DIGITALIZATION AS A FACTOR FOR BUSINESS SURVIVAL: A CRITICAL ANALYSIS OF BUSINESS AGILITY

Jacqueline MUJAYA [a*], Kurtz LAW [b], Satoshi ITO [c], Julia SISU [d], Andra GROSU [e]

[a,b,c,d,e] *Bucharest University of Economic Studies, Romania*

ABSTRACT

Historical data has shown that in times of volatility, many business models have lacked the flexibility of an agility mindset which may be described as a myopia in thinking and decision making. This research examines factors of agility in management by examining Apple Inc. as a case study and comparing it against the five domains of digital transformation. This is an ongoing study that looks at concepts such as leveraging digital technologies to create customer networks, innovation through collaborative technologies, shifting from traditional perceptions of competitors to partners, big data and value proposition. The purpose of this study is to help internal and external stakeholders to better identify high-potential success factors which will contribute to stronger corporate sustainability and, consequently, better longevity.

KEYWORDS: *agility management, business transformation, digitalization, innovation.*

DOI: 10.24818/IMC/2022/03.13

1. INTRODUCTION

According to Northern Trust Asset Management (2020), periods of volatility are becoming increasingly normal. For example, 56 volatility shocks in terms of global financial crises have occurred since 2008. Such occurrences have included, the Global Financial Crisis of 2007-2008, China's slow-down and oil price drop in 2015, and the coronavirus pandemic in 2019. Indeed, more recently it has been proposed that Russia's conflict with Ukraine has led to a commodities-supply shock, and a drop in customer sentiment towards spending (European Securities and Markets Authority, 2022). These effects have added to the existing pandemic-related inflation pressures and growing concern over the drop in household savings, and future rises in energy costs.

How then, might companies survive periods of volatility which have such dramatic impacts on so many aspects of the ways in which businesses operate? For example, consumers' attitudes to spending, or the effects of economic downturn on supply chain management, procurement, and logistics, etc.? Not to mention, the adverse subsequent effects on workers' mental health which can lead to a decline in work productivity and quality? These issues will be discussed later.

An OECD study in 2021 identified a widening gap between large enterprises and small and medium sized enterprises (SME) in terms of the adoption of digital transformation (OECD, 2021). The data suggests that large enterprises have the inclination to invest in areas of enterprise resource planning (ERP), social media, customer relationship management (CRM), electronic invoicing, cloud computing, e-commerce and supplier-customer management. But, less inclination in areas of Big Data and e-booking and orders. Indeed, their data showed that 80% of large enterprises used ERP, while less than 40% of SMEs have invested into the technology. Likewise, approximately 60% of

* Corresponding author. E-mail address: *mujaya4707@gmail.com.*

large enterprises have implemented CRM tools, whereas only around 30% of SMEs utilize the same benefits. This suggests that large enterprises have the capability to utilize these ready-at-hand technologies when difficult climates arise. Whereas the majority of SMEs have less capability to be agile in responding to the same economic climate. These are issues that need to be considered in order to determine how digitalization can be used as a factor of survival in the face of volatile market environments.

2. LITERATURE REVIEW

2.1 Interpreting the concept of business agility

Agility has been described as the ability to prosper in a competitive and rapidly changing environment (Goldman, et al., 1995). According to Lica (2020), characteristics of agile strategy include having flexible planning with fast adaptability, flexible and outcome driven processes and a continuous approach for improvement. Bernardes and Hanna (2008) suggest that while the terms flexibility and agility have in the past been used interchangeably, they are not the same. Indeed, Sharfi and Zhang (2001) identified that the conceptual model of agility consists of three constituting elements; agility drivers, such as changes or pressures from the business environment, agility capabilities such as responsiveness, competencies, flexibility and speed, and agility providers such as practice methods or tools that enable agility capabilities.

