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The Evolution of Competitive Advantage in Platform-Dominated Markets: Understanding Strategic Positioning in Digitally Networked Economies

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Abstract

In digitally networked economies, competitive advantage has shifted from firm-level resources to ecosystem-level orchestration, where platform leaders and complementors navigate interdependent value creation and capture. This theory-development article synthesizes recent advances in platform research to propose an evolutionary framework that explains how competitive advantage emerges, sustains, and erodes across three stages: firm-centric, platform-centric, and ecosystem-centric competition. Drawing on network effects, multi-sided market dynamics, and governance mechanisms, the framework highlights strategic positioning within platform hierarchies as the central driver of sustained advantage. Five core propositions articulate causal relationships between network intensity, complementor dependence, data-driven feedback loops, and value-capture asymmetry. The analysis reveals that platform leaders maintain dominance not through ownership of scarce resources but through selective promotion of complements, ecosystem governance, and orchestration of indirect network effects. Complementors, in turn, secure advantage by exploiting platform openness while mitigating lock-in risks. By integrating insights from peer-reviewed studies, this article advances a novel theory of ecosystem-driven competitive advantage that accounts for the dynamic interplay of technological affordances, strategic interdependence, and regulatory pressures. The resulting framework offers actionable guidance for platform leaders and complementors seeking to reposition within rapidly evolving digital markets.

Keywords Competitive advantage, Strategic positioning, Network effects, Value capture, Ecosystem governance, Platform ecosystems, Digitally networked economies

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Introduction

The rise of platform-dominated markets has fundamentally altered the nature of competition in the digital age.

Traditional firm-centric models of competitive advantage, rooted in the resource-based view and isolated value chains, have given way to ecosystem-centric logics in which value is co-created across interdependent actors [1, 2]. In industries ranging from mobility and e-commerce to fintech and entertainment, a handful of platform leaders—

such as Amazon, Alibaba, and Apple—have achieved market dominance not by owning physical assets or proprietary technologies alone, but by orchestrating vast networks of complementors and users [3–11]. This transition reflects a broader structural transformation in digitally networked economies, where competitive advantage increasingly resides in the ability to govern multi-sided markets, amplify network effects, and shape ecosystem evolution [12–17].

Early scholarship on platforms emphasized direct and indirect network effects as the primary engine of market tipping [1, 4]. Positive feedback loops allow platforms to grow rapidly once a critical mass of users and complementors is attained, creating winner-take-most dynamics that render traditional entry barriers obsolete [5, 16]. Yet recent evidence demonstrates that network effects alone do not guarantee sustained advantage; platform leaders must actively manage ecosystem governance, complementor incentives, and strategic entry into adjacent markets [6, 18–23]. Complementors, meanwhile, face a paradoxical position: dependence on the platform enhances their reach but exposes them to value-capture asymmetry and sudden rule changes [7, 14].

The present article addresses a critical gap in the literature. While prior studies have cataloged platform strategies and governance mechanisms, few have offered a unified evolutionary theory that explains how competitive advantage itself mutates across stages of market maturation [11, 18]. This article develops such a theory by tracing the progression from firm-centric competition—where advantage stems from internal resources and capabilities—to platform-centric competition—where advantage derives from controlling the core infrastructure—and finally to ecosystem-centric competition—where advantage emerges from orchestrating relational and data flows across loosely coupled actors [8, 20].

Three interrelated dynamics drive this evolution. First, network effects intensify over time, shifting from simple user–user interactions to complex, multi-layered complementor–user–platform loops [4, 22]. Second, platform hierarchies create power asymmetries that platform leaders exploit through selective promotion, data orchestration, and rule-setting [6, 19]. Third, value creation and capture become decoupled from traditional firm boundaries, compelling both leaders and complementors to pursue hybrid strategies of cooperation and competition [9, 24, 25].

This theoretical contribution is timely. Regulatory scrutiny of platform power, technological advances in artificial intelligence and blockchain, and the proliferation of decentralized ecosystems are reshaping the conditions under which competitive advantage can be sustained [26–28].

