

01-059

**(I) MANAGING THE DIGITAL TRANSFORMATION IN WELL-ESTABLISHED COMPANIES:
A FRAMEWORK FOR IMPLEMENTATION.**

Jimenez Agurto, Katia Sofia; Nuseibah , Ala

FH Dortmund

The global business is being impacted by technological disruption and the challenges to implement these kind of projects are increasing. The organizations are forcing their own capabilities to survive and keep up to date with the technological changes. This paper aim to conduct a literature review of the field of digital transformation; in addition, linking these topics to the adjacent fields of Change Management, Disruptive Technologies, and Project Management. By researching the relationship of Change Management, Disruptive Technologies and Project Management it becomes evident that a key success factor to manage the Digital Transformation is the inclusion of these academic fields. As result of the research, a conceptual framework is proposed with main focus in the Self-Assessment cluster to determine the capabilities of the organization before the adoption of the Digital Transformation Strategy.

The Self- Assessment does not guarantee the lack of risks, but it will help to mitigate them and thus have a smoothly digital transformation process.

Keywords: *Digital Transformation; Change Management; Disruptive Technologies*

**(II) GESTIONAR LA TRANSFORMACIÓN DIGITAL EN EMPRESAS ESTABLECIDAS: UN
MARCO PARA LA IMPLEMENTACIÓN.**

Todas las empresas a nivel global están siendo afectadas por los cambios disruptivos tecnológicos y los desafíos para implementar este tipo de proyectos están aumentando. Las empresas están forzando sus propias capacidades para sobrevivir y mantenerse al día con los cambios tecnológicos. El objetivo de este trabajo es realizar una revisión de la literatura sobre el campo de la transformación digital; además, vincular estos temas a los campos de Gestión de cambios, Tecnologías disruptivas y Gestión de proyectos. Al investigar la relación entre la gestión del cambio, las tecnologías disruptivas y la gestión del proyecto, se hace evidente que un factor clave de éxito para gestionar la transformación digital es la inclusión de estos campos académicos. Como resultado de la investigación, se propone un marco conceptual con un enfoque principal en el análisis de las capacidades de la organización antes de la adopción de la estrategia de transformación digital.

La auto-evaluación de las capacidades de la empresa no garantiza la falta de riesgos durante la transformación digital, pero si proporcionará a las empresas un análisis de sus capacidades para poder mitigar dichos riesgos y tener una transformación digital con riesgos mas bajos.

Palabras clave: *Transformación Digital; Gestión del Cambio; Tecnologías Disruptivas*

Correspondencia: Katia Sofia Jimenez Agurto katia.jimenezagurto001@stud.fh-dortmund.de



©2019 by the authors. Licensee AEIPRO, Spain. This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

New technologies are emerging every year, new demand from the customers, more competitive market and new products and services every day. One of the main reasons of the amount of changes are associated to one term “Digital Transformation”. The term has been growing for the past years but there is still a lack of understanding of the meaning. What is currently know in the current literature is the relation with the term “changes”. Digital Transformation is a big emerging term with a big amount of changes and open questions for the organizations.

There are some definitions of the term in the current literature. According to Matt, Hess, and Benlian (2015), Digital transformation comes with a significant amount of disruptiveness changes. Matt, Hess, and Benlian (2015) describe digital transformation as a significant shift in the business operations, products, processes and organizational structure of a company, which accompanies its initiatives to make use of digital technologies. One more definition is the one of Jason Bloomberg, “Digital Transformation refers to the customer-driven strategic business transformation that requires cross-cutting organizational change as well as the implementation of digital technologies”. All the authors stated that digital transformation is a significant change in the daily operations, strategy, and mindset of every employee and culture of the organization. It is key to highlight that Digital Transformation goes beyond to the implementation of one technology, one product, changes in the value chain, etc. The term implies a completely change in the strategic level of the organization. The strategic challenge for business is to develop the clear vision and the growing capability needed to put digital transformation in the top.

Since Digital Transformation is a journey for the entire company, the organizations should evaluate their own capabilities to be able to have a smoothly transformation. The purpose of this paper is to determine the key drivers that organizations should look at before the transformation journey and thus be able to succeed in the long-term.

The main research problem is how can well-established companies be enable to drive their digital transformation journey?

