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Rudiments of Sustainable Competitive Advantage in the Digital Age

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Abstract

Theoretical background: Progressive digitalization fundamentally changes companies' strategies, business models, and operational activities directed to the achievement of sustainable competitive advantage and maximization of long-term company value. The recent COVID-19 pandemic has spurred even further an unprecedented acceleration in the development of digitalization processes in virtually all areas of the economy. The changed competitive reality requires modification of existing and development of new rules and tools of strategic management that will help contemporary companies to cope with the challenges associated with the new competitive landscape. The views on the ways of building a competitive advantage dominating in the literature on the subject become questionable in the light of changes related to the digitalization of the economy. In this context, the issue of defining the term "competitive advantage" in new conditions and its sources, first of all, the role of knowledge in shaping it, is of particular importance.
Purpose of the article: This article aims to define sustainable competitive advantage and identify its sources in the digital economy. It also refers to the issue of new tools and areas of strategic analysis that companies should implement to formulate their strategies.
Research methods: The considerations in the article are presented on the background of the extensive integrative literature review. The article uses the method of critical analysis and synthesis of opinions of other authors as well as logical inference.

Main findings: The progressive digitalization of the economy fundamentally changes how modern organizations pursue competitive advantage as part of the implemented strategy. A sustainable competitive advantage should be equated with creating and capturing value rather than beating competitors. A prerequisite for sustainable competitive advantage is the development and application of innovative knowledge that creates essential value for customers in the long term. Strategic analysis in the digital age should embrace consumer needs, the organization's network connections and data flow, the structure of platforms and digital ecosystems, the revenue streams in networks, the types of a network, and learning effects.

Introduction

In recent years, we have witnessed many significant changes in the operating conditions of companies. These include the digitalization of the economy, the growing importance of social responsibility, and the concept of sustainable development in business strategy. Trends connected with digitalization have been around for a long time, are now accelerating, and have a measurable and growing direct impact on all aspects of reality. The recent COVID-19 pandemic has spurred an unprecedented acceleration in the development of digitalization processes in virtually all areas of the economy and society. Many digital companies have significantly scaled up their operations during the pandemic. GAFAM companies (Google-Alphabet, Apple, Facebook, Amazon, and Microsoft), which created the most extensive infrastructure based on platform ecosystems, have benefited from significant earnings gains during pandemic months. At the same time, airlines, hotel chains, restaurants, and millions of other small businesses are struggling to survive in the face of the COVID-19 pandemic (Sasikumar & Sersia, 2020). Digital transformation is changing the way individuals, social groups, and other actors interact with each other. It raises several pressing issues about work and skills, privacy and security, education, health, and other social areas. Digitalization is an important source of entrepreneurship, lowering barriers to entry and having a broader impact on the business environment by reducing transaction costs, increasing price transparency, and improving the efficiency of various processes. Progressive digitalization fundamentally changes modern companies' strategies, business models, and operational activities to achieve their primary goal, maximizing long-term value (Faulkner & Cambell, 2006; Jensen, 2002).

The main area of research within strategic management is to explain the sources of competitive advantage. Leading strategic management theories explain the origins of superior results in various ways. The economy's digitalization has changed the way competitive advantage is created. The examples of many companies that have quickly dominated several markets, dethroning incumbent leaders in the rankings of the most valuable global companies, are evidence of that change. The unprecedented success of these companies in creating and capturing value indicates that the digital economy has significantly changed sources of competitive advantage and its dynamics. Nowadays, companies that gain lasting consumer acceptance due to continuous innovation in the value proposition facilitated by implementing broadly understood digital tools attain a sustainable competitive advantage. The changed operating conditions require modification of existing and development of new rules and tools of strategic management that will help contemporary companies to cope with the challenges associated with the new competitive reality.

This article aims to define sustainable competitive advantage and identify its sources in the digital economy. The article also refers to the issue of new tools and areas of strategic analysis that help formulate the company's strategy. Thus, the paper aims to join the discussion on the theory of competitive advantage, which is one of the basic constructs of strategic management. The article begins with a brief review of the essential definitions of competitive advantage identified in the subject literature and main characteristics of digital economy. It is followed by a research methodology description. The next part of the article deals with the issue of the understanding of competitive advantage and the role of knowledge in its building. In the subsequent part, new methods of value creation analysis are presented. This section also postulates new areas of concern, which should be addressed in the company's strategic analysis. The article ends with the conclusions of the findings and recommendations regarding further research directions.

