

INTEGRATION OF INFORMATION RESOURCES IN INTERORGANIZATIONAL COLLABORATION STRATEGIES

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Purpose: The aim of the article is to explain the significance of information resources in the context of the collaboration strategies pursued by enterprises operating within an interorganizational network. The study seeks to identify the benefits derived from information resources within the value structure generated through interorganizational cooperation and to determine whether the assessment of these benefits varies depending on the enterprise's business profile, size, and level of engagement in the network.

Design/methodology/approach: The article adopts a quantitative approach grounded in the relational and strategic perspective of interorganizational networks. The empirical study, conducted among 401 enterprises, applied descriptive statistics, the chi-square (χ^2) test with Yule's ϕ coefficient, and the Mann-Whitney U test.

Findings: The research findings indicate that improved access to information was the highest-rated benefit of interorganizational cooperation among all the analyzed variables. This suggests that information is perceived by enterprises as the most important resource generated through collaboration with market partners. The results demonstrate that the informational dimension of cooperation constitutes a key mechanism strengthening market position, integrating relational value, and enhancing the enterprise's capacity for development.

Research limitations/implications: The cross-sectional design and reliance on subjective assessments limit causal inference and the observation of changes over time; therefore, future research should incorporate longitudinal, sectoral, and qualitative analyses.

Practical implications: The findings indicate that interorganizational relationships constitute an important source of strategic information resources, with informational benefits increasing through partner integration and stronger network engagement.

Social implications: Effective collaboration based on information exchange may foster the creation of a more stable, integrated, and adaptive business environment, as well as enable enterprises to better align their activities with market needs.

Originality/value: The article highlights the informational dimension of collaboration strategy as a key source of value in interorganizational networks, showing that access to information resources is the most significant perceived benefit of network cooperation and strengthens with greater partner integration.

Keywords: interorganizational networks; collaboration strategy; information exchange.

Category of the paper: Research article.

1. Introduction

Contemporary enterprises operate under conditions of increasing environmental complexity, intensifying market volatility, and the progressive specialization of resources and competencies. Under such circumstances, an organization's ability to independently acquire, process, and utilize information resources is increasingly proving insufficient. Consequently, particular importance is attached to collaboration strategies implemented within interorganizational networks, where value is created not only through access to material resources, but also through the flows of information, knowledge, and experience among partners (Dyer, Nobeoka, 2000). Classical approaches to organizational networks viewed the network as a form of coordination situated between market and hierarchy, characterized by the creation of durable patterns of exchange, including information exchange (Dhanaraj, Parkhe, 2006). This perspective was further developed by the relational view concept, according to which competitive advantage may arise from interorganizational knowledge-sharing routines, resource complementarities, and the joint learning of partners, rather than solely from assets controlled by a single enterprise (Lavie, 2006). Consequently, the informational dimension of collaboration should be perceived not as a by-product of relationships, but as one of the key mechanisms of value creation (McHugh, 2013).

Despite the growing interest in interorganizational relationships, a research gap remains evident. Existing studies have relatively often focused on general sources of relational advantage, mechanisms of knowledge sharing within specific configurations-particularly in supply chains and innovation networks-or on the broadly understood effects of cooperation (Li, Sikora, Shaw, Tan, 2006; Cheng, 2011). Considerably less attention has been devoted to information resources as a key component of value created and integrated within interorganizational networks (Mentzas et al., 2006), and even less to their relationship with such characteristics as the enterprise's business profile, size, and actual level of engagement in network relationships (Dhanaraj, Parkhe, 2006).

In response to the identified research gap, the following research question was formulated: do interconnections and relationships with market partners, developed within the framework of a collaboration strategy in an interorganizational network, enable enterprises to gain better access to information, and if so, does the assessment of this benefit depend on the enterprise's business profile, size, and level of network engagement? This question leads to the main objective of the article, which is to explain the significance of information resources in the context of collaboration strategies pursued by enterprises operating within interorganizational networks and to determine whether the perception of this value varies according to selected enterprise characteristics and the level of engagement in relationships with partners. The adopted approach is strategic-relational in nature and is based on the assumption that information resources constitute not only an outcome of cooperation, but also a prerequisite for

generating further value-creating effects, such as improved market recognition, increased flexibility, better alignment with customer needs, and the strengthening of an enterprise's competitive position (Li et al., 2006; Zakrzewska-Bielawska et al., 2023).

