

DEVELOPMENT OF METASPATIAL BUSINESS COLLABORATIONS AS A NEW FORM OF SCALING MARKET STRUCTURES AND INTERACTIONS

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Despite the active development of theories on platform ecosystems, network organizations, and inter-firm interaction, the phenomenon of multidimensional market structures operating simultaneously in physical, digital, and cognitive spaces remains insufficiently explored in contemporary economic science. Existing conceptual approaches – transaction cost theory, the dynamic capabilities framework, and platform leadership – each address isolated aspects of emerging forms of market coordination, yet fail to provide an integrated theoretical understanding of these phenomena as an independent evolutionary construct. This research addresses precisely that gap by introducing and conceptualizing the notion of metaspatial business collaboration as a new stage in the evolution of market structures. The aim of the study is to provide a theoretical substantiation of the conception of metaspatial business collaborations (MBCs), to develop a model of evolutionary stages in the transformation of market structures, and to propose a mechanism for scaling market interactions based on MBCs within the context of the digital economy. The methodological foundation of the study rests on a conceptual-analytical approach combining a systematic review of scientific literature, comparative analysis of inter-firm interaction forms, and systems modeling. The theoretical synthesis draws on both classical and contemporary economic theories, including transaction cost theory, dynamic capabilities, network organizations, and platform ecosystems. Empirical verification of selected propositions is grounded in the analysis of global market forecasts for the development of the metaverse and platform technologies. The concept of "metaspatial business collaboration" is introduced and substantiated as a multilevel system of interaction among market actors operating simultaneously in the physical, digital, and cognitive spaces of the market, characterized by polycentric governance, distributed value architecture, adaptive coordination, and platform orchestration. A five-stage evolutionary model of market structure transformation – from the atomistic to the metaspatial stage – is developed, demonstrating the systemic logic of increasing complexity in market interaction forms and the expansion of their spatial and temporal parameters. A three-dimensional mechanism for scaling market interactions based on MBCs is proposed, encompassing the horizontal dimension (reaching new market segments), the vertical dimension (deepening value creation chains), and the temporal dimension (accelerating innovation cycles). Five groups of MBC efficiency factors are systematized: architectural, managerial, cognitive, technological, and market-related. The scientific novelty of the study lies in the introduction of the concept of "metaspatial business collaboration" into academic discourse, the development of an original evolutionary model of market structures, and a three-dimensional scaling mechanism that synthesizes the propositions of leading economic theories at a qualitatively higher level of generalization. Unlike existing approaches, the proposed conception incorporates cognitive space as an equal and independent dimension of market interaction, and substantiates the mechanism of endogenous MBC growth through self-reinforcing network effects. The practical value of the research findings is determined by their applicability for enterprises in designing and evaluating metaspatial collaborations, as well as for public policy authorities in shaping digital transformation and economic reconstruction strategies. For Ukraine, MBCs represent a promising instrument for resource consolidation in priority sectors – agrotechnologies, IT services, renewable energy, and defense technologies – in the context of European integration and postwar recovery.

Keywords: metaspatial business collaborations; market structures; scaling of market interactions; digital transformation; network economy; platform orchestration; market evolution; distributed value architectures; polycentric governance; firm-to-firm interaction.

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Сергієнко О. А., Чернов О. О., Сілічова Т. В., Герингер О. Розвиток метапросторових бізнес-колаборацій як нової форми розширення ринкових структур і взаємодій

