

## INNOVATIVE ECONOMY AND KNOWLEDGE MANAGEMENT AS A SOURCE OF COMPETITIVE ADVANTAGE: AN ECONOMIC AND INSTITUTIONAL APPROACH

Judyta KABUS<sup>1\*</sup>, Krzysztof ROSZCZYŃIAŁSKI<sup>2</sup>, Dagmara BUBEL<sup>3</sup>,  
Izabela BAGIŃSKA<sup>4</sup>, Magdalena KOWALSKA-MUSIAŁ<sup>5</sup>

<sup>1</sup> Jan Dlugosz University in Czestochowa; j.kabus@ujd.edu.pl, ORCID: 0000-0002-7119-3327

<sup>2</sup> The School of Banking and Management in Krakow; roszczyn@wszib.edu.pl, ORCID: 0009-0004-5010-6396

<sup>3</sup> Jan Dlugosz University in Czestochowa; d.bubel@ujd.edu.pl, ORCID: 0000-0002-4609-6111

<sup>4</sup> Jan Dlugosz University in Czestochowa; i.baginska@edu.pl, ORCID: 0000-0001-8153-7587

<sup>5</sup> The School of Banking and Management in Krakow; m.kowalska@wszib.edu.pl,  
ORCID: 0009-0008-2989-2280

\* Correspondence author

**Purpose:** The aim of this article is to analyse the role of knowledge management as a key mechanism for building competitive advantage for enterprises in a data-driven economy. The study adopts an economic-institutional perspective, according to which knowledge is both a strategic resource and an element of the system of regulations, incentives and institutions that influence the effectiveness of economic entities.

**Design/methodology/approach:** The article is conceptual in nature and is based on an analysis of literature in the fields of knowledge management, institutional economics, resource-based view, transaction cost theory and data economics. A research framework was applied based on a comparison of knowledge management mechanisms with institutional conditions and an assessment of their impact on value creation and competitive advantage of enterprises.

**Findings:** The consistency of regulations related to data, intellectual property and information security, the quality of data infrastructure and institutional support for innovation have a significant impact on the effectiveness of knowledge management systems and business performance. In a data-driven economy, the ability to convert data into knowledge, the quality of decision-making processes, and the integration of knowledge into the organisational system are of key importance.

**Research limitations/implications:** Due to the conceptual nature of the study, further empirical research is needed, including comparative sector analyses and quantitative studies.

**Practical implications:** The results indicate the need to adapt knowledge management systems to regulatory and infrastructure requirements. The article formulates recommendations for enterprises and public institutions supporting the information economy.

**Social implications:** In social terms, the study highlights the importance of ethical data and knowledge management as a factor that strengthens public trust and promotes sustainable development.

**Originality/value:** The work brings a new perspective by integrating knowledge management with institutional economics, highlighting the role of data and regulation as co-creators of competitive advantage architecture in the digital economy.

**Keywords:** knowledge management, data-driven economy, innovation, competitive advantage.  
**Category of the paper:** Literature review.

## 1. Introduction

Knowledge management in enterprises operating in a data-driven economy is becoming one of the key factors shaping contemporary mechanisms of competitive advantage. The dynamic development of information technologies, the increasing digitisation of economic processes and the growing complexity of the institutional environment mean that knowledge – both explicit and tacit – is transforming into a strategic organisational resource that determines the ability of enterprises to adapt and grow (Kłak, 2024). The literature on the subject increasingly emphasises that organisational competencies in the acquisition, processing and use of knowledge determine the sustainability of competitive advantages, especially in an economy where data is becoming the basic category of value creation.

The improvement of knowledge management systems is part of a broader phenomenon of the evolution of contemporary management concepts, which aim to achieve ever greater synchronisation of internal organisational processes with the realities of the economic environment (Banaś, 2024). Appropriately tailoring organisational solutions to the requirements of a data-driven economy promotes both increased innovation and improved economic performance of enterprises (Serdyński, 2024). Both the conceptual foundations of knowledge management and the institutional framework for its functioning are universal in nature, which means that they can be implemented in enterprises with diverse business profiles (Ulhaq et al., 2024).