The theoretical scope of the article encompasses four interrelated areas: interorganizational network theory, the relational view approach, issues related to the integration and exchange of information and knowledge between organizations, and the stream of research on firms' relational capabilities. The substantive scope focuses on the informational dimension of collaboration strategy, understood as an enterprise's ability to acquire, utilize, and strengthen access to information through relationships with market partners. Empirically, the article refers to enterprises operating within interorganizational networks and examines the significance of this benefit in the context of variations in assessments depending on organizational characteristics and the level of relational engagement. This perspective makes it possible not only to deepen the understanding of value creation mechanisms within networks, but also to clarify the role of information in the structure of strategic outcomes generated through interorganizational cooperation.

2. Collaboration Strategy of Enterprises within an Interorganizational Network in the Context of Information Resource Flows

Contemporary enterprises are increasingly less likely to build their competitive position solely on the basis of resources confined within their internal organizational boundaries. Under conditions of growing environmental complexity, market turbulence, and progressive specialization, particular importance is attached to the ability to operate within relational arrangements in which value is created not only by the organization itself, but also by the quality and intensity of its connections with other entities. In this context, the information resources of enterprises operating within interorganizational networks should be regarded as one of the key components of strategic effectiveness, as they determine both the accuracy of recognizing environmental changes and the ability to coordinate activities with market partners (Lavie, 2006; Dhanaraj, Parkhe, 2006).

This significance stems primarily from the fact that an interorganizational network is not merely a structure of formal connections, but rather a space for the flow of resources such as information, knowledge, experience, and market relationships (Dhanaraj, Parkhe, 2006). Relationships established between enterprises enable access to information resources that, under conditions of independent operation, would be difficult to obtain, costly, or available too late to be effectively utilized in the decision-making process. From this perspective, information within an interorganizational network performs the function of a strategic resource that determines the ability to identify market opportunities, develop innovation, and build

organizational adaptability (Cheng, 2011). Research on interorganizational cooperation indicates that it is precisely through network relationships that enterprises gain access to dispersed knowledge and information, which become the foundation for learning, innovation, and increased adaptability (Chen et al., 2014).

At the same time, the literature increasingly emphasizes the relational and competence-based nature of the ability to utilize information within network arrangements (Dhanaraj, Parkhe, 2006). Mere participation in interorganizational relationships is insufficient. What becomes crucial is whether an enterprise is capable of developing and leveraging relationships in a manner that supports knowledge mobilization, information flows, and the coordination of activities with partners. In innovation networks, particular importance is attached to orchestrating innovation networks, the core of which lies precisely in managing knowledge mobility (Czakoń, 2010). The transformation of contacts with partners into tangible developmental and market outcomes requires relational capability, which emerged from the development of the networking capability concept, understood as a complex organizational ability to initiate, develop, and exploit business relationships (Mitrega et al., 2012; Mitrega et al., 2017). This stream of research is reflected in studies identifying communication, information exchange, transparency, and trust as key attributes of interorganizational relationships (Klimas et al., 2023). From this perspective, the construct underlying strategy and determining the manner in which relationships with partners are built and utilized is relational orientation (Zakrzewska-Bielawska, Czakoń, Kraus, 2023), which implies that information resources within collaboration strategies possess both a relational and a strategic character, as they depend on the quality of interorganizational ties and on the enterprise's orientation toward value creation through relationships.

The literature also emphasizes that information resources directly influence the level of integration and coordination of activities within interorganizational arrangements (Cheng, 2011). The higher the quality of information exchange, the greater the partners' ability to synchronize and integrate processes, respond more rapidly to disruptions, and reduce costs resulting from erroneous decisions and information asymmetry (Li, Sikora, Shaw, Tan, 2006). This is particularly evident in supplier relationships, strategic alliances, and innovation networks, where efficient information flows determine not only operational effectiveness, but also the capacity to jointly generate new solutions. From this perspective, trust constitutes one of the fundamental conditions for effective information sharing between organizations, as it increases partners' willingness to disclose and utilize information resources (Li et al., 2006).

Interorganizational cooperation fosters not only access to resources such as information, but also the creation of relational value, which emerges through the complementarity of competencies, partnerships, and the ability to jointly utilize organizational potential. Consequently, value creation and appropriation in enterprises are increasingly associated with the development of partnerships, access to complementary resources, and the use of

technological solutions supporting interorganizational collaboration, thereby strengthening the strategic importance of relationships in enterprise development processes (Dyduch, Cyfert, Zastempowski, 2024). At the same time, information resources acquired through the use of business analytics in the context of Industry 4.0 enhance process visibility, improve decision quality, and increase organizational resilience (Wolniak, 2024), confirming that information resources constitute one of the key mechanisms of integration, coordination, and adaptation within interorganizational arrangements. These conclusions reinforce the view that the informational dimension of cooperation is not only relational, but also competence-based in nature, as it requires specific organizational and managerial capabilities from enterprises.