Literature review

Since this paper relates to the issue of competitive advantage in the age of digital economy, literature review will cover these two areas of interest, namely competitive advantage understanding and main characteristics of digital economy.

The digitalization of the economy significantly impacts the sources and ways of building a sustainable competitive advantage and its dynamics. Before analyzing the changes that have taken place in this area, the concept of sustainable competitive advantage will be discussed. Since Porter popularized the idea, the term "competitive advantage" has been commonly used in the subject literature in management, economics, and corporate finance (Porter, 1985). The term "competitive advantage" or "sustainable competitive advantage" often occurs in the context of companies' superior performance. Many theories have emerged that explain why some companies and sectors perform permanently better than others (Powell, 2001). None of them has gained widespread acceptance in academia and business practice. The leading theories of strategy agree that the long-term superior performance of some companies is a fact and that it must be the result of specific reasons that can apply to the concept of competitive advantage (Powell, 2001). There is a lack of consensus among academics on the unambiguous definition of competitive advantage. The famous investor Warren Buffet approaches this issue pragmatically. In his investment decisions, he is seeking for businesses with a lasting competitive advantage. At a shareholders' meeting in 1995, Buffet, using a metaphor of moat, explained the principle of investing. He is looking for businesses with a broad and durable moat, defending the economic castle and its master. It can be cost leadership, position in the mind of customers (brand), technological advantage, and everything else that creates this moat (*So what is…*, 2013). In scientific studies, it is possible to identify two approaches to the concept of competitive advantage. Firstly, competitive advantage is defined through company performance, while secondly, through its sources. Most researchers define competitive advantage in terms of how companies perform or, more specifically, perform better than their competitors. Variables that are the subject of analysis in identifying better performance are profitability, return on investment, excess return, and created value (Sigalas & Economou, 2013). Some researchers analyze a competitive advantage with its determinants. Depending on the adopted strategy theory, these determinants are: barriers to mobility, cost leadership, diversity, valuable, rare and unique, difficult to replace resources, and dynamic capabilities.

Since the purpose of this article is not to analyze the evolution of the concept of competitive advantage, considerations on this topic will be limited to the presentation of two views authored by prominent representatives of the main theories of strategic management – positioning – Porter, and resource-based – Barney. According to Porter, the goal of the strategy is to properly position the company and its products in a market niche, where it is isolated from intense competition, which leads to extraordinary returns. They result from the monopoly or oligopoly edge due to barriers for entry to a given segment. Competitive advantage means low costs, differentiation, or effective concentration. In addition, Porter argues that competitive advantage is essentially rooted in the value that a company can create for its buyers that exceeds the cost of its creation by the company (Porter, 1985). According to Barney, a firm possesses a competitive advantage when implementing a value-creating strategy, not simultaneously being implemented by any present or potential competitor. In the heart of competitive advantage lie valuable and unique resources (Barney, 1991). The common element in both approaches to competitive advantage is its link with the concept of value creation. However, there is no precise definition of value creation and how to measure it. The difficulties in defining competitive advantage are partially connected with its dynamics. In the current conditions, maintaining a competitive advantage based on one particular factor over a more extended time is difficult. Research results indicate that a lasting competitive advantage is rare, and its duration decreases (Ruefli & Wiggins, 2003).

The digitalization of the economy relates to the wide use of digital technologies in various areas of social activities. Digitalization of the economy is facilitated, *inter alia*, by the digitization of data and processes. More than just making existing data digital, digitalization embraces the ability of digital technology to collect data, establish trends and make better business decisions. Digitalization can affect every step of the value chain for businesses – from planning, design, production, logistics, and marketing to sales and customer service. According to the 2016 G20 Summit document,

> The digital economy refers to a broad range of economic activities that include using digitized information and knowledge as the key factor of production, modern information networks as an

> important activity space, and the effective use of information and communication technology (ICT) as an important driver of productivity growth and economic structural optimization. Internet, cloud computing, big data, Internet of Things (IoT), fintech, and other new digital technologies are utilized to collect, store, analyze, and share information digitally and transform social interactions. (G20 Summit in China, 2016, p. 1)

Digitalization is often seen as the fourth industrial revolution, after the steam engine and mechanization, electricity and mass production, and computerization and automation (Björkdahl, 2020).