The aim of this article is to analyse knowledge management processes in relation to the conditions of a data-driven economy and to identify the relationships between information processing mechanisms, institutional structure and the ability of enterprises to achieve competitive advantages. The study is conceptual in nature and its structure is based on linking key elements of knowledge management with institutional conditions that shape the possibility of their use in economic practice. The result of the work is a set of conclusions and recommendations on how to strengthen knowledge management processes in enterprises whose functioning depends on the quality of data processing systems and their conversion into organisational knowledge.

The analytical framework used in the article allows for a clear presentation of the role of knowledge management processes in increasing decision-making efficiency, improving coordination of activities and strengthening the innovative potential of enterprises. This study is based on a broad review of the literature covering both the theoretical aspects of knowledge management and the economic concepts of institutions, intellectual property and data economics.

Identifying similarities and interrelationships between the economic function of knowledge and the institutional conditions for its use makes it possible to identify activities that can support enterprises in generating sustainable competitive advantages. Of particular importance here is the ability of enterprises to convert data into useful knowledge and to integrate information processes with the economic and strategic objectives of the entity.

## **2. Literature review**

### **2.1. Theoretical foundations of knowledge management and its importance for competitive advantage**

The concept of knowledge management is one of the key issues in contemporary management sciences and enterprise resource economics. The global literature emphasises that knowledge, both explicit and tacit, is a strategic resource that is highly difficult to imitate and determines the sustainability of competitive advantages (Oranga, 2023). Knowledge also serves as a factor that organises innovation processes, guides strategic decisions and enables the enterprise to adapt to technological and market changes.

In terms of resource theory (Battisti et al., 2022), a company's competitiveness is determined by resources with VRIN characteristics: valuable, rare, difficult to imitate and difficult to replace (Singh, 2022). Knowledge, especially organisational knowledge and team competencies, meets these criteria in a particularly clear way, becoming the basis for a lasting advantage over competitors.

The concept of organisational learning also makes a significant contribution to the development of the concept of knowledge as a resource. It should be emphasised that companies that build advantages in a volatile environment are characterised by their ability to learn systematically, which strengthens their adaptability (Mauludina et al., 2025). The need to combine operational learning with double-loop learning, which modifies the very rules of an organisation's functioning, is also important (Auqui-Caceres et al., 2023).

The literature on knowledge management also mentions the concept of epistemic diffusion, according to which an effective organisation should create structures and processes that enable the transfer of knowledge between individuals, teams and management levels (James, 2024). The effectiveness of diffusion increases within cultural cohesion and weakens in conditions of strong structural barriers.

From an economic perspective, knowledge is treated as intangible capital with increasing marginal productivity. The endogenous growth theory (Akcigit, 2021) argues that knowledge accumulation is self-reinforcing, leading to dynamic economies of scale, which makes knowledge management processes crucial for the long-term growth potential of enterprises.

The literature also emphasises that knowledge is the foundation of a data-driven economy, in which information is transformed into economic value through complex analytical, algorithmic and decision-making processes (Al-Okaily et al., 2023). The ability of enterprises to transform data into decision-making knowledge is now seen as a key determinant of market efficiency and innovation.

## **2.2. Institutional and regulatory conditions for knowledge management in a data-driven economy**

An important trend in the literature is the analysis of the role of institutions, both formal and informal, in shaping knowledge management mechanisms. Institutional economics (Frolov, 2023) emphasises that institutions set the framework within which companies can accumulate, protect and use knowledge. These include regulations on intellectual property, personal data, information security, data openness, interoperability and cybersecurity standards.

The literature indicates that effective knowledge management depends on a balance between information openness and the protection of knowledge resources (Ali et al., 2023). Overly restrictive systems limit the possibilities for knowledge diffusion and cooperation, while overly open systems increase the risk of losing strategic organisational resources.

Work in the field of institutional governance theory also makes a significant contribution to the analysis of the relationship between institutions and knowledge. The authors argue that inclusive institutions promote the development of intellectual capital, innovation and entrepreneurship, while exclusive institutions limit access to knowledge and inhibit competition (Ząbkowicz, 2022).

In a data-driven economy, the regulatory framework for data circulation is of particular importance. Work in the field of data economics emphasises (Funk, 2023) that regulations concerning data quality, accessibility, standardisation and sharing affect the effectiveness of predictive analytics, the quality of algorithmic models and the possibilities for digital organisational learning.