Research on interorganizational networks emphasizes that relationships with market partners contribute both to a better understanding of customer needs and to improved access to information, which in turn strengthens enterprises' market position and enhances their ability to respond to environmental demands (Łęgowik-Świącik, Kostrzewska, 2024). From this perspective, interorganizational relationships may play an important role in building enterprise resilience and achieving economies of scale, thereby indirectly confirming the strategic significance of information resources generated through cooperation (Łęgowik-Świącik, 2025). This means that information is not merely an element supporting operational activity, but becomes the binding force of network relationships and one of the main carriers of value created through collaboration. Such an approach opens the way for a more precise identification of the role of information within the value structure generated by cooperation, as well as for the empirical verification of whether its significance is universal or dependent on specific enterprise characteristics and the quality of network participation. Only then can the information exchanged between partners become useful, reliable, and practically applicable. Consequently, information resources within collaboration strategies should be understood more broadly than as a simple transfer of data, as they also encompass the ability to select, interpret, jointly process, and utilize information in a manner that strengthens decision-making processes and enables better exploitation of market opportunities.

In summary, the information resources of enterprises operating within interorganizational networks should be perceived as the capability to acquire, share, and utilize information in a manner that supports coordination of activities, reduction of uncertainty, joint learning, and the creation and integration of relational value. Their significance lies in enabling enterprises to operate more effectively in conditions of a complex and dynamic environment while simultaneously enhancing their ability to exploit the potential embedded in relationships with partners. Consequently, a collaboration strategy lacking a clear informational dimension remains incomplete, whereas a strategy that consciously develops this dimension becomes a tool for building sustainable competitive advantage, organizational resilience, and greater effectiveness of the entire network arrangement.

3. Research Methodology

The adopted research methodology was quantitative in nature and embedded in the perspective of studies on interorganizational networks, understood as relatively stable arrangements of cooperative relationships among autonomous enterprises (Lavie, 2006; Dhanaraj, Parkhe, 2006). This approach is consistent both with the classical understanding of networks as an intermediate form between market and hierarchy and with the relational perspective, according to which value can be created at the intersection of organizational boundaries through access to partners' complementary resources, knowledge, and competencies. In this context, the selection of a research procedure aimed at identifying the benefits derived from information resources within the structure of generated value, as well as assessing these benefits in relation to differences associated with the enterprise's business profile, size, and level of network engagement, makes it possible to capture both the overall perception of benefits and the variation in assessments depending on selected organizational characteristics.

The empirical material comprised 401 enterprises operating within interorganizational networks. The research instrument was a structured questionnaire survey, which included, on the one hand, demographic questions concerning enterprise characteristics such as size and dominant business profile, and, on the other hand, a set of 20 statements treated as variables in the analysis, referring to the value generated through cooperation with market partners. Responses were provided using a five-point Likert scale, where 1 indicated complete disagreement and 5 indicated complete agreement with the statement. In the descriptive part of the analysis, the mean and standard deviation were used to establish a hierarchy of assessments and identify the relative strength of approval for individual statements. The literature recognizes such an approach as acceptable in survey research based on five-point Likert items, particularly when the inferential component relies on nonparametric procedures or tests appropriate for categorical data (Sullivan, Artino, 2013; de Winter, Dodou, 2010).

The research procedure was conducted in three stages. In the first stage, descriptive statistics were applied by calculating means and standard deviations for all 20 variables, which were grouped into five synthetic categories of value. This stage served an organizing and diagnostic function, as it enabled the identification of which benefits of network cooperation were rated highest by respondents and which were evaluated relatively lower. In the second stage, the chi-square (χ^2) test of independence was employed to examine the relationships between the assessment of cooperation value and the enterprise's business profile as well as enterprise size. The selection of this procedure was justified by the fact that the analyzed relationships concerned categorical variables presented in contingency tables. The χ^2 test makes it possible to determine whether the distribution of responses differs significantly across the compared

categories of entities (McHugh, 2013; Hazra, Gogtay, 2016). As a complement to the test, Yule's ϕ coefficient was also examined as a measure of association strength (Akoglu, 2018).