Незважаючи на активний розвиток теорій платформних екосистем, мережевих організацій та міжфірмової взаємодії, у сучасній економічній науці залишається недостатньо дослідженим феномен багатовимірних ринкових структур, що функціонують одночасно у фізичному, цифровому та когнітивному просторах. Наявні концептуальні підходи – теорія трансакційних витрат, концепція динамічних здатностей, платформне лідерство – описують окремі аспекти нових форм ринкової координації, однак не забезпечують їх інтегрованого теоретичного осмислення як самостійного еволюційного феномену. Саме цю прогалину закриває це дослідження, вводячи та концептуалізуючи поняття метапросторової бізнес-колаборації як нової стадії еволюції ринкових структур. Метою дослідження є теоретичне обґрунтування концепції метапросторових бізнес-колаборацій (МБК), розроблення моделі еволюційних стадій трансформації ринкових структур та механізму масштабування ринкових взаємодій на основі МБК в умовах цифрової економіки. Методичну основу дослідження становить концептуально-аналітичний підхід, що поєднує систематичний огляд наукової літератури, порівняльний аналіз форм міжфірмової взаємодії і системне моделювання. Теоретичний синтез здійснено на базі класичних і сучасних економічних теорій – трансакційних витрат, динамічних здатностей, мережевих організацій і платформних екосистем. Емпірична верифікація окремих положень спирається на аналіз глобальних ринкових прогнозів розвитку метавсесвіту та платформних технологій. Введено й обґрунтовано поняття «метапросторова бізнес-колаборація» як багаторівневу систему взаємодії ринкових суб'єктів, що функціонує одночасно у фізичному, цифровому та когнітивному просторах і характеризується поліцентричністю управління, розподіленою архітектурою цінності, адаптивною координацією та платформною оркестровкою. Розроблено п'ятистадійну еволюційну модель трансформації ринкових структур – від атомарної до метапросторової, – яка демонструє системну логіку ускладнення форм ринкових взаємодій та розширення їх просторових і темпоральних параметрів. Запропоновано тривимірний механізм масштабування ринкових взаємодій на основі МБК, що охоплює горизонтальний вимір (охоплення нових ринкових сегментів), вертикальний вимір (поглиблення ланцюгів створення цінності) та темпоральний вимір (прискорення інноваційних циклів). Систематизовано п'ять груп факторів ефективності МБК: архітектурні, управлінські, когнітивні, технологічні та ринкові. Наукова новизна дослідження полягає у введенні до наукового обігу поняття «метапросторова бізнес-колаборація», розробленні оригінальної еволюційної моделі ринкових структур і тривимірного механізму масштабування, що синтезує положення провідних економічних теорій на якісно вищому рівні узагальнення. На відміну від наявних підходів, запропонована концепція включає когнітивний простір як рівноправний і самостійний вимір ринкової взаємодії, а також обґрунтовує механізм ендегенного зростання МБК через самопідсилювальні мережеві ефекти. Практична цінність результатів дослідження визначається можливістю їх застосування підприємствами для проєктування та оцінювання метапросторових колаборацій, а також органами державної політики при формуванні стратегій цифрової трансформації та відбудови економіки. Для України МБК є перспективним інструментом консолідації ресурсів у пріоритетних галузях – агротехнологіях, ІТ-послугах, відновлюваній енергетиці та оборонних технологіях – в умовах євроінтеграції та повоєнного відновлення.

Ключові слова: метапросторові бізнес-колаборації; ринкові структури; масштабування ринкових взаємодій; цифрова трансформація; мережева економіка; платформна оркестровка; еволюція ринку; розподілені архітектури цінності; поліцентричне управління; міжфірмова взаємодія.

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Introduction. The current economic landscape is characterised by qualitative shifts in market interactions that transcend traditional notions of the market as merely a transactional space for isolated entities. The digitisation, platformisation and networking of economic relations are giving rise to new configurations of interactions between entities that do not fit into the traditional categories of vertical integration, horizon-

tal alliances or cluster structures. Under these conditions, the boundaries between competition and cooperation, physical and digital market spaces, and sectoral and functional market relations are becoming increasingly blurred. Developing theoretical foundations for new forms of market interaction that can ensure a scalable effect from the synergy of the competencies, resources and data of various market participants is therefore

becoming particularly relevant. Traditional forms of inter-firm coordination, such as vertical mergers, contractual alliances and consortia, demonstrate limited capacity for adaptation and rapid scaling in conditions of network turbulence and hyper-competition [1; 2]. At the same time, new organisational and economic phenomena are emerging in the practices of leading technology companies and platform ecosystems. These can be characterised as 'meta-spatial' business collaborations - systemic entities that operate across multiple dimensions of the market space simultaneously. The absence of a systematic theoretical approach to analysing and conceptualising meta-spatial business collaborations hinders the development of economic theory and enterprises' practical application of this tool to scale market interactions. Therefore, this study is relevant because it provides a scientific justification for the concept of meta-spatial business collaborations as a new stage in the evolution of market structures.

Literature review. The theoretical foundations for studying forms of interfirm interaction can be found in the works of classic institutional and organisational theorists. Coase (1) substantiated the transactional nature of the firm as a means of minimising market exchange costs, while Williamson (2) developed this concept within the framework of transaction cost theory, demonstrating the conditions for the effectiveness of various forms of market coordination. The theory of network organisations, as set out by Powell W. [3] and Burt R. [4], provided a basis for understanding the effects of networks in market interactions and the role of structural 'gaps' in competitive advantage.

