

# THE IMPACT OF DIGITAL TRANSFORMATION ON STRATEGIC BUSINESS MANAGEMENT

**Benjamin Grab**

*The Bucharest University of Economic Studies, 71131, Romania  
benny\_grab@hotmail.com*

**Dr. Marieta Olaru**

*The Bucharest University of Economic Studies, 71131, Romania  
olaru.marieta@gmail.com*

**Roxana Maria Gavril**

*The Bucharest University of Economic Studies, 71131, Romania  
roxana.gavril@gmail.com*

## Abstract

*The research paper aims to identify and showcase key drivers of strategic business management development in the light of the recent waves of digital transformation experienced by companies around the globe. The paper presents an overview of the existing literature and a concise outline of the conducted research. Both research results from professional associations as well as recognized publishers were considered. Furthermore, expert interviews as well as market data were factored in for drawing a comprehensive picture on strategic management theories and frameworks, as well as the history and influence of digital transformation. Our research revealed that digital transformation is worldwide phenomena; however, the regional impact differs significantly, depending on the regulatory environment and the level of economic sophistication. In essence, the disruptive nature of this trend has the potential to shake the foundations of industries which requires firms to fundamentally change their strategic management approach. The introduction of the digital transformation strategy framework aims to address these challenges and aims to foster additional research in this field. The doctoral research was conducted within the Research Centre of Business Administration, The Bucharest University of Economic Studies, Romania.*

**Key words:** *Digital transformation, strategic business management, innovation, competition, digital market*

**JEL Classification:** L22, M16, O31

## I. INTRODUCTION

In the public domain, firms like Facebook or Google are perceived as the shining example of digital transformation. Naturally, they receive a lot of attention with people trying to unlock their business secrets or imitate the processes and procedures that are making them so financially successful. Points of interest span from the creation of a collaborative and innovation-fueling work environment to team or office structures. Less attention is however provided to the issue of strategic management and the scope and depth of impact of digital transformation processes. Despite existing research highlighting the profound nature of change initiated by digitization, there remains to be a lack of scientific analysis on the matter of strategic management. (Manyika & McAfee, 2014; Tornjanski et al., 2015).

The power of disruption as unfolded by the latest waves of digital transformation is a concept that is well established among senior managers. Against this background, 60% of top managers consider it to be a topic which requires attention going forward, while 30% regard the ongoing changes to be potentially threatening to both profitability as well as market position. In order to counter the challenges of digital transformation, firms lean towards new approaches in innovation management which is of vital strategic importance to stay ahead of their competition (Maier et al., 2013; Maier et al., 2014; Ford, 2015; Weill & Woerner, 2015a; Kiehne & Olaru, 2017).

In this light, the presented research intends to link existing studies, papers and information conducted by experts, professional associations and scholars from the field of strategic management with the drivers and

repercussions of digital transformation. By assessing and analyzing the various factors of influence, the digital transformation strategy star to be introduced towards the end of this paper shall work as a framework for structuring and channeling decision-making processes in the context of the current digital challenges.

## **II. RESEARCH PURPOSE**

Our research study on strategic management and digital transformation, pointed out that the recent scientific debate predominantly centers on three key issues:

First, the focus on demand for upgraded IT infrastructure and skilled labor. In this context, questions concerning adopting future-proof and cutting-edge technology are weighed against internal skills capacities as well as ramp-up, investment and training costs involved. Essentially, firms are striving for an improved value proposition both for existing and new customers as well as for the firm itself. (Joseph et al., 1999; Malik, 2016)

Secondly, the wide issue of human labor and potentially disruptive impact that digital transformation has. In this light, issues such as the future relationship between humans and artificial intelligence, the effect of automation on employment and salary structures as well as the role and future of education are broadly discussed. (Brynjolfsson & McAfee, 2014; Ford, 2015)

Thirdly, issues related to the customer expectations and product delivery. Business planning on company level is under pressure from changes in the market environment with new competitors arising from unexpected areas, increased transparency and constant pressure for innovation. Given this interplay of market forces, the current leaders of the technological elite such as Apple, Amazon or Tesla are among the players expressing most concern regarding the consequences of the next waves of digital transformation. (Tong, Li & Yuan, 2008; Weill & Woerner, 2015b).