The literature also highlights the growing importance of research on information infrastructure (Heinzl et al., 2024), which consists of digital platforms, database management systems, cloud technologies, and business analytics support systems. The authors point out that this infrastructure is a prerequisite for the effective operationalisation of knowledge management, especially in a data-intensive environment (Nauendorf, 2023).

## **2.3. Knowledge as an element of decision-making process architecture in enterprises**

The literature on the subject (Heilig et al., 2023) emphasises that knowledge plays a fundamental role in decision-making processes, determining the quality and accuracy of strategic, tactical and operational choices. Digitalisation and the growing use of data are making corporate decision-making systems increasingly complex, and their effectiveness depends on the organisation's ability to convert information into knowledge that can be used in management

practice. The authors (Muntwiler et al., 2023) point out that limited rationality in decision-making is compensated for by mechanisms that support the acquisition and processing of knowledge, which minimises uncertainty and allows for better prediction of the effects of actions.

Contemporary research trends emphasise that knowledge is an essential condition for the efficient functioning of analytical systems, including predictive mechanisms and algorithmic models (Rosati et al., 2023). An organisation's ability to synthesise knowledge resources from both internal information archives and external market sources enables the creation of structural decision-making advantages that translate into competitive differentiation. Research in the field of data-driven decision-making also indicates that the value of managerial decisions increases with greater transparency and accessibility of data, which reinforces the role of information infrastructure as the basis for the integration of knowledge resources within an enterprise (Munagandla et al., 2024).

A significant part of the literature (Martínez et al., 2023) is devoted to the integration of decision-making processes with knowledge management systems, pointing out that organisations that are able to combine expert knowledge with the results of data analysis created by digital systems gain an advantage. The combination of these two components leads to the emergence of so-called hybrid decision-making processes, which are characterised by a higher level of consistency and less susceptibility to errors resulting from intuitive decision-making (Ala et al., 2023).

The literature also emphasises the role of organisational culture in shaping knowledge-based decision-making processes. Organisations with a culture that encourages experimentation, employee autonomy and openness to information show a greater ability to use data effectively in decision-making. It is pointed out that organisational culture is an intermediary between access to data and the ability to transform it into knowledge that is useful in management processes (Müller, 2022).

#### **2.4. Knowledge management in the context of a data-driven economy: an overview of research trends and concepts**

Research on knowledge management in a data-driven economy covers many theoretical trends, from the economics of innovation, through information systems theory, to institutional analyses of data as a strategic resource. One of the most important areas of research is the problem of transforming data into organisational knowledge, which is referred to in the literature as data-to-knowledge conversion. The authors emphasise that the effectiveness of this transformation depends on the quality of the data, the degree of its structuring, and the organisation's ability to create knowledge ontologies that allow for its systematic use (Ioakeimidou et al., 2025).

Economic literature is paying increasing attention to the relationship between data structure and competitive advantage, pointing out that high-quality, frequently updated data is the basis for building predictive models and machine learning processes that strengthen business innovation (Niedermeier, 2025). Great emphasis is placed on the importance of big data analytics, machine learning and artificial intelligence technologies as tools for increasing knowledge productivity and achieving a higher level of information integration (Rane et al., 2024).

An important area of research also concerns the role of institutions regulating data circulation. The literature analyses the impact of regulations on data protection, system interoperability and information security standards on the ability of enterprises to use data in knowledge management processes (Hovav, 2023). It is pointed out that regulatory frameworks create both constraints and opportunities that shape companies' information strategies. Properly designed institutions promote data exchange, reduce information asymmetry and improve coordination in network economies (Marhad et al., 2024).

The literature on the data-driven economy also emphasises the importance of digital infrastructure and platform ecosystems that enable the creation of dynamic and distributed knowledge networks (Nicotra et al., 2024). The authors point out that effective knowledge management requires the integration of analytical systems, Big Data platforms, cloud tools, and structures that enable knowledge sharing between organisations. The development of data ecosystems leads to the emergence of new forms of cooperation and co-opetition, which intensify learning and innovation processes in an inter-organisational context (Sultana et al., 2024).