The concept of platform ecosystems is a key prerequisite for cross-domain collaboration. It was further developed by Eisenmann et al. [5], who investigated the mechanisms of multi-sided markets and network effects. Parker G. [6] systematised the principles of platform revolutions and ecosystem orchestration. Teece D. made an important contribution to our understanding of the dynamics of the co-evolution of market structures and technologies by developing the concept of dynamic capabilities. Similarly, Eisenhardt K. and Santos F. studied market strategies in conditions of complex interdependencies. Howden D., Nicolai J. Foss and Peter G. Klein [9] explored the issues of meta-organisational forms and firm boundaries in the digital economy, rethinking the theory of the firm in the context of platformisation. Gawer A. and Cusumano M.'s works [10] analyse general platforms and their role in industry transformations. Notable domestic studies include analyses of networking and clustering as forms of organising market interactions [11, 12], and studies of the digital transformation of business models and the development of platform structures [13, 14]. Nevertheless, the conceptual dimension of metaspacial business collaborations as an independent phenomenon of market evolution remains under-researched, necessitating the development of a corresponding theoretical framework.

This study aims to provide a theoretical justification for the concept of metaspacial business collaborations as a new stage in the evolution of market structures. It also aims to develop a model for forming these collaborations and outline a mechanism for scaling up market interactions based on them. The key issue with traditional market coordination methods, such as vertical integration, strategic alliances and clusters, is

that they are structurally limited in terms of scalability when faced with network turbulence. These forms are unable to ensure a simultaneous presence in the physical, digital and cognitive spaces of the market, so there is an objective need for a qualitatively new form of inter-firm interaction. A key focus of the study is to justify metaspacial business collaborations as a distinct stage in the evolution of market structures. This new stage is characterised by fundamentally novel coordination and scaling properties that were previously unattainable. Meta-spatial business collaborations can generate a synergistic effect that exceeds the sum of the individual participants' contributions, enabling endogenous growth without proportional increases in management costs. The competitive advantages formed in this way cannot be replicated by any traditional form of market coordination acting alone.

In light of the need to accelerate the recovery of the domestic economy, metaspacial business collaborations are an effective means of consolidating Ukrainian enterprises' resources and attracting foreign partners and technologies. Thanks to the metaverse's platform-based logic of low barriers to entry, modular architecture and open standards, small and medium-sized businesses can integrate into such collaborations without the need for large-scale initial infrastructure investments.

Research methods. This article takes a conceptual-analytical methodological approach, combining a synthesis of classical economic theories – transaction costs, dynamic capabilities, network organisations and platform ecosystems – with the aim of establishing an integrated theoretical foundation for conceptualising the MBI. Methods of data collection included a systematic review of scientific literature and analysis of global market forecasts, particularly regarding the metaverse and hardware platform markets. These were used to empirically verify theoretical propositions. Methods of comparative analysis were applied to analyse and generalise the data when constructing an evolutionary table of market structure transformation stages, and methods of system modelling were applied when developing a mechanism for three-dimensional scaling of market interactions based on the MBC. As the study is theoretical and conceptual in nature and does not involve statistical or empirical testing of hypotheses, the hardware and software used are not explicitly specified.

Results. An analysis of contemporary market interactions reveals that market structures are undergoing a systemic transformation driven by digitalisation, globalisation and technological innovation. The traditional 'market-hierarchy' dichotomy proposed by O. Williamson [2] no longer fully captures the organisational forms that have emerged in the networked economy. These are being replaced by hybrid, networked and platform-based structures, in which firm boundaries are blurred and coordination is carried out through complex algorithmic and reputational mechanisms. In order to conceptualise these new forms of market interaction, the author introduces the concept of 'metaspacial business collaboration' (MBC) - a multilevel system of interaction among market actors that functions simultaneously in three parallel market spaces: physical (traditional channels, logistics and offices); digital (platforms, e-commerce, APIs and data ecosystems); and cognitive (shared models of perception, shared knowledge, social norms, brand perception and consumer neural and be-

havioural models). The MBC concept is based on a synthesis of transaction cost, dynamic capabilities and platform ecosystem theories, and extends beyond the traditional understanding of inter-firm interaction. The key characteristics of metaspatial business collaborations are summarised in Fig. 1.

