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### BUSINESS DIGITAL TRANSFORMATION IN THE DATA-DRIVEN ECONOMY: ENHANCING VALUE WITH AI SERVICES

Yulia STUKALINA<sup>®\*</sup>, Olga ZERVINA<sup>®</sup>

Faculty of Transport and Management, Transport and Telecommunication Institution, 1 Lomonosova str., LV-1019, Riga, Latvia

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**Abstract.** The purpose of the paper is to explore cutting-edge AI-based solutions applied for providing a multi-business company with the capability to increase business value in the agenda of digital transformation. The main elements of a scale-up business strategy, where AI creates business value, are identified and described. The methodology includes secondary research involving reviewing and interpretation of secondary data, analysis of publicly available statistical data, and a case study for providing factual evidence from a specific example – the company, which is one of the best illustrations of business digital transformation. The conducted research shows that today, data has become key resource for data-driven business model innovation and maximizing business value. The results are supposed to contribute to the debate what AI means for business leaders in the agenda of developing a scale-up strategy, and how they would benefit from building an AI-powered company.

Keywords: digital economy, data, business value, Artificial Intelligence (AI).

JEL Classification: O3.

### Introduction

Growing digitalization of the modern knowledge-based economy is transforming the way people do business and communicate (United Nations Conference on Trade and Development [UNCTAD], 2021). It is quickly changing business practices and boosting innovation and modernization in all business segments (OECD, 2019, 2021). Data and data flows contribute to addressing burning economic and social challenges, including the issues that are associated with the Sustainable Development Goals (UNCTAD, 2021); the accomplishment of them being an essential pre-requisite for generating a company's competitive (The Sustainable Development Goals Report, 2021).

Digital innovation is reformatting companies and entire industries through disrupting business operational models and providing an assortment of opportunities for both businesses and policy-makers (World Economic Forum, 2018). Digital transformation (DT) associated with the usage of digital technologies significantly modifies customers' behaviours and expectations as well (Verhoef et al., 2021). The seven technologies, which are transforming the industries to a considerable degree include Artificial Intelligence, big data analytics and cloud, Internet of Things and connected devices, Social media and platforms, robots and drones, autonomous vehicles, custom manufacturing and 3D printing (World Economic Forum, 2018).

The cost of cutting-edge technologies is decreasing, so new advanced applications are available that can be combined in innovative ways, their synergy exceeding their capabilities when used separately (ibid.). However, digital enterprises need more deep changes than just investing in the up-to-date digital technologies; they also have to basically transform the way they create new business ventures, use the lean approach to main and support business processes, develop employees' digital skills (building "digital workforce"), and employ "digital traction metrics" instead of traditional key performance indicators (KPIs) for assessing the performance (World Economic Forum, 2016).

The purpose of the article is to explore cutting-edge AI-based solutions applied for providing a multi-business company with the capability to increase business value in in the agenda of digital transformation. To accomplish this aim, the following objectives were formulated:

<sup>\*</sup> Corresponding author. E-mail: Stukalina.J@tsi.lv

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- Discussing the place of global digital platforms that support data value chain.
- Exploring strategic data-driven solutions developed by the case company for different areas and industries.
- Exploring the case company's Artificial Intelligence and Machine Learning (ML) services that are based on an all-inclusive cloud platform – as best examples of using AI in business in the agenda of digital transformation.
- Based on the Amazon.com case, identifying the main elements of a scale-up business strategy, where AI creates business value.

### 1. Methodology and research design

In the paper, the authors used a multi-method approach. The methodology of the research includes 1) secondary research, involving reviewing and interpretation of secondary data; 2) analysis of statistical data – using and interpreting statistics from a number of sources; 3) analysis of the Amazon.com case study for providing factual evidence from a specific example – the multi-business company that is one of the best illustrations of business digital transformation.

The choice of the above methods was determined by the nature of the study (exploratory), main research aim and assocciated supporting objectives.

To understand the context, in which AI is applied, the author reviewed the literature and previous research on the topic. Recent work about digital business transformation has been mainly dedicated on exploring related challenges, benefits and accompanying trends. The purpose of the review of related work and specialized literature was to familiarize the readers with the research issue and the rationale for exploring this issue. In the paper, different interconnected aspects of the phenomenon under observation are examined.

Statistical data was utilized to investigate some trends, patterns, and relationships in the context of business digital transformation. The authors analysed quantitative data that were available from trusted statistics portals – most commonly used secondary data sets within the social sciences.

The Amazon.com case study was conducted to explore strategic data-driven solutions developed by Amazon.com for different industries, mainly AI and ML services based on an all-inclusive cloud platform – as best examples of using AI in business. The rationale for choosing the company was its status of a global digital platform and one of the best illustrations of business digital transformation. For analysis, the authors used publicly available information from the company's website.