While this paper proposes that digitalization in the modern world can be a critical success factor for achieving agile operations, historically, Information Technology (IT) has been said to have represented one of the largest barriers to radical change. This is in part because changes to IT architectures have typically required high set-up costs, high implementation risk and the necessary retraining of employees, especially in terms of stages of implementation, maintenance and usage (Attaran, 2004). In addition, digital transformation often requires the suitable integration of legacy systems which contain important business logic and data necessary for standard business operations (Bakar, et al., 2021). Integration therefore can in itself be a significant hindrance to agility. This remains true today for bespoke systems using technologies such as Robotic Process Automation (RPA) which has a relatively high learning curve and potentially long term associated costs due to issues such as its weaknesses in handling unexpected changes to business processes (Fernandez and Aman, 2021). An example of which may be a company seeking to be agile by changing its business processes to handle an unexpected shift in the market, in such case, this attempt at agility will likely break an existing RPA solution which has already been implemented to handle a specific mechanism of the previous process.

On the other hand, the existence of off-the-shelf tools such as Slack, Zoom and DocuSign has created an almost instant usage capability for most of the commonly installed operating systems. They have successfully been shown to decrease the divide between digital solutions planning and implementation. Visible results can be instantly seen in day-to-day use, and employee satisfaction or lack of it can be immediately communicated. These off-the-shelf tools tend to have substantial available documentation through user reviews and existing communities which can help businesses navigate the transition from an old system to a newer one.

Effects of the coronavirus pandemic led to a sharp decline in business revenues and a higher dependence on bank financing for SMEs which has decreased their ability to be agile in implementing technologies to react to the economic conditions (Yoshino, 2016). This may be especially true for implementing tools such as RPA which could potentially cost a company between $5,000 and $15,000 for a single software robot solution, and potentially a fully loaded cost of up to $20 million for a large RPA deployment (Walker, 2016). Nonetheless, it can be said that COVID-19 has had a significant impact in changing the attitudes towards business models that utilize remote working tools such as Slack and Zoom, in a more positive way (Law, et al., 2021). In

particular, this was seen during the various lockdowns that had been imposed by global governments to counter the risk of spreading infection during the coronavirus pandemic of 2019.

2.2 Understanding the five domains of digital transformation premise

Rogers (2016) proposed the 5 Domains of Digital Transformation, whereby each domain is represented by the categories of customers, competitors, data, innovation and value. The principles of the 'customer' category are denoted by leveraging existing digital technologies to create customer networks. In so doing, opportunities may arise in the form of improving the path to purchase, better understanding customers' core behaviors, and reinventing marketing funnels. Szymkowiak (2019) further explains that improving funnels can contribute to an improved customer traffic rate, a better perceived customer experience and more efficiency.

In terms of the 'competitors' category, Rogers (2019) suggests the need to build platforms rather than simply focus on products. Therefore, an innovative reconceptualization of who the competitors are, enables new types of companies to be born. One example given was that of Airbnb, which operated with a lean management system from its inception. Airbnb did not conceptualize hotels, and similar businesses which offered accommodation as competitors, but rather potential business partners. Therefore, while no rental properties were owned, the business model was still able to satisfy travelers' rental needs. As of today, according to the iProperty Management website, Airbnb has approximately 4 million hosts, with over 6 million listings (iProperty Management, 2022). It is also important to note, that no Airbnb staff were required to take care of the properties or indeed, on-site customers, this has allowed the shifting of responsibility for customer care and quality of service to be placed on the hosts of the properties themselves, thereby decreasing both the associated risks and the direct costs of sustaining these properties.

The data domain refers to the ways in which information is utilized so as to provide business opportunities and advantages. Big data has become a buzz-word in society today especially relating to areas of high-volume data analysis or trend analysis (Gupta and Agrawal, 2020). While these advances in technologies seem to have a lot of benefits and are opening up various capabilities, there is a growing concern relating to ethical abuse of data. For example, Wade (2018) explained that data collected from social media, had generated 50 million profiles for the purpose of targeted advertisement which potentially had influenced the US election in 2016. Cases such as these have led to an increasing public demand for tighter controls of data use.