As shown in Fig. 1, metaspatial business collaborations are characterised by four defining features. Polycentric man-

agement means that decisions are made within several centres of authority (i.e. unique domains such as the platform, regulator, cluster, brand and orchestrator), rather than in a single holding centre. This allows participants to maintain their autonomy while coordinating strategic directions simultaneously through co-productive standards and inter-organisational protocols.

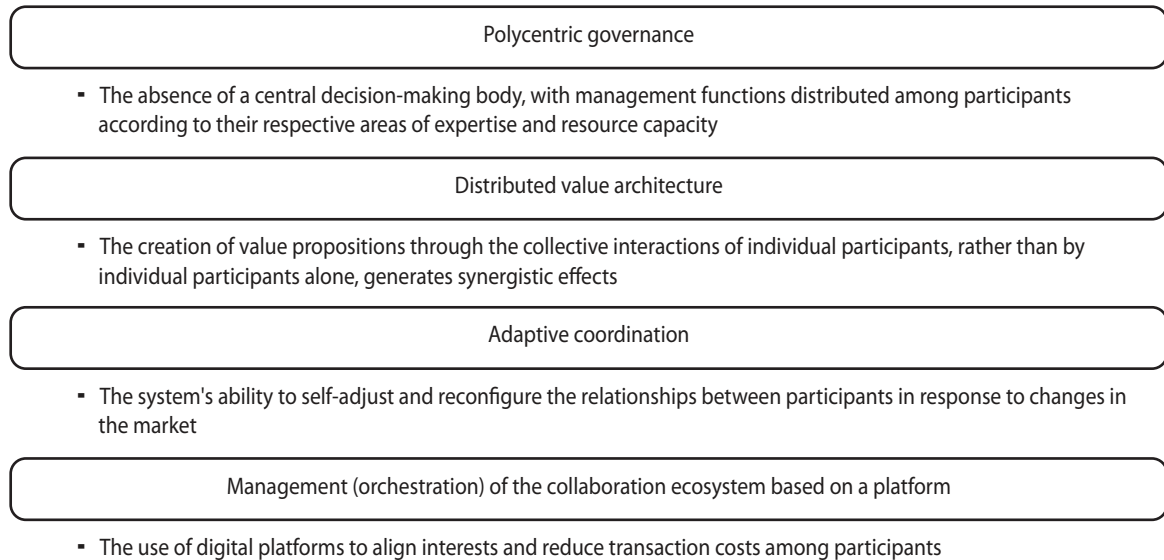


Fig. 1. Key characteristics of hyperspatial business collaborations

Source: created by the authors based on a synthesis of references [3; 4; 5]

A distributed value architecture means that value creation and generation do not occur within a single centre, but through interaction between multiple ecosystem participants (e.g. suppliers, platforms, users, data partners and analytical services). Each participant contributes its own resources (e.g. data, networks, capital and know-how), and value is extracted from the ecosystem through collaboration rather than hierarchical exploitation. Rather than relying on rigid contracts, coordination is achieved through dynamic rules, standardised protocols (APIs, SLAs, etc.) and rapid feedback mechanisms (dashboards, A/B testing, behavioural triggers). This allows the

system to respond quickly to changes in user behaviour, new technological capabilities and regulatory initiatives. The platform acts as the infrastructure core and “orchestrator”, ensuring the integration of various ecosystem components (B2B, B2C, B2G, data services and FinTech elements). Acting as the market’s digital ‘middleware’, the platform creates digital protocols, exchange standards, trust mechanisms and monitoring tools, enabling the synchronisation of actions across physical, digital and cognitive spaces. To gain a deeper understanding of the nature of MBKs, it is important to consider them in the context of the evolution of market structures (see Table 1).

Table 1

Evolutionary stages of market structure transformation

Stage	Form of interaction	The principle of coordination	Spatial dimension	Scalability
I. Atomic	Market transactions between independent agents	Price competition	Physical market	Limited
II. Hierarchical	Vertical integration, mergers, and acquisitions	Administrative oversight	Industry-specific space	Average
III. Network	Strategic alliances, clusters, consortia	Relational Coordination	Regional/sectoral	High
IV. Platform	Multilateral platforms, ecosystems	Algorithmic orchestration	Digital space	Very high
V. Metaspatial	MBC – hybrid systems in physical, digital, and cognitive spaces	Decentralized polycentric coordination	Metaspace (multidimensional)	Unlimited

Source: created by the authors based on a review of [1–8]

