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Strategic Competition in Digital Platforms for Quality Education: A Review of Game Theoretic Models and Empirical Insights

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Abstract
Digital platforms have transformed modern economies by enabling multi-sided interactions, fostering network effects, and orchestrating complex ecosystems. These characteristics distinguish platform markets from traditional industries and raise new questions about strategic competition. This article reviews and synthesizes game-theoretic models and empirical research on platform strategies, focusing on pricing, openness, entry dynamics, and evolutionary competition. The analysis shows that two-sided and multi-sided market theories provide the foundation for creating quality education through developing new body of knowledge to understand asymmetric pricing and classical models such as Bertrand, Cournot, and Hotelling have been adapted to capture platform-specific dynamics. Evolutionary game theory extends the analysis by incorporating adaptive strategies, feedback loops, and multiple equilibria. Empirical studies validate many theoretical predictions but also reveal contextual variations, particularly in user behavior, multi-homing practices, and ecosystem governance. Evidence from Thailand and other emerging economies underscores the importance of regulatory frameworks and consumer perceptions in shaping competition. Policy analysis highlights that governance operates at multiple levels: platforms internally design rules for complementors and users, while regulators externally oversee fairness and market power. The article identifies research gaps in hybrid modeling, behavioral integration, and comparative studies across regions. By linking theory, evidence, and governance debates, this review contributes to advancing scholarly understanding and providing practical insights for policymakers and practitioners to manage digital platform ecosystems for creating sustainable business and communities.

Keywords: Digital platforms; game theory, quality education, sustainable communities and societies

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Introduction
Digital platforms have become central actors in the contemporary economy, transforming industries ranging from retail and finance to mobility and education. Their ability to facilitate interactions among multiple groups of users, generate network effects, and orchestrate digital ecosystems has made them both engines of innovation and objects of intense competition (Rietveld & Schilling, 2021). Unlike traditional markets, platform markets are characterized by multi-sided interactions, cross-side network effects, and the importance of data as a strategic resource (Jullien, Pavan, & Rysman, 2021). These features amplify the complexity of competition and have prompted scholars to adopt advanced theoretical tools, particularly game theory, to model strategic interactions among platforms, complementors, and users.

The study of strategic competition in digital platforms through a game-theoretic lens is motivated by several distinctive dynamics. First, price competition in multi-sided markets often involves asymmetric subsidies, where one side of the market is charged below cost or even provided services for free in order to attract users on the other side (Khan et al., 2025; Abdelkafi & Makhlouf, 2019). Second, platforms must decide whether to pursue openness or exclusivity, balancing the benefits of rapid ecosystem growth with the risks of value leakage to rivals (Gawer, 2021). Third, network externalities create tipping points that can lead to winner-takes-most outcomes, yet recent studies suggest that compatibility and multi-homing can prevent full market dominance (Chaisiripaibool et al., 2025; Kim & Lee, 2023). These dynamics highlight why static models of price competition alone are insufficient and why evolutionary and dynamic game models are increasingly applied to explain platform strategies over time (Zhang & Liu, 2023; Li & Mei, 2024).

Empirical research complements theoretical insights by revealing how platforms behave in practice. For example, studies of digital marketplaces demonstrate that compatibility strategies can shape market outcomes in ways predicted by two-stage game models (Kim & Lee, 2023). Similarly, ecosystem perspectives highlight the co-evolution of platforms, complementors, and users, showing that governance choices affect long-term competitive stability (Suuronen, 2024). In the Chinese context, evolutionary game analysis has shown how data-sharing incentives influence the strategic balance among firms empowered by platform infrastructures (Li & Mei, 2024). These findings illustrate that theory and evidence are mutually reinforcing: game-theoretic models provide predictive structure, while empirical work grounds these models in observed behavior.