The paper is structured in the following sections. In the Introduction, the actuality of research topic, the aim and objectives of the study, as well as research methodology are described. In the second section, the authors provide a review of related work and specialized literature on the research topic. In the third section, the results of the analysis of statistical data and Amazon.com case study are presented. In the same section, a framework for scaling up in the digital transformation age is provided. In the concluding section of the paper the main conclusions, limitations of the study and implications for further research are discussed.

#### 2. Related work and literature review

# 2.1. Business digital transformation: new standards and attitudes to economic and business development

Today, digital business has become a prevalent economic segment (Wirtz, 2021). Remaining competitive in the global stormy environment requires from a modern company to go through an inclusive digital transformation (Sacolick, 2017).

Companies are now deploying various digital solutions that provide additional opportunities for transforming their products and services, innovation being regarded as the nonstop introduction of new technologies, business models and communications approaches (Chaffey, 2011; Chaffey et al., 2019). This is determined by the necessity to increase customer value as a response to growing demand for better-quality products and services in the agenda of markets internationalization (Morabito, 2016; Presser et al., 2018; Aagaard, 2018). Digital transformation allows creating value in collaboration with consumers over digital ecosystems and platforms (Vaska et al., 2021).

From the business perspective (based on the pragmatic needs of businessmen to gain benefits by investing into digital solutions), digital transformation is defined as "organizational change through the use of digital technologies and business models to improve performance" (Wade, 2015). Digital transformation embraces both the service sector producing intangible goods (professional services, health care, transportation and logistics, information services, arts and entertainment, etc.) and manufacturing sector ("Industry 4.0" – digital transformation of production procedures and value creation processes).

One of the unique characteristics of digital transformation is the "exponential growth" in machine-readable information over the Internet (UNCTAD, 2019). This is associated with the digital technologies that now represent a core economic resource: data analytics, blockchain, cloud computing, Internet of Things (IoT), robotics, Artificial Intelligence (AI) (Jabłoński & Jabłoński, 2020; Maheshwari, 2019; Strømmen-Bakhtiar, 2020; UNCTAD, 2021). In the manufacturing sector, augmented value is also created through automation, Big Data, Cyber-Physical Systems, Smart Factory technologies, etc. (Gilchrist, 2016; Machado & Davim, 2020; Khan, 2021).

Business digital transformation is closely related to the company's capacity to effectively use novel technologies and advanced models for expanding their business processes (Herbert, 2017). Digital transformation initiates new standards and attitudes to economic and business development, having a strong economic effect (OECD, 2019); it "outruns the technology" itself, as it is more about dealing with emerging challenges through generating a competitive digital capability (Herbert, 2017; Vaz, 2021).

This can be done by utilizing new cost-efficient business models and developing more efficient business procedures practices, this way creating more customer value (Herbert, 2017).

Thus, digital transformation presupposes a more inclusive digitalization experience as ever before; it also transforms customer relations and operations and brings about crucial; changes in business structures, the management of the digital transformation being a serious challenge for any company (Klein, 2020). A real "digital enterprise" continuously endeavours to empower novel and "leaner-operating" models reinforced by agile business procedures, linked digital platforms, analytics and cooperation capabilities for increasing performance, new customer-centric and employee-centric digital business models being enabled (World Economic Forum, 2016). Therefore, the use of digital solutions by modern businesses can be regarded as a strategic tool linked to the company's overall strategy.

# 2.2. Digital transformation and the role of an efficient digital strategy

Digital transformation forces business leaders re-evaluate the way they develop a strategy aimed at achieving a competitive advantage (Rogers, 2016). As many enterprises are now "experimenting" with digital transformation, current research prove that the improved competitive positioning of successful companies is not only dependent on the ICTs they use, but on the strategies that they develop and implement (Ismail et al., 2017).

The business of global digital platforms is also about the platform strategies they develop and implement – the strategies that enable them to sustain their dominance in the international market (UNCTAD, 2021).

The main elements of a digital business strategy include (Chaffey et al., 2019):

- Business priorities.
- Restructuring type.
- Differentiation/positioning policies.
- Revenue models.
- Business models.

The business models involve data- and technologyenhanced models, advancements in ICTs making data monetization – the cost of storage, real-time data gathering, analytics and decision making – more affordable (World Economic Forum, 2016). So, as companies need to make investment decisions much faster, a bigger emphasis is put on the decisions supported by data and analytics (UNCTAD, 2021).