Table 1 illustrates the qualitative leap in understanding market structures represented by the transition to the metaspacial stage: a shift from the sequential expansion of spatial interaction boundaries to their simultaneous presence across multiple market space dimensions. In this context, the concept of 'metaspaces' denotes not merely the sum of physical and digital spaces, but a fundamentally new environment of interaction in which the cognitive dimension (shared mental models, trust and reputational capital) plays a role that is no less significant than that of material and technological resources [15]. The process of establishing metaspacial business collaborations comprises three interrelated phases. During the initiation phase, potential participants are identified, a shared core of values is defined and the interaction architecture is configured. During the consolidation phase, the focus shifts towards refining governance mechanisms, allocating roles among participants and establishing shared digital infrastructures. In the scaling phase, the focus shifts towards expanding the geographical scope and subject matter of interactions, attracting new participants and generating network effects. Of particular importance in the context of this study is the analysis of the mechanism for scaling market interactions based on the MBC (see Fig. 2). As Fig. 2 shows, scaling market interactions in the MBC occurs simultaneously across three dimensions. Horizontal scaling involves geographic and segmental expansion, reaching new markets, consumer segments and industries through network effects and platform integration. Vertical scaling involves deepening value chains, from integrating adjacent stages of production and distribution to engaging consumers as active co-creators of the product. Temporal scaling is demonstrated by accelerating innovation cycles and reducing time to market through distributed knowledge generation and parallel hypothesis testing within a collaborative framework [16; 17]. The process of forming metaspacial business collaborations is clearly defined and follows three distinct stages: initiation, consolidation and scaling. The first stage involves identifying participants and defining core values. The second stage involves institutionalising management relationships and digital infrastructure. The third stage involves realising network effects and scaling up.

This sequence is not linear and may be iterative in nature. However, skipping any phase could seriously undermine the sustainability of the collaboration. Horizontal, vertical and temporal scaling are not independent strategies - they function as a single integrated mechanism. Expanding into new geographic markets (the horizontal dimension) creates a resource base for deepening value chains (the vertical dimension), while accelerating innovation cycles (the temporal dimension) ensures the competitiveness of management-based collaborations (MBCs) across all geographic and industry segments simultaneously.

The fundamental difference between MBCs and traditional forms of inter-firm interaction is their ability to generate self-reinforcing network effects at the end of the scaling phase. Attracting new participants increases the system's value for all existing participants, triggering endogenous growth in collaboration without proportionally increasing management costs. Forming shared digital platforms during the consolidation phase is a prerequisite for transitioning to the scaling phase. Without an integrated technological foundation, coordinated expansion into new markets, deepening of cross-level interac-

tion within value chains and reduction of time-to-market for innovative solutions would not be possible.

The combined result of the interaction between the three formation phases and the three scaling dimensions is a synergistic effect that exceeds the sum of the individual participants' contributions. This effect provides MBCs with sustainable competitive advantages in the digital economy - advantages that cannot be replicated by any traditional form of market coordination acting alone. The effectiveness of metaspacial business collaborations as a tool for scaling market interactions depends on a number of factors, which are summarised in Table 2.

Examining the practices surrounding the formation of MBCs in both global and domestic contexts reveals characteristic patterns in their development. Firstly, MBCs usually emerge around technological platforms that orchestrate interaction and establish standards for the exchange of data and value. Secondly, successful MBNs are characterised by an asymmetric participant structure - a combination of a few large 'anchor' players and a large number of smaller, specialised participants - which ensures the stability and flexibility of the system [18]. Thirdly, MBCs demonstrate the ability to self-replicate and expand through internal network effects without the need for centralised growth management.

In Ukraine, cross-border business collaborations are being developed within the specific context of wartime and the need for accelerated economic recovery. Such collaborations can be an effective means of consolidating domestic enterprises' resources, attracting foreign partners and technologies, and scaling up competitive industries as part of integration with European markets. MBCs show particular promise in the fields of agrotechnology, IT services, renewable energy and defence technologies, areas in which Ukraine has significant comparative advantages.