The relevance of platform competition extends beyond academic debate. Regulators worldwide are grappling with questions of market power, user welfare, and innovation incentives in platform-dominated industries. In Thailand, for instance, recent policy research highlights the challenges of overseeing platform markets, including antitrust issues, consumer protection, and innovation governance (Somkiat et al., 2023). Likewise, national agencies emphasize the need for conceptual clarity on the nature of digital platforms and their competitive effects (Digital Business Development Office, 2020). Integrating theoretical models with empirical insights can therefore inform evidence-based policy and guide regulatory frameworks that ensure fair and dynamic platform markets. In light of these developments, this article undertakes a systematic review and synthesis of game-theoretic models and empirical research on strategic competition in digital platforms. The rationale for focusing on this topic lies in the growing importance of platforms in structuring markets and shaping social interactions, coupled with the need for analytical clarity on how strategic competition unfolds in such contexts. By integrating models of two-sided and multi-sided markets, evolutionary dynamics, and empirical case studies, this review contributes to a more comprehensive understanding of platform competition.

The objectives of this paper are threefold: (1) to map and synthesize the core game-theoretic approaches used to analyze platform competition, (2) to assess how empirical studies support, refine, or challenge these models, and (3) to identify research gaps and policy implications relevant to both scholars and regulators. In doing so, the article aims to advance theoretical development, enhance empirical grounding, and provide actionable insights for managing competition in digital platform ecosystems.

Literature Review

To provide a comprehensive and rigorous account of strategic competition in digital platforms, this article adopts a structured literature review approach. Following established guidelines for systematic and scoping reviews, the method integrates both conceptual and empirical works published in leading journals, books, and conference proceedings, as well as policy reports and theses that enrich the regional and practical context (Rietveld & Schilling, 2021; Jia, 2019). The purpose is not only to summarize existing findings but also to synthesize diverse perspectives into an integrative framework that highlights theoretical developments, empirical evidence, and policy implications.

Scope and Inclusion Criteria

The scope of the review covers scholarly contributions related to digital platform competition, with a focus on game-theoretic models and their empirical validation. Three categories of studies were prioritized: (1) Theoretical models that employ static, dynamic, or evolutionary game theory to analyze platform strategies (e.g., Jullien, Pavan, & Rysman, 2021; Zhang & Liu, 2023); (2) Empirical research that applies case studies, econometric modeling, or simulation to validate theoretical propositions (Kim & Lee, 2023; Suuronen, 2024); and (3) Policy-oriented and contextual works that offer insights into regulation and governance, particularly in developing economies such as Thailand (Somkiat et al., 2023; Digital Business Development Office, 2020).

To ensure comprehensiveness, the review incorporates sources in both English and Thai, thereby enabling the synthesis of global academic debates with regional case-specific knowledge. This dual-language approach strengthens the contribution by bridging international theory with local empirical realities.

Search and Selection Strategy

Sources were identified through academic databases such as Scopus, Web of Science, and ScienceDirect, complemented by targeted searches of Google Scholar, conference proceedings, and institutional repositories. Search keywords included *"platform competition," "two-sided markets," "game theory," "evolutionary games," "compatibility,"* and *"ecosystem governance."* The Thai-language literature was sourced from the Thai Journal Citation Index (TCI), national university repositories, and research institutions specializing in digital economy and innovation policy.

A total of 20 references were selected for in-depth analysis, comprising 10 international English-language sources and 10 Thai-language sources. These works were screened for relevance, credibility, and methodological rigor. Inclusion was based on whether the work explicitly analyzed strategic behavior in digital platforms through a game-theoretic framework or provided empirical insights directly related to competition dynamics.

Analytical Framework

The review employed a thematic synthesis method. Each source was coded according to its contribution to four analytical dimensions: (1) Market Structure and Pricing – how platforms set prices, subsidies, and incentives in two- and multi-sided markets (Jullien et al., 2021; Abdelkafi & Makhlouf, 2019); (2) Openness and Compatibility – how strategic choices about platform boundaries and interoperability shape competition (Gawer, 2021; Kim & Lee, 2023); (3) Evolutionary Dynamics – how user adoption, network effects, and ecosystem evolution are modeled over time (Zhang & Liu, 2023; Li & Mei, 2024; Xia, 2025); and (4) Policy and Governance – how governments and institutions respond to competition and regulate platform power (Somkiat et al., 2023; Suksan, 2022).