The concept of a unified strategy associated with a single long-term strategy is out-of-date; companies have to constantly launch new strategic initiatives (including

digital solutions) and use several transient competitive ad-vantages (World Economic Forum, 2016), as many causal impacts govern the decisions managers take in terms of designing various strategic initiatives in the modern business environment (Stukalina, 2013). The following shifts should be made (World Economic Forum, 2016): allow experimenting and concentrate on experiences; focus on solutions to emerging problems, research and repeat if necessary; systematically support early-stage innovation; create durable relationships and networks based on digital innovations.

Thus, implementing digital business models developed in the frame of an effective digital strategy will demand a number of strategic digital solutions for revolutionizing the company's business processes: big data analytics and cloud technologies, Internet of Things, robotics, etc. As Artificial Intelligence in business is prevalent both directly and indirectly (Anderson & Coveyduc, 2020), it plays a leading role in improving the quality of decision-making through extending human capabilities (Phillips-Wren & Jain, 2016).

## 2.3. The importance of integrating Artificial Intelligence into a digital business strategy

In business, Artificial Intelligence is used for considerably transforming existing business models and generating new models (Akerkar, 2019; Rose, 2020; Frockman, 2020; Jha, 2020).

Understanding specific business benefits of adopting AI adoption is crucial for a company's success, since they are closely linked with the business objectives (Enterprise AI Guide, 2019). For business, AI provides the following benefits (Akerkar, 2019):

- Dealing with enormous amounts of data and discovering valuable patterns in huge volumes of data of any category to be used in self-learning models.
- Making better decisions by increasing value of the data and moving to the "prescriptive analytics".
- Through better visualization and transparency of data interpreting and use data.
- Segmenting customers optimally through recognizing archetypes.
- Offering novel business models and stimulating value creation by speeding up innovation.

For business executives, one of the main AI benefits is its applicability for analysing big databases, this way creating a foundation for the decision-making (Buntak et al., 2021) by applying analytical tools to unstructured data (e.g. Fuzzy Logic, Intelligent Agents, Artificial Neural Networks, Agent Teams, Case-Based Reasoning, decision support systems, etc.), developing generalized solutions and discovering connotations in the information obtained from numerous sources (Phillips-Wren & Jain, 2016). Business leaders are faced with the necessity to integrate AI-related technologies into their business procedures (Medicine, 2021).

In other words, AI-based solutions must be incorporated companies' business strategies – as strategic initiatives (projects) launched in the frame of strategic priorities identified in the course of the market analysis. Using a strategic approach to Artificial Intelligence, business leaders can focus their AI efforts in the areas that would deliver the maximum value for the company (Akerkar, 2019). Owing to machine learning capabilities, any data, which AI is provided, will enable executives to make optimal predictions and decisions (Medicine, 2021).

In view of the above, AI is supposed to be key to generating a company's competitive advantage through establishing unique value proposition supported by huge amounts of data, which are collected, processed, stored and used by business organizations.

### 3. Main trends, patterns and relationships in the context of business digital transformation

In this section, the main trends, patterns and relationships in the context of business digital transformation are discussed based on the available statistics.

Business organizations worldwide are continuously investing in information technologies and services to speed up growth and efficiency (Figure 1). Adoption rate of emerging technologies in organizations worldwide is reflected in Figure 2.

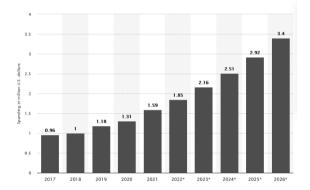


Figure 1. Spending on digital transformation technologies and services worldwide from 2017 to 2026 (in trillion U.S. dollars) (source: Statista, 2023a)

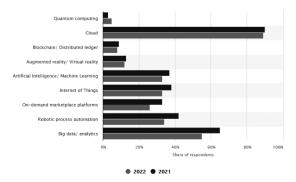


Figure 2. Adoption rate of emerging technologies in organizations worldwide from 2021 to 2022 (source: Statista, 2023b)

Developing the appropriate technological capabilities is the first step in an organization's digital transformation (World Economic Forum, 2016). Digitalization leads organizations to modify their business models with the support of several digital technologies, especially the Internet (Klein, 2020). So, digital business can be defined as the trans-formation of key business processes through the use of Internet technologies (via digital platforms) (Chaffey et al., 2019).

In the data-driven economy, the majority of digital business applications are available via the Internet; so, the importance of the Internet and digital data for the modern economy and society is increasing. The number of Internet activities undertaken by individuals in different countries is constantly growing, which leads to further development of digital businesses worldwide (UNCTAD, 2021).

The COVID-19 pandemic brought about a dramatic increase in the use of digital technologies owing to the social distancing rules and national lockdowns (De et al., 2020). It has also influenced Internet traffic considerably, as the majority of activities occurred online (UNCTAD, 2021).