The 'innovation' domain takes into account the principle of experimenting and innovation. Through leveraging the synergies between existing digital technologies can enable innovation to occur (Edu, et al., 2020). Augmented Reality-Remote Assist (AR-RA) is one example which utilizes an existing mobile platform's hardware mechanism i.e.: a smart phone with a camera, data storage and internet connectivity, and a call center with access to an internal database of easily accessible support electronic documentation. The offering utilizes smart phones which are already widespread, so it eliminates the need to develop and sell the delivery mechanism, as well as reduces the cost to train customers to interface with the device that is connected to their front end. AR-RA means that generalist employees can resolve issues that are within their expertise, but are also able to contact specialists in real-time to resolve complex or unique issues which would have required the sending of a specialist on a different date. The ability to see the problem through the device's camera, and then show detailed interactive schematics on its display, while receiving live instructions from the specialist, provides a level of sophistication in solution giving that was previously considered impossible. Another example includes technologies such as chatbots which utilize databases of answers based on probabilistic data. These systems can be leveraged to answer common customer queries without need for actual human workers (Gatan, et al., 2001).

In the 5 Domains of Digital Transformation, it is inferred that the values held by customers may change over time, so the company that is providing services or products must continuously analyze its value proposition so that it remains current and relevant (Rogers, 2016). Value proposition has

been discussed in various areas of academia such as in supply chain management, marketing, logistics and many more (Martinez and Bititci, 2006; Hassan, 2012; Antikainen, et al., 2019). In each case, there is a commonality that describes a type of symbiosis between the service or product offering and that of the customer or user. For example, the need to satisfy a customers' needs, wants and fears may be met by the offerings' product or service functions, features and security measures. The potential benefit of having a strong value proposition and the subsequent ability to make good on promises can lead to a 'better than expected' sense of satisfaction by the user or customer. This can lead to a company's increased capabilities to scale, and increase demand for those products and services (Bailetti, et al., 2020).

3. RESEARCH OBJECTIVES

This research examines Apple Inc. as a case study in terms of agile practices that contributed to business successes during periods of volatility. We examine these factors in association with the 5 Domains of Digital Transformation to determine whether the model is suitably cohesive. Therefore, two primary research questions were proposed.

1. How has Apple used business agility to demonstrate adaptability, flexibility and continuous improvement to build robustness and longevity?
2. Does the Apple Inc case study validate the 5 Domains of Digital Transformation model?

4. RESEARCH METHODOLOGY

Firstly, the data was gathered from a systematic review of 34 articles from different sources including peer review journals, but not limited to them. The articles focused on different aspects of Apple's business and operations. The materials went through multiple passes of reading, comprehending, scanning and highlighting meaningful words, phrases and concepts. Subsequent groupings were made to form categories of similar codes and overarching themes. Thematic descriptions were constructed to explain the company's agile practices and cultural behavior towards times of volatility as shown in figure 1. Examples of the coding process is demonstrated in figures 1 and 2.