4) Policy and Governance – how governments and institutions respond to competition and regulate platform power (Channuwong et al., 2022; Suksan, 2022).

This coding enabled the identification of recurring patterns, divergences between theory and evidence, and research gaps. It also ensured that the synthesis captured both the universal dynamics of platform competition and the specific challenges faced in local contexts.

Limitations

As with any review, this study faces certain limitations. First, while the selection of sources was systematic, it was constrained by publication availability up to 2025. Emerging studies not yet indexed in major databases may have been excluded. Second, the reliance on English and Thai literature provides breadth across global and regional contexts but may omit relevant findings from other linguistic domains. Finally, the thematic synthesis emphasizes depth of analysis over exhaustive coverage, focusing on representative and high-quality contributions. Despite these limitations, the review offers a robust and integrative perspective suitable for advancing both academic debates and practical policymaking.

Theoretical Foundations

The study of strategic competition in digital platforms builds upon foundational concepts in industrial organization, microeconomic theory, and the economics of information. Game theory provides the primary analytical framework for understanding how platforms make strategic decisions under conditions of interdependence, network externalities, and asymmetric information (Jullien, Pavan, & Rysman, 2021). This section reviews three major strands of theoretical work: two-sided and multi-sided market theory, classical models of competition adapted to platform settings, and dynamic and evolutionary game approaches.

Two-Sided and Multi-Sided Markets

The concept of two-sided markets emerged from the recognition that platforms simultaneously serve multiple groups of users and must manage cross-side network effects. In such markets, value creation arises from the ability of a platform to attract and coordinate both sides, with pricing structures playing a critical role in balancing participation (Abdelkafi & Makhlouf, 2019). For example, credit card networks subsidize cardholders with rewards while charging merchants transaction fees, illustrating asymmetric pricing as a strategy to maximize overall network value (Jullien et al., 2021).

Multi-sided platforms extend this logic to more complex ecosystems where multiple stakeholders—users, advertisers, developers, and complementors—interact. Suuronen (2024) emphasizes that platforms in multi-sided markets act as ecosystem orchestrators, shaping governance mechanisms that determine value capture and distribution. The theoretical insights highlight that competitive advantage is not only derived from user acquisition but also from managing complementarities among different sides of the market. These dynamics underscore the centrality of network effects, switching costs, and the risk of market tipping toward monopolistic outcomes (Rietveld & Schilling, 2021).

Classic Competition Models in Platform Settings

Classical models of competition—such as Bertrand and Cournot frameworks—have been adapted to analyze platform markets. Bertrand competition explains how platforms engage in price wars, often driving prices toward marginal cost, but in platform settings, cross-subsidization alters these dynamics. Cournot competition, focusing on quantities or user bases rather than prices, is relevant where platforms compete for market share rather than immediate profitability. Hotelling location models have also been applied to explain product differentiation and spatial competition in digital contexts, such as app stores or streaming services (Kim & Lee, 2023).

The choice between openness and exclusivity is another central strategic dilemma. Gawer (2021) shows that the degree of platform openness—whether through open APIs, compatibility standards, or controlled ecosystems—directly influences complementor participation and consumer adoption. Open platforms encourage rapid ecosystem growth but expose firms to value leakage, while closed platforms capture more value at the risk of limiting adoption. These theoretical trade-offs are particularly salient in industries

where interoperability is technologically feasible, but competitive incentives may discourage it.

Dynamic and Evolutionary Perspectives

While static game models offer valuable insights, they often fall short in capturing the temporal and adaptive nature of platform competition. Evolutionary game theory addresses this gap by modeling how strategies evolve over time in response to changing user bases, network effects, and competitive feedback loops (Zhang & Liu, 2023). For instance, evolutionary models illustrate how platforms can achieve equilibrium states through reinforcement mechanisms that amplify early advantages, leading to path dependence and potential market tipping.