In view of the above, the significance of the Internet and digital data for economies and societies is growing, especially in terms of e-commerce developments. In this context, companies worldwide are concerned about how to use the benefits of digital business for generating more value to their organizations, which can be done through reaching to a larger customer base and stimulating customer loyalty, reducing costs due to electronic delivery of services (Chaffey et al., 2019).

In the agenda of business digital transformation, data is collected by different means. From 2015 to 2020, there has been a considerable increase of the number of digital platforms that can collect data at a massive scale - from fifty to one hundred fifty; major hybrid platform companies such as Amazon are now dominating the market (controlling both innovation and transaction platforms) (Acs et al., 2021). A platform generates the whole network of data, users and functionality that grows exponentially and creates a loyal community of consumers (Cusumano et al., 2019). Platform-based ecosystems are global in nature, having billions of users and millions of mediators (Sussan & Acs, 2017). These platforms offer enormous potential for innovation and the provision of "next-generation services" (World Economic Forum, 2016). Digital (internet-based) "multisided" platforms provide more opportunities for value creation, value capture and innovation – the so-called "platformization" (Acs et al., 2021).

Thus, global digital platforms that can collect data at a massive scale play a central role in all stages of the socalled "data value chain"; using the Internet-based technologies they can considerably enhance data generation and data flows, this way accomplishing a competitive advantage (UNCTAD, 2021).

Lately, top digital platforms have witnessed a noteworthy increase in their revenues (Figure 3).

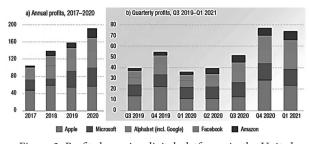


Figure 3. Profits by major digital platforms in the United States/billions of dollars (source: UNCTAD, 2021)

Digital platforms that handle massive data are now enhancing their market power in the data value chain with the help of acquiring start-ups (UNCTAD, 2019). They also invest heavily in Artificial Intelligence; this helps them utilize and manage data in the most efficient way and enrich customer experience (UNCTAD, 2021). Business data and Artificial Intelligence are interconnected, so the business and technology can evolve together (Medicine, 2021).

AI-based technologies are now being applied in manufacturing, marketing and promotion, research and development, quality management, etc. (Buntak et al., 2021). In many companies worldwide, AI is already driving revenue growth – the best examples being Netflix, Alibaba Group, Rolls-Royce, General Electric, Lancôme, Amazon (Candelon & Stokol, 2021). The number of companies – largest patent owners in Machine Learning and Artificial Intelligence – is constantly growing. Digital platforms that handle massive data are now enhancing their market power in the data value chain by acquiring start-ups (UNCTAD, 2019). The number of acquisitions of AI start-ups from 2016 to 2021 is shown in Figure 4.

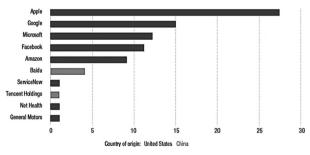


Figure 4. Number of acquisitions of AI start-ups/top ten acquirers: 2016–2021 (source: UNCTAD, 2021)

The above data proves that Artificial Intelligence demonstrates increasing potential in terms of both improved business systems and processes.

### 4. Amazon.com: scaling up in the digital transformation age

The Amazon.com case study investigates the way a successful multi-business company and a recognized innovator uses original AI-based solutions for supporting implementation of its scale-up business strategy with a strong emphasis on multi-functional and trans-industrial aspects. Over the course of years, Amazon com. has developed into a global digital platform, becoming a real "technology" company, whose business operations are focused on simplifying online transactions for consumers. Over time, Amazon has demonstrated an increase in global net revenue (Figure 5), following the "customercentric" business strategy (Amazon's 2021 Sustainability Report, 2022).

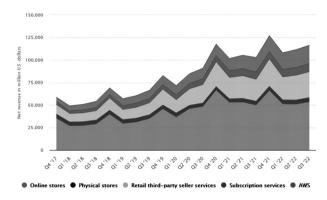


Figure 5. Global net revenue of Amazon.com from 4th quarter 2017 to 3rd quarter 2022, by product group (in million U.S. dollars) (source: Statista, 2023c)

Their exponential growth emerges from the control of such strategic services as retail, subscription, logistics, advertising, etc., which are instrumental to producing, distributing and selling goods. The scope of Amazon's digital strategy involves trans-functional and trans-industrial aspects, digitization of services and products and the accompanying information (Bharadwaj et al., 2013). The strategy scope is extensive, since their strategy embraces several value chains and industries that are sustained by unique digital solutions. Their scale-up business strategy aimed at sustaining their global competitive advantage is based on technological innovation and own digital infrastructure (Bharadwaj et al., 2013).