2. Objectives

The two main goals of this paper are:

- To develop an understanding of the importance of digital transformation concept in organizations and the implications of the topic and relate it to adjacent concepts such as disruptive technologies, change management and project management.
- To propose a framework that aims to determine if the organization has the capabilities to start with the implementation of digital transformation.

As part of the scope of this paper, only the cluster “**Self-Assessment**” will be explain into details.

3. Literature Review

3.1 Digital Transformation

The term “digital transformation” have existed since 2000 (Patel and McCarthy 2000). Nevertheless, there a few concepts about this topic. Westerman et al. (2011) define digital transformation as “the use of technology to improve performance or reach of enterprises”. Another well-known, more holistic definition for the term is that “digital transformation can be

understood as the changes that digital technology causes or influences in all aspects of human life” (Kaplan, 2010). Another interesting definition by Lankshear and Knobel (2008) defines digital transformation as the third and ultimate level of digital literacy that “is achieved when the digital usages which have been developed enable innovation and creativity and stimulate significant change within the professional or knowledge domain”.

Many authors are still trying to find an accurate definition for the term “Digital Transformation” and consultant companies are trying to develop frameworks to implement this kind of project within organizations. However, it is key to highlight that digital transformation is not about the acquisition and implementation of one or more technologies, or the digitalization of one or more processes. Digital transformation is about strategy and new ways of thinking and involve the whole organization.

Transforming for the digital age requires the organizations to upgrade its strategic mindset much more than it’s IT Infrastructure to focus more in changing roles of technology leadership within business to a strategic level.

3.2 Disruption

For many, the need to re-think, re-design and adapt their organizations arises in response to a fear of a different, the unknown. Dire outcome: disruption.

Digital transformation is rewriting the rules of business. These new rules have created opportunities but also countless new challengers to take in well-established organizations. According to the author Rogers, disruption has become a buzzword, bandied about indiscriminately. Business disruption happens when an existing industry faces a challenger that offers far greater value to the customer in a way that existing firms cannot compete with directly (Rogers, 2016).

Disrupt or be disruptive are the options for organizations. No industry is immune. If the Industrial Revolution was about machines transforming nearly every physical act of labor and value creation, nowadays, organizations are at the beginning of a revolution in which computing will transform nearly every logical act of value creation. (Rogers, 2016).

Marc Andreessen has famously said that “software is eating the world”. He invented the first Web browser, the software that unleashed the Internet as a network for mass participation. If software is eating the world, Digital Transformation is guiding organizations in a world of uncertainties not every year but every day.

3.3 Disruptive Technologies

A disruptive technology is one that displaces an established technology and shakes up the industry or a groundbreaking product that creates a completely new industry (Clayton M. Christensen, 1997). Christensen separates new technology into two categories: sustaining and disruptive. Sustaining technology relies on incremental improvements to an already established technology. Disruptive technology lacks refinement, often has performance problems because it is new, appeals to a limited audience and may not yet have a proven practical application.

According to the Project Management Institute (PMI), all the new technologies emerging or existing such as Internet of Things (IoT), Artificial Intelligence (AI), Cloud Computing, Robotics and many more are part of the definition of Disruptive Technologies. All of them take part (trigger) of the disruption of many organizations.

Christensen’s theory of disruptive technologies is one of the most popular for explaining the plight of the incumbent firm facing a significant new technology. He proposes a theory of response to disruptive technologies in two books about innovation (Christensen, 1997; Christensen and Raynor, 2003). He argues that investing in disruptive technologies is not a rational financial decision for senior managers to make because, for the most part,

disruptive technologies are initially of interest to the least profitable customers in the market (Christensen, 1997). Christensen and Overdorf (2000) present a framework for dealing with disruptive change that focuses on resources, processes and values.

The term disruptive technology is young in the literature and there are only a few authors trying to understand the topic. It is very important to note out that authors like Christensen are not focus in one particular technology like the Internet of things (IoT), Artificial Intelligence (AI) and many others growing day by day. The focus of the author is to analyze the impact of the implementation of these technologies in organizations. Therefore, he proposed a framework with elements such as resources, processes, and values to have a better understanding of the implication of any disruptive technology project. The author argued the need to analyze the elements stated before – resources, processes, and values- as part of the adoption of any disruptive technology during the digital transformation journey of the organizations.