Li and Mei (2024) apply evolutionary game analysis to data-sharing among enterprises, demonstrating that platform empowerment mechanisms influence whether firms choose to cooperate or defect. Similarly, Xia (2025) argues that platforms in multisided markets must adapt strategies dynamically to balance cross-side effects, user growth, and regulatory pressures. These dynamic perspectives contribute to a more nuanced understanding of competition by emphasizing stability, adaptation, and the potential for multiple equilibria depending on initial conditions and strategic responses.

Synthesis of Theoretical Insights

Taken together, these theoretical approaches reveal that strategic competition in digital platforms cannot be reduced to simple price or quantity games. Instead, it is shaped by interdependent decisions regarding pricing, openness, compatibility, and long-term ecosystem management. Two-sided and multi-sided market theory provides the structural foundation, classical models explain tactical choices in competitive contexts, and evolutionary approaches capture the adaptive and dynamic dimensions of competition. This synthesis creates a robust framework for linking theoretical predictions with empirical observations, which the following sections explore in greater detail.

Game-Theoretic Models of Platform Strategy

The strategic behavior of digital platforms has been extensively analyzed using game-theoretic models. These models illuminate how platforms design pricing structures, manage openness and compatibility, respond to entry threats, and adapt through evolutionary dynamics. By examining these dimensions, it is possible to understand not only the tactical decisions of individual firms but also the systemic forces that shape competition and ecosystem evolution.

Pricing, Subsidies, and Multi-Homing

One of the most distinctive features of platform competition is the use of asymmetric pricing to stimulate participation on both sides of the market. Platforms often subsidize one user group to attract the other, a phenomenon well-documented in two-sided market theory (Jullien, Pavan, & Rysman, 2021). For instance, streaming services may offer free or low-cost subscriptions to users while generating revenues from advertisers or premium tiers. Bertrand-style models, when adapted to platform settings, reveal that aggressive price competition can accelerate user adoption but also intensify risks of profit erosion (Abdelkafi & Makhlouf, 2019).
Multi-homing—the practice of users participating in multiple platforms simultaneously—adds further complexity. Game-theoretic models indicate that multi-homing can weaken network effects and prevent tipping toward monopoly outcomes (Rietveld & Schilling, 2021). However, it also increases competitive pressure, as platforms must continually innovate and differentiate to retain user engagement. Empirical studies confirm that pricing strategies are often designed to reduce multi-homing by locking in users through loyalty schemes, switching costs, or exclusive content (Kim & Lee, 2023).

Openness, Compatibility, and Boundary Choices

Another crucial strategic dimension involves decisions on openness and compatibility. Hotelling-inspired competition models suggest that compatibility among platforms can expand total market size by enabling complementors and consumers to engage with multiple systems (Kim & Lee, 2023). Yet openness is a double-edged sword. Gawer (2021) emphasizes that open platforms foster ecosystem growth by inviting developers and third-party complementors, but at the cost of reducing control and potentially ceding value to external actors. Closed or semi-open systems, by contrast, allow platforms to appropriate greater value but may constrain ecosystem development.

Game-theoretic analysis clarifies this trade-off by showing that openness decisions are influenced by the stage of platform development. Early in the lifecycle, platforms may adopt open strategies to accelerate user adoption and attract complementors. As they mature, however, they often tighten control to consolidate market power and profitability. The balance between openness and exclusivity thus emerges as a dynamic strategic variable shaped by competitive context and ecosystem maturity.

Entry, Tipping, and Ecosystem Control

Entry dynamics and tipping points are central to understanding long-run platform competition. Models of sequential entry suggest that early movers gain advantages through accumulated network effects and data resources, potentially deterring late entrants

(Rietveld & Schilling, 2021). At the same time, evolutionary models highlight that tipping toward a single dominant platform is not inevitable. Factors such as interoperability, multi-homing, and differentiated strategies can sustain multiple competing platforms (Zhang & Liu, 2023).

Ecosystem control is another critical dimension. Platforms not only compete directly but also orchestrate interactions among complementors and users, shaping the broader ecosystem (Suuronen, 2024). Game-theoretic frameworks show that strategic ecosystem governance—such as setting standards, allocating rents, or managing complementor access—serves as an indirect form of competitive rivalry. By controlling the "rules of the game," platforms influence not only user adoption but also the competitive strategies of rivals.