In the frame of their scale-up business strategy, a set of strategic sustainability-related initiatives (projects) are being implemented; among the most "continue to be heard" are supporting small and medium businesses (SMBs) selling in Amazon's Store (\$30 billion investment in 2019 and 2020), renovating transportation network utilizing novel technologies, alternative fuels and delivery procedures, transition to the use of renewable energy only in the frame of "the Climate Pledge Initiative" started in 2019, introducing "sustainable packaging" ("smart packaging for e-commerce"), launching new certifications such as CarbonNeutral product, Carbon Neutral Certification, Carbon Trust Carbon Neutral Certification, delivering Amazon Technical Academy tuition program (\$12 million investment in 2020) and Amazon Future Engineer Program (\$50 million investment in 2020).

In the agenda of implementing a scale-up business strategy with a strong focus on trans-functional and trans-industrial aspect, Amazon offers a variety of strategic data-driven solutions to different industries (Table 1).

Table 1. AWS (Amazon Web Services) solutions for different industries (source: Amazon.com, 2023a)

Industry	Solution
Marketing and advertising	Solutions for modernizing data sharing, advertising intelligence and customer experience through machine learning (ML) and analytics know-hows
Finance	Solutions for capital markets, banking, payments and insurance, enabling organizations to modernize their own infrastructure for stimulating business growth
Energy	Solutions for accelerating the transition to more sustainable energy consumption, offering the broadest and deepest cloud platform
Automotive	Purpose-built automotive solutions for software-defined vehicle, connected mobility, autonomous mobility, product engineering, manufacturing, supply chain, digital customer engagement, etc.
Manufacturing	Smart products manufacturing solutions and solutions for distributing products through an internationally linked distribution network, employing advanced automation, ML, AI, robotics
Retail	Smart store solutions, digital commerce solutions, intelligent supply chain solutions, employing Internet-of-Things, AI, ML, edge computing, cloud computing
Education	AWS Educate: free online learning mo- dules on cloud computing, Amazon Day One blog
Game Tech	Game production in the cloud, game analytics and big data, game service and networking, etc.
Healthcare	Healthcare solutions such as artificial intelligence-generated imaging model, AWS-powered chatbots, AWS-powered data resources, etc.
Consumer Packaged Goods	AI-based solutions for accelerating decision-making, moving companies' IT infrastructure to the cloud, connecting different data sources, etc.
Telecommu- nications	Solutions including advanced and secure cloud infrastructure for "cloudifying" businesses, operations support system and business support system

As seen from the Table 1, among various strategic digital solutions, unique AI-based solutions developed by Amazon play a very special role. Some of them were created in a strategic partnership with Intel Corporation. AWS and Intel have a more than fifteen-year relationship in terms of designing, building and supporting cloud ser-vices, which helps to improve business outcomes by better managing cost and complexity and enabling scaling to satisfy both current and future needs. As for cooperation in the area of finance, Amazon is partnering with Goldman Sachs – the investment bank that offers loans to US customers and lines of credit of up to \$1 million to traders selling on Amazon. Seeking partners with complimentary capabilities is an essential element of Amazon's scale-up business strategy.

For Amazon, the above exclusive AI-based solutions present new opportunities for getting such gains as costefficiency and productivity through a) encouraging research and product/service innovation at Amazon; b) enhancing customer experience and improving customer service at Amazon; c) improving security of the company's operations; d) optimizing supply chain processes in the company (Enterprise AI Guide, 2019). As a result, Amazon's sustainability-related initiatives integrated in their business strategy are supported by the company's original AI technologies. Thinking strategically, the company offers various AI-based business solutions to other enterprises across many industries worldwide.

So, Amazon Web Services (AWSs) provide a wide range of AI and Machine Learning services for any business. AWS AI capabilities are based on an all-inclusive cloud platform that is optimized for Machine Learning (Enterprise AI Guide, 2019). There are numerous powerful applications that AI has at Amazon, which are applied for addressing both general business issues (increasing customer experience and engagement, improving safety and security, optimizing business procedures, accelerating innovation, etc.) and specific problems of a particular enterprise based on its business needs ("purpose-built" AI services). The so-called "AWS pre-trained AI Services" provide ready-made intelligence for various business applications. In Table 2, AWS AI Services are summarized.