3.4 Change Management

For the purpose of this paper, the model developed by Lewin for change management is take it as a base. There are many models concerning organizational change, but the Lewin model is taken as a base due to the simplicity of the model. The part of change management can change from organization to organization; this can be influence not only due to the size of the organization but also due to the maturity of the organization. A different model will be complex to address for some organizations. The key point of change management as part of the development of this framework is to show the need of change and thus create an awareness of change management as part of the implementation of digital transformation. The digital transformation is a set of a wide range of changes for the whole organization; therefore, a change process should be incorporate to manage a smooth change.

The Kurt **Lewin change theory model (Lewin, 1947)** is base around a 3-step process (Unfreeze-Change- Freeze) that provides a high-level approach to change.

3.5 Project Management

Digital transformation is not one project within an organization. The reason of why Project Management is part of the developed of the framework is to use it as a good practice during the digital transformation. The project management is a guide of phases, tools and methods to create a solid foundation during the transformation journey. For the purpose of this paper, the project management body of knowledge (PMBOK, 6th edition from the Project Management Institute (PMI) is being used. Using the PMBOK as based does not imply that is the only one that can be use but at least is one of the most structure frameworks to start working on. The ideology of the PMBOK is process-based, therefore will add value to the structure of the developed framework.

As stated before, researchers, organizations, public government and many more are trying to find a common understanding of the implications of the digital transformation. Right now, the common understanding is that the power of a digital transformation strategy lies in its scope and objectives (*MIT Sloan Management Review & Deloitte*). Even if the digital transformation should not be treat as one project, should share the fundamental principles of project management like a clear definition of scope and objectives.

After an extensive literature review of different fields, the predominant adjacent fields of the digital transformation are the ones mentioned above disruption, disruptive technologies, change management and project management. The graphic below represents the connection among the fields.

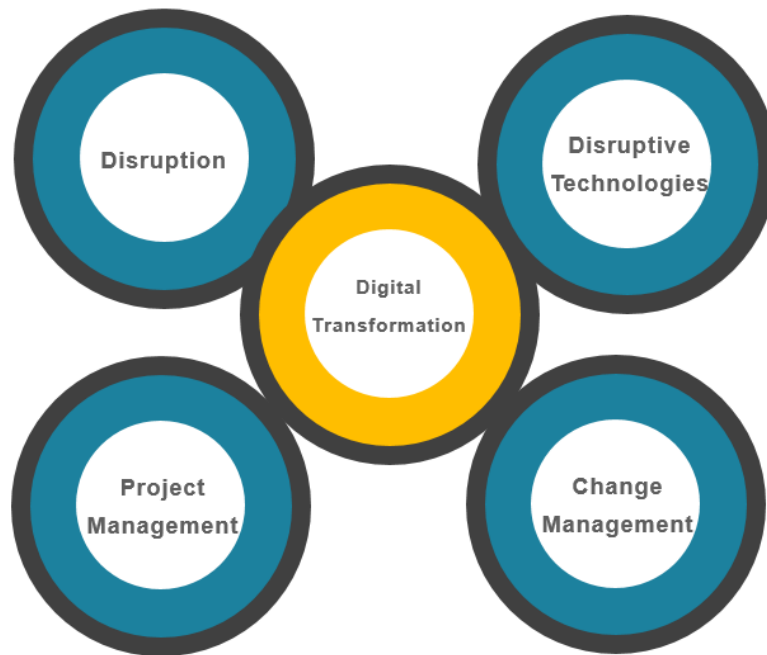


Figure2. Academics fields - Digital Transformation (Own model)

4. Analysis and Discussion

The current literature does not provide an established framework for managing the digital transformation that include the academic fields of disruption, disruptive technologies, change management and project management. Therefore, the following framework present a new perspective to manage the digital transformation.

As part of the scope of this paper, the cluster **Self-Assessment** is the only one to be discuss further. The cluster will allow organizations to know their strengths and weaknesses in terms of digital transformation. By doing so, the outcome of the self- assessment will let them know where to invest in digital capabilities and how to lead the transformation.

The key drivers are a collection of existing theories, methods, frameworks, good practices from more than 8 books with case studies from different companies. In addition, a wide range of collection of papers from different authors and companies.