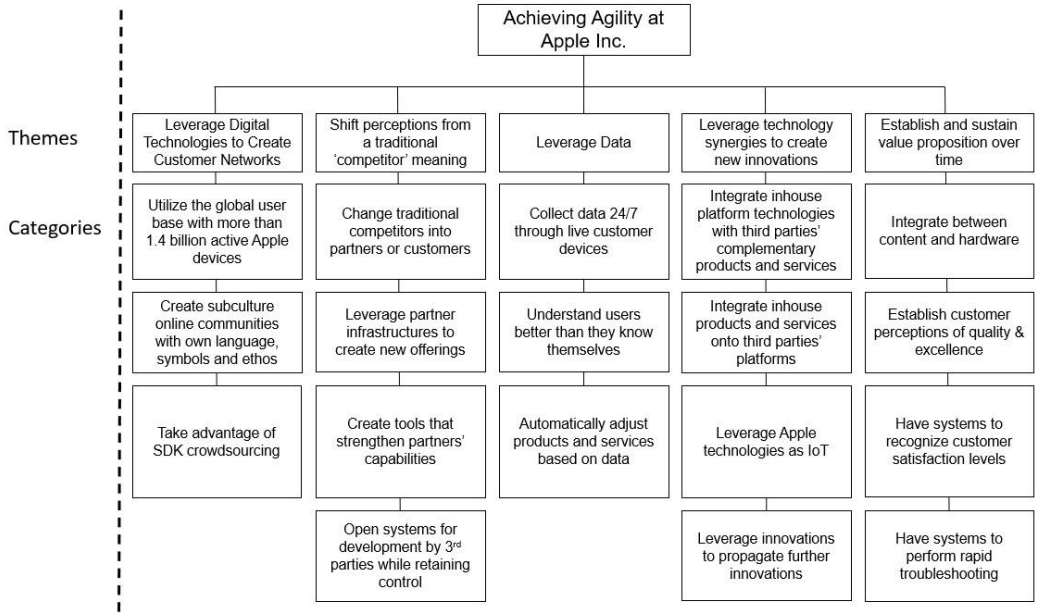

Figure 1. Example of Coding of the Data
Source: Authors' own material

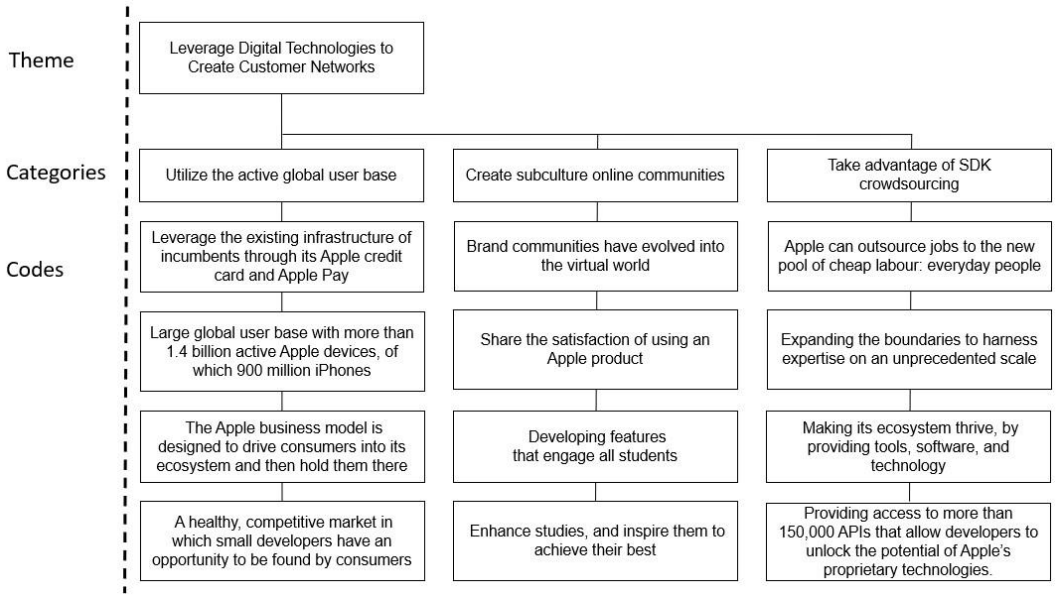

Figure 2. Example of Coding from Systematic Review
Source: Data collected from various research studies

5. FINDINGS & DISCUSSION

The ability to leverage digital technologies to communicate widely across the entire Apple community is covered under the 'customer' category of Rogers' 5 Domains model. Communication channels utilizing technologies such as forums and chatbots, support the concept of responsiveness as a competitive advantage as they help ensure rapid feedback of customer satisfaction levels. In this study, the data suggests that creating subculture communities further helps to enhance user experiences, and creates a communal sense of shared goals and ownership. These factors have contributed to enhancing business agility, as robust communication channels enable rapid troubleshooting, and loyal communities can create resilience.