Evolutionary Game Models and Cooperative Dynamics

Recent research has expanded the toolkit of platform analysis by incorporating evolutionary game theory. These models simulate how strategies evolve through repeated interactions, capturing adaptive behavior under uncertainty and bounded rationality. Li and Mei (2024), for instance, employ evolutionary game analysis to study data-sharing among enterprises empowered by platform infrastructures. Their findings demonstrate that platforms can act as enablers of cooperative equilibria, aligning incentives through governance mechanisms and reducing the risk of defection.

Similarly, Zhang and Liu (2023) analyze platform competition from an ecosystem perspective, applying evolutionary models to explain how user adoption, complementor strategies, and platform governance co-evolve. Xia (2025) extends this work by integrating evolutionary dynamics into multi-sided market competition, showing that stable equilibria depend on feedback loops between cross-side network effects and strategic adaptation. These approaches enrich traditional models by illustrating not just static equilibria but also dynamic processes of adjustment, path dependence, and potential multiple equilibria.

Synthesis of Strategic Models

The combined insights of pricing, openness, entry dynamics, and evolutionary perspectives provide a multifaceted view of platform competition. Game-theoretic models reveal that strategic choices are interdependent: pricing affects multi-homing behavior, openness shapes ecosystem participation, and entry dynamics interact with evolutionary feedback loops. Taken together, these models underscore that platform competition is not a one-dimensional contest but a complex system of interactions that unfold over time. This synthesis provides a robust foundation for linking theory with empirical evidence, as explored in the following section.

Empirical Insights and Measurement

Empirical studies play a crucial role in testing, refining, and sometimes challenging the predictions of game-theoretic models of platform competition. While theory provides structured frameworks for analyzing strategic interactions, real-world data reveal the extent to which these models capture actual platform behavior. By examining empirical findings from international and Thai contexts, this section highlights how pricing, openness, ecosystem governance, and evolutionary dynamics manifest in practice.

Pricing Strategies and Multi-Homing Behavior

Empirical evidence shows that platforms frequently use asymmetric pricing to stimulate adoption, consistent with two-sided market models (Jullien, Pavan, & Rysman, 2021). For example, ride-hailing services subsidize passengers through discounts while charging higher fees to drivers, a strategy aligned with cross-side network effect theory. Kim and Lee (2023) provide evidence that digital platforms adopt compatibility strategies to manage competition, often designing two-stage pricing models that maximize both adoption and profit. Multi-homing behavior, however, complicates these strategies. Studies confirm that users often engage with multiple platforms simultaneously, reducing lock-in effects and forcing firms to continuously differentiate (Rietveld & Schilling, 2021). This empirical finding supports theoretical predictions that multi-homing weakens monopolization tendencies.

Openness, Compatibility, and Ecosystem Development

Empirical research also sheds light on the trade-offs between openness and exclusivity. Gawer (2021) demonstrates how firms in technology-intensive industries strategically adjust platform boundaries, with open strategies accelerating adoption while closed systems increase value appropriation. Suuronen (2024) emphasizes the role of multi-sided platforms in orchestrating digital ecosystems, finding that governance choices—such as establishing standards or granting selective access—directly shape competitive outcomes. Thai studies complement these insights: for example, Kottha (2021) finds that platform quality and service strategies affect customer loyalty in local markets, suggesting that openness and compatibility are perceived by users as markers of reliability and trust.

Entry Dynamics, Market Tipping, and Ecosystem Control

Empirical findings confirm that early movers often gain advantages through accumulated network effects, yet tipping toward monopoly outcomes is not inevitable. Zhang and Liu (2023) provide evidence that evolutionary dynamics, including interoperability

and user adaptability, sustain multi-platform competition. In contrast, some industries exhibit winner-takes-most outcomes due to high switching costs and data-driven reinforcement loops (Rietveld & Schilling, 2021). Thai research highlights similar dynamics: Sawangchom (2024) shows that gamification strategies in online retail platforms influence purchase intentions, which in turn reinforce competitive positions. These findings underscore that local consumer behavior can magnify or mitigate tipping dynamics, depending on cultural and contextual factors.