Theoretical Foundations and Literature Synthesis

Platform research has evolved rapidly since 2017, moving from descriptive accounts of network effects to nuanced examinations of strategic positioning, governance, and ecosystem dynamics [1, 11]. Early contributions established that platforms differ from traditional pipelines by enabling multi-sided markets in which value is co-created through interactions among platform owners, complementors, and users [2, 13]. McIntyre and Srinivasan [1] argued that network structure, rather than firm resources, determines competitive outcomes, while Parker *et al.* [2] demonstrated how developers invert traditional firm boundaries by contributing to ecosystem value.

Subsequent work deepened understanding of demand heterogeneity and complementor responses. Rietveld and Eggers [3] showed that heterogeneous user preferences create opportunities for niche complementors, yet platform owners can tilt the market through selective promotion [6]. Wen and Zhu [5] provided evidence that the threat of platform-owner entry prompts complementors to innovate or diversify, illustrating the tension between cooperation and competition. Cennamo and Santaló [7] introduced the concept of generativity tension, whereby platforms must balance openness (to stimulate innovation) with control (to capture value).

A parallel stream examined ecosystem structures and governance. Hein *et al.* [8] conceptualized digital platform ecosystems as layered architectures comprising infrastructure, complementors, and users, while Abdelkafi *et al.* [9] highlighted multi-sidedness as the defining feature that enables indirect network effects. Rietveld and Schilling [11] offered a systematic review confirming that platform competition literature spans strategy, economics, and information systems, yet remains fragmented. Cennamo [12] synthesized these insights into a platform-based perspective on competition, emphasizing that advantage accrues to firms capable of orchestrating ecosystem relationships.

Recent studies have shifted focus to dynamics within mature ecosystems. Kretschmer *et al.* [17] conceptualized platforms as meta-organizations that require distinct orchestration capabilities. Chen *et al.* [18] reviewed governance and design choices, noting that centralized versus decentralized architectures influence innovation and welfare. Li *et al.* [20] demonstrated that product scope and

collaborative network centrality shape ecosystem evolution, while Wang [21] proposed an information-ecology lens to explain digital innovation ecosystems.

Complementor strategies have received increasing attention. Cenamor [14] developed a framework for complementor competitive advantage, stressing the need to reduce platform dependence through multi-homing or proprietary extensions. Agarwal et al. [22] showed how platforms manage complementor product adoption amid network effects, while Shi et al. [23] compared early and late entry by platform owners into complementary markets. Zhou et al. [24] revealed that user-driven value in two-sided markets depends on platform design choices that shape participation.

Governance and regulatory issues have gained prominence. Engert et al. [27] applied an information-ecology approach to self-organization in platform ecosystems, while Krämer and Shekhar [28] examined data-sharing versus data-siloing regulations and their impact on innovation. Wang et al. [25] emphasized network orchestration capabilities as a source of sustainable advantage, and Subramaniam [29] explored broader implications for competitive strategy in digital ecosystems.

Collectively, studies reveal three recurring themes: (1) network effects remain foundational yet evolve from simple to complex multi-layered forms [4, 16, 26]; (2) platform hierarchies generate power asymmetries that leaders exploit through governance and selective intervention [6, 19, 23]; and (3) value capture increasingly depends on ecosystem positioning rather than isolated firm actions [7, 14, 25]. What remains underdeveloped is an integrative evolutionary theory that explains how these elements interact over time to reshape competitive advantage. The following section addresses this gap.

Table 1 distinguishes the three competitive regimes underlying the article's evolutionary theory and clarifies how the locus, mechanism, and sustainability of advantage shift from the firm to the platform and finally to the ecosystem.