This study's data suggests that Apple Inc invests heavily into the development of its ecosystem consisting of various platforms. Platforms may be considered either physical in terms of actual hardware, or non-physical such as Apple Pay or the App Store. Indeed, the Apple OS in itself could be considered a platform where various applications can run within the Apple computing environment. However, it is important to note that the platforms Apple leverage are not limited to inhouse creations. Apple leverages partner platforms to innovate and create new markets.

This concept is encompassed by two of the domains from Rogers' (2016) 5 Domains model. Firstly, to leverage digital technologies to create new markets, and secondly to shift away from the traditional mindset concept of 'competitor'. If we take Apple Pay as an example, other financial institutions which supply payment method offerings such as credit cards, may be considered 'competitors' through conventional understanding. This is because users typically must decide which method to adopt, and the subsequent choice would lead to a decrease in commission revenue for the other party. However, by shifting perception towards financial institutions as partners, enables Apple to utilize their technological functionality in parallel, to offer partner payment services through Apple devices and technologies. This, therefore enables both third parties and Apple to gain new business opportunities in the market. Such innovations created through quid pro quo agreements help produce more flexibility not only for the offering providers but also for customers themselves and additionally supports an enhanced value proposition that creates competitive advantages

In this study we focus on the value proposition offered by Apple to its users both in terms of consumers of Apple products, and Apple partners. For partners we focus on, SDK developers,

Media-content creators and associated technology enterprises. In Figure 3, we examined the needs, wants and fears that their users have, and identified ways in which Apple satisfies them. Figure 3 represents a small selection of functions, features and security that are leveraged to provide a strong value proposition.

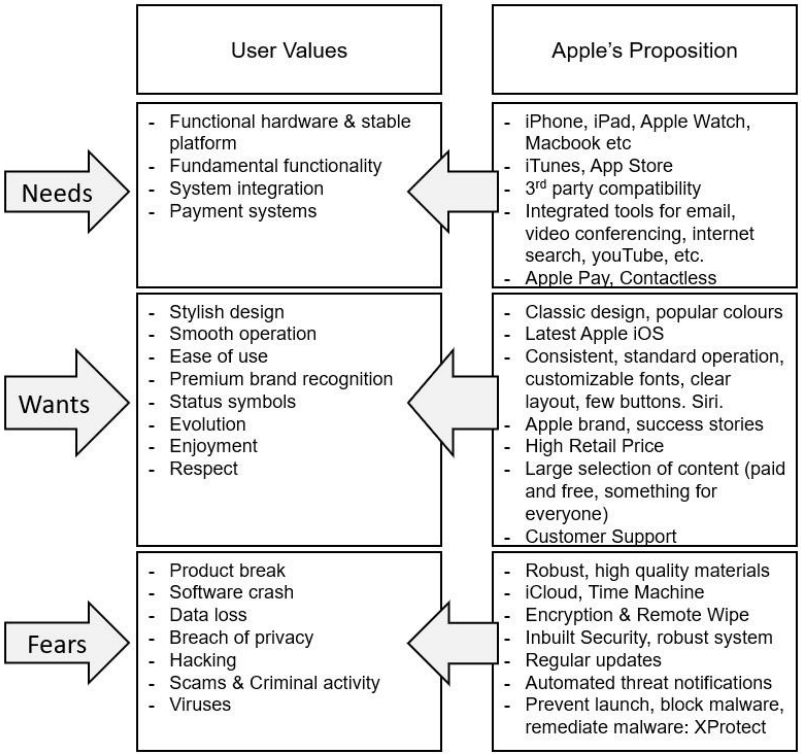

Figure 3. Example of Apple's Value Offering to its Users
Source: Authors' own content

Leveraging data is the third category in Rogers' (2016) model and is described by Apple's established position in the global market in various industries such as telecommunication devices, personal computers, software, media and so on, which has created opportunities for cross platform integration and subsequent mass data gathering. With over 1.4 billion active devices, most of which are connected to the internet and consist of multitudes of sensors and processing capability, creates an abundance of data opportunities for Apple to leverage. This can include gathering biometric data from consumers' Apple Watch to generate new marketing leads, such as understanding customer trends in fitness, or physical health and could lead to an increased or decreased request for development of associated apps, and multimedia. Additionally, big data can be leveraged to increase relevance in targeted advertising.