In the third stage of the analysis, the Mann-Whitney U test was conducted to compare assessments formulated by two independent groups of enterprises: entities with lower and higher levels of engagement in the interorganizational network. The groups were divided according to the median overall assessment of engagement ($Me = 4.050$). The choice of this test was methodologically appropriate because the compared data were ordinal in nature, and the Mann-Whitney U procedure does not require the assumption of normal distribution while maintaining high usefulness in the analysis of two independent samples (Nachar, 2008; Sullivan, Artino, 2013). The adoption of this procedure made it possible to determine whether more intensive participation in network relationships is associated with significantly higher evaluations of the value created through cooperation, and thus whether the level of engagement differentiates the perception of strategic and operational outcomes. Results meeting the condition of $p < 0.05$ were considered statistically significant. The reliability of the research instrument was assessed using Cronbach's alpha coefficient, which enables the evaluation of the internal consistency of a scale and is widely used in social and organizational research (Taber, 2018).

The proposed methodology is consistent with the research objective, as it combines the diagnosis of assessment levels, the analysis of relationships between enterprise characteristics and the perception of benefits, and the comparison of groups differing in their level of network engagement. From the perspective of methodological rigor, an important advantage of this procedure is the combination of simple descriptive measures with tests appropriate for ordinal and categorical data, which increases the validity of inference and reduces the risk of overinterpretation of the results. At the same time, it should be noted that the study is based on respondents' self-assessments and has a cross-sectional character, meaning that it explains the coexistence of assessments well, but does not provide a basis for causal inference.

4. Research Results

The research findings obtained for the variable referring to the belief that mutual connections and relationships with market partners enable better access to information indicate the particular importance of information resources in cooperation under conditions of enterprises operating within interorganizational networks. In light of the descriptive statistics, the analyzed variable achieved the highest mean value among all examined components of cooperation value ($M = 4.466$; $SD = 0.692$), which allows the conclusion that access to information is perceived by respondents as one of the most significant outcomes of implementing collaboration strategies with market partners. At the same time, the relatively

low standard deviation indicates considerable consistency in assessments and, therefore, a high level of agreement among respondents regarding the perception of this benefit. This means that, within the studied population, information is perceived not only as an operational resource, but also as a strategic resource that strengthens the enterprise's ability to respond to environmental volatility and make more accurate managerial decisions (Table 1).

Table 1.

Findings on the Significance of the Informational Dimension of Enterprise Collaboration Strategy in an Interorganizational Network

Area of Analysis	Indicator/ Result	Outcome	Interpretation in the Context of the Informational Dimension of Collaboration Strategy
Subject of analysis	Variable 2	<i>Mutual connections and relationships with market partners enable better access to information</i>	The variable describes the informational dimension of cooperation and refers to the perception of information as a strategic benefit resulting from participation in an interorganizational network.
Descriptive statistics	Mean (M)	4.466	The highest mean among all 20 analyzed variables. This indicates that the surveyed enterprises consider access to information to be the most important outcome of network cooperation.
	Standard deviation (SD)	0.692	The low level of variation in responses indicates considerable agreement among respondents regarding this benefit.
Distribution of responses	Rating 5	227	A very high share of the highest ratings confirms the strong belief among respondents in the importance of network relationships for access to information.
	Rating 4	140	Together with rating 5, this indicates the dominance of positive responses.
	Rating 3	28	A small share of neutral responses.
	Rating 2	6	A marginal share of low ratings.
	Rating 1	0	No strongly negative responses were recorded.
Overall positive assessment	Share of ratings 4 and 5	approx. 91.5%	The result confirms that access to information is widely perceived as a fundamental value of cooperation within networks.
χ^2 test of independence - enterprise business profile	χ^2	2.161	No significant relationship was found between the enterprise's business profile and the assessment of improved access to information.
	p	0.340	Statistically insignificant result ($p > 0.05$). Informational benefits are cross-sectoral in nature.
	Yule's ϕ	0.073	Very weak strength of association. The business profile does not significantly differentiate the perception of the informational value of cooperation.
χ^2 test of independence - enterprise size	χ^2	1.063	No significant relationship was found between enterprise size and the assessment of access to information.
	p	0.789	Statistically insignificant result ($p > 0.05$). The significance of information is assessed similarly by enterprises of different sizes.
	Yule's ϕ	0.051	Negligible strength of association. Organization size is not a significant factor differentiating the assessment of informational benefits.

Cont. table 1.

Mann-Whitney U test - level of network engagement	Mean for enterprises with lower engagement	4.356	Less engaged enterprises also highly assess the importance of access to information, although less strongly than more network-active firms.
	Mean for enterprises with higher engagement	4.567	The higher rating indicates that more intensive participation in network relationships increases the perceived informational value of cooperation.
	Z	-2.330	The result indicates statistically significant differences between the compared groups.
	p	0.0198	Statistically significant result ($p < 0.05$). The level of network engagement differentiates the assessment of informational benefits.
Synthetic conclusion	Position of the variable in the overall study	Highest-rated cooperation benefit	The informational dimension of collaboration strategy constitutes a key component of value generated within interorganizational networks.
Strategic significance	Final interpretation	-	Better access to information strengthens the enterprise's ability to recognize environmental changes, respond to market needs, build competitive position, and develop long-term strategic effectiveness.