## **2.5. Barriers and challenges in knowledge management in a data-driven economy**

The literature emphasises that despite the growing importance of data as a strategic resource for enterprises, knowledge management processes face numerous technological, organisational, institutional and cultural barriers (Shadmanfar et al., 2024). The most frequently cited challenges include problems related to data quality, fragmentation and restrictions on access to information, which significantly hinder the process of converting data into organisational knowledge. Researchers also point to the risk of information overload, leading to a decline in the effectiveness of decision-making processes and difficulties in identifying information that is key to strategic objectives (Matthies, 2021).

Competence issues remain an important challenge. The literature emphasises that effective use of data requires a high level of analytical competence, the ability to interpret model results and the ability to implement them in management practice (Bakalis et al., 2024). The lack of specialised skills significantly weakens the effectiveness of knowledge management systems, as confirmed by research on the so-called digital skills gap (Hoe, 2025).

Infrastructural limitations are also a significant barrier, including the inefficiency of IT systems, the lack of interoperability between platforms, and difficulties in integrating data from various sources, both internal and external. Research indicates that companies with dispersed information resources encounter greater difficulties in building consistent knowledge management processes, which leads to increased coordination costs and the risk of analytical errors (Jarrahi et al., 2023).

The literature also emphasises the importance of regulatory barriers. Data protection standards, compliance requirements, restrictions on cross-border information flows and intellectual property regulations can both support and hinder an organisation's ability to manage knowledge effectively. Sometimes, overly stringent institutional frameworks limit the innovative potential of enterprises, hindering the creation of data ecosystems or inter-organisational knowledge sharing (Geissdoerfer et al., 2023).

From a cultural perspective, the lack of organisational trust and the insufficient willingness of employees to share knowledge remain a problem. Researchers emphasise that a culture of information reluctance leads to the creation of so-called knowledge silos, which disrupt the processes of knowledge diffusion and hinder the creation of shared competence resources (Offergelt et al., 2024). These barriers become particularly evident in organisations that have not developed formal knowledge circulation mechanisms and structures that support cooperation and information integration.

## **2.6. Directions for the development of research on knowledge and data**

The scientific literature shows a dynamic development of new research trends in knowledge management in a data-driven economy (Pisoni et al., 2024). One of the most important areas of research is the analysis of the role of artificial intelligence, machine learning and predictive algorithms in the processes of creating and using organisational knowledge. The authors point out that these technologies not only enable the automation of decision-making processes, but also the creation of knowledge previously unavailable to companies, which redefines the boundaries of their competitive advantages (Mezina et al., 2024).

Another area of intensive research is the conceptualisation of data as a new category of productive capital. Economic literature proposes treating data as a separate type of resource, whose value increases as it is processed and integrated with other components of intangible capital (Medeiros et al., 2022). This research includes both modelling the economic value of information and analysing the dynamics of organisational learning in conditions of intensive data use (Barth et al., 2023).

Another important research trend concerns the processes of knowledge co-creation within data ecosystems (Bag et al., 2021). The development of digital platforms and information exchange networks fosters the creation of shared learning spaces where knowledge is created and developed by multiple interconnected organisations. The literature emphasises that contemporary competitive advantages increasingly result not only from internal resources,

but also from access to knowledge that is dispersed and created within networked environments (Hoppenstedt et al., 2025).

Institutional research also shows a growing interest in the role of the state in shaping data infrastructure, interoperability standards and policies supporting information innovation (Hodapp et al., 2022). It is pointed out that regulatory actions can increase data availability, enhance market transparency and create conditions conducive to the development of institutions supporting knowledge management (Gujar, 2025).

The literature also highlights a clear need to develop research on the ethical and social consequences of data use, particularly in the context of increasing automation of cognitive processes (Akinrinola et al., 2024). The issues of algorithmic accountability, model transparency and data ethics constitute a new, rapidly developing area of study that is shaping the future directions of knowledge management in organisations.

### **3. Methods**

The methodology used in this study is based on a conceptual approach that aims to integrate theoretical findings in the field of knowledge management with the economic and institutional perspective specific to the data-driven economy. The article is not empirical in nature; its structure has been designed to enable a systematic analysis of the relationships between knowledge management processes, the role of institutions, and the mechanisms for building competitive advantages for enterprises.