In the light of the disruptive nature of changes at work, firms need to assess and address those individual factors of influence with the aim of adopting strategic options suitable for their industry. While the current discussion mainly centers on isolated aspects of digital transformation, firms are required to establish a broader digital strategy framework as not to fall victim to the substantial changes posed by the new digital market landscape. (Weill & Woerner, 2015b).

## **III. METHODOLOGY**

The research presented in this paper, with focus on the impact of digital transformation on strategic management, is based on an inclusive and thorough assessment and review of existing research from various professional sources. It includes main ideas of specialty books, research papers and expert opinions from a range of scholars, research firms and professional associations. With the aim of drawing an integrated picture of the current research landscape, over 50 available publications were considered, processed and analyzed. Furthermore, expert interviews as well as market data were factored in for drawing a comprehensive picture on strategic management theories and frameworks, as well as the history and influence of digital transformation.

In a nutshell, the desk research presented in this paper is intended to form the basis for further research in this field, with the aim of broadening the scope of the scientific debate on the effects of digital transformation on current strategic management models and tools. Consequently, the introduction of factors of influence in the form of the integrated digital strategy framework shall be enriched by empirical research on the degree of impact across various industries going forward.

## **IV. FORM AND IMPACT OF DIGITAL TRANSFORMATION**

Achieving operational excellence is at the core of most digitization efforts. Ultimately, this translates into an improved cost position and efficiency. In order to achieve those targets, companies engage in activities towards standardizing and automating business processes. Considering the potential effects of such implementation efforts, industry champions might see their market share under attack from more digitization-driven competitors. However, firms who are capable of mastering the challenges of digitization are able to provide a new value proposition to their clients in the light of a better and more reliable data management. Essentially, this is a pre-requirement for effective scaling business operations across various market and customer segments. While the benefits of investing time and resources in automation and standardization are straightforward, the major of firms are struggling to steer the internal implementation process. According to

research conducted by MIT, only 1 in 4 established company has so far managed to digitize completely their internal processes. Given that automation and standardization are perceived as a natural first step on the way towards mastering digital transformation, the apparent lack of digital sophistication among firms is potentially threatening for business (Markovitch & Willmott, 2014; Ross, 2017)

The full scope of digital transformation is both complex in nature and challenging for all companies involved. It is associated with a technological quantum leap liaised with hot topics such as big data analytics, artificial intelligence, smart cities or social media channels. In the light of the diverse and colorful digital transformation landscape, companies may find it challenging to identify and address these trends in a structured and convincing manner. In addition to that, new market competitors seek opportunities provided by market changes by creating value swiftly and inclusively. Essentially, becoming a new digital leader is about using the strategically important element of innovation management to outperform the competition by using the new playing field created through the digital era (Maier et al., 2013; Maier et al., 2014; Kiehne & Olaru, 2017). This way firms can provide both a new customer experience in combination with an enhanced value proposition which ultimate has the intrinsic potential to reshape the way business has been conducted. (Schallmo et al., 2016; Ross, 2017; Newman, 2018; Richards, 2018)

In essence, digital transformation is a phenomenon transcending the globe while influencing the business activities of companies worldwide. While borders do not bring the power of change to a full stop, it needs to be noted that the effects of digital transformation are not evenly distributed across countries and regions of the world. Policy makers and businesses have a great degree of influence in affecting a countries' digital agenda by shaping its regulatory and policy framework. In addition to that, the overall state of economic sophistication has an imprint on the capability of a country to deepen its digital evolution.