Source: authors' own calculations.

Further analysis aimed to determine whether the assessment of this aspect of cooperation varies depending on enterprise characteristics. The results of the chi-square (χ^2) test of independence did not reveal a statistically significant relationship between the assessment of improved access to information and the enterprise's business profile ($\chi^2 = 2.161$; $p = 0.340$). A similar conclusion applies to the strength of association measured by Yule's ϕ coefficient, whose value ($\phi = 0.073$) should be considered very low. The obtained results indicate that, regardless of whether the enterprise operates in the manufacturing, service, or trade sector, the role of network cooperation in improving access to information is assessed in a similar manner. Thus, informational benefits may be regarded as cross-sectoral in nature and as a relatively universal component of value generated within interorganizational relationships (Figure 2).

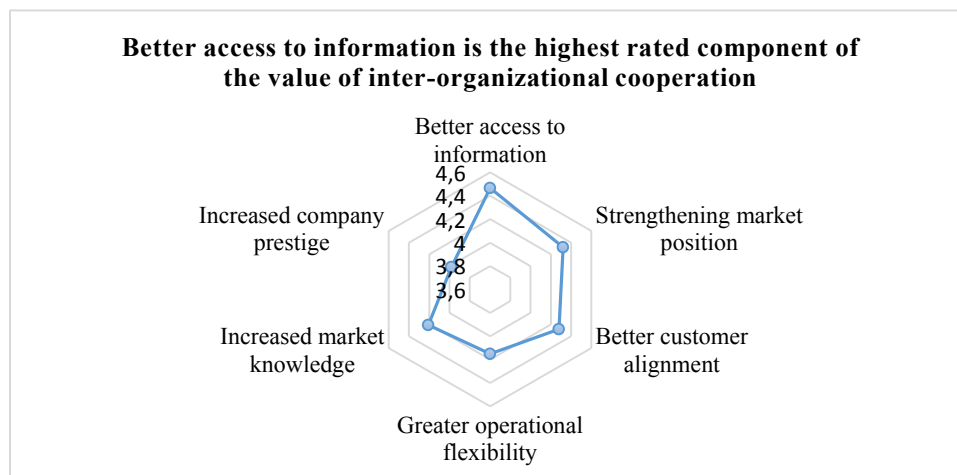


Figure 2. Structure of Cooperation Benefits in Interorganizational Networks.

Source: authors' own calculations.

A similar pattern emerges from the analysis taking enterprise size into account. In this case as well, no statistically significant relationship was identified ($\chi^2 = 1.063$; $p = 0.789$), while the value of the ϕ coefficient ($\phi = 0.051$) confirms a negligible strength of association. This means that both smaller and larger enterprises perceive the importance of network participation for improving access to information in a comparable manner. From the perspective of strategic management, this finding is significant because it suggests that the informational effects of cooperation are not determined by the scale of operations, but rather result from participation in cooperative relationships itself and from the quality of interactions undertaken with partners.

A different result was obtained in the analysis of variations in assessments according to the enterprise's level of engagement in the interorganizational network. The Mann-Whitney U test revealed statistically significant differences between the groups of entities with lower and higher levels of engagement ($Z = -2.330$; $p = 0.0198$). The mean assessment of the analyzed variable was higher among enterprises more strongly engaged in network relationships (4.567) than among entities with a lower level of engagement (4.356). The obtained result allows the conclusion that the intensity of participation in cooperation structures strengthens the perception of informational benefits. In other words, it is not merely the presence within the network itself, but rather the actual degree of engagement in relationships with partners that determines the scale of benefits resulting from the flow of information, knowledge, and experience.

The reliability of the research instrument was assessed using Cronbach's alpha coefficient. The overall scale achieved a Cronbach's alpha value of 0.553, indicating moderate internal consistency. The highest reliability was obtained for the scale related to innovative solutions ($\alpha = 0.751$), while the remaining subscales showed lower levels of consistency, reflecting the multidimensional and heterogeneous nature of value generated through interorganizational cooperation.

Consequently, it should be concluded that improved access to information constitutes one of the key manifestations of value generated through the implementation of collaboration strategies within interorganizational networks. These benefits are widely perceived and relatively independent of the enterprise's basic structural characteristics, such as business profile or size. At the same time, their perception increases with the level of engagement in network relationships, indicating that the strategic effectiveness of cooperation results not merely from formal participation in a network, but primarily from the active co-creation of relationships, the integration of benefits derived from information resources, the intensity of interactions, and the ability to utilize information exchange mechanisms in managerial processes.