Table 1. Competitive advantage regimes in platform-dominated markets

Analytical dimension	Firm-centric competition	Platform-centric competition	Ecosystem-centric competition

Primary locus of advantage	Internal resources and capabilities	Control of core platform infrastructure	Orchestration of ecosystem relations and data
Dominant strategic unit	Individual firm	The platform and its sides	The ecosystem and its hierarchy
Main source of value creation	Internal production and firm-managed activities	Interactions between users and complementors mediated by the platform	Distributed creation across interdependent actors
Main source of value capture	Direct appropriation by the focal firm	Platform-mediated transactions and access control	Centralized appropriation through governance data control and hierarchy positioning
Role of users	Buyers or end consumers	Demand-side participants generating direct and indirect network effects	Active demand generators participating in shaping ecosystem learning and adaptation
Role of complementors	Peripheral partners or suppliers	Critical sources of variety and innovation	Strategic actors with partial autonomy sub-ecosystems potential bargaining relevance
Network effects	Weak or absent	Strong and increasingly indirect	Dense, multi-layered recursive path dependence
Governance logic	Managerial hierarchy and	Platform rule-setting and	Hybrid orchestration balance

	contractual control	access governance	openness, transparency, and regulatory adaptation
Key mechanism of dominance	Scarcity and proprietary control	Market tipping through infrastructure centrality	Sustained orchestration of relationships, dependence, and feedback loops
Principal strategic risk	Resource imitation	Failure to achieve scale or manage complements	Value-capture backlash, regulatory intervention, complementor defection, ecosystem fragility
Complementor opportunity structure	Limited	High but conditional on platform dependence	Highest value, moderate dependence, paired with cross-ecosystem capabilities building
Data relevance	Operational support	Transactional optimization and ranking	Strategic for ecosystem sensing, prediction, reconfiguration
Sustainability of advantage	Moderately durable if protected	High when network effects stabilize	Durable and continuous renewal through governance and adaptive repositioning

Ecosystem Evolution and Strategic Positioning: A Theory of Competitive

Advantage in Platform-Dominated Markets

Building on the synthesized foundations, this section develops a novel evolutionary theory of competitive advantage. The theory posits that advantage in digitally networked economies progresses through three stages—firm-centric, platform-centric, and ecosystem-centric—each characterized by distinct loci of value creation, power distribution, and strategic positioning. **Figure 1** illustrates this progression.

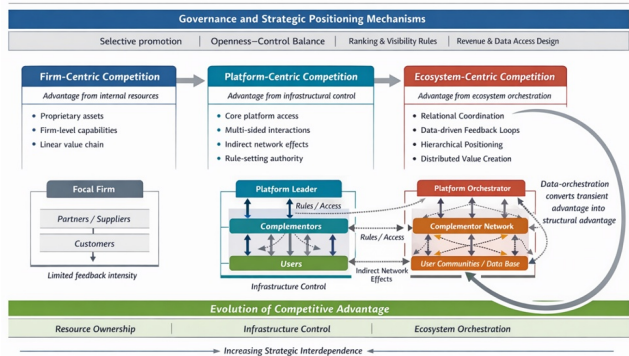


Figure 1. Evolution of competitive advantage in platform-dominated markets.

The figure illustrates the article's proposed evolutionary logic, in which competitive advantage shifts from firm-level resource control to platform-level infrastructural control, and finally to ecosystem-level orchestration. As the system evolves, governance mechanisms, complementor positioning, and data-driven feedback loops become the primary determinants of sustained advantage. Value creation becomes increasingly distributed, while value capture becomes increasingly asymmetric unless moderated by transparent governance and hybrid regulatory adaptation.

Network effects and competitive advantage

As digital platforms evolve, the nature of network effects shifts from predominantly user-driven mechanisms toward increasingly complementor-mediated dynamics. In the early stages, platform growth is largely driven by direct network effects, in which the platform's value increases with each additional user. However, as the platform matures, indirect network effects—generated through interactions between users and complementors—become the primary engine of sustained competitive advantage.

This transition reflects a structural shift: value creation becomes less dependent on sheer user scale and more contingent on the quality, diversity, and innovativeness of complementary offerings. Complementors extend platform functionality, create differentiated use cases, and embed the platform more deeply into users' routines. As a result, the platform's competitive advantage becomes increasingly endogenous to its ecosystem rather than exogenous to its user base.