In terms of using the 5 Domains of Digital Transformation model to analyze a company, in this study the model encompassed a wide area of the success factors that drive agility in Apple Inc, but perhaps did not produce a holistic picture. For example, other categories were determined through coding, such as 'cohesive strategy objectives', 'talent engagement and operations' and their 'culture of communication and reporting lines'.

6. CONCLUSION

This paper represents the initial stages of a long-term study in the identification of digitalization as a form of business agility. It seeks to demonstrate how large enterprises such as Apple Inc has utilized digital technologies in order to respond to shifts in macro and micro economic conditions.

In particular, we determined several success factors such as the five domains originally listed in Rogers' 2016 model, but also identified other factors such as leveraging cohesion in corporate strategies and creating a unique and communicative corporate culture. Therefore, at this time, we suggest that Rogers' model might not produce a holistic picture, and that other equally important domains may exist outside of its scope. However, limitations of this study include a relatively small data sample size. Consequently, in the future we will increase the size of raw data for analysis by drawing on a greater selection of literature and by utilizing other research methods such as interviews and focus groups. We also intend to investigate more companies from different industries, and examine whether the success factors for large enterprises are also true for SMEs.

ACKNOWLEDGMENT

This study was conducted as part of a doctoral program at the Bucharest University of Economic Studies.

REFERENCES

Antikainen, M., Lammi, M. and Balatsas-Lekkas, A. (2019). How to Create a Sustainable Value Proposition in Logistics? *Proceedings of the ISPIM Innovation Conference. Celebrating Innovation: 500 Years since daVinci. Florence, Italy. 16-19 June, 2019*. Available from: https://www.researchgate.net/publication/334231363_How_to_create_a_sustainable_value_proposition_in_logistics

Attaran, M. (2004). Exploring the Relationship between Information Technology and Business Process Reengineering. *Information & Management. 41*. 585-596. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0378720603000983

Bakar, H. A., Razali, R. and Jambari, D. I. (2021). Legacy Systems Modernization for Citizen-Centric Digital Government. *Sustainability. 2021. 13, 13112*. Available from: https://doi.org/10.3390/su132313112

Bernardes, E. S. and Hanna, M. D. (2009). A Theoretical Review of Flexibility, Agility and Responsiveness in the Operations Management Literature. *International Journal of Operations and Production Management. 29(1),* 30-53. Available from: https://www.emerald.com/insight/content/doi/10.1108/01443570910925352/full/html

Edu, S. A., Agoyi, M. and Agozie, D. Q. (2020). Integrating Digital Innovation Capabilities Towards Value Creation: A Conceptual View. *International Journal of Intelligent Information Technologies. 16(4),* 37-50. Available from: https://www.igi-global.com/gateway/article/262978

European Securities and Markets Authority. (2022). Russian War Adds Uncertainty and Volatility to EU Financial Markets. *Press Release*. Retrieved: 22/Oct/2022 from https://www.esma.europa.eu/sites/default/files/library/esma71-99-2006_press_release_trv_2_2022_russian_war_adds_uncertainty_and_volatility_to_eu_financial_markets.pdf

Fernandez, D. and Aman, A. (2021). The Challenges of Implementing Robotic Process Automation in Global Business Services. *International Journal of Business and Society. 22(3)*, 1269-1282. Available from: https://publisher.unimas.my/ojs/index.php/IJBS/article/view/4301

Gatan, L., Vlad, C. I., Ishida, H., Takahashi, T and Kaneko, H. (2021). Using Cognitive Technology to Drive HR Transformation at INTEC in Japan. *Review of International Comparative Management. 22(2)*, 193-203. Available from: https://www.rmci.ase.ro/no22vol2/05.pdf

Goldman, S. L., Nagel, R. N. and Preiss, K. (1995). *Agile Competitors and Virtual Organizations – Strategies for Enriching the Customer.* Van Nostrand Reinhold, London.