The issue of the distribution of digital sophistication among countries is the core of joint study conducted by the Harvard Business Review, Fletcher School at Tufts University as well as the renowned global financial service company Mastercard. The Digital Evolution Index aims to assess and cluster the degree of digital evolution in key countries across all continents. Concisely, associated researchers formed four types of countries based on a set of 170 different indicators. The final result of the digital evolution index are in the form of a landscape introducing the current status of digital transformation in more than 60 countries around the globe:

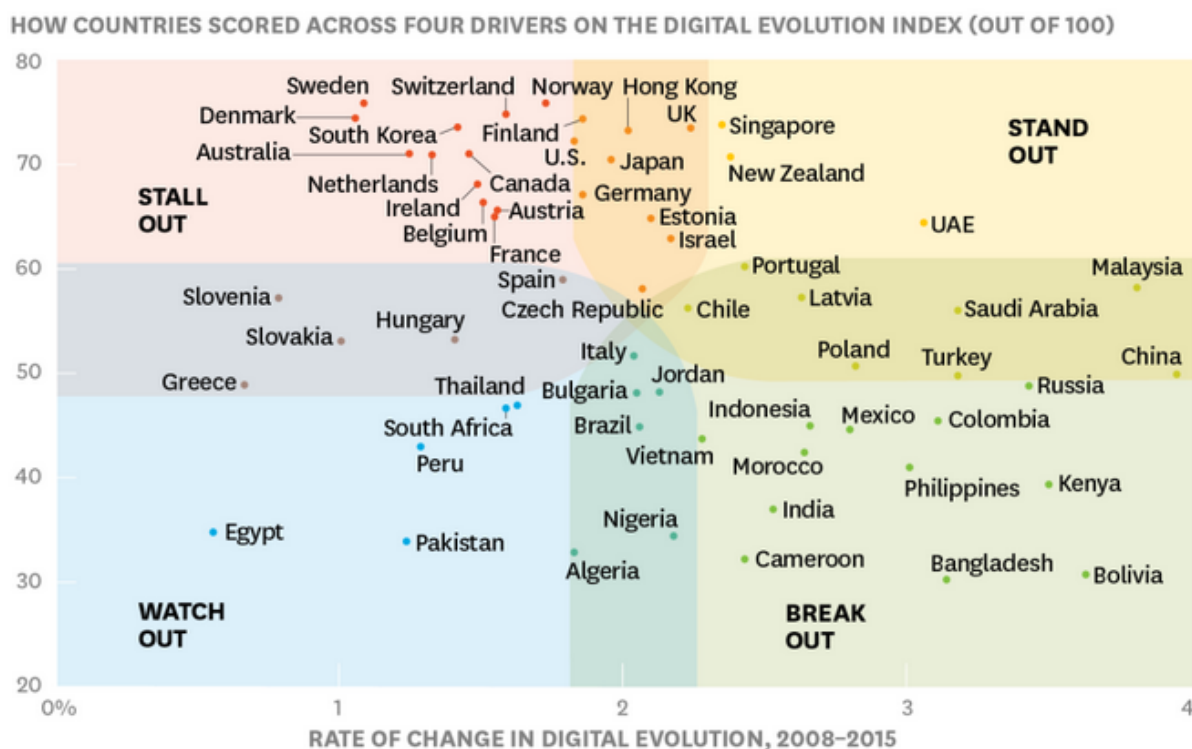
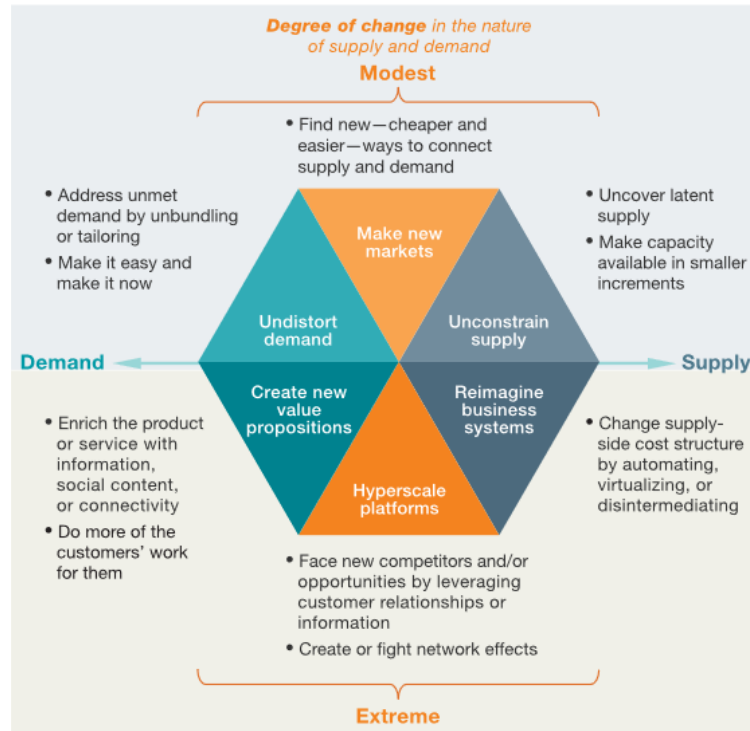