Below is the framework that contains the whole landscape of digital transformation strategy.

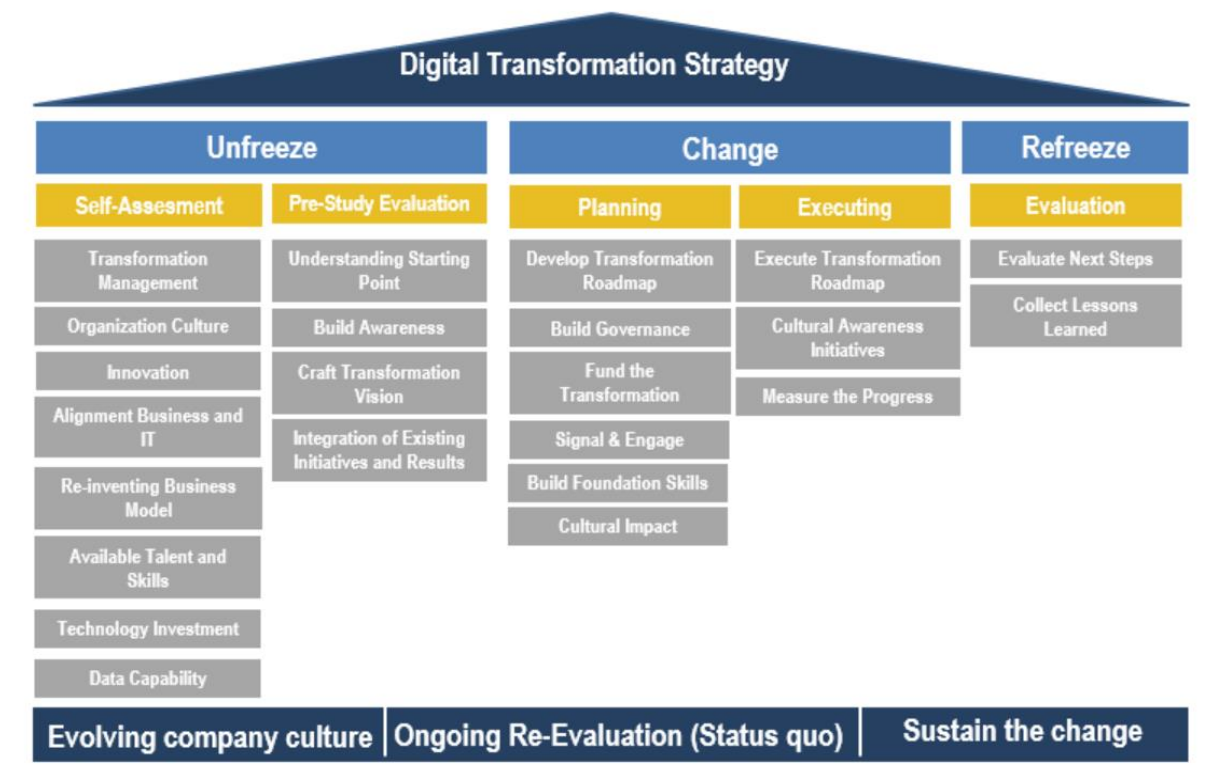


Figure2. Managing the Digital Transformation (Own model)

As part of the cluster "Self-Assessment" some elements were identified **Transformation Management, Organization Culture, Innovation, Alignment IT and Business, Re-inventing Business Model, Available Talent and Skills, Technology Investment and Data Capability**. As part of the process to collect data within companies to assess their capabilities using the key drivers, methods such as interview and shadowing processes are recommendable. The outcome of the assessment is the capabilities of the organization in a way of **Portfolio-level balanced scorecard of the capabilities**. Below an example of the outcome:

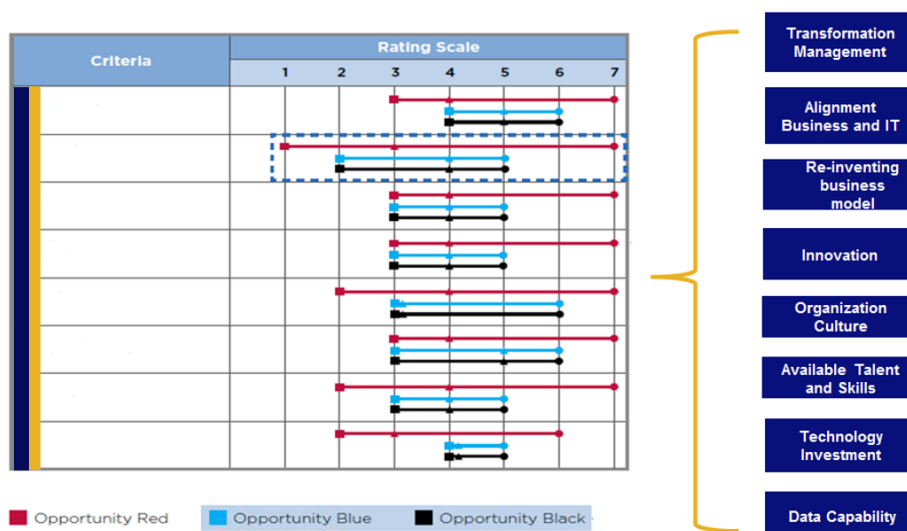


Figure3. Portfolio-level balanced scorecard of the capabilities (Own model)

The key drivers of the **Self-Assessment** are explain into details in the following section.

4.1 Transformation Management

Managing a well-established company in the digital age is not easy. Hence, a high engagement from the management during all the transformation is required to succeed. It is necessary to fix the basis, have a strong alignment among department and collaborate to determine the target of the company in the digital transformation journey. Many companies are creating a unique division to manage the digital transformation. This was the case of Starbucks. According to many case studies, it is a good practice to start with a division; nonetheless, the process should be aligned with all the departments of the organization, not only IT, not only business but the whole organization. As part of the governance, the management should be involved during the entire journey to steer the wheel to keep the transformation on the right track. The elements of this driver are **digital leadership, governance, engagement and digital shared vision.**

4.2 Organization Culture

The organization culture is a process that can take years since involve the mission, vision, beliefs, processes, and way of work of the individuals. Organization culture is a key element since is one of the main pillars to be able to adopt the digital transformation journey. The organization should engage all the employees with the transformation. When employees are engaged in a shared vision, they help to make the vision a reality and support the management during the entire journey. As part of the engagement, the organization can incorporate a set of initiatives to make feel everyone as part of the change and foster a culture of collaboration. According to George, Didier & Andrew in their book leading the change, some well-established companies such as Starbucks and Codelco implemented some contest to foster a culture of change and awareness of the transformation. The elements of this driver are **change in mindset, foster agility, collaborative skills and knowledge sharing.**

4.3 Innovation

The term innovation has been evolving for the past years. According to Rogers (2016), innovation is any change to a business product, service or process that adds value. The change can be an incremental improvement to the creation of totally new and unprecedented. In the digital age, organizations need to innovate in a radically different fashion, based on rapid experimentation and continuous learning rather than concentrating primary on a finish product; this approach focuses on identifying the right problem and then developing, testing, and learning from multiple possible solutions. During the digital age, innovation is not only about the word new but also evolving, changing, refining, adding launching and testing solutions to satisfy the need demand of the customers. As Scott Anthony say, innovation is not just about “big bangs”; it is about anything new that has impact and can add value.

As digital technologies make it easier and faster than ever to test ideas, this new approach to innovation is essential to bringing new ideas to market faster and with less cost, less risk, and greater organizational learning. The elements of this driver are **adding value through innovation and Trends and insights: Innovation opportunities.**

4.4 Alignment Business and IT

Digital transformation is about re-thinking and re-building the way the organization has been working for years. As part of this process, the communication with the business should be change to a strategic one. For the past decades, IT is known as infrastructure provider, as part of the change. Nowadays, there is demand to see the role of IT to service provider which can offer a wide range of service and not only the technical one. The alignment of business is critical to build up solid foundations and follow one same goal, one same direction during the transformation journey of the organization. The elements of this driver are **customer experience, customer relationship and ranking priorities**.

4.5 Re-inventing business model

According to Rogers (2016), companies can expect to compete with more and more businesses that do not look much like them. This was not possible a decade ago but now is the reality for many organizations. Therefore, to challenge the current business model and re-invent it to a digital business model is not optional but a must.

