CONCEPTUAL MODELS OF COMPETITIVENESS ASSESSMENT AND THEIR EVOLUTION

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Abstract. *This study examines the conceptual models of competitiveness assessment and traces their evolutionary trajectory in the context of structural transformation in the global economy. The growing complexity of market environments, digitalization, and the increasing role of intangible assets have significantly reshaped traditional approaches to measuring competitiveness. The paper aims to systematize the major theoretical frameworks, identify key methodological shifts, and evaluate their analytical relevance for modern industrial enterprises.*

The research is based on a comprehensive literature synthesis and comparative analysis of structural, resource-based, dynamic capability, systemic, and ecosystem approaches. The findings reveal a clear transition from static, cost-oriented models toward multi-level, capability-driven and network-based frameworks. The study also highlights persistent methodological challenges, including indicator selection, measurement of intangible assets, and cross-level integration. To address these issues, the paper proposes an integrated conceptual architecture that combines micro-, meso-, and macro-level diagnostics. The results contribute to the theoretical advancement of competitiveness assessment and provide practical implications for policymakers and industrial managers seeking to enhance competitive performance in the digital economy. Overall, the research demonstrates that effective competitiveness evaluation in the modern era requires hybrid, dynamic, and system-oriented measurement frameworks capable of capturing both firm-level capabilities and ecosystem interactions.

Keywords: *competitiveness assessment, dynamic capabilities, resource-based view, systemic competitiveness, digital economy, industrial enterprises, innovation capacity, ecosystem approach.*

1. Introduction

In the context of accelerating globalization, technological disruption, and intensifying market rivalry, the concept of competitiveness has become one of the central categories in modern economic science and strategic management. Governments, industries, and individual firms increasingly seek reliable tools to evaluate their competitive position and to design effective development strategies. As a result, conceptual models of competitiveness assessment have evolved significantly over the past decades, reflecting changes in economic structure, technological paradigms, and theoretical approaches. Understanding the evolution of these models is essential for both scholars and practitioners who aim to measure, compare, and enhance competitive performance in a dynamic economic environment.

Competitiveness, by its nature, is a multidimensional and context-dependent phenomenon. At the firm level, it generally refers to the ability to produce goods and services that meet market requirements while maintaining or increasing profitability and market share over time. At the

industry and national levels, competitiveness encompasses broader dimensions such as productivity, innovation capacity, institutional quality, and structural efficiency. Because of this complexity, early attempts to assess competitiveness relied primarily on partial indicators – most notably cost advantages and price competitiveness. However, the limitations of such narrow metrics soon became apparent, especially in knowledge-based and innovation-driven economies.

The earliest conceptual models of competitiveness assessment emerged within the neoclassical economic framework, where comparative advantage and cost efficiency were dominant explanatory variables. These models typically focused on factor endowments, labor costs, and trade performance. While useful for explaining trade patterns in relatively simple industrial structures, they proved insufficient in capturing qualitative dimensions such as technological capability, managerial efficiency, and innovation potential. The shift from price-based to productivity-based competition in the late twentieth century created the need for more comprehensive analytical frameworks.

A major turning point in the evolution of competitiveness models was the growing recognition of the role of industry structure and strategic positioning. Structural approaches emphasized that competitive outcomes depend not only on internal efficiency but also on the configuration of market forces, entry barriers, supplier power, and buyer behavior. This perspective broadened the analytical scope from purely internal cost factors to the external competitive environment. Nevertheless, structural models were sometimes criticized for their relative static nature and limited ability to explain why firms within the same industry often demonstrate markedly different performance levels.

In response to these limitations, resource-oriented perspectives gained prominence. The resource-based view (RBV) shifted attention toward firm-specific assets, capabilities, and competencies as the primary sources of sustainable competitive advantage. Within this framework, competitiveness assessment models began to incorporate intangible assets such as knowledge, organizational routines, human capital, and technological capabilities. This marked an important conceptual transition from industry determinism toward firm heterogeneity. However, as business environments became more volatile and innovation cycles shortened, even RBV-based models required further refinement.

The emergence of dynamic capability theory represented another significant milestone in the evolution of competitiveness assessment. Scholars increasingly recognized that in rapidly changing markets, the mere possession of valuable resources is insufficient; what matters more is the firm's ability to integrate, reconfigure, and renew those resources over time. Consequently, modern assessment models started to include indicators related to adaptability, innovation speed, digital maturity, and learning capacity. This dynamic perspective better reflects the realities of Industry 4.0, digital transformation, and platform-based competition.