Global market forecasts confirm the strategic potential of metaspacial business collaborations as the next stage in the evolution of market structures. The hardware and platforms market is expected to demonstrate steady upward momentum, reaching a projected volume of \$56.4 billion by 2034, with an average annual growth rate of 23.8% from 2026 onwards. The highest growth rates are expected in the Asia-Pacific region, at 27.1%, driven by the active innovation efforts of leading technology companies such as Baidu, Alibaba and Rokid. Meanwhile, the metaverse market is set to undergo significant expansion, growing from an estimated \$85 billion in 2025 to \$620 billion by 2035 - equivalent to an average annual growth rate of 22.1%. Corporate collaborations and the active adoption of NFT-based tools that are shaping new models for creating and monetising digital value will be the key drivers of this growth. Meta forecasts 16.4% annual revenue growth until 2027, with operating margins of 39.1%, which indicates the maturity of business models in the metaverse segment. These figures align with projections for the expansion of major infrastructure deals, such as the Nvidia-Meta partnership, which is set to invest US\$27 billion in AI infrastructure from 2027 onwards. These deals focus on the use of edge computing, digital twins and application solutions within the metaverse. In the corporate sector, VR is already being used for staff training, delivering productivity gains of 20–50%, while MR is being used in industry for the same purpose. Meanwhile, the integration of

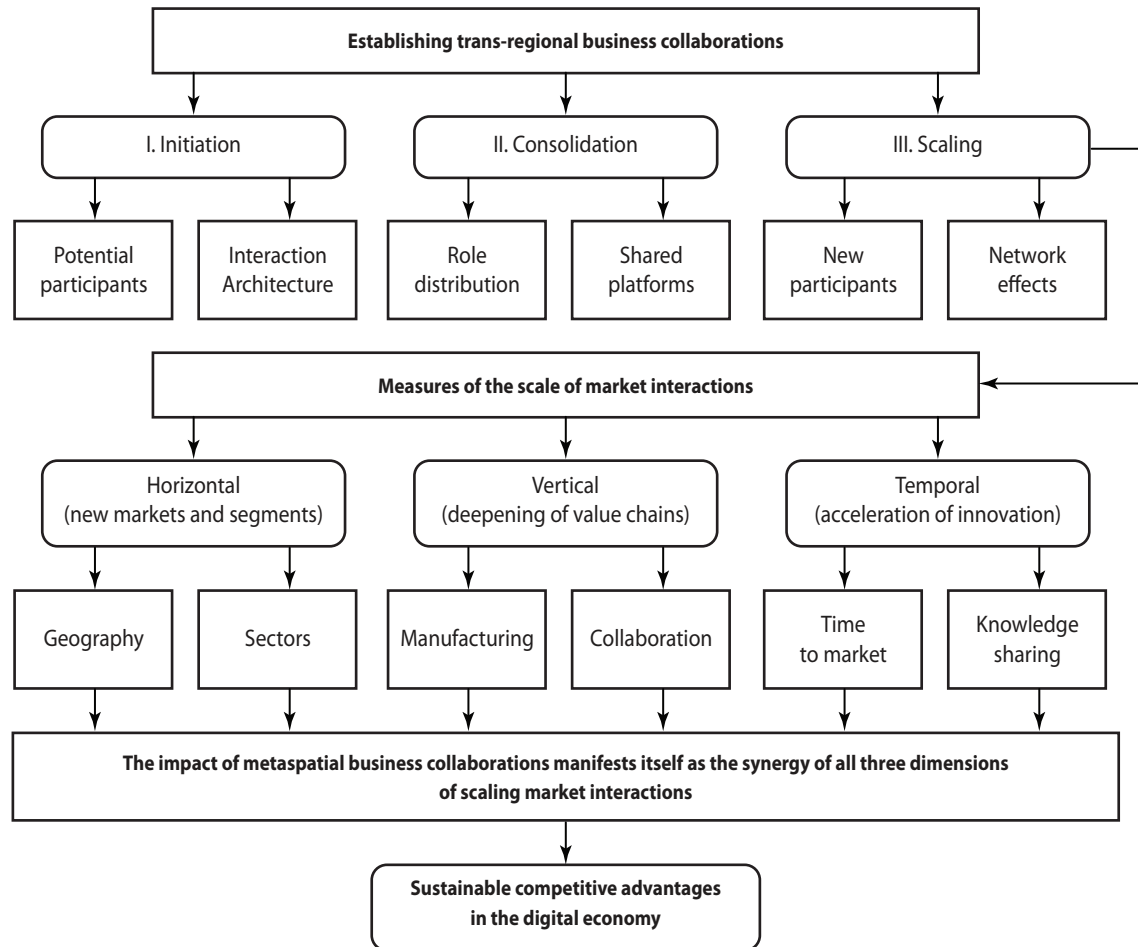


Fig. 2. Mechanism for the formation and scaling of market interactions based on meta-spatial business collaborations