Figure 1 - Map of Digital Evolution (Source: Chakravorti, B., et al. 2017)

Among the regions of the world, Asia is at the forefront of digital transformation with the UAE, Malaysia and Singapore catering successfully to a tech-savvy urban society. While many of the top spots are currently taken by emerging economies, most of the developed countries such as the United Kingdom or the United States are forced to revisit their digital strategies, in order not to lose ground to their competitors. Interestingly,

numerous smaller countries such as Estonia or Israel have already outperformed bigger markets. Among the most interesting cases are the break out countries consisting of a diverse group of nations including Bangladesh, Bolivia and Colombia. (Billon, 2010; Chakravorti et. al., 2017)

Aside from the regional distribution of digital transformation, Dawson et. al. (2015) targets the individual factors of influence with regards to supply and demand for redefining market forces at large. Figure 2 sums up the two main sides of the medallion with the upper part focusing on the modest changes associated with supply and demand, while the lower part centers on the more disruptive developments as unleashed by the latest wave of digital transformation.



**Figure 2 - Digital change overview (Source: Dawson, A., et al. 2016).**

In the modest development section, the following three points shall be considered with regards to changes in the supply and demand equilibrium:

- **Undistort demand:** Digital transformation removes obstacles by allowing customers to experience the full range of products and services on offer which have previously been limited by dominant market competitors. In this regard, online insurance brokers can provide a broader selection of services, in contrast to the very normed and limited insurance products available some years ago.

- **Unconstrain supply:** The digital era helps to unleash firms' potential by allowing them to tap upon segments which have been previously deemed uneconomical. In this context, semi or fully automated processes provide for a better cost structure on the firms' side, while customers enjoy a seamless and cost-efficient process.

- **Make new markets:** Wikipedia has been at the forefront of making a new market by using various elements of the digital transformation. The business model focuses on crowd founding whereas users pay for the intrinsic value that they experience in product. In addition to that, content and quality management are steered by crowd knowledge allowing it to renew and reinvent itself every day. Essentially, it provides access to an abundance of knowledge anywhere and anytime, which makes paperback versions of the latest encyclopedia a thing of the past.

With reference to the more extreme section, the impact on the factors balancing demand and supply is of a more disruptive nature. In its most extreme form, companies may be forced to close down, while others may experience substantial effects regarding their revenues and profits. These three points include:

- **Create new value propositions:** This element relates to the fact that customers are sometimes not even aware of the products or services that they desire. In this context, the invention of tablets serves as a prime example since oversized smartphones filling the gap between small phone devices and laptops were largely regarded as difficult to market. However, the initial success of the iPad made both suppliers as well as customers rethink their initial perception.

- **Hyper scale platforms:** Today's tech companies are no longer limited by product or industry frontiers,

but rather benefit from their skills and capabilities in business automation, data analytics and marketing. In this context, they are capable of adding new business activities to their existing network whenever a promising opportunity arises.

- Re-imagine business systems: The management of internal processes and superior access to the entire value chain of products and services forms an integral part of improved business systems. Essentially, it helps to build new barriers against competitors from all kinds of industries while securing a superior cost position.

## V. INFLUENCE OF DIGITAL TRANSFORMATION ON ORGANIZATIONAL STRATEGIC MANAGEMENT

Digital transformation can already be felt in many industries with business activities being affected in all parts of the world. While the degree of disruption may be different across business segments and countries, Hirt and Willmott (2014) successfully define seven main drivers which impact on traditional forms of business. Against this background, they play a vital role considering strategic planning and implementation processes.