The explosion of digital technologies offers many opportunities for innovative business models and value propositions. Many authors in the current literature address that customer will create the value such as business like Airbnb or Uber. These digital platform businesses operate with the basic in order to allow their customer to create their own value.

Business model reinvention sometimes involves radically shifting what you sell, how you sell it, or how you make money of it. The three main reasons for reinvention of the business model are the creation of new value chains, shifts in the competitive landscape and today's exponential technological innovation that is continually challenging with opportunities and threats (Westerman & Bonnet & McAfee, 2014)

It can represent a challenge for conservative organizations to change their business model. However, as stated before, disruption is here, therefore well-established organizations need to exploit new digital resources by developing new capabilities and challenging their present value propositions to change their business model from a traditional business model to a digital business model to be able to satisfy the internal and external demand. The elements of this driver are **identify emerging threats and opportunities in the value proposition and disrupting business model**.

4.6 Technology Investment

Advances in digital technologies are fueling the rise of new. But, what about the current ones? As starting point, organizations should address some questions like where are we? What do we need? Which are the main priorities? How can we link the current initiatives with the future ones? Digital transformation does not mean to start from zero, it means to take the current initiatives and be able to integrate them in one single landscape.

The organizations should also evaluate carefully through pre-studies the right technologies for the organization. Disruptive technologies are a big set of different trends, one of the biggest mistakes is take one technology just because is a trend in the market and not because it will solve a need of the organization. An analysis of the profitable is fundamental to make the right choices. The elements of this driver are **linking current & future initiatives and analysis of the profitable**.

4.7 Available Talent and Skills.

Organizations that want to push beyond the status quo must put renewed focus on the role of available talent and skills. It is a critical factor to develop the internal talent and be able to capture the external one. In addition, there is a need to develop a "learn fast" mentality within the organizations. Nowadays, it is not about the current knowledge, the main value is related to the ability to learn and adapt fast to the environment. Organizations must build and maintain effective systems for sourcing and hiring workers, for establishing and evolving career paths, and for fostering continuous learning opportunities and a culture of growth. The elements of this driver are **creating a learning culture, employee journey, allocating talent and treasure and, empowering talent.**

4.8 Data Capability

As Gil Elbaz Putsite stated in their quote "*The world is one big data problem*", the data can become a big problem for organizations if it is not treated in the right way. Digital transformation operations require a strong technology backbone that integrates and coordinate process and data in the right way to increase the efficiency and effectiveness in the whole organization. One of the key factors is the ability to integrate the data to make better decisions and thus be able to create a better value. It is important to highlight that the term data goes beyond "Data mining" or "Big Data", the term data capability refers to the ability of the organization to re-design the processes according to the needs of the business, customers and have a harmonization of digital processes to foster productivity, efficiency and agility. The data should be seen as one of the most important assets of the organization since is the base to create and improve the existing and upcoming operational processes. The elements of this driver are **harmonization and digitization of processes, data integration, data as strategic asset and bridging silos.**

5. Conclusion and Future Research: Meeting the Challenges

Continuous disruption is the new normal and Digital Transformation relies on an organization's ability to integrate rapidly evolving technology and tools. Even extremely successfully, companies built in the pre-digital age struggling to adapt their strategic thinking in order to thrive and grow in the digital age. Digital transformation is not a simple topic and there are still many uncertainties surrounded. The Self- Assessment can offer well-established organizations a guide to know their own capabilities and be able to plan better their potential ones.

Reinventing and reimagining organizations during the digital age requires big challenges. It requires thinking differently about every aspect of the strategy - **Transformation Management, Organization Culture, Innovation, Alignment IT and Business, Re-inventing Business Model, Available Talent and Skills, Technology Investment and Data Capability.**

As future research, a case study based on an organization is in process to use the key drivers to assess the capabilities of the organization.

