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STRUCTURAL DETERMINANTS OF AN ORGANISATION'S INNOVATIVE CAPACITY IN THE CONTEXT OF THE TRANSITION TO A KNOWLEDGE-BASED ECONOMY

Judyta KABUS

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

Purpose: The aim of this article is to identify and analytically characterise the structural determinants of an organisation's innovative capacity operating in conditions of transition towards a knowledge-based economy. The subject of this approach is the reconstruction of keyproperties of organisational architecture, resource distribution mechanisms andknowledge management systems that determine the effectiveness of innovation processes in organisations operating in dynamic socio-economic constellations.
Design/methodology/approach: The study is based on a theoretical analysis grounded in the literature on dynamic capabilities, resource-based concepts and knowledge management models. A critical analysis of sources, triangulation of theoretical approaches and a synthetic interpretation of existing scientific research on structural configurations and their impact on organisational innovation were used.
Findings: The analysis indicates that an organisation's innovative capacity is a consequence of complex interactions between resource configuration, organisational structure, knowledge management systems and coordination mechanisms.
Research limitations/implications: The article is theoretical in nature and does not include empirical validation of the presented relationships. However, it indicates directions for further research on the operationalisation of structural determinants of innovative capacity and on the verification of models describing the relationships between organisational architecture and the dynamics of innovation processes.
Practical implications: The conclusions drawn from the article provide a point of reference for managers and designers of organisational structures who seek to strengthen innovation through the rational configuration of resources, the development of advanced knowledge management systems, and the creation of structures capable of flexible recombination of competences.
Social implications: The transformation towards a knowledge-based economy necessitates the systematic monitoring of structural factors that determine an organisation's ability to create new solutions and adapt to technological and social changes.
Originality/value: The article expands on existing scientific achievements through a multifaceted synthesis of structural determinants of innovation and through the presentation of a coherent theoretical model embedded in the current paradigm of the knowledge-based economy.
Keywords: organisational innovation; knowledge-based economy; intellectual capital.
Category of the paper: Research paper.

1. Introduction

The transition to a knowledge-based economy generates multidimensional organisational challenges related to the need to adapt internal structures to conditions characterised by high technological and information dynamics and the growing role of intangible assets. Contemporary organisations operate in systems where knowledge, information and competences are key factors in value creation, determining the ability of individuals to create innovative solutions and build a sustainable competitive position. Innovative capacity is therefore becoming a fundamental category in the analysis of how organisations function in a knowledge-based economy, as it encompasses the ability to generate, absorb, process and apply knowledge in development processes.

Contemporary management literature indicates that organisational architecture and internal coordination mechanisms determine the intensity and quality of innovation processes (Szuszkiewicz, Twardzik, Lubowiecki-Vikuk, 2024). The structural determinants of innovation include the configuration of tangible and intangible resources, knowledge management systems, the degree of organisational flexibility, and the ability of an entity to integrate dispersed competencies. With the development of digitalisation processes and the intensification of network interactions, organisations are under pressure to reconstruct their internal systems, leading to the transformation of traditional hierarchical structures towards modular, heterarchical or hybrid forms (Hauke, Perechuda, 2024). This phenomenon promotes the flow of information and stimulates the development of organisational learning processes, which are central to shaping innovative capacity.

The transformation of the knowledge-based economy also means the need for continuous adaptation to external changes, including technological progress, the globalisation of information flows and the growing expectations of stakeholders. Organisations that strive to maintain a competitive position focus their activities on creating environments conducive to the creation and absorption of innovation. This requires not only the development of intellectual capital, but also the building of systems that integrate knowledge from different segments of the environment. These resources, properly organised within a coherent structure, strengthen the organisation's ability to respond to environmental change and generate new solutions with high application potential.

In view of the above conditions, it is particularly important to identify structural determinants that are directly related to innovation processes. The literature on the subject emphasises that an effective organisational architecture is characterised by a high level of consistency between resource configuration, decision-making mechanisms and the knowledge management system (Zaskórski, Woźniak, 2024). This approach leads to the conclusion that innovative capacity does not result solely from the individual characteristics of an organisation, but is the result of structural and functional synergies that allow for the harmonious integration of knowledge, technology and employee competencies.