Gupta, N. and Agrawal, R. (2020). Application and Techniques of Opinion Mining. In Bhattacharyya, et al. (Ed.), *Hybrid Computational Intelligence. Challenges and Applications. A*

volume in Hybrid Computational Intelligence for Pattern Analysis and Understanding (pp. 1-23). Academic Press.

Hassan, A. (2012). The Value Proposition Concept in Marketing: How Customers Perceive the Value Derived by Firms – A Study of Customer Perspectives on Supermarkets in Southampton in the United Kingdom. *International Journal of Marketing Studies. 4(3),* 68-87. Available from: https://www.ccsenet.org/journal/index.php/ijms/article/view/17696

iProperty Management. (2022, August 3rd). Airbnb Statistics. Retrieved: 26/Oct/2022 from https://ipropertymanagement.com/research/airbnb-statistics

Law, K., Takahashi, T., Vlad, C., Kokusho, K. and Iqbal, S. (2021). Gauging Reactions to Remote Working at IBM Japan During the Period of COVID-19. *Business Excellence and Management. 11(2),* 168-181. Available from: https://beman.ase.ro/special_issue_2/13.pdf

Lica, M. D. (2020). Business Agility – the Key for Binding Innovative Solutions in an IT Organization. *Proceedings of the 3rd International Conference on Economics and Social Sciences. Innovative models to revive the global economy. Oct 15-16, 2020*. Available from: https://doi.org/10.2478/9788395815072-076

Martinez, V. and Bititci, U. S. (2006). Aligning Value Propositions in Supply Chains. *Journal of Value Chain Management. 1(1),* 6-18. Available from: https://www.inderscienceonline.com/doi/abs/10.1504/IJVCM.2006.009020

Northern Trust Asset Management. (2020). *Navigating Extended Periods of Volatility.* Retrieved: 22/Oct/2022 from https://cdn.northerntrust.com/ma/am/Institutional/APAC/EMS/Navigating_Extended_Periods_of_Volatility_Paper.pdf

OECD. (2021). *The Digital Transformation of SMEs.* OECD Library. https://doi.org/10.1787/20780990

Rogers, D. (2016). *The Digital Transformation Playbook. Rethink Your Business for the Digital Age.* Columbia Business School Publishing.

Sharfi, H. and Zhang, Z. (2001). Agile Manufacturing in Practice. Application of a Methodology. *International Journal of Operations and Production Management. 21(5/6),* 772-794. Available from: https://doi.org/10.1108/01443570110390462

Szymkowiak, A. (2019). Marketing in Online Sales Funnels. In. Pietrzykowski, M. (Ed.*): Fostering Entrepreneurial and Sales Competencies in Higher Education.* Bogucki Wyd. Nauk., Poznan 2019. (pp. 67-75). Available from: http://bogucki.home.pl/repozytorium/9788379862801-5.pdf

Wade, M. (March 2018). Psychographics: The Behavioural Analysis that Helped Cambridge Analytica Know Voters' Minds. *IMD*. Retrieved 26/Oct/2022 from: https://www.imd.org/contentassets/71dc4105f07346979d6741809759763c/tc018-18.pdf

Walker, R. (2016, July 6). Robotic Process Automation Slashes IT Costs, Alleviates Complexity. *The Wall Street Journal*. Retrieved: 23/Oct/2022 from https://deloitte.wsj.com/articles/robotic-process-automation-slashes-it-costs-alleviates-complexity-1467777743

Yoshino, N. (2016). Major Challenges Facing Small and Medium-sized Enterprises in Asia and Solutions for Mitigating Them. *ADBI Working Paper Series*. Retrieved: 22/Oct/2022 from https://www.adb.org/sites/default/files/publication/182532/adbi-wp564.pdf