Indirect network effects also intensify switching costs on both sides of the market. Users face higher costs due to accumulated data, learned behaviors, and reliance on specialized complements, while complementors experience asset specificity through platform-specific investments (e.g., APIs, data integration, algorithmic optimization). These dynamics generate a reinforcing loop in which complementor innovation strengthens user retention, which in turn attracts further complementor participation.

Proposition 1

The greater the intensity of indirect network effects, the more they positively moderate the platform leader's ability to sustain market dominance by increasing user switching costs and complementor lock-in.

Platform hierarchy and power dynamics

Platform ecosystems are inherently hierarchical, with platform leaders occupying a structurally privileged position at the apex. This centrality enables leaders to shape the rules of participation, control critical resources (notably data and user access), and influence the distribution of value across the ecosystem. Governance mechanisms—such as algorithmic ranking, access restrictions, pricing structures, and interface design—function as instruments of power that subtly but effectively guide complementor behavior.

Rather than exercising overt control, platform leaders often deploy selective enablement, promoting certain complements while deprioritizing others. This creates a curated environment in which high-performing or strategically aligned complementors receive disproportionate visibility and growth opportunities. Such selectivity allows platform leaders to balance openness (to stimulate innovation) with control (to capture value), thereby avoiding the inefficiencies of both extremes.

Importantly, this hierarchical control is not static but dynamically enacted through continuous adjustments to

governance rules, often informed by real-time data analytics. The result is a form of algorithmic governance that shapes ecosystem evolution without requiring direct intervention.

Proposition 2

Platform leaders that selectively promote high-generativity complements achieve greater ecosystem value capture than those pursuing uniform openness or strict control.

Complementor positioning strategies

Complementors operate within structural constraints imposed by platform leaders but retain strategic agency in how they position themselves. Two primary strategies—multi-homing and platform-specific specialization—represent opposing approaches to managing dependence. Multi-homing reduces reliance on any single platform but may dilute focus and increase coordination costs. At the same time, deep specialization enhances performance within a single ecosystem but increases vulnerability to changes in platform governance.

A more effective strategy lies in maintaining moderate dependence, whereby complementors leverage platform resources while simultaneously cultivating capabilities that extend beyond a single ecosystem. These may include brand reputation, proprietary technologies, or cross-platform user communities. Such capabilities function as portable assets, enabling complementors to retain bargaining power and strategic flexibility.

However, this balance is delicate. Excessive independence can reduce algorithmic visibility and limit access to platform-driven demand, while excessive dependence can lead to commodification and reduced margins. Complementors must therefore continuously recalibrate their positioning in response to evolving platform dynamics.

Proposition 3

Complementors that maintain moderate platform dependence while investing in cross-ecosystem reputation secure higher long-term value capture than fully dependent or fully independent actors.

Ecosystem-based value capture

While value creation in platform ecosystems is distributed across a network of actors, value capture tends to remain disproportionately centralized. Platform leaders, by virtue of

their control over infrastructure, standards, and data flows, can appropriate a significant share of the value generated by complementors. This creates an inherent tension between collective value creation and asymmetric value capture.

Complementors can counterbalance this asymmetry by orchestrating sub-ecosystems—for example, by building developer communities, creating modular extensions, or establishing their own platforms on top of existing ones. These strategies enable complementors to internalize a greater portion of the value they generate and reduce dependence on the focal platform.

Nevertheless, without deliberate intervention, ecosystem dynamics tend toward increasing concentration of value at the center. Transparent governance mechanisms—such as fair revenue-sharing models, clear ranking criteria, and equitable data access—can mitigate this imbalance and sustain long-term ecosystem health.

Proposition 4

Ecosystem-centric competition intensifies value-capture asymmetry unless platform leaders implement transparent governance mechanisms that redistribute rents to high-value complementors.

Data flows and feedback loops

A defining feature of digital platforms is their capacity to generate and leverage continuous streams of data. These data flows create feedback loops that reinforce existing advantages: user interactions generate data, data informs algorithmic improvements, and improved algorithms enhance user experience, thereby attracting more users and complementors.