#### **3.1. Methodological objective and course of the study**

The main methodological objective is to identify the key elements that constitute the advantages of enterprises in conditions of intensive data use. The article focuses on creating a synthetic theoretical framework that allows for the analysis of the processes of converting data into knowledge, the organisational mechanisms of its diffusion, and the institutional conditions regulating these processes.

#### **3.2. Research approach**

The conceptual and analytical approach used comprises three main stages:

- theoretical analysis,
- interdisciplinary synthesis, and
- conceptual modelling.

This approach necessitates the organisation of key analytical categories, as presented in Table 1, which defines the basic types of knowledge used in the study and their significance for management processes.

**Table 1.***Categories of knowledge relevant to methodological analysis*

Knowledge category	Characteristics	Significance for analysis
Explicit knowledge	Structured, easy to document and transmit.	Enables the identification of formal processes.
Tacit knowledge	Based on the experience of individuals, difficult to formalise.	Crucial for interpreting decision-making mechanisms.
Procedural knowledge	Relates to methods of performing activities and organisational routines.	Important for mapping data processing processes.

Source: own study.

Taking into account the three above categories of knowledge provides the basis for building a coherent analytical structure that allows us to examine how companies create value based on data and institutional rules for its use.

### 3.3. Data sources and analytical procedures

The article is based on an analysis of secondary sources, selected for their theoretical and interpretative significance. Analytical procedures include:

- critical analysis of the literature,
- comparison of theoretical approaches,
- reconstruction of key conceptual categories,
- modelling of relationships between knowledge, institutions and competitive advantage.

The analysis revealed that knowledge management processes are subject to various constraints that determine their usefulness in economic practice. These barriers are summarised in Table 2.

**Table 2.***Barriers relevant to knowledge management analysis methods*

Type of barrier	Characteristics
Technological	Low data quality, lack of system interoperability, infrastructure limitations.
Organisational	Siloed structures, lack of formal knowledge circulation processes.
Cultural	Reluctance to share knowledge, low level of organisational trust.
Regulatory	Restrictions resulting from legal norms concerning data and its protection.

Source: own study.

### 3.4. Justification for the selection of methods and model design

The choice of conceptual methods stems from the need to analyse complex, intangible and difficult-to-measure phenomena. Knowledge management mechanisms that integrate data, organisational processes and institutional frameworks of enterprise operation play a key role here. The most important of these are listed in Table 3.

**Table 3.***Knowledge management mechanisms included in the conceptual model*

<b>Mechanism</b>	<b>Description</b>	<b>Significance for the model</b>
Conversion of data into knowledge	Transforming data into information useful for decision-making.	Indicates sources of information advantage.
Knowledge diffusion	Transferring knowledge between individuals and teams.	Determines the effectiveness of knowledge circulation.
Knowledge retention	Retaining key knowledge resources within the organisation.	Reduces the risk of losing competencies.
Knowledge integration	Combining knowledge from multiple sources and systems.	It is a prerequisite for process synergy.

Source: own study.

This structured methodology allows for a consistent link between the theoretical foundations and the interpretative model presented later in this study, ensuring clarity of the analysis criteria and transparency of the assumptions made.

## 4. Results and Discussion

The conceptual model developed in this article presents the relationships between the institutional conditions for the functioning of enterprises, knowledge management processes and data resources, which together determine an organisation's ability to achieve competitive advantage in a data-driven economy. The model's structure is based on theoretical analysis and organises key areas of influence, enabling the identification of cause-and-effect elements.

### 4.1. Model assumptions

The conceptual model is based on a set of assumptions that reflect the specific nature of how enterprises operate in a data-driven economy and their dependence on institutions, information processes and knowledge resources. Firstly, it was assumed that institutions, both in formal terms, including legal regulations, public policies, technical standards and information security standards, and in informal terms, including practices, customs and cultural patterns of behaviour, set the framework within which enterprises acquire, process and use data. These institutions shape not only the scope of available information resources, but also the acceptable methods of processing them, the level of system interoperability and the quality of infrastructure, which directly affects the effectiveness of knowledge management.