5. Discussion

The obtained empirical research results confirm that information resources, considered in the context of enterprise cooperation within interorganizational networks, should be regarded as one of the key components of relational value. This is evidenced by the fact that the variable referring to the statement that mutual connections and relationships with market partners enable better access to information achieved the highest mean score among all analyzed benefits ($M = 4.466$; $SD = 0.692$). This indicates that the surveyed enterprises perceive information as one of the most significant outcomes of implementing collaboration strategies within interorganizational networks. This result is consistent with the existing literature, which emphasizes that interorganizational networks function as structures enabling the flow of knowledge, information, and market interpretations, thereby supporting organizational learning, integration and coordination of activities, and the enhancement of enterprises' adaptive capabilities (Lavie, 2006; Dhanaraj, Parkhe, 2006).

The empirical research findings simultaneously indicate that informational benefits are universal and relationally pervasive, as their assessment did not differ significantly either by enterprise business profile ($\chi^2 = 2.161$; $p = 0.340$; $\phi = 0.073$) or by enterprise size ($\chi^2 = 1.063$; $p = 0.789$; $\phi = 0.051$). The obtained result suggests that the significance of access to information is not determined by the organization's basic structural characteristics, but rather stems from the very nature of network cooperation. In this respect, the study confirms findings indicating that communication, integration, information exchange, transparency, and trust constitute fundamental attributes of interorganizational relationships, regardless of industry or enterprise scale (Klimas, Czakon, 2022). This means that information may be treated as a common element of value created within networks, rather than as a benefit generated only for selected types of enterprises.

Particular attention should be paid to the fact that the assessment of improved access to information differed significantly depending on the enterprise's level of engagement in the interorganizational network. Enterprises more strongly engaged in network relationships rated these benefits higher than entities with lower levels of engagement (4.567 versus 4.356; $Z = -2.330$; $p = 0.0198$). This result indicates that mere formal participation in a network is not a sufficient condition for fully exploiting the informational potential of cooperation. Rather, the key factors are the intensity of participation, relational activity, and the enterprise's ability to develop and maintain ties with partners. Such an interpretation is consistent with the networking capability concept, according to which enterprise effectiveness in business relationships depends on its ability to initiate, develop, integrate, and utilize relationships in a manner conducive to knowledge and information transfer (Mitre ga, Forkmann, Ramos, Henneberg, 2012; Mitre ga, Forkmann, Zaefarian, Henneberg, 2017). It is also supported by research demonstrating that trust, cooperation, and relational embeddedness constitute

fundamental conditions for effective knowledge sharing between organizations (Chen, Lin, Yen, 2014). From this perspective, the conducted study fills an identified research gap by demonstrating that informational benefits occupy a key position within the value structure of cooperation, possess a cross-sectoral and cross-scale character, and intensify with the level of relational engagement. Consequently, the study clarifies not only whether network cooperation facilitates better access to information, but also under what conditions this potential is activated. The obtained findings also correspond with more recent research on the functioning of enterprises within interorganizational networks, which indicates that relationships with market partners support both the recognition of customer needs and improved access to information, while strengthening enterprises' market position (Łęgowik-Świącik, Kostrzewska, 2024). The present study extends these findings by providing confirmation that information is not merely one of the benefits of cooperation, but, in the perception of the surveyed enterprises, constitutes its most strongly recognized outcome, the intensity of which depends primarily on the level of engagement in network relationships.

Consequently, it may be concluded that the conducted empirical research reinforces the relational and network-based approach to enterprise strategy. The findings demonstrate that the advantages derived from cooperation are not limited solely to access to material resources or cost-related effects, but are to a significant extent based on the quality and intensity of information resource flows. The novelty of the study lies in the empirical clarification of the position of informational benefits within the value structure of cooperation and in demonstrating that their significance increases with active participation in the network. Thus, the identified research gap has been addressed by showing that information resources constitute a dimension of collaboration strategy that is structurally universal yet relationally conditioned, and that their significance does not depend on enterprise size or business profile, but rather on the actual level of engagement in the interorganizational network.