Table 2. AWS AI Services (source: Amazon.com, 2023b)

AI services	Examples	Description
Avanced text analytics	Amazon Com- prehend	A natural-language processing (NLP) service using ML to discover valuable insights and connections in texts
Automated text reviews	Amazon CodeGuru	A developer tool offering intelligent recommendations for improving code quality, application performance
Chatbots	Amazon Lex	AI service with innovative natural language models for designing, building, testing and installing conversational interfaces
Demand forecasting	Amazon Forecast	A forecasting service designed for business metrics analysis
Document analysis	Amazon Textract	A tool for automatically extracting printed text, handwriting and data from any text
Enterprise search	Amazon Kendra	An intelligent search service run by ML enabling an enterprise's employees and customers effortlessly find the required content

AI services	Examples	Description
Fraud prevention	Amazon Fraud Detector	A fully managed service allowing customers to identify potentially untrustworthy activities
Image and video analysis	Amazon Rekognition	A tool offering pre-trained and customizable computer vision capabilities for taking out information from images
Personalized recommen- dations	Amazon Personalize	A tool enabling developers to create applications used for delivering a wide array of personalization experiences, etc.)
Real-time translation	Amazon Translate	A neural machine translation service delivering affordable, high-quality, fast and customizable language translation
Text to speech	Amazon Polly	A service converting text into life-like speech
Trans- cription	Amazon Transcribe	A tool for converting speech to text

End of Table 2

In Table 3, AWS Machine Learning Services for developers, business analysts and data scientists are summarized.

Table 3. AWS (Amazon Web Services) solutions for different industries (source: https://aws.amazon.com)

ML service	Description
Amazon	A tool for preparing data, generating
SageMaker	accurate ML predictions and improving
for Business	cooperation through sharing models and
Analysts	datasets with data scientists
Amazon SageMaker for Data Scientists	Integrated development environment for the ML life-cycle, enabling to access data from various data sources and enhance productivity with purpose built-tools
Amazon	Streamline the machine learning lifecycle
SageMaker	for building continuous integration and
for MLOps	delivery pipelines to decrease model
Engineers	management overhead

In view of the above, it is observable that at Amazon.com (which has become a global digital platform), they are using an innovative approach to creating and executing a customer-centric digital business strategy, which incorporates both technology and organizational procedures for designing and providing original services to a broad range of consumers (Digital transformation checklist, 2017). It is determined by the importance of the Internet and digital data for the modern economy, especially regarding e-commerce expansions.

Based on the conducted analysis it can be concluded that Amazon's digital business strategy is characterized by the following features:

- It is focused on scaling up performance for sustaining their universal competitive advantage.

- Its extensive scope covers both trans-functional and trans-industrial aspects, including various value chains and industries.
- The main elements of scaling up are as follows:
  1) technological innovations (advanced digital solutions);
  2) own resource team (researchers, designers, experts, managers, educators);
  3) original sustainability-related initiatives supported by own resources and digital technologies;
  4) strategic partnerships that allow sharing resources and risks;
  5) brand commercialization through offering innovative digital services to other businesses (Amazon Web Services based on cloud computing, providing a reliable, effortlessly available and low-cost infrastructure platform for enterprises internationally).

As regards Amazon Web Services, cutting-edge AIbased solutions (provide ready-made intelligence for various business applications) play the most important role in terms of enhanced performance and improved business processes, demonstrating a high potential for future success. Amazon's scale-up strategy elements are presented in Figure 6.

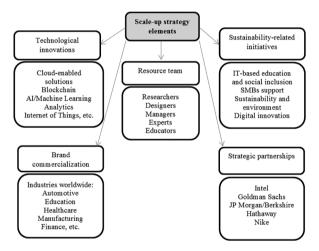


Figure 6. Amazon's scale-up strategy elements: where AI creates business value (source: author's construction based on the Amazon.com case study)

### Conclusions

The results of the study show that in the age of digital transformation, data has become key resource for data-driven business model innovation. Global digital platforms, which can manage huge amounts of data, have increased their market power in the data value chain, thanks in no small part to heavy investments in Artificial Intelligence (AI). Business data and AI are interrelated, evolving together and being mutually beneficial.

The Amazon.com case has proved the importance of developing a customer-centric digital business strategy aligned with strategic priorities, which are identified on the basis of the modern consumers' needs analysis. AIbased solutions and related web-based services are at the core of such a strategy, supporting the implementation of a scale-up business strategy characterized by a strong focus on multi-functional and trans-industrial aspects.

The main contribution of this study can be summarized as follows. The obtained results are supposed to contribute to the debate what AI means for business leaders in the agenda of developing a scale-up strategy, and how they would benefit from building an AI-powered company in the age of digital transformation.

The main limitation to the generalization of the research results is the following: the case study involved in-depth analysis of one global digital platform. A reference period - the time period for which statistical data were collected - should be extended, which would result in more precise findings.