Despite significant theoretical progress, the assessment of competitiveness remains methodologically challenging. One persistent issue concerns the selection and weighting of indicators in composite models. Different methodological choices may lead to substantially different rankings and policy conclusions. Another challenge relates to data comparability and measurement of intangible factors such as innovation capability, digital readiness, and organizational quality. Moreover, the rapid diffusion of digital technologies, artificial intelligence, and green transformation agendas is continuously reshaping the determinants of competitiveness, requiring ongoing refinement of existing models. The research aims to synthesize major theoretical

approaches, identify key methodological shifts, and highlight emerging trends in competitiveness measurement.

2. Literature review

The conceptualization and measurement of competitiveness have attracted sustained scholarly attention across strategic management, industrial economics, and development studies. Over time, the literature has evolved from cost-based and structural explanations toward capability-driven and systemic frameworks. This section reviews key foreign and local studies that have shaped the conceptual models of competitiveness assessment.

One of the foundational contributions to competitiveness analysis was made by Michael Porter [1], who introduced the Five Forces framework to analyze industry structure and the determinants of profitability. Porter argued that competitive intensity is shaped by five structural forces–rivalry, threat of entrants, supplier power, buyer power, and substitutes–thereby linking competitiveness to the external industry environment.

Porter later expanded the analytical scope through the Diamond Model, proposing that national and industry competitiveness depends on the interaction of factor conditions, demand conditions, related industries, and firm strategy and rivalry. This model shifted the debate from simple cost advantages to systemic competitive environments [2].

Building on Porter's work, Rugman and D'Cruz [3] developed the Double Diamond model, arguing that the original framework underestimated the role of globalization and multinational activity. Their extension incorporated both domestic and international determinants of competitiveness, making the model more applicable to open economies.

From a firm-level perspective, Barney [4] advanced the Resource-Based View (RBV), emphasizing that sustainable competitive advantage stems from valuable, rare, inimitable, and non-substitutable resources. This approach redirected competitiveness research toward internal capabilities and intangible assets.

Further theoretical refinement was provided by Wernerfelt [5], who conceptualized the firm as a bundle of resources and highlighted the strategic importance of resource positioning in achieving superior performance. His work laid the groundwork for subsequent capability-based models.

Recognizing the dynamic nature of competition, Teece, Pisano, and Shuen [6] introduced the Dynamic Capabilities framework, arguing that firms must continuously integrate, build, and reconfigure competencies to remain competitive in rapidly changing environments. This marked a shift from static resource possession to adaptive capability development.

In the field of innovation economics, Freeman [7] emphasized that technological change and R&D investment are central drivers of long-term competitiveness, thereby embedding innovation into competitiveness assessment models.

A systemic perspective was proposed by Esser et al. [8] through the Systemic Competitiveness model, which integrates meta-, macro-, meso-, and micro-level factors. This approach highlighted the importance of institutional and policy environments alongside firm capabilities.

The concept of value disciplines introduced by Treacy and Wiersema [9] further enriched competitiveness analysis by suggesting that firms achieve market leadership through operational excellence, customer intimacy, or product leadership.

Recent empirical work by van de Wetering et al. [10] demonstrated that the alignment between IT flexibility and dynamic capabilities significantly enhances firm performance, reinforcing the relevance of capability-based assessment models in the digital economy.

More contemporary research by Patelli et al. [11] highlights that national competitiveness increasingly correlates with diversification and knowledge complexity, supporting capability-based interpretations of economic evolution.

The issue of increasing the competitiveness of enterprises is also widely covered in local economic literature. In particular, S.Gulyamov, A.Vakhobov, B.Berkinov and A.Kholikulov [12] scientifically substantiated that industrial modernization and structural changes are the main ways to strengthen the competitive advantage of enterprises, and that enterprise competitiveness can be ensured through the combination of management efficiency, innovative activity, and marketing policy.

3. Research methodology

This study employs a qualitative and analytical research design aimed at synthesizing and systematizing the conceptual evolution of competitiveness assessment models. The methodological framework is based on a multi-stage approach combining theoretical generalization, comparative analysis, and structural synthesis.

At the first stage, a systematic literature review was conducted covering seminal and contemporary works in strategic management, industrial economics, and innovation studies. Both foreign and local scholarly contributions were examined to ensure conceptual completeness and contextual relevance. Content analysis was applied to identify the core assumptions, analytical units, and key indicators used in different competitiveness models.

At the second stage, a comparative analytical method was used to classify competitiveness frameworks into major evolutionary stages—structural, resource-based, dynamic capability, systemic, and ecosystem approaches. Each model was evaluated according to its analytical focus, explanatory power, and methodological limitations.

At the third stage, a synthesis method was employed to develop an integrated conceptual model of competitiveness assessment. The proposed framework combines micro-level firm capabilities, meso-level industrial and cluster conditions, and macro-level institutional and digital ecosystem factors. Logical abstraction and systems analysis were used to ensure internal coherence of the proposed model.