6. Conclusion

The conducted research confirmed that the benefits derived from information resources within the collaboration strategies of enterprises operating in interorganizational networks constitute an important mechanism for creating and integrating relational value and strengthening enterprise competitiveness. The obtained results indicate that, among the analyzed effects of cooperation, improved access to information received the highest evaluation ($M = 4.466$; $SD = 0.692$), which allows information to be regarded as the most important benefit achieved through relationships with market partners. This means that participation in a network is not limited to the realization of operational objectives, but also supports the acquisition of knowledge about the market, customers, and changes in the environment. The study also

demonstrated that informational benefits coexist with higher evaluations of such effects as strengthening market position, better alignment with customer needs, greater operational flexibility, increased knowledge of the market and customers, and enhanced enterprise prestige. This indicates that information is not a separate outcome of cooperation, but rather a factor that initiates and reinforces subsequent areas of value creation.

An important finding is also that the significance of informational benefits did not differ substantially either by the enterprise's business profile or by its size. This demonstrates the universal character of the informational dimension of cooperation, regardless of industry or enterprise scale. The lack of significant differences suggests that the informational benefits derived from network cooperation are universal in nature and are perceived similarly regardless of enterprise size or industry. Their significance is determined primarily by participation in and the quality of interorganizational relationships rather than by the structural characteristics of the organization. At the same time, it was found that a higher level of engagement in network relationships is associated with a higher assessment of access to information. This means that the informational potential of cooperation results not merely from membership in a network itself, but from active participation in relationships, the intensity of interactions, and the willingness to exchange knowledge.

The scientific value of the article lies in presenting the benefits derived from information resources not merely as one of the relational benefits, but as a key element of the value structure generated within interorganizational networks. The results suggest that access to information initiates a mechanism of mutually reinforcing effects, including better market recognition, integration of relational value, greater flexibility, stronger customer orientation, and the strengthening of market position. Informational benefits enhance organizational resilience by enabling faster recognition of market changes, reducing decision-making uncertainty, and improving responsiveness to environmental disruptions. Under the conditions of Industry 4.0 transformation, access to information and the ability to integrate it also support the development of organizational flexibility, process adaptability, and a more sustainable, knowledge-based model of enterprise operation. Thus, information becomes an active factor of development and an important condition for enterprise sustainability and resilience.

The practical significance of the study lies in indicating that managers should treat network relationships as a source of strategic knowledge rather than merely a tool for achieving short-term economic effects. In terms of practical implications, it is worth emphasizing the need to develop formal and informal communication channels, shared data exchange platforms, and regular coordination meetings among network partners. Equally important are building trust, integrating processes, and strengthening long-term partner engagement, as these factors support more effective information flows and the use of knowledge in decision-making processes.

However, the limitations of the study should also be acknowledged. The research was cross-sectional in nature, based on respondents' declarations, and does not allow for causal inferences. Therefore, further research using longitudinal and qualitative approaches appears justified, as it would enable a more comprehensive explanation of the mechanisms underlying the creation and utilization of informational benefits.

In conclusion, the benefits derived from the information resources of enterprises cooperating within interorganizational networks are of fundamental importance for value creation, strengthening competitive position, and building the organization's long-term development capability. Information is not only the highest-rated outcome of cooperation, but also a factor initiating further relational and strategic benefits. In this sense, it performs an integrative function across the various dimensions of network cooperation outcomes.

References

1. Akoglu, H. (2018). User's guide to correlation coefficients. *Turkish Journal of Emergency Medicine*, 18(3), 91-93. DOI: 10.1016/j.tjem.2018.08.001
2. Chen, Y.H., Lin, T.P., Yen, D.C. (2014). How to facilitate inter-organizational knowledge sharing: The impact of trust. *Information & Management*, 51(5), 568-578. <https://doi.org/10.1016/j.im.2014.03.007>
3. Cheng, J.H. (2011). Inter-organizational relationships and information sharing in supply chains. *International Journal of Information Management*, 31(4), 374-384. <https://doi.org/10.1016/j.ijinfomgt.2010.09.004>
4. Czakon, W. (2010). Dynamiczne podejście do zarządzania. *Acta Universitatis Lodziensis, Folia Oeconomica*, 234, pp. 3-10. <http://hdl.handle.net/11089/243>
5. de Winter, J.C.F., Dodou, D. (2010). Five-point Likert items: t test versus Mann-Whitney-Wilcoxon. *Practical Assessment, Research, and Evaluation*, 15(1), Article 11. DOI: 10.7275/bj1p-ts64
6. Dhanaraj, C., Parkhe, A. (2006). Orchestrating innovation networks. *Academy of Management Review*, 31(3), 659-669. <https://doi.org/10.5465/amr.2006.21318923>
7. Dyduch, W., Cyfert, S., Zastempowski, M. (2024). Value creation and value capture in energy sector organizations: evidence from Poland. *Polish Journal of Management Studies*, 29, 97-118. DOI: 10.17512/pjms.2024.29.1.06.
8. Dyer, J.H., Nobeoka, K. (2000). Creating and managing a high-performance knowledge-sharing network: The Toyota case. *Strategic Management Journal*, 21(3), 345-367. [https://doi.org/10.1002/\(SICI\)1097-0266\(200003\)21:3<345::AID-SMJ96>3.0.CO;2-N](https://doi.org/10.1002/(SICI)1097-0266(200003)21:3<345::AID-SMJ96>3.0.CO;2-N)