Platform leaders that develop advanced data-orchestration capabilities can move beyond reactive adaptation to proactive ecosystem shaping. By analyzing real-time signals, they can anticipate emerging trends, identify high-potential complementors, and adjust governance mechanisms accordingly. This transforms data from a passive resource into an active strategic instrument.

Over time, these feedback loops convert temporary advantages—such as early market entry or rapid user growth—into structural advantages that are difficult for competitors to replicate. The result is a self-reinforcing

system in which data, algorithms, and ecosystem interactions co-evolve.

Proposition 5

Real-time data-orchestration capabilities enable platform leaders to anticipate and shape ecosystem evolution, thereby converting transient network advantages into structural competitive advantage.

Strategic repositioning under regulatory pressure

Platform ecosystems do not operate in a vacuum; they are increasingly subject to regulatory scrutiny and technological disruption. Regulations targeting data privacy, interoperability, and market power can alter the fundamental rules of competition, forcing both platform leaders and complementors to adapt their strategies.

In this context, rigid governance models become liabilities. Instead, platforms benefit from adopting hybrid governance structures that combine openness (e.g., data sharing, interoperability) with selective control (e.g., protection of core assets, strategic data siloing). Such hybrid approaches enable platforms to comply with regulatory requirements while preserving their competitive advantages.

For complementors, regulatory changes can open new opportunities to reduce dependence on dominant platforms, particularly when interoperability mandates lower switching barriers. At the same time, increased complexity requires greater strategic agility and investment in capabilities that span multiple ecosystems.

Proposition 6

In regulated platform markets, hybrid governance models combining data sharing with selective siloing enhance collective ecosystem resilience and individual strategic flexibility.

Integrative perspective

Taken together, these propositions advance a dynamic theory of platform competition in which competitive advantage evolves from firm-level resource control to ecosystem-level orchestration. Rather than being rooted solely in proprietary assets, sustained advantage emerges

from the ability to structure, govern, and continuously reconfigure a network of interdependent actors.

This framework explains why some platforms maintain long-term dominance while others experience erosion, and why certain complementors thrive despite structural asymmetries. It highlights that the locus of competition is no longer the individual firm, but the configuration and evolution of the ecosystem itself.

Platform-based competitive logic: Orchestrating ecosystem dynamics

The transition to platform-centric competition demands a fundamental reconfiguration of strategic logic. Platform leaders no longer compete primarily through proprietary resources but through the deliberate orchestration of ecosystem relationships that amplify network effects and lock in participants [11, 17]. This logic privileges relational governance over transactional control, enabling leaders to shape the direction of value flows without owning every complement. Selective promotion of high-potential complements, for instance, creates asymmetric incentives that reinforce the platform’s centrality while stimulating generativity [6, 7].

In firm-centric stages, advantage rested on controlling scarce assets or capabilities. In platform-centric stages, it shifts to governing access points and data interfaces that connect users and complementors [2, 12]. Leaders deploy rule-setting mechanisms—such as application programming interfaces, revenue-sharing models, and algorithmic ranking—to channel complementor innovation toward platform goals. Recent theorizing shows that such governance must balance openness for innovation with sufficient control to prevent value leakage [18, 27].

Hierarchies emerge naturally as platforms scale. The leader occupies the apex, exercising power through data visibility and barriers to entry into complementary markets [23, 25]. Complementors occupy intermediate layers, where positioning depends on their ability to leverage platform affordances while building independent reputational capital. Users form the foundational layer, their participation generating the data that fuels feedback loops [20, 21]. This layered structure explains why platform leaders can sustain dominance even when individual complements erode: the ecosystem as a whole becomes the unit of advantage.

Complementors face a strategic dilemma: deeper integration with the platform increases reach and network benefits yet heightens dependence and vulnerability to rule changes [14, 22]. The evolutionary theory advanced here posits that optimal positioning lies in moderate dependence—sufficient to access indirect network effects but buffered by multi-homing or proprietary extensions that preserve strategic autonomy.