The second key assumption of the model is the role of knowledge management processes as a central mechanism for activating the potential of data. It is assumed that a company's ability to convert data into organisational knowledge, its diffusion between subsystems of the organisational structure, retention in key competence areas and integration at the operational and strategic levels is the foundation of an organisation's adaptive capacity. Knowledge management processes determine not only how information is transformed into a resource of

decision-making importance, but also the speed of the company's response to changes in the competitive environment and the effectiveness of innovation development.

The third assumption relates to data resources, which in a digital economy are the basis for creating economic value. These resources vary in terms of quality, availability, timeliness and degree of structuring, which affects their informational usefulness. The model assumes that high-quality and accessible data resources can strengthen organisational processes, provided that there are mechanisms capable of interpreting them properly. Data is therefore not treated as an autonomous resource, but as a component of an information system whose value is only revealed in knowledge management processes.

These assumptions lead to the conclusion that a company's competitive advantage results from the synergistic interaction of institutions, knowledge processes and data resources. An organisation achieves lasting market benefits only when it has access to stable and favourable regulations, is able to generate and maintain knowledge of high decision-making value, and uses data resources in a systematic and purposeful manner. This approach to the problem allows us to view competitive advantage not as a one-dimensional effect, but as a dynamic configuration of structural, procedural and informational factors, the effectiveness of which depends on the coherence of the entire system (Table 3).

**Table 4.**

*Assumptions of the conceptual model and their analytical implications*

<b>Model assumption</b>	<b>Assumption content</b>	<b>Implications for analysis</b>
Institutional conditions	Formal and informal institutions shape the conditions for data acquisition, processing and distribution.	Defining the boundaries of an organisation's activities and the level of accessibility of information resources.
Knowledge management processes	The organisation processes data into knowledge through conversion, diffusion, retention and integration.	The ability to assess the effectiveness of knowledge mechanisms and their impact on decisions.
Quality of data resources	Data varies in quality, availability and timeliness, which affects its usefulness.	The need to identify factors that increase the informational value of data.
Synergistic nature of advantage	Competitive advantage results from the combination of institutions, knowledge processes and data resources.	Approach to competitive advantage as the effect of a multidimensional system.

Source: own study.

The table organises the key dimensions of the model and shows that each of the assumptions contributes a separate but complementary element to the analysis of competitive advantage. Institutions define the framework for action, knowledge management processes transform data into a strategic resource, and data quality determines the value of potential information benefits. Only their synergistic interaction creates a coherent system in which a company can achieve sustainable competitive advantages. This structured framework enables the precise use of the model in the further part of the study.

#### **4.2. Logic and structure of the model**

The logic of the conceptual model is based on the assumption that the competitive advantage of companies operating in a data-driven economy is not the result of a single isolated factor, but stems from a multi-level system of relationships between institutions, knowledge management processes and data resources. The model's design has been shaped in such a way as to capture the complex relationships and feedback mechanisms between these areas, creating a systemic rather than a linear structure. Thus, the model is not merely a cause-and-effect illustration, but reflects a multidimensional system that drives the process of competitive advantage creation.

The first element of the model's logic is the assumption that institutions constitute a superordinate layer that determines the scope and possibilities of using information resources in enterprises. Institutions, in a sense that includes both regulations and social norms, organisational practices and data infrastructure, create a context within which enterprises can accumulate, process and exchange knowledge. It is institutions that set the acceptable limits for data use, define the level of data availability and shape incentives for investment in the development of information systems. The model therefore assumes that institutions act as a meta-control mechanism that determines the effectiveness of knowledge-related operations at the organisational level.

The second logical component of the model's structure is the recognition that knowledge management processes constitute an operational layer in which a company's ability to give economic utility to information resources is revealed. The processes of knowledge conversion, diffusion, retention and integration are placed at the centre of the model, as it is these processes that transform raw, often unstructured data of varying quality into a resource with decision-making and strategic properties. From the perspective of the model's logic, knowledge management processes act as a transformative mechanism that activates the potential of data. However, their effectiveness is closely dependent on institutional conditions, which is why the model assumes a vertical arrangement in which knowledge processes are located between institutions and data resources.