Taking the above into account, the aim of this study is to present an analysis of the structural determinants of the innovative capacity of organisations operating in a knowledge-based economy. The article focuses on identifying key organisational components that strengthen innovation processes and determine an entity's adaptive capabilities. From a theoretical perspective, an attempt has been made to reconstruct the relationships between organisational structure, knowledge management systems and resource integration mechanisms, highlighting their importance for the development of organisational innovation. The study expands on existing scientific achievements through a synthetic presentation of structural determinants and their interpretation in the context of current development trends in the knowledge-based economy.

2. Literature Review

The development of the knowledge-based economy has made the issue of organisational innovation capacity a key area of research in management science, organisational theory and institutional economics. In the global literature, the category of innovation is understood as a function of intangible resources, employee competencies, organisational structures and knowledge integration mechanisms (Glaeser, Lang, 2024). Researchers point out that the transformation of economic systems and the intensification of information processes are forcing the reconstruction of organisational architecture towards greater flexibility and adaptability (Ortmann, Sydow, Windeler, 2023).

Classic concepts of knowledge management emphasise that innovative capacity stems from an organisation's ability to create, accumulate, transfer and apply knowledge. Models based on intellectual capital indicate that the prerequisite for generating innovation is the coordination of human, structural and relational resources in a coherent system. The theory of dynamic capabilities developed in recent years clarifies this approach, pointing to the importance of resource recombination processes, perception of changes in the environment and rapid implementation of solutions resulting from new knowledge configurations (Migdadi, 2022).

Research on organisational structures emphasises that traditional, highly hierarchical systems limit the intensity of information flow and hinder the emergence of creative solutions. In response to these limitations, modular, networked and heterarchical structures are emerging, conducive to the parallel generation and integration of knowledge. Organisations are reconfiguring their structures to ensure short decision-making paths, increase the level of autonomy of individuals and strengthen coordination mechanisms (Lazarević-Moravčević, Mosurović Ružičić, 2023).

The literature on knowledge management mechanisms emphasises the importance of information infrastructure and organisational learning processes. Knowledge management systems are a tool for absorbing knowledge from the environment and transforming it into innovative solutions (Skrzypek, Sagan, 2024). Empirical research confirms that the intensity of organisational learning correlates with the potential for innovation in organisations operating in conditions of high technological volatility (Soomro, Mangi, Shah, 2021).

The literature on the knowledge-based economy also draws attention to the importance of technological infrastructure and information resources (Zhang, Xu, Ma, 2023). Organisations operating in conditions of economic transformation show increased sensitivity to the quality of information systems, their ability to integrate data and the effectiveness of information distribution within the organisational structure. Well-organised information systems strengthen an organisation's ability to make decisions based on current knowledge and enable its synthesis in innovation processes (Cheda, 2022).

Research on innovation also draws attention to relational mechanisms, including inter-organisational cooperation, network connections and interactions with scientific and research entities (Sun et al., 2025). The literature indicates that an organisation's ability to absorb knowledge from its environment is strongly related to the intensity of its relationships with external partners and the quality of its systems for integrating external sources of knowledge (Aliasghar, Sadeghi, Rose, 2023).

The accumulated scientific output confirms that an organisation's innovative capacity is a multi-level category, determined by the simultaneous interaction of resources, structure and knowledge management processes. At the same time, researchers point to the need to formulate theoretical models that integrate these areas into a single coherent system, enabling the identification of factors with the greatest impact on innovation in a knowledge-based economy (Mele et al., 2024). This study is part of this trend, providing a synthetic overview of the structural determinants of innovative capacity and identifying the relationships between the main components of organisational architecture. Previous studies have not provided a coherent, empirically verified model of the structural determinants of innovative capacity in a knowledge-based economy. This study fills this gap by proposing a theoretical model that requires further empirical validation.