So, further study based on the use of new data sources is required to develop a deeper understanding of how AI-based solutions and services may be integrated in a digital strategy of a successful multi-business company, which is aimed at achieving a competitive advantage in the turbulent international environment.

#### **Disclosure statement**

The authors do not have any competing financial, professional, or personal interests from other parties.

#### References

- Aagaard, A. (2018). The concept and frameworks of digital business models. In A. Aagaard (Ed.), Digital business models: Driving transformation and innovation (pp. 1-26) Springer, Cham. https://doi.org/10.1007/978-3-319-96902-2\_1
- Acs, Z., J., Song, A., Szerb, L., Audretsch, D., B., & Komlosi, E. (2021). The Evolution of the global digital platform economy: 1971-2021. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3785411
- Akerkar, R. (2019). Artificial intelligence for business. Springer, Cham. https://doi.org/10.1007/978-3-319-97436-1\_1
- Amazon sustainability 2021 report. (2022). Delivering progress every day. https://sustainability.aboutamazon.com/2021sustainability-report.pdf
- Amazon. (2023a). Cloud computing services. https://aws.amazon.com
- Amazon. (2023b). Artificial intelligence services. https://aws. amazon.com/machine-learning/ai-services/
- Anderson, J. L., & Coveyduc, J. L. (2020). Artificial intelligence for business: A roadmap for getting started with AI. John Wiley & Sons.
- Bharadwaj, A., Sawy, O., Pavlou, P., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. MIS Quarterly: Management Information Systems, 37(2), 471-482. https://doi.org/10.25300/MISQ/2013/37:2.3
- Buntak, K., Mutavdžija, M., & Kovačić, M. (2021). Application of artificial intelligence in the business. International Journal for Quality Research, 15(2), 403-416. https://doi.org/10.24874/IJQR15.02-03

Candelon, F., & Stokol, G. (2021). At these companies, AI is already driving revenue growth. Fortune. https://fortune. com/2021/05/07/artificial-intelligence-ai-revenue-growthnetflix-alibaba-spicy-snickers-lancome/

- Chaffey, D. (2011). Digital business and e-commerce management. Strategy, implementation and practice (6<sup>th</sup> ed.). Pearson.
- Chaffey, D., Hemphill, T., & Edmundson-Bird, D. (2019). Digital business and e-commerce management (7th ed.). Pearson.
- Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). The business of platforms: Strategy in the age of digital competition, innovation, and power. Harper Collins.
- De, R., Pandey, N., & Pal, A. (2020). Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. International Journal of Information Management, 55, 102171. https://doi.org/10.1016/j.ijinfomgt.2020.102171
- Digital transformation checklist. (2017). Using technology to break down innovation barriers in government. Amazon Web Services, Inc. https://d1.awsstatic.com/whitepapers/digitaltransformation-checklist.pdf
- Enterprise AI Guide. (2019). The Executive's playbook for business success with AI. Amazon Web Services, Inc. https:// d1.awsstatic.com/Intel/PDFs/AI\_Enterprise\_Guide\_Intel. pdf
- Frockman, J. M. C. (2020). Artificial Intelligence business. Debora de Marco Publishing.
- Gilchrist, A. (2016). Industry 4.0: The Industrial Internet of Things. Apress.

https://doi.org/10.1007/978-1-4842-2047-4\_10

- Herbert, L. (2017). Digital transformation: Build your organization's future for the innovation age. Bloomsbury Publishing.
- Ismail, M. H., Khater, M., & Zaki, M. (2017). Digital business transformation and strategy: What do we know so far? (Working Paper. University of Cambridge). Cambridge Service Alliance.
- Jabłoński, A., & Jabłoński, M. (2020). Digital business models: Perspectives on monetization. Routledge. https://doi.org/10.4324/9780429322679
- Jha, A. (2020). Artificial Intelligence for business leaders. Amazon Digital Services LLC.
- Khan, Sh. (Ed.). (2021). A step towards society 5.0: Research, innovations, and developments in Cloud-based computing technologies. CRC Press. https://doi.org/10.1201/9781003138037
- Klein, M. (2020). Leadership characteristics in the era of digital transformation. Business & Management Studies: An International Journal, 8(1), 883-902. https://doi.org/10.15295/bmij.v8i1.1441
- Machado, C., & Davim, J. P. (Eds.). (2020). Industry 4.0: Challenges, trends, and solutions in management and engineering. manufacturing design and technology series. CRC Press. https://doi.org/10.1201/9781351132992
- Maheshwari, A. (2019). Digital transformation: Building intelligent enterprises. John Wiley & Sons.
- Medicine, J. (2021). Artificial Intelligence for business. New Era Publishing Limited.
- Morabito, V. (2016). The future of digital business innovation. Trends and practices. Springer. https://doi.org/10.1007/978-3-319-26874-3
- OECD. (2019). Measuring the digital transformation: A roadmap for the future. OECD Publishing. https://www.oecd.org/ going-digital/measurement-roadmap.pdf