Source: created by the authors

Table 2

Factors influencing the effectiveness of metaspatial business collaborations as a tool for scaling market interactions

A set of factors	Specific factors	Mechanism for controlling scaling
Architectural	The platform's modularity, openness and API standardisation, as well as its system interoperability	Lower the barriers to entry for new participants and accelerate horizontal scaling
Management	The quality of the governance protocol, the transparency of revenue distribution and the mechanisms for resolving conflicts	They evaluate the stability of coalitions and the willingness of participants to commit to the long term
Cognitive	Shared mental models, trust and reputational capital are all key to a culture of open innovation	They reduce transaction costs and promote the sharing of knowledge among participants
Technological	The level of digital integration, use of AI and big data, and real-time analytics capabilities	Ensure the adaptive coordination and optimisation of resource flows within the network
Market	Intensity of competition, network effects, the regulatory environment and market maturity	They create incentives for cooperation and determine how quickly collaborative models spread

Source: the authors developed this based on a review of references [3–7; 15–18]

AI for spatial mapping is forming the technological foundation for the next generation of MBK. In the corporate sector, VR is already being used for employee training, and MR is being used in industry to drive productivity gains of 20–50%. Meanwhile, the integration of AI for spatial mapping is laying the technological foundation for the next generation of MBK.

In the context of Ukraine's future prospects, these global trends are particularly significant. The SME Development Strategy up to 2027 highlights e-commerce, regionalisation and digital services as key areas that naturally contribute to the development of a horizontal dimension for the digital economy. A notable practical development is the UkraineVerse initiative, which involves integrating metaspatial elements into the country's reconstruction processes by combining AR/VR tools with local production restoration and European integration efforts. For small and medium-sized businesses, 2026–2027 will present an opportunity to engage in metaspatial collaborations via e-commerce platforms and digital services, which do not necessitate substantial initial investments in hardware infrastructure. Thus, an analysis of global market forecasts and the domestic context confirms that metaspatial business collaborations are a real and measurable economic phenomenon, not merely a theoretical construct, shaping a new stage in the evolution of market structures. The practical potential of hyperspatial business collaborations in Ukraine lies in creating flexible networks of interaction between enterprises. This enables the pooling of resources, expertise and digital assets to achieve shared market objectives [19]. In agrotechnology, for example, MBCs can facilitate the integration of producers, processors, logistics operators and financial partners, thereby increasing the efficiency of value chains and reducing losses at every stage. For IT services, such collaborations can lead to joint product development, the rapid scaling of solutions and entry into international markets without incurring excessive costs. In the energy sector, MBCs can coordinate decentralised projects, develop renewable sources and enhance energy infrastructure resilience [20]. In the defence technology sector, they facilitate rapid technology exchange, innovation testing and the accelerated implementation of critical solutions. In retail and regional reconstruction, MBCs can ensure better synchronisation of supply, reduce transaction costs and enhance business model resilience in unstable environments. These findings are significant because cross-sectoral business collaborations can effectively consolidate resources, accelerate innovation and scale up market interactions for enterprises across various sectors of Ukraine's economy. Such collaborations are particularly relevant in conditions of turbulence, resource scarcity, high risk and the need for rapid business adaptation to changes in the external environment. Such collaborations provide enterprises with the opportunity to pool financial, material and human resources, as well as digital assets, data, technological solutions, expertise and market access channels, significantly enhancing their competitiveness.

Hyperspatial business collaborations show particular promise in agricultural technologies, IT services, renewable energy, defence technologies and retail. In these sectors, combining digital platforms, distributed value architectures and adaptive management reduces transaction costs, enables faster decision-making and enhances coordination among partici-

pants in value chains. It also creates more sustainable business models. In the agricultural sector, this means better integration of producers, processors, logistics and financial partners. In the IT sector, it means expanding network cooperation and entering new international markets. In the energy sector, it means accelerating the implementation of decentralised and flexible solutions. In the defence sector, it means enhancing the ability to rapidly scale critical technologies. In retail, it means optimising omnichannel models of customer engagement.

In this context, trans-regional business collaborations serve as both a new format for company interaction and a tool for Ukraine's economic reconstruction, structural modernisation and European integration. They facilitate the development of a new type of network economy, characterised by digital interaction, innovative cooperation, rapid adaptation to market changes and joint risk management. Therefore, further research into and practical implementation of MBCs could be crucial for long-term growth, increased business resilience, and the strengthening of Ukrainian enterprises' position in the global economic landscape.