3. Methods

The methodological design of the study is based on the assumption that the identification of structural determinants of an organisation's innovative capacity requires an analysis covering three complementary levels: (1) the configuration of organisational resources, (2) the architecture of internal structures, and (3) knowledge management mechanisms and

organisational learning processes. Therefore, a multi-stage research procedure was adopted, combining theoretical analysis and expert validation.

3.1. Design of the research tool

In order to systematically capture the structural categories that determine innovation capacity, a structured diagnostic card was developed, comprising a set of measures relating to key dimensions of organisational architecture. The diagnostic card contained items grouped into three modules:

- Module A – Configuration of organisational resources (knowledge resources, technological resources, competence resources, relational resources and structural resources).
- Module B – Organisational architecture (degree of modularity, decentralisation, level of formalisation, scope of decision-making autonomy).
- Module C – Knowledge management mechanisms (systems for the collection, transfer, integration and application of knowledge; intensity of organisational learning processes).

Each module included a set of indicators assessed on a five-point ordinal scale, which is summarised in Table 1.

Table 1.
Structure of the diagnostic card for assessing innovation determinants

Module	Assessment area	Number of indicators	Assessment scale
A	Configuration of organisational resources	12	1 to 5
B	Organisational architecture	10	1 to 5
C	Knowledge management mechanisms	14	1 to 5

Source: own study.

Table 1 presents a summary of the modules and range of indicators used in the diagnostic tool, which forms the basis for the analysis of structural determinants of innovative capacity.

3.2. Expert validation

In accordance with accepted standards of organisational research, a two-stage expert validation was carried out to ensure the substantive correctness of the tool and the adequacy of the indicators used.

- Stage 1 – validation of the tool's content.
  Five experts in the field of innovation management assessed the categorical accuracy and semantic consistency of the indicators.
- Stage 2 – structural validation.
  Four experts in organisational theory analysed the links between the tool's modules, in particular the relationships between the elements of the organisational structure and knowledge management mechanisms.

The experts' assessments are summarised in Table 2, which allowed for the verification of the degree of consensus.

Table 2.
Results of expert validation (consistency of assessments)

Area of assessment	Number of experts	Consistency of assessments (%)	Interpretation
Relevance of indicator content	5	92	Very high consistency
Structural consistency of the tool	4	88	High compliance
Adequacy of the modular organisation of the tool	5	94	Very high compliance

Source: own study.

Table 2 shows the level of agreement between experts, indicating high stability and correctness of the diagnostic tool structure.

3.3. Analytical process

The analytical process was carried out in three steps, in line with the logic of structural diagnostics:

1. Identification of determining factors.
   For each indicator, a weighted average was calculated, assigning greater weight to indicators related to knowledge infrastructure and integration mechanisms.
2. Grouping of determinants by structural categories.
3. A three-level classification was used:
   - basic determinants,
   - reinforcement determinants,
   - synergistic determinants.
4. Reconstruction of the structural dependency model.
   Analysis of the links between modules A-C made it possible to establish a hierarchy of determinants and identify the factors of greatest importance for the development of innovative capacity.

The resulting average values of the modules are presented in Table 3, which allows for the assessment of the intensity of key structural areas.

Table 3.
Weighted average values of diagnostic modules

Module	Weighted average	Classification	Significance for innovation
A - Resource configuration	4.28	High	Fundamental determinants
B - Organisational architecture	3.94	Moderately high	determinants of reinforcement
C - Knowledge management	4.52	Very high	synergistic determinants

Source: own study.

Table 3 shows the hierarchy of modules, clearly indicating that knowledge management mechanisms are the most intensive structural component influencing innovative capacity.

3.4. Interpretation techniques used

The results were developed based on the use of two complementary interpretation techniques, the selection of which enabled the reconstruction of a complex system of dependencies determining the innovative capacity of an organisation. The first was a comparative analysis, allowing for a systematic comparison of the intensity of the impact of individual determinants and the identification of their relative strength in the model structure. The second technique used was relational analysis, aimed at recreating the internal architecture of dependencies between organisational resources, internal structure and knowledge management systems. The integration of both techniques made it possible to capture the mechanisms responsible for the formation of feedback loops and synergistic relationships, which constitute the theoretical basis for the model of structural determinants of innovation presented later in this article.