The third component of the model design is the inclusion of data resources as an input layer, which forms the foundation for the functioning of knowledge processes. The model assumes that data is not a neutral factor, but has significant and varied informational utility, depending on its quality, availability, timeliness, structure and degree of compliance with the analytical requirements of the organisation. Data is therefore both a resource and a constraint, and its nature has a significant impact on the effectiveness of knowledge processes. In the logic of the model, data resources are therefore an element determining the epistemic potential of an organisation, defining the limits of the possible conversion of information into knowledge.

The fourth element of the model refers to competitive advantage as the starting layer, which is the result of the synergistic interaction of institutions, knowledge processes and data resources. The model assumes that competitive advantage cannot be analysed solely as the effect of a company's actions, but as the result of a configuration of systemic, procedural and informational factors. In the logic of the model, competitive advantage is a resultant state that only becomes apparent when all previous layers remain coherent and mutually reinforcing. Therefore, in the model's structure, advantage is placed at the lowest level, as the final link in the sequence of dependencies, rather than as an autonomous category.

A key element of the model's logic is also the assumption that the relationships between the layers are asymmetrical, conditional and hierarchical, rather than linear. This means that institutions influence knowledge processes and data resources, but the latter two do not have the capacity to modify institutions in the short term. Knowledge processes extract value from data, but their effectiveness depends on the properties of the institutions that create the framework conditions. Data, on the other hand, influence the quality of knowledge, but do not determine the directions of regulation that shape its circulation. This asymmetrical relationship architecture forms the logical foundation of the model and makes it possible to capture the mechanisms responsible for the model's didactic transparency, analytical consistency and predictive usefulness.

The model has been designed with a view to its operationalisation in further stages of research, both theoretical and empirical. The model allows for the analysis not only of the levels of dependence, but also of the dynamics of value flow between layers. The systemic nature of the structure means that the model can be used to interpret regulatory changes, evaluate the implementation of data-based technologies, and study the impact of digital transformation on the functioning of enterprises. This makes it a tool with high application potential, capable of adaptation in various sectoral and institutional contexts.

**Table 5.**  
*Conceptual model logic – synthetic approach*

<b>Model layer</b>	<b>Role in the structure</b>	<b>Impact mechanism</b>	<b>Consequences for further layers</b>
Institutions (regulations, standards, data infrastructure)	Superior layer, determining the systemic conditions for the functioning of enterprises.	Shaping access to data, defining rules for information flow, creating restrictions and incentives.	Sets the limits of the operability of knowledge management processes and determines the epistemic potential of the organisation.
Knowledge management processes (conversion, diffusion, retention, integration)	Transformational layer activating the potential of data.	Transforming information into organisational knowledge, distributing and consolidating knowledge resources.	Determines the quality and consistency of knowledge available for decision-making processes, affects operational efficiency.
Data resources (quality, timeliness, availability, structure)	Input layer determining the organisation's information base.	Providing input material for knowledge processes; modulating informational and analytical value.	It defines the limits of knowledge transformation and influences the organisation's innovation and predictive capabilities.

Cont. table 5.

Competitive advantage (innovation, decision accuracy, process synergy)	The output layer resulting from the interaction of the other elements.	Materialisation of value created by institutions, knowledge and data through improved organisational performance.	Strengthens the adaptability of the system, but does not have a reciprocal effect on institutions (asymmetric relationship).
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Source: own study.

The table summarising the logic of the model shows that its structure is based on a consistently organised hierarchy of relationships, in which each layer performs a specific systemic function. Institutions create an overarching framework, defining the operational capabilities of the organisation and setting the boundaries for data flow. Knowledge management processes are a transformative mechanism responsible for giving data epistemic and decision-making significance. Data resources serve as an input layer, determining the value of the results that can be obtained, while competitive advantage materialises the synergistic effects of the entire system.

The presented structure reveals that competitive advantage is a result that cannot be explained in isolation from systemic institutional conditions and the quality of knowledge processes. The model shows the interdisciplinary nature of the relationships, integrating economic, managerial and institutional perspectives, and its architecture allows for a precise analysis of the complex processes characteristic of a data-driven economy.

Thanks to its structured design, the model can serve as both a tool for in-depth theoretical analysis and a basis for empirical applications in research on the determinants of competitive advantage in modern enterprises.