### 1. Price setting and profits remain under substantial pressure -

The abundance and structure of information provided to customers across the internet helps closing the previously existing information asymmetry between firms and clients. This improvement in market transparency puts customers in a better position with the effect of higher bargaining power and lower prices. However, the later might be subject to regional differences given substantial fluctuations in digital sophistication across the globe. (Grab et al., 2018b)

### 2. Competition is no longer limited to your own industry -

Barriers for market entry have proven to be useful for many decades, allowing market participants to defend themselves against competition from other players. The rise of digital firms has largely distorted this old perception of shielding industries. These companies rely on superior management skills, flat organizations, technical-savvy staff and entrepreneurial spirit to challenge the current heavyweights in any given industry. In the process, they do not only question the status quo of doing business, old paradigms are further put into question. As a result, ramp up costs are no longer the deciding factors for success, which forces the old guard to seek new strategies beyond pure rent-seeking.

### 3. Satisfied customers reinforce a winner takes all dynamic -

Large tech firms such as Apple or Google have taken the element of perfect customer lock-in to new levels by pooling internal resources and capabilities in the form of superior business organization, talented staff and technological advancements for the benefit of an attractive company culture. This stimulates a positive perception cycle which in addition to high quality services and products turns firms into go-to places for customers. This return effect reinforces the customer relationship and manifests the winner takes it all dynamic of the digital era.

### 4. Modular business models are a key success factor -

Against the background of the winner takes it all dynamic stimulated by large tech companies, smaller firms may find it particularly difficult to compete on an equal footing. Therefore, innovative market participants aim to piggyback on the success of larger market players by adding their businesses to existing platform structure provided by bigger firms. This translates into a win-win situation since customers are able to find a broader selection of products and services within a known environment.

### 5. Fighting for smart brains is crucial -

Frey & Osborne (2013) take a strong stand towards the impact of ongoing business automation as well as further introduction of robotics and artificial intelligence in the work place by stating that almost half of all professions worldwide have the potential to be replaced by machines over the decades to come. While institutions such as the OECD are in strong disagreement regarding the scale and scope of the effect on the global labor market, it is widely acknowledged among scholars that digital transformation forces a shift in skills and capabilities required for the future. In this context, firms need to find new strategies to address the issue of talent gaps within their organization, while at the same time thinking of new ways to train people who are stuck in professions which will no longer be needed. (Manyika et al., 2017; Nedelkosa & Quintini, 2018)

### 6. Convergence of global supply and demand -

Online service providers are not limited in their regional focus. In this light, firms have almost unlimited access to customers when it comes to expanding their growth strategies. From a customers' perspective, standardized products are made available across country frontiers. Along the entire value chain, clients expect a harmonized process from the moment a delivery is made to the after sales service. (Grab et al., 2018a).

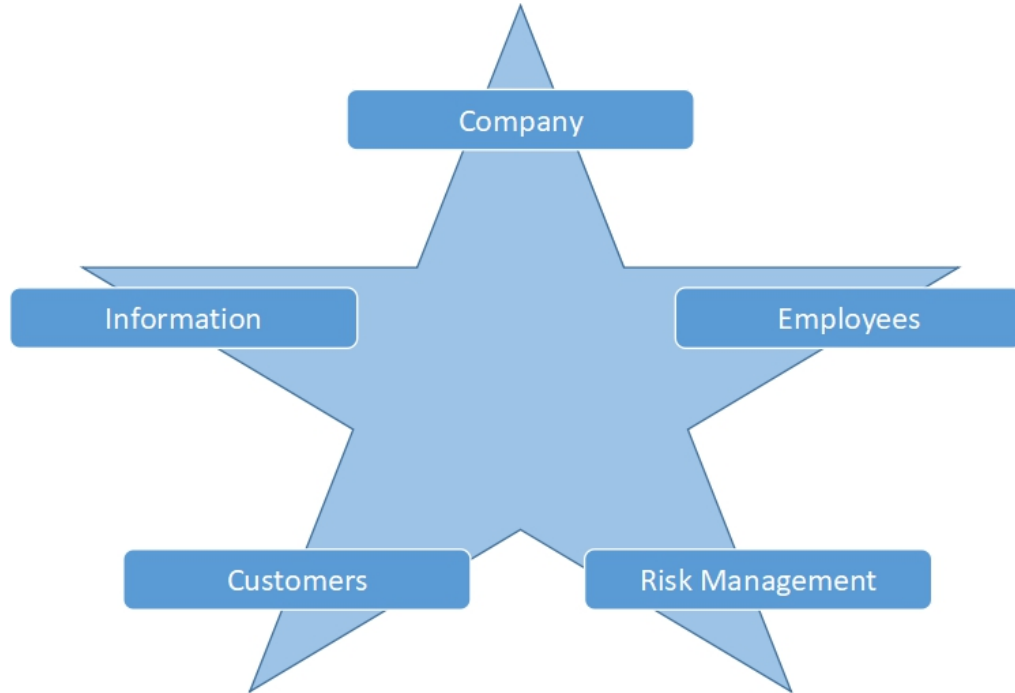
### 7. Constantly evolving business models -