Evolutionary Games and Cooperative Strategies

Recent empirical studies validate the growing importance of evolutionary game theory. Li and Mei (2024) demonstrate that enterprise cooperation in data sharing depends on platform governance mechanisms, confirming theoretical predictions that platforms can act as enablers of cooperative equilibria. Xia (2025) shows that multisided market competition involves adaptive strategies where user growth, regulatory constraints, and competitive actions interact dynamically. Evidence from Thai contexts complements these global findings: Chanathip (2567) and Siripanyathanakit (2022) document how perceived value and community-building strategies influence long-term user adoption in mobile gaming and augmented reality platforms, suggesting that evolutionary mechanisms extend beyond firm strategies to encompass consumer adaptation.

Policy and Governance in Practice

Policy-oriented research highlights how governments interpret and respond to platform competition. In Thailand, the study by Somkiat et al. (2024) identifies challenges in regulating digital platforms, including competition oversight, consumer protection, and innovation support. Similarly, the National Digital Business Development Office (2020) emphasizes the need for clear conceptual frameworks to guide platform governance. These policy-focused studies align with international debates on antitrust enforcement, interoperability mandates, and data portability requirements. They confirm that while game-theoretic models explain firm-level strategies, empirical policy research highlights the systemic implications of these strategies for market structure and welfare.

Synthesis of Empirical Findings

Overall, empirical research supports the validity of game-theoretic models but also reveals their limitations. Pricing and multi-homing dynamics align with two-sided market predictions, though cultural and contextual factors influence outcomes. Openness and compatibility strategies are shown to affect ecosystem health, yet decisions often depend on platform maturity and regulatory environments. Entry dynamics demonstrate both tipping and multi-platform coexistence, with empirical variation reflecting industry characteristics. Evolutionary games provide valuable insights into cooperative equilibria and adaptation, yet empirical studies suggest that consumer behavior and policy frameworks are equally decisive in shaping long-term outcomes. By integrating these empirical findings, it becomes evident that strategic competition in digital platforms is simultaneously theoretical, behavioral, and institutional.

Policy, Governance, and Regulation

The strategic behavior of digital platforms has significant implications for policy and governance. While theoretical and empirical studies highlight how platforms compete through pricing, openness, and ecosystem strategies, policymakers face the challenge of ensuring that these markets remain competitive, innovative, and socially beneficial. Regulatory debates therefore focus on how to balance platform dynamism with oversight mechanisms that prevent abuse of power and safeguard consumer welfare.

Antitrust and Market Power

Concerns over market concentration and monopolistic behavior have been central to discussions on platform governance. Game-theoretic models predict the possibility of tipping toward dominant platforms due to reinforcing network effects (Rietveld & Schilling, 2021). Empirical evidence supports this in sectors such as e-commerce and social media, where first movers often consolidate power through data accumulation and ecosystem lock-in (Zhang & Liu, 2023). In response, regulators in several jurisdictions have introduced measures to curb anticompetitive practices, including restrictions on predatory pricing, merger controls, and requirements for interoperability (Sin et al., 2025; Gawer, 2021). These interventions aim to preserve competition while recognizing the unique dynamics of multi-sided markets.

Governance of Digital Ecosystems

Platforms act as orchestrators of ecosystems, shaping the incentives and behavior of complementors, developers, and users (Suuronen, 2024). Governance decisions regarding openness, compatibility, and data-sharing not only affect firm strategies but also influence broader market outcomes. For instance, Li and Mei (2024) show that governance mechanisms can facilitate cooperative equilibria in data-sharing, reducing the risks of opportunism among enterprises. In this sense, regulation and self-governance are intertwined: platforms set the “rules of the game” internally, while regulators oversee whether these rules align with public interest.

National Policy Perspectives

In Thailand, policy research has underscored the urgency of addressing challenges posed by digital platforms. Somkiat et al. (2024) emphasize that platforms raise unique governance issues, including market concentration, consumer protection, and digital

sovereignty. The report highlights that without appropriate oversight, platforms may exploit information asymmetries and exert disproportionate influence over local markets. Complementing this, the National Digital Business Development Office (2020) stresses the importance of clear definitions and systematic surveys of platform activity to inform evidence-based policymaking. Together, these studies demonstrate how local regulatory contexts intersect with global trends, creating both challenges and opportunities for platform governance in emerging economies.