Discussion. The findings of this study fit seamlessly into the main trajectory of institutional and organisational theory, significantly expanding its conceptual boundaries in the process. The proposed concept of MBO is a logical extension of the 'market–hierarchy' dichotomy; however, it identifies the emergence of a new coordination mechanism that is neither price competition nor administrative control. Whereas Powell [3] defined network forms of organisation as an intermediate stage between the market and the hierarchy, MBNs represent a qualitatively higher level of organisation where networkedness is combined with platform orchestration and the cognitive dimension of interaction – a space of shared mental models and reputational capital which was peripheral to previous theories. Teece D's concept of dynamic capabilities [7] finds its logical organisational expression in MBNs. It is precisely metaspatial collaboration that provides the environment in which dynamic capabilities are realised, not at the level of an individual firm but at the level of a distributed network of participants. This fundamentally enhances the adaptive potential of the system as a whole. A comparison with related studies reveals both points of convergence and significant differences. The work of Gawer and Cusumano [10] on platform leadership and industry transformations is the closest conceptual precursor to the MBC. However, their analytical framework is limited to the digital space, failing to account for the cognitive dimension of interaction as an independent and equal environment for market activity. While Jacobides M.'s [15] research on ecosystem theory highlights the importance of participant complementarity and the architectural boundaries of the ecosystem, it does not elucidate the mechanism of simultaneous scaling across three dimensions – horizontal, vertical and temporal – which is the central contribution of this article. Adner's concept of an ecosystem as a structure emphasises the interdependence of participants, but considers this primarily in a static context. In contrast, MBKs are fundamentally oriented towards dynamic self-reproduction and endogenous growth through network effects. Thus, the proposed concept of MBN does not negate existing approaches, but rather synthesises them at a higher level of generalisation by adding a cognitive dimension and a

three-dimensional scaling mechanism as an original theoretical contribution.

Despite the theoretical significance of the results obtained, this study has a number of limitations that must be considered when interpreting and applying its findings in practice. Firstly, the conceptual and theoretical nature of the study means that the proposed propositions cannot be verified quantitatively. The hypotheses regarding the synergistic superiority of the MBC effect over traditional forms of coordination, and the self-reinforcing nature of network effects, remain theoretical assertions that require empirical confirmation using representative datasets. Secondly, the proposed evolutionary model of the stages of market structure transformation is based on a synthesis of predominantly English-language scientific literature and the practices of leading technology companies. This limits its verifiability in the context of peripheral and transition economies, particularly Ukraine. Thirdly, despite its conceptual heuristic value, the concept of 'cognitive space' as the third dimension of the MBC remains operationally undefined: the article does not propose any measurable indicators of cognitive synergy, which complicates the practical application of this construct when designing and evaluating real-world collaborations. Fourthly, the analysis of the Ukrainian context is largely prognostic and prescriptive and is based on limited empirical evidence, which reduces its accuracy in highly uncertain war-time and post-war conditions.

Conclusions. This study provides evidence for the concept of metaspacial business collaborations as a new stage in the evolution of market structures. This concept transcends traditional forms of inter-firm interaction and reflects the realities of the digital network economy. It has been established that MBCs are multilevel systems of market interaction operating simultaneously in the physical, digital and cognitive spaces of the market. They are characterised by polycentric governance, distributed value architecture, adaptive coordination and platform orchestration.

A model of the evolutionary stages of market structure transformation (from atomic to metaspacial) has been developed to demonstrate the systemic logic behind the increasing complexity of market interaction forms and the expansion of their spatial and temporal parameters. A mechanism for scaling market interactions based on MBCs has been proposed which involves three dimensions of scaling: horizontal (covering new market segments), vertical (deepening value chains) and temporal (accelerating innovation cycles). The factors influencing the effectiveness of meta-spatial collaborations (MBCs) have been categorised into architectural, managerial, cognitive, technological and market factors.

This provides the basis for a set of practical tools for evaluating and designing MBCs. MBCs have been shown to offer considerable benefits over traditional forms of inter-firm coordination when it comes to scaling market interactions, thanks to network effects, architectural modularity, and cognitive synergy among participants. Further research prospects include developing a methodological toolkit for quantitatively assessing the effectiveness of meta-spatial business collaborations and analysing the sector-specific characteristics of their formation in the context of Ukraine's reconstruction and European integration.

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