Digital transformation represents a major change for most firms who have so far lived under the

impression that small incremental changes are sufficient to stay in business. However, in a world where your next competitor is formulating and implementing radical solutions for your industry, this kind of slow moving approach will no longer be successful. In this context, the tourism industry makes for an excellent example where tech platforms such as Tripadvisor continuously reshape their business models to improve access to new clients. (Grab et al., 2018c)

Based on these statements, the waves of digital transformation are not a single event, but shall be considered the new normal requiring firms to continually change, evolve and innovate. This puts substantial pressure on both internal as well as external strategic factors.

Figure 3 aims to isolate and combine the most imminent elements of digital strategy formulation, in order to structure the discourse on the topic with the help of an integrated framework:



**Figure 3 - Digital transformation strategy star (Source: own illustration)**

#### Company -

For companies to compete successfully in the fast changing market environment, the power of innovation and creativity needs to be unleashed among the workforce with the aim of staying ahead of competitors with superior product and service delivery. In order to create an environment driven by collaboration and entrepreneurial thinking, firms are required to introduce new management methods which go beyond the old way of leadership. Against this background, the next generation of leaders will play a vital role in deciding whether hierarchical structures are outdated and to what extent new forms of organizational development can take center stage. (Hamel & Breen, 2007; Hamel, 2012; Weill & Woerner, 2015; Manyika et al., 2017)

#### Employees -

Digital transformation represents a significant challenge for employees on various levels. Most notably, members of the workforce are confronted with new styles of leadership and organizational set-ups. Additionally, they are required to learn and adopt new skills and capabilities to actively contribute to the requirements of the innovation-driven business environment. Furthermore, the issue of artificial intelligence and human-robot relations in the work place will require new concepts going forward, in order to harmonize internal processes, (Hamel, 2012; Ford, 2015; Weill & Woerner, 2015; Nedelkoska & Quintini, 2018)

#### Customers -

Customer experiences and expectations have been significantly impacted by digital companies operating on local or global basis. This can be associated with an increased level of transparency allowing customers to compare products and services with only a few clicks. Against this background, firms feel the increase in bargaining power of consumers, which forces them to provide for an improved value proposition in the form of a seamless customer value chain from product selection to after sales service. (Hamel, 2012; Hirt & Willmott, 2014)

#### Information -

The management of information is one of the cornerstones of the digital transformation era. Therefore,

firms can gain a competitive edge based on their individual ability to collect, select, process and utilize large amounts of available data. In the context of big data analytics, firms may filter data from various different sources with the aim of utilizing information for the benefit of providing bespoke products and services to different customer groups. In the light of challenges posed by a fast-paced and volatile business environment, planning processes can be further enhanced through the targeted use of data analytics. If companies aim to profit from such development, an internal focus on sharing knowledge and fostering internal communication across department lines is at the core of establishing a work culture based on learning and innovation.. (Hamel, 2012; Bennett & Lemoine, 2014)

#### Risk management -

Classic approaches on risk management may fall short in capturing the substantial changes created by digital transformation. In this context, new systems and specialists are required to take a more holistic view, while at the same time focusing on the key drivers of future developments. The improvement of internal risk management systems shall hence be more flexible as well as closer to the core of the business activities, in order to create additional value (Hamel, 2012; Tupa et al., 2017)