The study relies primarily on secondary data and conceptual evidence rather than primary empirical estimation.

4. Analysis and results

The analysis of conceptual models of competitiveness assessment reveals a clear evolutionary trajectory from static, cost-oriented frameworks toward dynamic, capability-based and ecosystem approaches. This evolution reflects structural changes in the global economy, including technological acceleration, globalization, digitalization, and the growing importance of intangible assets. Based on the reviewed literature and comparative synthesis, this section systematizes the conceptual foundations of competitiveness assessment and identifies key stages of their evolution.

4.1. Conceptual foundations of competitiveness assessment

Competitiveness assessment models generally rest on three analytical pillars: (1) structural environment, (2) internal firm capabilities, and (3) dynamic adaptability. Early models

predominantly emphasized external market structure, while later approaches increasingly incorporated firm-specific resources and systemic interactions.

The structural paradigm—represented by Porter's industry analysis—assumes that competitive outcomes are largely determined by market forces and industry configuration. In this framework, firms are viewed as position-takers within relatively stable competitive environments. Such models are particularly useful for sectoral diagnostics but are limited in explaining performance differences among firms operating within the same industry.

The resource-based paradigm marked a major conceptual shift by recognizing heterogeneity among firms. Competitiveness became associated with the possession and effective deployment of valuable and inimitable resources. This approach significantly improved firm-level diagnostics; however, its static nature initially limited its ability to capture rapid environmental change.

The dynamic capabilities perspective further expanded the analytical scope by emphasizing learning, innovation, and strategic reconfiguration. In this view, sustainable competitiveness depends not only on resource endowment but also on the firm's ability to renew its competence base under conditions of uncertainty.

More recently, systemic and ecosystem approaches have emerged, reflecting the networked nature of modern production systems. These models integrate institutional quality, digital infrastructure, innovation ecosystems, and global value chain participation into competitiveness assessment. As a result, competitiveness is increasingly interpreted as a multi-level, co-evolutionary phenomenon.

4.2. Evolution of competitiveness assessment models

To synthesize the theoretical progression, Table 1 systematizes the major stages in the evolution of competitiveness assessment.

Table 1.

Evolution of conceptual models of competitiveness assessment[1]

Stage	Period	Dominant approach	Key focus	Main limitation
I. Structural	1980s	Industry structure (Porter)	Market forces, positioning	Underestimates firm heterogeneity
II. Resource-based	Late 1980s–1990s	RBV	Unique resources and capabilities	Static orientation
III. Dynamic capabilities	Late 1990s–2000s	Dynamic capability view	Adaptation and innovation	Measurement complexity
IV. Systemic competitiveness	2000s	Multi-level systems	Institutional and meso factors	High data requirements
V. Digital & ecosystem	2010s–present	Platform/ecosystem models	Networks, digitalization, co-creation	Conceptual fragmentation

[1] Author's development

The table demonstrates that each subsequent stage does not replace but rather extends previous frameworks. Modern competitiveness diagnostics therefore require an integrated, multi-layer methodology.

4.3. Comparative analytical assessment

The comparative analysis indicates three major transformation patterns.

First, the unit of analysis has expanded. Early studies focused on industries and firms, whereas contemporary research increasingly examines innovation systems, clusters, and digital ecosystems. This reflects the shift from isolated competition toward network competition.

Second, the nature of competitive advantage has evolved from cost efficiency to knowledge intensity. Empirical studies consistently show that productivity growth in modern manufacturing is more strongly associated with technological capability, R&D intensity, and human capital quality than with traditional factor cost advantages.

Third, the time horizon of competitiveness assessment has lengthened. Static snapshot indicators (market share, price competitiveness) are being complemented by forward-looking metrics such as innovation capacity, digital readiness, and organizational agility.

4.4. Implications for industrial enterprise assessment

Applying the synthesized framework to industrial enterprises yields several analytical implications.

First, reliance on single-dimension indicators (cost, productivity, or market share alone) is no longer sufficient for evaluating competitiveness. Industrial firms operating in technologically turbulent environments require multi-factor diagnostic systems that incorporate innovation capability, digital maturity, and supply-chain integration.

Second, the growing importance of intangible assets—such as organizational knowledge, brand capital, and technological competencies—necessitates the use of composite indices rather than purely financial metrics. Empirical evidence shows that firms with strong dynamic capabilities maintain performance advantages even in volatile markets.

Third, the ecosystem perspective highlights the role of external complementarities. Industrial competitiveness increasingly depends on cluster participation, supplier networks, research collaboration, and institutional support. This is particularly relevant for emerging economies, where firm-level strengths may be constrained by meso- and macro-level bottlenecks.