OECD. (2021). Going digital in Latvia, OECD Reviews of digital transformation. OECD Publishing. https://doi.org/10.1787/8eec1828-en

Phillips-Wren, G., & Jain, L., C. (2016). Artificial Intelligence for decision making. In Gabrys, B., Howlett, R. J., & Jain, L. C. (Eds.), Lecture notes in computer science: vol. 4252. Knowledge-based intelligent information and engineering systems (pp. 531–536). KES 2006. Springer. https:// doi.org/10.1007/11893004\_69

- Presser, M., Zhang, Q., Bechmann, A., & Belliatis, M. J. (2018). The Internet of Things as driver for digital business model innovation. In A. Aagaard (Ed.), *Digital business models: Driving transformation and innovation* (pp. 27–56). Springer, Cham. https://doi.org/10.1007/978-3-319-96902-2\_2
- Rogers, D. (2016). *The Digital transformation playbook: Rethink your business for the digital age*. Columbia University Press. https://doi.org/10.7312/roge17544

Rose, D. (2020). Artificial Intelligence for business. Pearson.

- Sacolick, I. (2017). Driving digital: The leader's guide to business transformation through technology. American Management Association.
- Statista. (2023a). *Global digital transformation spending 2026*. https://www.statista.com/statistics/870924/worldwide-digital-transformation-market-size/
- Statista. (2023b). Adoption of emerging technologies Worldwide 2022. https://www.statista.com/statistics/661164/worldwide-cio-survey-operational-priorities/
- Statista. (2023c). *Amazon: Global product net revenue by quarter 2022.* https://www.statista.com/statistics/999686/amazons-net-revenue-by-product-group-quarter/
- Strømmen-Bakhtiar, A. (2020). Introduction to digital transformation and its impact on society. Informing Science Press.
- Stukalina, Y. (2013). Management of the educational environment: The context in which strategic decisions are made. *Procedia – Social and Behavioral Sciences*, 99, 1054–1062. https://doi.org/10.1016/j.sbspro.2013.10.579
- Sussan, F., & Acs, Z. J. (2017). The digital entrepreneurial ecosystem. Small Business Economics, 49(1), 55–73. https://doi. org/10.1007/s11187-017-9867-5
- The Sustainable Development Goals Report. (2021). United Nations Publications. https://unstats.un.org/sdgs/report/2021/ The-Sustainable-Development-Goals-Report-2021.pdf

United Nations Conference on Trade and Development. (2019).

Digital Economy Report 2019: Value creation and capture: Implications for developing countries. UNCTAD. United Nations Publications. https://unctad.org/system/files/officialdocument/der2019\_en.pdf

- United Nations Conference on Trade and Development. (2021). Digital economy report 2021. Cross-border data flows and development: For whom the data flow. UNCTAD. United Nations Publications. https://unctad.org/system/files/officialdocument/der2021\_overview\_en\_0.pdf
- Vaska, S., Massaro, M., Bagarotto, E., & Dal Mas, F. (2021). The digital transformation of business model innovation: A structured literature review. *Frontiers in Psychology*, 11, 1–18. https://doi.org/10.3389/fpsyg.2020.539363
- Vaz, N. (2021). Digital business transformation: How established companies sustain competitive advantage from now to next. John Wiley & Sons.
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Fabian, N., Haenleinc, M., & Qi Dong, J. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901. https:// doi.org/10.1016/j.jbusres.2019.09.022
- Wade, M. (2015). A conceptual framework for digital business transformation. Global Center for Digital Business Transformation: An IMD and Cisco Initiative. https://www.s-ge. com/sites/default/files/static/downloads/digital\_business\_ transformation\_framework\_imd\_0.pdf
- Wirtz, B. W. (2021). Digital business and electronic commerce: Strategy, business models and technology. Springer, Cham. https://doi.org/10.1007/978-3-030-63482-7
- World Economic Forum. (2016). Digital transformation of industries: Digital enterprise. White Paper, January 2016. https://reports.weforum.org/digital-transformation/wpcontent/blogs.dir/94/mp/files/pages/files/digital-enterprisenarrative-final-january-2016.pdf
- World Economic Forum. (2018). Digital transformation initiative in collaboration with Accenture: Executive summary. http://reports.weforum.org/digital-transformation/wp-content/blogs.dir/94/mp/files/pages/files/dti-executive-summary-20180510.pdf