The digital economy has created a business environment different from the industrial age, primarily due to the "economics of information". In the case of information, its production's initial (fixed) costs may be high. However, its usage and application costs are meager and, in many cases, marginal (Shapiro & Varian, 1999). Therefore, with the intermediation of platforms offering different digital products and services, it is possible to provide consumers with a better bid at a lower price because the cost of selling an additional item is negligible. This decrease in incurred costs is partially passed on to the consumer by lowering the price. As a result, it is easier for companies to attract new and retain existing customers, which translates into an increase in revenues and total gross margin. For example, in 2002, the first year Amazon generated a profit, its gross margin was 25%, while in 2018, it grew to as high as 40%. These figures translate into approximately USD 1 billion in 2002 and USD 93 billion in 2018 in the total margin (Charan, 2021).

The digital economy proliferation results from developing four cross-cutting base technology areas related to hardware, software, the dissemination of the Internet and mobile communication, and artificial intelligence. These technologies have drastically reduced the costs of searching, analyzing, storing, and sharing information. The commercialization of 5G and 6G networks will further facilitate the development of economy digitalization (Skrzypek, 2021). The rapid adaptation of new digital technologies significantly changes how individuals and organizations function and interact with other entities (Sturgeon, 2019). The company can achieve the efficiency of various processes and activities in the business sphere by collecting and analyzing data that can support the decision-making processes. Data storage, processing, and distribution take place over the Internet in the cloud and are accessible to all entities and authorized persons. Because computing infrastructure and storage space are scalable and always available, the cloud allows businesses to collect unprecedented amounts of data in real-time in various formats (Sturgeon, 2019). Their analysis and inference are crucial in building a competitive advantage. Data and algorithms for their processing, including artificial intelligence, are critical competitive tools. Through data analysis, it is possible to identify dependencies and patterns and social and business contexts, e.g. in consumer behavior. As a result, information is a factor that can help optimize operations.

The development of the digital economy affects two main market areas: manufacturing and consumer applications. Digitalization concerning production is often referred to as "Industry 4.0". Examples of digital applications in the sphere of industry are (Sturgeon, 2019): advanced production equipment (e.g. 3D printers, robots, drones, cobots), production lines using sensors and infrastructure adapted to collect information to control systems and processes, advanced simulators, augmented and virtual reality, new materials, and techniques, small-sized drives, actuators, nano-scale control, integration of design, manufacturing, logistics and customer relations technologies. From a consumer perspective, the digital economy offers new "smart" products and services, new ways of shopping, and new opportunities for communication and expression. Examples of digital tools applications in the consumer sphere are (Sturgeon, 2019): smartphones and other mobile devices, social networks, the Internet of Things, autonomous applications in vehicles, e-commerce, transport, and delivery services. On the heels of Industry 4.0 a new concept of Industry 5.0 has recently emerged. While Industry 4.0 has focused more on digitalization and AI-driven technologies for increasing the efficiency and flexibility of production, the concept of Industry 5.0 focuses more on social fairness and sustainability, therefore, highlighting the importance of research and innovation to support industry in its long-term service to humanity (European Commission, 2021).

A new phenomenon related to digitalization is platforms that enable the creation of multi-sided digital markets that connect different groups of users. A digital (online) platform is "a digital service that facilitates interaction between two or more distinct but interdependent sets of users (both companies and individuals) who interact through the service using the Internet" (OECD, 2020 p. 249). Users and beneficiaries of online platforms go beyond individual consumers. They also include employees, governments, and businesses that can act as buyers, sellers, or employers. Business models based on digital platforms enable rapid expansion of companies. From the platform participant on the supplier side perspective, they are an excellent tool to meet needs or run a business. For the incumbent competitors, platforms are a source of serious problems related to losing market share to digital competitors. Also, digital platforms force the need to intensify the fight for remaining market shares with traditional competitors. Through the technology used, platform-based business models enable the owner to scale quickly thanks to the network effect, in which the platform's value for its users increases with their number (Vaz, 2021). Using a digital platform is not a guarantee of gaining a competitive advantage, but its lack is a significant competitive weakness. A digital platform is a binder that connects the entire business ecosystem. It directs and facilitates data analysis from many sources that detect consumer behavior patterns and forecasts and offers consumers individual experiences (Charan, 2021). Digitalization creates a new opportunity to create value, fundamentally changing the market situation and shifting the competitive advantage from traditional companies to those that base their business models on digitalization. Consequently, platforms that allow handling transactions at a low cost dominate the market. The use of technology provides for fast scaling of the platform, thanks to the network effects (Vaz, 2021).