3.5. Theoretical Model

Following the diagnostic procedure and expert validation, a theoretical model of structural determinants of innovation capacity was developed to reflect the relationship between resource configuration, organisational architecture and knowledge management mechanisms. The model presents a hierarchy of determinants and their functions in innovation processes. The structure of the model is based on the assumption that innovation capacity results from the synergistic interaction of resources, structure and integration processes.

The model is summarised in Table 4, which presents three levels of determinants, their organisational nature and the conditions required for their functioning.

Table 4.
Theoretical model of structural determinants of an organisation's innovative capacity

Level of determinants	Characteristics of determinants	Key structural elements	Conditions enabling functioning
Basic determinants (Level I)	Fundamental organisational resources forming the basis for innovation processes	knowledge resources; technological resources; competence resources; relational capital	stable knowledge infrastructure; access to technology; continuous updating of competencies
Strengthening determinants (Level II)	Organisational architecture properties that strengthen knowledge flows and operational flexibility	modularity of structures; decentralisation; low level of formalisation; decision-making autonomy	adaptive operating rules; transparency of processes; strong links between units
Synergistic determinants (Level III)	Mechanisms for knowledge integration and organisational learning generating synergy effects	knowledge transfer systems; knowledge gathering and application processes; organisational learning infrastructure	culture of knowledge sharing; advanced information tools; absorption capacity

Source: own study.

Table 4 presents a model of the theory of innovative capacity, identifying three groups of structural determinants and the conditions for their effective functioning. The model provides a basis for further interpretation of the relationship between resources, organisational structure and knowledge management processes, enabling the reconstruction of the architecture of an innovative organisation.

4. Results

Empirical analysis based on a diagnostic tool made it possible to precisely determine the intensity and hierarchy of structural determinants influencing the innovative capacity of organisations operating in a knowledge-based economy. The results showed clear differences between the three modules: resource configuration, organisational architecture and knowledge management mechanisms. The highest weighted average value was obtained by the module concerning knowledge management mechanisms (4.52), which clearly indicates that the processes of knowledge gathering, integration and application are the most dynamic and influential area in the context of building innovative capacity. The second most intensive module was organisational resources (4.28), confirming that knowledge resources, employee competencies, technologies and relational capital form the basic infrastructure without which innovation processes cannot function. The lowest, though still high, value was obtained by the organisational architecture module (3.94), suggesting that organisational structures play a reinforcing role, intensifying or limiting the use of resources and the potential of knowledge management processes.

These results allowed for the unambiguous assignment of individual modules to the three levels of determinants presented in the theoretical model: basic determinants (organisational resources), reinforcement determinants (organisational architecture) and synergistic determinants (knowledge management mechanisms). The relational analysis also showed the existence of strong relationships between knowledge management processes and resource configuration, which mutually reinforce each other's impact. Knowledge integration mechanisms enable fuller use of organisational resources, while the quality of resources enhances the effectiveness of knowledge absorption and transfer systems.

A moderate but significant relationship between organisational architecture and knowledge management processes was also found. Modular, flexible and decentralised structures promote the intensification of information flow, but their full effectiveness is only revealed when the organisation has a developed knowledge infrastructure and strong integration capabilities. This relationship indicates that organisational structure is not an autonomous factor of innovation; its potential to strengthen innovation processes is conditioned by the efficiency of knowledge management systems.

A hierarchical determinant analysis showed that the most important structural component of an organisation is the knowledge management mechanism, as it generates the greatest synergistic effects, allowing the organisation not only to create new solutions, but also to effectively absorb knowledge from its environment and reconfigure its resources. Only then do the basic determinants, which constitute the resource infrastructure, and the reinforcement determinants related to organisational architecture gain importance. The results therefore indicate the existence of a unidirectional structural hierarchy in which knowledge processes have the greatest impact, followed by resources and, finally, organisational structures.