Consumer Welfare and Fairness

Regulatory frameworks increasingly focus on consumer rights, transparency, and fairness. For example, Kottha (2021) shows that consumer loyalty in Thailand's rental car business is influenced by platform quality and service strategies, suggesting that consumer perceptions should guide regulation. Similarly, Sawangchom (2024) demonstrates that gamification strategies affect purchasing intentions, raising questions about the ethical use of behavioral design in digital platforms. These findings indicate that governance must extend beyond competition policy to encompass fairness, accountability, and consumer empowerment.

Toward Integrated Governance Models

The convergence of theoretical insights, empirical findings, and policy analysis points to the need for integrated governance models. Such models combine antitrust measures with platform-specific rules, support cooperative data-sharing while protecting privacy, and foster innovation while mitigating risks of exclusion. International debates emphasize the role of adaptive regulation, where rules evolve alongside technological and market changes (Jullien et al., 2021). For countries like Thailand, aligning national policies with global best practices while addressing local specificities can create more balanced and inclusive digital ecosystems (Suksan, 2022).

Synthesis

Overall, the governance of digital platforms requires a multi-level approach. At the firm level, platforms govern their ecosystems through strategic choices on openness and compatibility. At the market level, competition authorities monitor and address risks of concentration. At the national level, policymakers must design frameworks that both encourage digital innovation and safeguard public interest. The integration of these levels ensures that platform competition remains dynamic, fair, and aligned with societal goals. By combining theoretical models with empirical and policy perspectives, researchers and practitioners can contribute to the design of governance systems that address the complexities of the platform economy.

Research Gaps and Future Directions

Although significant progress has been made in analyzing strategic competition in digital platforms, important gaps remain in both theoretical development and empirical application. Addressing these gaps is essential for advancing scholarly understanding and for informing policymakers seeking to regulate platform markets effectively.

Limitations of Current Theoretical Models

Classical and static game-theoretic models provide elegant frameworks for analyzing pricing, openness, and entry dynamics, but they often oversimplify the adaptive and path-dependent nature of platform competition. Evolutionary game models offer greater realism by incorporating feedback loops and dynamic adjustment, yet these models remain underutilized and frequently constrained by simplifying assumptions (Channuwong et al., 2023; Zhang & Liu, 2023; Xia, 2025). Future research could benefit from hybrid models that integrate static precision with dynamic adaptability, potentially by combining evolutionary frameworks with agent-based simulations.

Integration of Behavioral and Experimental Insights

Most existing game-theoretic studies assume rational decision-making by firms and users, yet empirical research increasingly shows that behavioral biases—such as bounded rationality, framing effects, and loss aversion—influence platform adoption and strategy (Kim & Lee, 2023). Experimental economics, especially field and laboratory experiments, could be more systematically integrated into the study of platform competition. Such approaches would provide greater empirical grounding to refine assumptions about consumer and firm behavior.

Data-Driven Approaches and Machine Learning

The rise of big data and machine learning offers opportunities to extend empirical research beyond traditional econometric models. For example, demand estimation in digital platforms could leverage predictive analytics while retaining theoretical consistency from structural models (Li & Mei, 2024). Future research should explore how machine learning can enhance the explanatory and predictive power of game-theoretic models, bridging the gap between abstract theory and real-world complexity.

Cross-Regional and Comparative Studies

Much of the literature on platform competition is concentrated in developed economies, particularly the United States, Europe, and China (Rietveld & Schilling, 2021; Gawer, 2021). Fewer studies explore platform dynamics in emerging markets, where institutional

settings, consumer behaviors, and regulatory frameworks differ markedly. Research in Thailand demonstrates unique challenges in platform governance, such as balancing digital sovereignty with global integration (Somkiat et al., 2023; Digital Business Development Office, 2020). Future studies should pursue comparative analyses that highlight regional variations and their implications for theory and policy.