Research methods

The main research problem discussed in the article is changes in the domain of strategic management in connection with the ongoing digitalization of the economy. In connection with it, two research questions are submitted: (1) Do the new conditions for the functioning of enterprises related to the broadly understood digitalization of the economy affect the essence and sources of competitive advantage?, (2) Under these conditions, should the methods and tools of strategic analysis used in the phase of its formulation be modified? Based on research questions, two hypotheses are put forward: (1) the current theories concerning the essence and methods of building a competitive advantage in the conditions of the digital economy must be modified due to their ambiguity and maladjustment to the current conditions of competition; (2) the strategic analysis in digital age should embrace new areas of concern – consumer needs, the organization's network connections and data flow, the structure of platforms and digital ecosystems, the revenue streams in networks, the types of a network and learning effects. Since this paper aims to advance knowledge and theoretical frameworks within a field, the considerations in the article are presented on the background of the extensive integrative literature review. The article uses the method of critical analysis and synthesis of opinions of other authors as well as logical inference. Conducted data analysis in an implemented approach critically analyze and examine the literature and the main ideas and relationships of an issue. The selection of articles and other publications included in this research were guided by the research questions and hypotheses. They comprise mainly selected publications on the competitive advantage, with authorship of the most prominent researchers in the field. In addition, the choice of publications on financial aspects of value creation and contemporary developments in the digital economy were included in the study. The main strength of these selections is that it combines perspectives and insights from different fields, which allows for assessment, critique, and synthesis of the literature on a research topic in a way that enables new theoretical frameworks and perspectives to emerge. The main weakness of the choice made is that it does not cover a representative sample of articles ever published on the topic.

Results – knowledge as a foundation of competitive advantage

In the digital age, gaining a competitive advantage and maintaining it is more complex than before. Until recently, companies that enjoyed significant competitive advantage owed it due to distribution channel control, economies of scale, or unique intangible assets, e.g. strong brands and valuable patents. Many of these traditional sources of competitive advantage, like brands, reputation, patents, and noteworthy technologies, still matter (Charan, 2021). On the other hand, the pace and intensity of competition have changed significantly. Currently, competitive actions and reactions to them must be swift. Even the best-run business can quickly get into trouble due to the appearance of an innovative competitor. Therefore, as the founder of Amazon Jeff Bezos says, every day should be the first for any company – they cannot stop at complacency from the position obtained. The firms should act permanently as vigorously and innovatively as at the beginning of their business (Charan, 2021). Concerning the sources of competitive advantage, it is necessary to constantly adapt activities to the changing conditions of competition and consumer expectations. In traditional approaches to building competitive advantage, companies have focused on capturing value by creating entry barriers (Porter, 1985, 1980) or utilizing unique resources and competencies (Barney, 1991; Grant, 1991; Peteraf, 1993). These barriers were relatively stable, allowing for a dominant position over a more extended time. Nowadays, when the competitive environment becomes more dynamic and destructive, through exogenous and endogenous changes, achieving and maintaining success requires active maneuvering by initiating own moves and responding to competitors' actions. Reliance on static positioning or once acquired valuable resources is a recipe for failure. From this point of view, the essence of the strategy becomes the vigorous search for new or improved sources of advantage. Relying on static factors no longer leads to success (D'Aveni et al., 2010). According to this principle, the relentless pursuit of strategic change is necessary to succeed, especially in emerging industries or environments where frequent changes occur and the game rules are unstable or inconsistent. Destructive environments seldom reach the maturity phase. Frequent changes lead to cannibalism of past achievements through regular innovation, which leads to the re-initiation of early stages of development in the industry and product life cycle (Christensen, 1997). Hence, companies that gain repeated consumer acceptance, resulting from continuous innovation on their behalf, hold a sustainable competitive advantage while generating high value for themselves. A competitive advantage based on a strong brand is an excellent example of the changes. In the past, this advantage was relatively durable, and maintaining it required minor adjustments to brand promises in the wake of changing consumer tastes. With the current market dynamics, when established brands miss technological changes and their consequences, they can lose a strong bond with consumers and reduce the power of their impact, as has been the case, for example, with brands such as Kodak, BlackBerry, Nokia, Blockbusters (Madden, 2020). Today, consumers are future-oriented and value the potential of a brand more than its past. Consequently, brand equity's components are no longer past customer experiences but, increasingly, customer expectations for future experiences (Dahlen & Karsberg, 2016). However, when companies recognize the changes in trends and adapt accordingly, by offering new experiences to customers, their brands can survive and preserve and even strengthen their value. It is the case, for example, with Netflix, which has completely changed its value proposition for consumers. A brand's success ultimately determines its consumers' perception in the context of their constantly evolving needs and expectations. Brand values and how they communicate must align with the brand's DNA, adapt to market conditions, and be consistent with the times.