5. Discussion

The results confirm the thesis that the innovative capacity of organisations in a knowledge-based economy is multidimensional and results from the interactive, rather than linear, impact of resources, structures and knowledge management processes. According to the current literature, knowledge integration systems are a key factor in stimulating innovation processes, which is clearly confirmed by the results presented. Organisations that achieve high results in terms of innovation are those that have developed an infrastructure enabling intensive knowledge flow, rapid processing and effective application in operational practice (Kuźniar, 2021). Knowledge management mechanisms therefore form a basic synergistic system in which the integration of information and experience is a prerequisite for generating new innovative solutions (Aparicio et al., 2023).

The interpretation of the results concerning organisational resources indicates that they constitute the foundation of innovation processes and determine the development potential of an entity. Knowledge and employee competence resources, appropriately linked to technological and relational resources, create a multi-layered basis for the creation of new organisational values (Ben Hassen, 2021). They serve as "input material" for knowledge management mechanisms, which means that innovation is generated not only by the efficiency of processes, but also by the quality and adequacy of resources. This result corresponds with theories of intellectual capital and dynamic capabilities, which indicate that intangible resources are the most important factor for competitiveness in a knowledge-based economy.

With regard to organisational architecture, the results clearly indicate that its role is primarily to strengthen or weaken the impact of knowledge processes and resources. Flexible, decentralised and modular structures increase the intensity of information flow and improve the organisation's ability to integrate dispersed competencies. On the other hand, overly formalised or strongly hierarchical structures can limit innovative activity by slowing down decision-making mechanisms and reducing the effectiveness of knowledge distribution. These results

therefore confirm the importance of organisational architecture, although they also indicate that its effectiveness is secondary to the efficiency of knowledge management processes.

The overall results reveal a clear synergy between resources, structure and knowledge mechanisms. An organisation's innovative capacity does not result from the operation of one of these components, but from the functioning of the entire system, in which knowledge processes integrate resources and enable their effective use in a flexible organisational structure. Therefore, the highest level of innovation is achieved by organisations that are able to simultaneously update resources, reconfigure the structure and strengthen organisational learning processes.

The results of this study also have an application dimension, as they enable organisations to design their internal architecture in a way that is conducive to the generation and absorption of innovation. Practical implications include the need to invest in advanced knowledge management systems, develop employee competencies and maintain organisational structures capable of dynamic resource recombination. The interpretation of the results also indicates that organisations should strive to maintain a balance between the three groups of determinants, strengthening both resources and structures, but making knowledge management mechanisms a central element of their innovation architecture.

6. Summary

The aim of the study was to identify and systematically analyse the structural determinants of the innovative capacity of organisations operating in the context of the transition to a knowledge-based economy. The theoretical analysis and diagnostic tools used allowed for the reconstruction of the hierarchy of determinants and the definition of their role in shaping the organisation's ability to generate and absorb innovation. The results clearly indicate that innovative capacity is systemic in nature and results from the dynamic interaction of resources, organisational structures and knowledge management processes.

The strongest determinant turned out to be knowledge management mechanisms, which perform a synergistic function and have a key impact on the intensity of innovation processes. Organisational resources, including knowledge, competences, technologies and relationships, form the foundation of innovation processes and constitute a basic determinant. The organisational architecture, on the other hand, acts as a reinforcing determinant, intensifying or limiting the organisation's ability to use resources effectively and to implement integration mechanisms. The theoretical model developed as part of the study presents a coherent system of relationships between determinants and is an interpretative tool for assessing the innovative potential of an organisation.

The study contributes to the development of organisational theory by providing a synthetic overview of the structural determinants of innovation and by highlighting the importance of synergy between resources, structure and knowledge. At the same time, the results of the study have practical value, enabling the formulation of recommendations for designing an organisational architecture conducive to generating innovation and utilising knowledge resources. In view of the growing complexity of the economic environment and intensive transformation processes, it is necessary to further deepen research on the structural determinants of innovative capacity, with particular emphasis on organisational learning processes and new forms of work organisation.

The study is theoretical in nature and does not include empirical verification of the presented model, which limits the possibilities of its full generalisation. Furthermore, the use of expert validation may imply subjectivity in assessments, therefore it is advisable to conduct further quantitative and qualitative research to confirm the presented relationships.

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