## VI. CONCLUSIONS

Digital transformation has the power to shift the balance between firms competing in the same market environment. It essentially affects known tectonic business structures by setting a new playing field and changing the way firms compete on various levels. The existing strategic management theories and models still partly serve the purpose to assess firm's internal resources and capabilities. In combination with tools and systems for analyzing the existing and future market environment, firms can further adopt strategic options. However, as outlined in the paper, the challenges posed by digital transformation are disruptive in nature and a thorough understanding, monitoring and acting on the key factors will be crucial for firms going forward. Therefore, the integrated framework on digital strategies aims to complement the existing models while addressing individual shortfalls as described.

In a next step, the presented desk study shall be complemented by empirical research with a focus on individual or combined elements of the digital transformation strategy star. Points of consideration for future research may include the role of leadership in stewarding digital transformation processes or the introduction of self-managed teams as a vehicle for successfully addressing the most imminent challenges of the new digital reality.

## VII. REFERENCES

- Bennett, N., Lemoine, G.J., (2014). What VUCA really means for you, Harvard Business Review, Jan-Feb 2014, pp. 27
- Billon, M., Lera-Lopez, F., Marco, R., (2010). Differences in digitalization levels: a multivariate analysis studying the global digital divide. Review of World Economics, (146) 39, pp. 39-73.
- Brynjolfsson E., McAfee A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies (1st ed.). W. W. Norton
- Chakravorti B., Bhalla A., Chakravorti R.S., (2017) 60 Countries' Digital Competitiveness, Indexed; Harvard Business Review - July 2017 [online] Available at: <<https://hbr.org/2017/07/60-countries-digital-competitiveness-indexed>> [Accessed 01 May 2018]
- Dawson, A., et al., (2016). The economic essentials of digital strategy, McKinsey Quarterly April 2016 [online] Available at: <<https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-economic-essentials-of-digital-strategy>> [Accessed 12 April 2018]
- Ford, M., (2015). Rise of the robots: Technology and the threat of a jobless future, 15th edition, APA: Washington D.C.
- Frey, C. B., Osborne, M. A., (2017), The future of employment: How susceptible are jobs to computerisation?, Technological Forecasting and Social Change, 114, issue C, p. 254-280
- Grab, B., Geldmacher W., Ionescu R., (2018) Managing the risks associated with the cyber city project - case study of the NEOM Project; 31st IBIMA Conference in Milan Proceedings, ISBN:978-0-9998551-0-2, 25 - 26 April 2018
- Grab, B., Gavril, R.M., Bothe J., (2018). Managing the challenges and opportunities of e-commerce platforms in the Gulf region; 6th International Conference on Management, Leadership and Governance in Bangkok Proceedings, ISBN: 978-1-911218-81-4, 24 - 25 May 2018
- Grab, B., Bumbac, R., Gavril, R., Ilie, C., (2018). The winner takes it all - business model innovation in

the tourism industry, BASIQ Conference in Heidelberg 2018, 4th BASIQ International Conference on New Trends in Sustainable Business and Consumption Proceedings, ISSN: 2457-483X, 11 -13 June 2018

Hamel, G., Breen, B., (2007). *The Future of Management*. Boston: Harvard Business School Press

Hamel, G., (2012) *What Matters Now: How to Win in a World of Relentless Change, Ferocious Competition, and Unstoppable Innovation*, Chicago, IL: Jossey Bass

Hirt, M., Willmott, P., (2014). Strategic principles for competing in the digital age. *McKinsey Quarterly* May 2014. [online] Available at: <<https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/strategic-principles-for-competing-in-the-digital-age>> [Accessed 10 February 2018].

Joseph, M., McClure, C., Joseph, B., (1999). Service quality in the banking sector: the impact of technology on service delivery. *International journal of bank marketing*, 17(4), pp. 182-193.