The sustainable competitive advantage should rely on innovative knowledge. The digital economy is no different from previous economic conditions in this respect. Value creation has always depended on the quality of the ideas implemented. Innovative ideas derived from knowledge lead to increased returns on investment, which translates into higher generated value. Hence, the company's ability to build knowledge that allows the emergence of high-quality ideas that create value, which is a crucial determinant of the company's success and long-term competitive advantage, becomes vital (Madden, 2020, 2021). Industrial economics implemented ideas in investments in tangible assets – buildings, machinery, and equipment. The return on these investments was moderate due to their physical limitations and the competitors' ability to imitate the solutions used easily. Currently, investments in intangible assets outweigh physical assets. For example, in 2016 in the United States, total spending on physical assets amounted to USD 1.49 trillion, while private sector expenditures on intangible assets alone amounted to USD 2.16 trillion (Lev, 2019). The proliferation of intangible and digital assets has changed the economy toward increased complexity. The growing source of progress and value creation is knowledge. In this context, the quality of new ideas is more important for success than the simple growth of offering more of the same. Ideas reflected in intangible and digital assets are not limited by their physicality and can be distributed in practice at zero marginal cost. These effects of digital are further reinforced because digitalization has also accelerated economic activity. Digital products and services defuse fast, markets are latently transparent, and it is easier for companies to identify, engage and grow their customer bases.

The prerequisite for winning a long-term competitive advantage for the company is the ability to anticipate and meet consumers' needs. It is related to the dynamic capability of the company to build innovative knowledge that allows the creation of high-quality ideas that create value for consumers (Winter, 2003). No universal recipes for building specific, innovative knowledge will translate into these effects. Instead, the focus should be placed on promoting and encouraging employees to adopt particular attitudes, such as self-improvement, creativity, the ability to find unique schemes, and a wide, going beyond the boundaries of a single sector look at the marketplace. Such an approach based on a thorough understanding of causality, combined with recognizing the nonlinear complexities of systems, allows for identifying paths that lead to innovative solutions. It is essential to go beyond routine behaviors based on analogies from the past. In this context, it is desirable to use feedback, which can help to overcome specific reliance on the past (Madden, 2021). Building a culture of knowledge in a company is a primary, hidden source of competitive advantage. The quality and level of knowledge culture can be measured indirectly through the effects of building value for the customer, with such measures as customer satisfaction, customer growth rate, sales growth, and gross margin. Assuming the knowledge culture also contributes directly to value capture for the company, its impact can be measured using indicators such as economic profit and the ratio of the company's value to the value of the capital employed. The culture of knowledge creation triggers creativity and motivates employees to solve problems and create innovation, also by identifying the sources of currently obsolete solutions. Holding the past often results from routine and not questioning the existing, outdated assumptions on which the current business operates. The starting point for effective knowledge building is the awareness of the need for constructive skepticism towards currently accepted beliefs that affect the perception of reality and the activities carried out (Madden, 2020). Employees and organizational culture work together to create a "social engine" that drives innovation and activities to deliver individual experiences for each consumer, which is crucial to gaining a sustainable competitive advantage (Charan, 2021).

