrate the advantages of new ecosystem-oriented collaboration models, such as the establishment of digital platforms and the participation in new or existing ecosystems, with the goal of delivering innovative digital products and services and satisfying the growing demand for online orders. For this reason, DT-related ideas and concepts like ecosystem-oriented and embedded organizations, data-driven automation, and virtual business processes are highly relevant in both academia and industry. Their answers to fundamental concerns about organizational strategy and change, such how to adapt organizations or where to compete, are the reason behind this. In addition to providing managers with a comprehensive grasp of the phenomenon on its own, DT's multi-dimensional framework can be used as a high-level checklist with the research matrix. This is because the framework is designed to take into account multiple dimensions.

Conclusion

The interest of researchers and managers in DT is growing at a rapid rate. On the other hand, there are still a great deal of questions that remain unanswered regarding what DT is and what it includes. Because of this, it is difficult to gain a better grasp of the phenomena of organizational transformation by expanding upon prior research on the topic and providing practice with evidence-based recommendations. Consequently, this study set out to define the parameters within which DT studies can be conducted with an eye toward organizational transformation. To achieve this, all existing information about DT was reviewed, synthesized, and abstracted. Then, these findings were connected to the existing body of knowledge in the field. Digital transformation (DT) is the process by which an organization undergoes a metamorphosis as a result of the extensive use of digital technologies. Our research indicates that this trend is primarily characterized by a change toward digital business ecosystems as the foundation for and engine of flexible organizational architectures. There are four ways to look at this change topic: from the tech impact angle, from the compartmentalized adaptation point, from the systemic shifts angle, and from the holistic co-evolution angle. The perspectives vary in the scope of their contexts and the focus on processes of change within organizations. However, they all agree on one point: the traits of digital technologies, especially their ubiquitous nature and the dynamics they generate, are associated with organizational change. By integrating our results with what is already known about organizational change, we have determined that DT is best understood as a state of continuous change that is susceptible to and impacted by episodic bursts, which in turn generate more continuous change.

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