4.5. Integrated conceptual model

Based on the synthesis, this study proposes that modern competitiveness assessment should integrate three analytical layers: micro, meso and macro level.

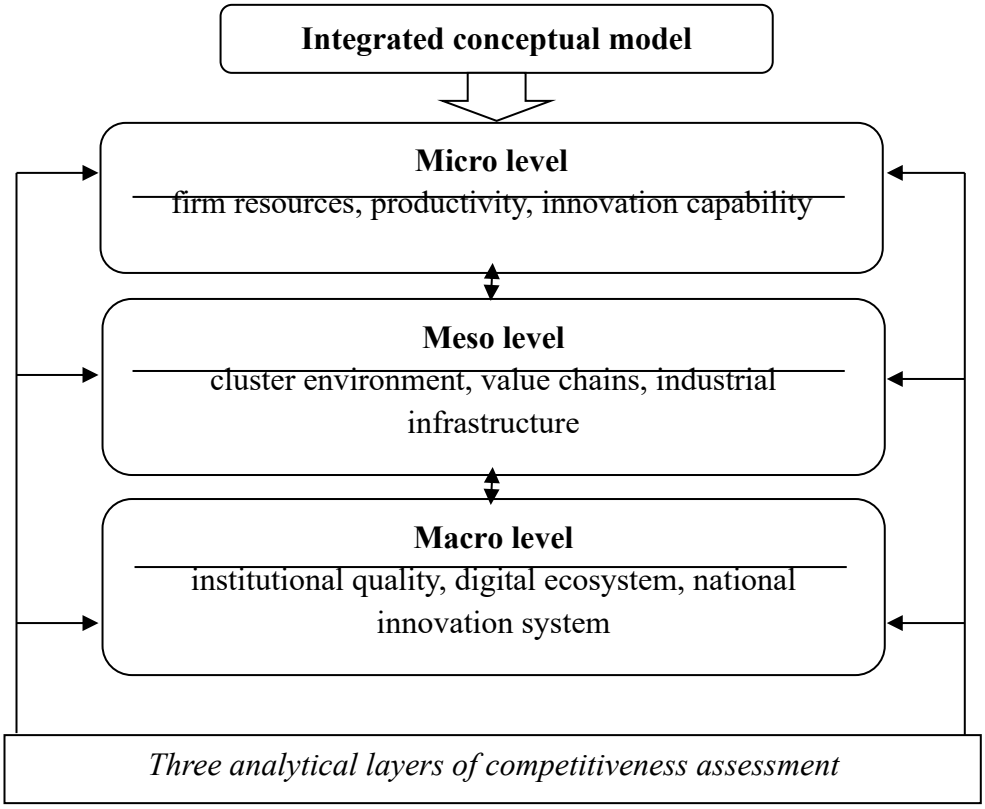

Figure 1. Integrated conceptual model of competitiveness assessment[2]

Such an integrated architecture reduces the risk of partial diagnostics and better reflects the co-evolutionary nature of competitiveness in contemporary industry.

Overall, the results confirm that the theoretical evolution of competitiveness models mirrors the broader transformation of the global economy toward knowledge-driven and digitally interconnected production systems. For high-impact international research, this implies that future empirical work should prioritize hybrid measurement frameworks capable of capturing both firm-level capabilities and systemic ecosystem effects.

5. Conclusion

The conducted research confirms that the conceptual models of competitiveness assessment have undergone a profound transformation in response to structural changes in the global economy. Early cost- and structure-based approaches provided an important analytical foundation but proved insufficient for explaining performance differentials in knowledge-intensive and rapidly changing markets. Subsequent theoretical developments—particularly the resource-based view and dynamic capabilities framework—shifted the focus toward firm-specific assets, learning capacity, and adaptive capabilities.

The findings demonstrate that modern competitiveness is inherently multi-dimensional and co-evolutionary. Competitive advantage increasingly depends on the interaction between internal firm competencies, meso-level industrial environments, and macro-level institutional and digital

[2] Author's development

ecosystems. As a result, single-factor or purely static assessment tools no longer provide an adequate diagnostic basis for strategic decision-making.

The study also identifies several persistent methodological challenges, including the measurement of intangible assets, indicator weighting in composite indices, and the integration of cross-level determinants. Addressing these challenges requires the development of hybrid assessment frameworks that combine quantitative indicators with capability-oriented diagnostics.

In sum, the evolution of competitiveness assessment models reflects the broader transition of the world economy toward knowledge-driven and digitally interconnected production systems. Future research should focus on operationalizing integrated measurement tools and empirically validating multi-level competitiveness frameworks in different industrial and national contexts.

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