The dynamic nature of competitive advantage can be a clue in defining this concept. A sustainable competitive advantage should not be equated with a specific activity, positioning, or resource. Instead, a company's continued ability to build innovative knowledge allows it to create high-quality value-creating ideas. The concept of competitive advantage has to be linked to value creation as the company's primary objective. To fulfill this objective, in the first place, the company must create value for the customers, which will encourage them to buy the product, while simultaneously implementing activities that will capture as much of the created value as possible. From the customer's perspective, the willingness to buy a product depends on the product's value compared to the price. The difference between the product's value and the price is considered a margin for the customer. The higher the customer's margin from the transaction, particularly compared to alternatives, the greater his willingness to make a purchase. Assuming that the competitive advantage leads to the maximization of the company's value, it is possible to analyze the impact of the sources of advantage on the determinants of the company's value. According to the valuation model based on economic profit, the firm's value is equal to the sum of the invested capital and the present value of the future economic profits of the company. A firm creates additional value above the invested capital when it generates economic profits – the return on invested capital (ROIC) above its cost (Koeller et al., 2005). When a company achieves economic profit from new investments, faster growth of the company additionally contributes to increasing its value. Hence, long-term high economic profits are a sign of sustainable competitive advantage. High economic profits translate into a higher ratio – the company's value to the value of the capital employed.

Based on the above considerations, it is possible to propose a universal definition of competitive advantage and a way of measuring it. A company has a sustainable competitive advantage if it pursues a strategy that allows the development and application of innovative knowledge that creates essential value for customers in the long term and captures this value profitably for itself. The measure of competitive advantage is the length of the period of high economic profits and their size, which reflects in the current ratio of the company's value to the value of capital employed (EV/IC). A relative sustainable competitive advantage for a company can be determined by comparing its economic profit margins and EV/IC ratio with its peers.

Discussions – value creation analysis for strategy formulation

Digitalization can facilitate value creation and capture at different value chain stages, both inside and outside the organization. Gaining the benefits in the form of cost reduction in connection with the digitalization of production and logistics processes allows for increasing the margin for the consumer by reducing prices. However, the benefits of this type are susceptible to competitive pressure from companies that engage in a more far-reaching digital transformation (Cennamo et al., 2020). The more efficient yet more challenging is to apply digitalization to activities related to creating higher overall value for the consumer. Competing based on operational efficiency is not enough for long-term success because it is easy for other companies to imitate. Combining operational efficiency with offering a new value proposition to customers can result in a long-term competitive advantage for the company (Bjorkdahl, 2020).

In the traditional approach, the goal of the company's strategy was to outperform the competition by gaining an advantage over it. However, gaining a competitive advantage may be a side effect, not the strategy itself. The main objective of any company's strategy is to maximize value. The way to achieve this goal is to best meet consumers' current and future needs, which leads to earning economic profits in the long term. Focusing on building value rather than beating competitors prevents the implementation of a faulty strategy that leads to gaining advantages over competitors in some areas but, at the same time, causes a decrease in company value. In other words, not every advantage over competitors benefits the company. The common search for advantages results from confusing cause and effect. Pursuing economic benefits (economic profit) will likely give companies an edge over time in specific areas. On the other hand, seeking a competitive advantage over competitors will not guarantee a satisfactory economic profit (Kontes, 2010).

Equating sustainable competitive advantage with creating and capturing value, rather than beating competitors, is fundamental to formulating a sound company's strategy. Thus, strategic analysis should focus on the factors that influence value creation and capture rather than traditional industry and competitors analysis. At the very heart of these traditional analyses are outdated assumptions regarding the set of market players and the definition of sectors. Currently, the boundaries between sectors are blurring, making it necessary to think beyond individual industry scope. Consumer needs and experiences may span across traditional sectors. Therefore, many well-established management concepts should at least be modified, if not rejected. Porter's theories of competitive advantage, five-force competition analysis, BCG matrices, or Hamel and Prahalada's key competencies do not work well in the digital age (Charan, 2021). For example, the five-force analysis focuses on gaining market share, managing entry and exit barriers, and implementing basic low-cost and differentiation strategies. These barriers have not been able to stop new entrants such as Amazon, Airbnb, Uber, and others from dominating many markets. In turn, building advantages on core competencies and resources can be a trap because they will force a perspective from the inside out, which can narrow the perception of the environment and limit the possibility of identifying market opportunities (Charan, 2021). Serving mass markets and large segments have ceased to be a paradigm for doing business nowadays. The technology allows simultaneously implementing the old mutually exclusive strategies – personalizing the offer and low costs. Algorithms and digital platforms facilitate the delivery of customized experiences at a low price.