9. Hazra, A., Gogtay, N. (2016). Biostatistics series module 4: Comparing groups - categorical variables. *Indian Journal of Dermatology*, 61(4), 385-392. DOI: 10.4103/0019-5154.185700
10. Klimas, P., Czakon, W. (2022). Species in the wild: A typology of innovation ecosystems. *Review of Managerial Science*, 16(1), 249-282. <https://doi.org/10.1007/s11846-020-00439-4>.
11. Klimas, P., Stańczyk, S., Sachpazidu, K., Stanimir, A., Kuźmiński, Ł. (2023). The attributes of inter-organizational relationships: Which fifteen of them really matter to software developers? *Industrial Marketing Management*, 110, 1-16. <https://doi.org/10.1016/j.indmarman.2023.02.004>.
12. Lavie, D. (2006). The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of Management Review*, 31(3), 638-658. <https://doi.org/10.5465/AMR.2006.21318922>
13. Łęgowik-Świącik, S. (2025). The role of inter-organisational relationships in enhancing business resilience and achieving economies of scale. *Scientific Papers of Silesian University of Technology. Organization and Management Series*, 234. <https://doi.org/10.29119/1641-3466.2025.234.12>
14. Łęgowik-Świącik, S., Kostrzewska, J. (2024). Understanding customer needs in shaping socially responsible enterprises in inter-organizational networks. *Scientific Papers of Silesian University of Technology. Organization and Management Series*, 204, 376-390. <https://doi.org/10.29119/1641-3466.2024.204.22>
15. Li, J., Sikora, R., Shaw, M.J., Tan, G.W. (2006). A strategic analysis of interorganizational information sharing. *Decision Support Systems*, 42(1), 251-266. <https://doi.org/10.1016/j.dss.2004.12.003>
16. McHugh, M.L. (2013). The chi-square test of independence. *Biochemia Medica*, 23(2), 143-149. DOI: 10.11613/BM.2013.018
17. Mentzas, G., Apostolou, D., Kafentzis, K., Georgolios, P. (2006). Inter-organizational networks for knowledge sharing and trading. *Information Technology and Management*, 7(4), 259-276. <https://doi.org/10.1007/s10799-006-0276-8>
18. Mitreğa, M., Forkmann, S., Ramos, C., Henneberg, S.C. (2012). Networking capability in business relationships: Concept and scale development. *Industrial Marketing Management*, 41(5), 739-751. <https://doi.org/10.1016/j.indmarman.2012.06.002>
19. Mitreğa, M., Forkmann, S., Zaefarian, G., Henneberg, S.C. (2017). Networking capability in supplier relationships and its impact on product innovation and firm performance. *International Journal of Operations & Production Management*, 37(5), 577-606. <https://doi.org/10.1108/IJOPM-11-2014-0517>
20. Nachar, N. (2008). The Mann-Whitney U: A test for assessing whether two independent samples come from the same distribution. *Tutorials in Quantitative Methods for Psychology*, 4(1), 13-20. DOI: 10.20982/tqmp.04.1.p013

21. Song, Y.I., Woo, W., Rao, H.R. (2007). Interorganizational information sharing in the airline industry: An analysis of stock market responses to code-sharing agreements. *Information Systems Frontiers*, 9(2-3), 309-324. <https://doi.org/10.1007/s10796-007-9026-7>
22. Sullivan, G.M., Artino, A.R. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education*, 5(4), 541-542. DOI: 10.4300/JGME-5-4-18.
23. Taber, K.S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273-1296. <https://doi.org/10.1007/s11165-016-9602-2>
24. Wolniak, R. (2024). Global supply chain coordination – the business analytics usage in Industry 4.0 conditions. *Silesian University of Technology Scientific Papers. Organization and Management Series*, 196, 577-591. <https://doi.org/10.29119/1641-3466.2024.196.39>
25. Zakrzewska-Bielawska, A., Czakon, W., Kraus, S. (2023). Relational orientation in B2B strategies: Measurement scale development and validation. *Journal of Business Research*, 160, 113791. <https://doi.org/10.1016/j.jbusres.2023.113791>