### 4.3. Recommendation

Based on the proposed model, a set of recommendations relating to its key components can be formulated. First and foremost, the need to adapt organisational knowledge management mechanisms to the existing institutional framework is emphasised, particularly in areas relating to data protection, system interoperability and intellectual property. Harmonising internal procedures with formal regulations helps to reduce the risks associated with information processing and strengthens the possibilities for inter-organisational cooperation, which is an important condition for the functioning of enterprises in a data-driven economy. At the same time, it is advisable to develop knowledge management processes that support the conversion of data into resources of cognitive and operational value, including through mechanisms for the diffusion, retention and integration of knowledge at the operational and strategic levels. Of particular importance is the implementation of tools enabling the automation of information flow, the use of predictive analytics and the systematic documentation of organisational knowledge. At the same time, organisations should take steps to improve the quality of data resources, ensuring that they are up to date, structured and accessible within interoperable information ecosystems. The development of infrastructure based on open data standards, cloud

computing and analytical platforms can significantly increase knowledge productivity and reduce information handling costs. Ultimately, it is emphasised that knowledge management should be treated as an integral part of an organisation's strategic model, rather than a separate process. Only a coherent combination of institutional frameworks, data resource quality and knowledge management processes enables the full exploitation of a company's information potential and provides the basis for building a sustainable competitive advantage in a data-driven economy.

## 5. Conclusion

The analysis carried out allows us to clearly state that knowledge management in a data-driven economy is a fundamental mechanism determining the ability of enterprises to build sustainable competitive advantages. It has been pointed out that knowledge is not only an organisational resource, but also a complex structure resulting from the interaction of institutions, information processes and the quality of data resources. The conceptual model developed captures this relationship, presenting it as a systemically linked configuration of elements that determine both the effectiveness of decision-making processes and the innovative potential of enterprises.

The conclusions drawn from the analysis confirm the key role of institutions that set the operational framework for organisations and define acceptable forms of data use. Appropriately designed regulations, information infrastructure and institutional stability act as catalysts for knowledge management processes, strengthening their ability to generate organisational value. In turn, the mechanisms of conversion, diffusion, retention and integration of knowledge play a central role in giving data strategic significance, enabling its transformation into a resource of high decision-making utility.

The analysis also emphasises that competitive advantage is not the result of a single process, but rather the result of the synergistic interaction of multiple layers of the system. The effectiveness of knowledge processes depends on the quality of data, and the usefulness of data is only revealed in conditions of institutional coherence. The model thus showed that competitive advantage arises not as the sum of independent factors, but as the result of a coherent configuration of structural and procedural elements.

The study also has practical significance. The results indicate that companies operating in a data-intensive environment should invest in the development of knowledge management systems, striving to improve the quality of information conversion and integration processes. At the same time, it is necessary to monitor regulatory changes and adapt information management models to institutional requirements. The recommendations are universal and can be applied in organisations of different sizes and degrees of digital advancement.

Despite extensive analysis, the study is conceptual in nature, which allows for the identification of several directions for further research. In particular, empirical research on the effectiveness of data conversion processes into knowledge, analysis of the role of algorithmisation in decision-making processes, and assessment of the impact of regulatory policies on the functioning of data ecosystems require further study. The indicated research perspectives may in the future enable the validation of the model in sectoral, regional and inter-organisational conditions, providing in-depth knowledge about the dynamics of competitive advantages in a data-driven economy.

This study is conceptual in nature and has not been empirically validated, which limits the generalisability of the proposed model. The analysis is based solely on secondary literature, which means that its conclusions depend on the availability and interpretation of existing research. Furthermore, the study does not take into account sector-specific differences or organisational factors such as culture, resistance to change or technological maturity. Finally, the rapid development of data management and digital technologies may require future changes to the proposed framework.

In summary, the study presents a coherent and theoretically sound interpretation of knowledge management as a determinant of competitive advantages of enterprises. The conceptual model introduced provides an analytical tool for a systematic understanding of the complex relationships between information, knowledge, institutions and market outcomes. Thus, the article contributes to the development of interdisciplinary scientific discourse on the role of knowledge in the digital economy and provides a starting point for further in-depth research on the mechanisms of data-based advantage.

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