Knowledge that allows to anticipate and ultimately meet customer needs is the primary source and prerequisite for gaining a competitive advantage. This knowledge is based on inputs from analyzing consumer data, trends in their behavior, technological changes, or competitors' activities. Therefore, data has become one of the most critical drivers of value creation in the digital age. Digital businesses can derive data directly from intensive monitoring of user activity, behavior, and user-generated content on platforms. This data can be of significant value to a company, whether sold, used to improve advertising targeting, or used indirectly by enhancing the platform's software and personalizing the user experience (HM Treasury, 2018). Data must be collected, recorded, adequately organized, processed, analyzed, and finally transformed into knowledge to get economic value (Sasikumar & Sersia, 2020). For lasting competitive advantage, companies must translate knowledge into activities that enable them to create and capture value. This can be done through application of an appropriate business model, which describes how the organization creates, delivers, and captures value (Osterwalder & Pignuer, 2010). A good business model remains the key to the success of any organization. Scalable business models based on digital platforms enable increasing returns with scale and are particularly effective. Unlike linear business models, where value is created earlier in the value chain and consumed in the later phases, in digital business models, platforms not only make products available but also allow users to co-create and consume additional value (Choudary, 2013).

In a situation where many organizations digitize their data flows and processes, the architecture of the economy is transforming into a global network consisting of several subnets, e.g. social networks, supply chain networks, mobile device networks, or application networks. Under these conditions, the most centrally located entities in business networks can control data flows, aggregate and analyze them to better predict and meet consumer expectations by providing personalized experiences (Iansiti & Lakhani, 2020). The growing importance of data for the success of businesses means that the competitive advantage is shifting towards organizations that can control the data flowing in networks and, on their basis, optimize their activities. Therefore, a strategic analysis preceding strategy formulation should include an analysis of the structure and importance of an organization's connections in different industries and the data flowing through the networks. Part of this analysis identifies platforms or, more broadly, digital ecosystems that may impact companies' business models, whether by incorporating them in their business model or as a potential threat to the company. Digital platforms can be categorized according to various criteria, e.g. their functionality, users' types, data used, or sources of revenue generated (OECD, 2019). A broader concept of a digital ecosystem is a combination of interacting applications, operating systems, platforms, business models, and hardware. Usually, not all ecosystem elements belong to the same organization. A digital ecosystem can involve thousands of different companies. Digital ecosystems go beyond simple supply chains. They can be multidimensional, involving partners from different industries. The competitive advantage within the ecosystem stems from expanding the ability to deliver higher value to customers by acquiring new partners, sharing data with them, leveraging their unique capabilities, and pooling financial resources to grow the platform (Charan, 2021). Consequently, there is an opportunity to obtain additional revenue streams from the ecosystem. The most effective platforms and their ecosystems leverage network and learning effects. Network effects are characterized firstly by an increase in the benefits of network members with the addition of new users and decreasing marginal costs associated with servicing new users. Learning effects capture added value by increasing the amount of data flowing through networks. These data can power artificial intelligence, help understand and improve the user experience, or better target ads from their contractors (Iansiti & Lakhani, 2020). Network and learning effects mean that the more network connections, the greater the value of the network. Network effects offer new opportunities for capturing value, so strategic network analysis should be essential for a company's strategic analysis. This analysis comprises three issues: network mapping, identification of network value creation factors, and analysis of potential network expansion opportunities (Iansiti & Lakhani, 2020). Network mapping involves identifying the critical networks with which the organization is currently associated. The potential for value creation in the network is related, i.e. to network and learning effects, synergies with other networks, the lack of competitive alternatives, and the inability to eliminate network intermediation. Finally, the analysis of network expansion opportunities is to identify potential connections to other networks. Thus, a strategic analysis should focus on the structure and importance of the company's relationships in different industries, and the data flows through the company's networks. The company's strategy should now address issues related to managing its networks and utilizing data that flows through them. Just as industry analysis has dominated strategy over the past few decades, network analysis is increasingly shaping the strategic thinking of the future (Iansiti & Lakhani, 2020).