Kiehne, J. Oлару, M. (2017), *Implementing Industrie 4.0 strategies: beyond technical innovations*, 4th BASIQ Conference in Heidelberg 2018 Proceedings, 11-13 June 2018

Maier, D., Oлару, M., Weber, G., Maier, A. (2014). *Business Success by Understanding the Process of Innovation*, 9th European Conference on Innovation and Entrepreneurship (ECIE) Location: Univ Ulster Business School, School of Social Enterprises Ireland, Belfast, IRELAND, 18-19 September 2014, Proceedings of the European Conference on Entrepreneurship and Innovation

Maier, D., Oлару, M., Maier, A. (2013). *Integrating Concepts of Creativity and Innovation - a key to Business Excellence*, 8th European Conference on Innovation and Entrepreneurship (ECIE) Location: Hogeschool Univ Brussel, Brussels, BELGIUM, 19-20 September 2013, Proceedings of the 8th European Conference on Innovation and Entrepreneurship, Volume 2

Malik, V., (2016). Impact of information technology on banking services comparative analysis of public and private sector banks.

Manyika, J., McAfee, A., (2014). *Why every leader should care about digitization and disruptive innovation*. McKinsey Global Institute

Manyika, J., (2017). What the future of work will mean for jobs, skills, and wages. *McKinsey Quarterly* November 2017. [online] Available at: <<https://www.mckinsey.com/global-themes/future-of-organizations-and-work/what-the-future-of-work-will-mean-for-jobs-skills-and-wages>> [Accessed 8 February 2018].

Markovitch, S., Willmott, P., (2014). Accelerating the digitization of business processes. *McKinsey - Corporate Finance Business Practise*, May 2014, pp. 1-4.

Nedelkoska L., Quintini G., (2018) “Automation, skills use and training”, OECD Social, Employment and Migration Working Paper, No. 202, Paris: OECD Publishing

Newman, D. (2018). 2018 Digital Transformation Trends: Where Are We Now?, *Forbes*: 20 August 2018, Retrieved 3 January 2019 from: <https://www.forbes.com/sites/danielnewman/2018/08/20/2018-digital-transformation-trends-where-are-we-now/#5ce36efbc647>

Richards, J. (2018). *Digital Transformation Fundamentals: The new age of information*, Amazon Media, [https://www.amazon.de/Digital-Transformation-Fundamentals-information-English-ebook/dp/B07MK7RHBT/ref=sr\\_1\\_15?ie=UTF8&qid=1546507135&sr=8-15&keywords=digital+transformation](https://www.amazon.de/Digital-Transformation-Fundamentals-information-English-ebook/dp/B07MK7RHBT/ref=sr_1_15?ie=UTF8&qid=1546507135&sr=8-15&keywords=digital+transformation)

Ross J., (2017). Don't Confuse Digital With Digitization. *MIT Sloan Review* - September 2017; [online] Available at: <<https://sloanreview.mit.edu/article/dont-confuse-digital-with-digitization/>> [Accessed 10 January 2018]

Schallmo, D. et al., (2016). *Digitale Transformation von Geschäftsmodellen: Grundlagen, Instrumente und Best Practices (Schwerpunkt Business Model Innovation)*, Wiesbaden: Springer Gabler, [https://www.amazon.de/Digitale-Transformation-von-Gesch%C3%A4ftsmodellen-Instrumente/dp/3658123877/ref=asap\\_bc?ie=UTF8](https://www.amazon.de/Digitale-Transformation-von-Gesch%C3%A4ftsmodellen-Instrumente/dp/3658123877/ref=asap_bc?ie=UTF8)

Tong, Y., Li, D., Yuan, M., (2008). Product lifecycle oriented digitization agile process preparation system. *Computers in industry*, 59(2), pp. 145-153.

Tornjanski et al., (2015). A need for research focus shift: banking industry in the age of digital disruption, *ESMSJ*, 5 (3), pp. 11-16

Tupa, J., Simota, J., Steiner, F., (2017). Aspects of Risk Management Implementation for Industry 4.0. *Procedia Manufacturing*. Volume 11, pp. 1223-1230.

Weill, P., Woerner, S. L., (2015). Thriving in an increasingly digital ecosystem. *MIT Sloan Management Review*, 56(4), pp. 27-34.

Weill, P., Woerner, S. L., (2015). *Working With Your Board on Digital Disruption?. Research Briefing*, MIT CISR