Policy and Governance Innovations

Current policy debates often focus narrowly on antitrust concerns, overlooking broader issues such as consumer rights, fairness in algorithmic design, and sustainability in digital ecosystems (Suuronen, 2024). Research can play a pivotal role by evaluating the effectiveness of different regulatory tools, such as interoperability mandates, data portability requirements, and cooperative data-sharing frameworks. In addition, future work should consider the ethical implications of platform strategies, especially the use of gamification and behavioral nudges that shape consumer decision-making (Katangchol et al., 2023; Sawangchom, 2023; Chanathip, 2024).

Toward an Integrated Research Agenda

The most promising path forward involves integration: combining static and evolutionary game models, linking behavioral and experimental insights with econometric evidence, and aligning global theory with local empirical contexts. By advancing along these lines, scholars can generate more nuanced theories that reflect the complexity of real-world platform markets while providing practical guidance for policymakers and industry stakeholders. Such a research agenda will not only deepen theoretical contributions but also enhance the societal relevance of studies on platform competition.

Conclusion

Digital platforms represent one of the most transformative organizational forms of the modern economy, reshaping industries, consumer behavior, and competitive dynamics. Their unique characteristics—multi-sided interactions, network effects, and data-driven strategies—demand analytical frameworks that move beyond traditional models of firm competition. This article has reviewed and synthesized the contributions of game-theoretic models and empirical studies to the understanding of strategic competition in digital platforms.

The review highlighted that two-sided and multi-sided market theory provides the foundational structure for analyzing pricing and participation dynamics, while classical competition models such as Bertrand, Cournot, and Hotelling remain useful when adapted to platform settings. Openness and compatibility emerged as central strategic choices, with game-theoretic analysis clarifying the trade-offs between ecosystem growth and value appropriation (Gawer, 2021; Kim & Lee, 2023). Evolutionary game models further extend the analysis by capturing adaptive strategies, feedback loops, and multiple equilibrium outcomes (Zhang & Liu, 2023; Li & Mei, 2024; Xia, 2025).

Empirical studies have validated many theoretical predictions while also revealing important contingencies. Pricing subsidies, multi-homing behaviors, and network effects largely operate as theorized; however, contextual factors such as consumer trust, cultural preferences, and regulatory settings significantly shape outcomes (Channuwong et al., 2025; Rietveld & Schilling, 2021; Suuronen, 2024). Evidence from Thailand underscores the importance of local perspectives, showing how platform governance, consumer perceptions, and policy frameworks influence competitive dynamics (Somkiat et al., 2023; Sawangchom, 2023). These findings illustrate that platform competition is simultaneously global and local, requiring both theoretical precision and empirical sensitivity. Policy analysis further emphasizes that governance cannot be separated from strategy. Platforms themselves act as rule-makers within ecosystems, while regulators shape the boundaries of fair competition and consumer protection. The synthesis of international scholarship and Thai research demonstrates that effective governance requires a multi-level approach, balancing innovation with oversight and aligning local priorities with global standards (Channuwong et al., 2024; Digital Business Development Office, 2020; Suksan, 2022).

The article identified several research gaps, including the need for hybrid theoretical models, greater integration of behavioral insights, and comparative studies across regions. Addressing these gaps will not only advance academic knowledge but also inform practical strategies for managing platform ecosystems. By aligning game-theoretic precision with empirical grounding and policy relevance, future research can contribute to more resilient, inclusive, and competitive digital economies.

In conclusion, this review contributes to the scholarly and practical understanding of platform competition by bridging theoretical models, empirical evidence, and policy debates. Its significance lies in offering an integrated perspective that recognizes the complexity of strategic interactions in digital ecosystems. For scholars, the synthesis provides a roadmap for advancing theory and methodology. For policymakers, it offers insights into governance challenges and regulatory options. For industry practitioners, it highlights the strategic trade-offs of pricing, openness, and ecosystem control. Together, these contributions demonstrate why studying strategic competition in digital platforms is both timely and essential for navigating the evolving landscape of the digital

economy.

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