References

- Accenture, 2018. Forging the future: Evolving with Disruptive Technologies. *Project Management Institute*, [Online]. 1/1, 2. Available at: https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/thought-leadership/disruptive-technologies/forge-future-disruptive-technology.pdf?sc_lang_temp=en [Accessed 1 December 2018].
- Benlian., Hess., Mat., Wiesböck., A., T., C., F., 2016. Options for Formulating a Digital Transformation Strategy. *MIS Quarterly Executive*, [Online]. 1, 3. Available at: <http://www.misqe.org/ojs2/index.php/misqe/article/viewFile/645/424> [Accessed 16 October 2018].
- Christensen, C., 1997. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. 1st ed. Cambridge, US: Harvard Business Review Press.
- Christensen, Overdorf, C., M., 2000. Meeting the challenge of disruptive change. *Harvard Business Review*, [Online]. 78/2, 67-76. Available at: https://www.researchgate.net/publication/215915528_Meeting_the_Challenge_of_Disruptive_Change [Accessed 10 October 2018].
- Deloitte. 2019. Strategy, not technology, drives digital transformation. [ONLINE] Available at: <https://www2.deloitte.com/insights/us/en/topics/digital-transformation/digital-transformation-strategy-digitally-mature.html>. [Accessed 14 March 2019].
- Dobbs, R., Manyika, J. and Woetzel, J., 2016. *No Ordinary Disruption*. 1st ed. New York: Public Affairs.
- Garrett, Neubaum, R., D., 2013. Top Management Support and Initial Strategic Assets: A Dependency Model for Internal Corporate Venture Performance. *Journal of Product Innovation Management*, [Online]. 30:5, 896-915. Available at: <https://onlinelibrary.wiley.com/doi/full/10.1111/jpim.12036> [Accessed 17 October 2018].
- Gimpel, Röglinger, H., M., 2018. Digital Transformation: Changes and Chances. *Fraunhofer Institute for Applied Information Technology FIT*, [Online]. 1, 13. Available at: https://www.fim-rc.de/wp-content/uploads/Fraunhofer-Studie_Digitale-Transformation.pdf [Accessed 16 October 2018].
- Matt., Hess., Benlian., C., T., A., 2015. Digital Transformation Strategies. *Business & Information Systems Engineering*, [Online]. Volume 57/Issue 5, 339–343. Available at: <https://link.springer.com/article/10.1007/s12599-015-0401-5> [Accessed 2 November 2018].
- Narver, Slater, J., S., 1990. The Effect of Market Orientation on Business Profitability. *Journal of Marketing*, [Online]. 54, 20-35. Available at: <http://dx.doi.org/10.2307/1251757> [Accessed 16 October 2018].
- Nwokah, Maclayton, N., D., 2015. Customer Relationship Management and Marketing Performance: The Study of Food and Beverages Firms in Nigeria. *European Journal of Business and Management*, [Online]. 10:4, 65-75. Available at: https://www.researchgate.net/publication/279806452_Customer_Relationship_Management_and_Marketing_Performance_The_Study_of_Food_and_Beverages_Firms_in_Nigeria [Accessed 16 October 2018].
- Parry, Kirsch, Carey, Shaw, W., C., P., D., 2014. Empirical Development of a Model of Performance Drivers in Organizational Change Projects. *Journal of Change Management*, [Online]. 14:1, 99-125. Available at: <https://doi.org/10.1080/14697017.2012.745894> [Accessed 17 October 2018].
- Patel, McCarthy, K., 2000. *Digital Transformation: The Essentials of e-Business Leadership*. 1st ed. Houston, USA: McGraw-Hill.
- Project Management Institute. 2018. *The Standard for Project Management Professional – Sixth Edition*. Newtown Square, PA: PMI.
- Rogers, D., 2016. *The Digital Transformation Playbook*. 1st ed. New York: Columbia University Press.
- Schein, E., 1996. Three Cultures of Management: The Key to Organizational Learning. *MIT Sloan Management Review*, [Online]. 38/1, 27. Available at:

https://www.researchgate.net/publication/40962225_Three_Cultures_of_Management_The_Key_to_Organizational_Learning [Accessed 25 October 2018].

Schumpeter, J., 1934. *The theory of economic development: an inquiry into profits, capital, credit, interest and the business cycle*. 1st ed. Cambridge, MA: Harvard Economics.

Westerman, G., Bonnet, D., & McAfee, A. 2014. *MIT Sloan Management Review*. [ONLINE] Available at: <https://sloanreview.mit.edu/article/the-nine-elements-of-digital-transformation/>. [Accessed 17 October 2018].

Westerman, G., Bonnet, D. and McAfee, A., 2014. *Leading Digital: Turning Technology into Business Transformation*. 1st ed. Boston, Massachusetts: Harvard Business Review Press.