The financial analysis related to the implemented strategy of capturing value is also changing in the digital economy. The emergence of digital platforms and businesses has changed the value capture mechanism. Value is created for the customer and captured through a simple pricing mechanism in traditional companies. In this realm, an indicator of the company's competitive advantage is earning positive present and short-term economic profits. However, in digital businesses, the creation and capture of value can be separated since they often come from different stakeholders. Additionally, value capture can be delayed in time, so companies can create significant value for their customers for many years and, at the same time, generate negative economic profits. Simultaneously, these companies are able to significantly increase their market value, financing growth from new share issues. Their strategies concentrate on building the largest possible market share, particularly by using the network effect. Typically, the capital expenditures of digital companies are very high and account for a large part of revenues. In the early stages of development, digital businesses invest in the future, spending money on marketing, customer acquisition, hiring developers and other technology experts, purchasing licenses, building a digital platform, collecting data, and developing an ecosystem (Charan, 2021). These expenses are treated as costs in the income statement, which reduce current profits. Thus, digital companies are sacrificing earnings for growth. Consequently, emphasis is put on immediate value creation for consumers at the expense of value capture. Such policy is referred to as the primacy of revenue growth over profits (Menz et al., 2021). The business idea, in this case, is based on the premise that building a critical mass of platform users will translate into opportunities to use this position to earn money in the future. In the case of companies that sacrifice earnings for building scale, an indicator of their sustainable competitive advantage is the high ratio of the company's market value to its book value. The high market value of these companies results from investors' expectations that they will generate economic profits in the long run.

Conclusions

Progressive digitalization fundamentally changes how modern companies operate practically in all their areas of activity. Digitalization improves the efficiency of various processes and activities inside and outside the organization. Digital technologies can support value creation and capture at different value chain stages – from planning, design, production, logistics, and marketing to sales and customer service. The traditional division into separate companies and sectors becomes problematic. The concept of a hard "border" is becoming more challenging to define in the digital age, as the combinations of collaborative digital technologies blurred the boundaries of separate companies and sectors. These transformations related to digitalization affect the process of strategic management through a profound impact on the methods of building value for customers and its capture. This article highlights issues related to building a sustainable competitive advantage for the company in the digital age. Specifically, the conducted considerations concern the understanding of competitive advantage, tools, and areas of strategic analysis that managers should address in strategy formulation and implementation. Achieving success in the digital age requires a new approach to strategy and its role in the organization. Its main reference point should be the customer base, not the competition. Currently, competitive advantage cannot equate with a specific action, position, or resource. It results from the company's ability to continuously build innovative knowledge that allows it to create new, high-quality ideas that create value. These ideas result from modified and improved knowledge, allowing for the continuous renewal of short-term competitive advantages, and facilitating long-lasting advantage. Hence, constantly upgraded knowledge on anticipating and meeting the customers' needs is the primary source and prerequisite for gaining a sustainable competitive advantage for the company.

When conducting strategic analysis in the digital age, the focus should be placed on the factors influencing value creation and capture rather than traditional industry and competitors analysis. Therefore, many well-established strategic analysis tools should be replaced, or at least supplemented, by new types of research. These new research embrace but should not be restrictive to the following analysis: trends and evolutions in consumer needs based on integrated data on their activities and behavior, the structure of organization's networks and data flows through these networks, the structure of platforms and digital ecosystems, revenue streams in networks and platforms, types and strength of network effects and learning. Digitalization has also resulted in a relative shift in emphasis on value creation at the expense of capturing it. Therefore, when carrying out a financial analysis of the planned strategy, managers should consider the possible significant delay in obtaining positive financial results in the form of economic profit. Overall, the analyses carried out in the article provide arguments supporting the research hypotheses.

The presented article aims to the enrichment of strategic management theory concerning the issue of building a sustainable competitive advantage in the digital age. The author in no way claims that the review of the literature and the argument carried out is exhaustive, or definitive. Instead, this article attempts to stimulate and indicate directions for further developing the concept of building a competitive advantage in the digital age. Concerning the new types of strategic analysis tools proposed in the article for implementation in the current market conditions, the author draws attention to the need for further clarification, specification, and appropriate instrumentation of these tools.

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