Empirical evidence in the literature indicates that fully dependent complementors experience value-capture erosion when platforms enter their markets or alter their algorithms [5, 23]. Conversely, fully independent actors forgo scale advantages. Proposition 3 formalizes this trade-off: moderate dependence, coupled with cross-ecosystem reputation, maximizes long-term capture. This positioning strategy enables complementors to ride platform growth while preparing exit ramps or sub-ecosystem leadership roles [26, 29].

Ecosystem-centric competition decouples creation from capture. Value is co-created through user–complementor interactions and data flows, yet capture concentrates at the platform apex unless governance redistributes rents [7, 24]. Leaders can mitigate backlash and regulatory risk by implementing transparent mechanisms—such as performance-based revenue shares or data-access tiers—that align incentives [28]. Without such redistribution, value-capture asymmetry intensifies, prompting complementor exit or regulatory intervention [27].

Table 2 consolidates the article’s theory into an actor-specific positioning matrix that shows how platform leaders and complementors generate, defend, or erode advantage under mature ecosystem competition.

Table 2. Strategic positioning matrix in platform-dominated ecosystems

Actor	Strategic positioning choice	Mechanism activated	Expected advantage
Platform leader	Uniform openness	Broad complementor participation and generativity	Rapid ecosystem expansion and experimentation

Platform leader	Strict control	Centralized rule-setting and tight quality management	Strong appropriability and consistency
Platform leader	Selective promotion of high-generativity complements	Differential visibility, ranking, and support allocation	Higher ecosystem value capture and stronger indirect effects
Platform leader	Advanced data orchestration	Real-time sensing, ranking optimization, predictive intervention	Conversion of transient network advantages into structural advantages
Platform leader	Hybrid governance under regulation	Controlled openness with selective data sharing and siloing	Greater resilience through strategic flexibility and regulatory pressure
Complementor	Full dependence on one platform	Deep ecosystem integration and platform-specific optimization	High short-term visibility and demand aggregation
Complementor	Full independence from dominant platforms	Autonomy and control over customer relationships	Higher strategic sovereignty
Complementor	Moderate dependence on multi-homing	Access to multiple ecosystems and reduced lock-in	Strong bargaining position and resilience
Complementor	Platform-specific specialization	Deep fit within the platform, combined	Superior short-term capabilities

	plus portable proprietary assets	with transferable capability base	with adaptable flexibility
Complementor	Sub-ecosystem orchestration	Community-building, modular extensions, and secondary coordination roles	Partial internalization of value creation and strong autonomy

Network-driven competition:
Sustainability and erosion of advantage

As ecosystems mature, competitive advantage becomes increasingly fragile. Network effects that once propelled dominance can reverse when users or complementors multi-home, or when external shocks—such as technological disruption, regulatory mandates, or rival platform emergence—alter feedback loops [16, 28]. Sustainability, therefore, requires continuous repositioning: leaders must evolve from infrastructure providers to meta-organizers capable of anticipating ecosystem shifts [17, 20].

Anticipating erosion through data orchestration capabilities. Real-time data flows enable leaders to detect early signals of erosion—declining complementor engagement, user churn, or weakening indirect effects [21, 25]. Proposition 5 underscores that superior data-orchestration converts transient network advantages into structural ones. Platforms that invest in predictive analytics and ecosystem-sensing routines can proactively adjust governance, thereby extending the ecosystem-centric stage.

Regulatory demands for data portability and interoperability compel hybrid models that combine selective siloing (to protect core advantages) with controlled sharing (to satisfy antitrust requirements) [28]. Proposition 6 predicts that such hybrids enhance collective resilience. Technological advances—such as decentralized ledgers or AI-driven matching—further expand opportunities for sub-ecosystems, allowing complementors to capture more value while remaining within the broader platform [8, 29].

These dynamics illustrate that competitive advantage in platform-dominated markets is not static but evolves through deliberate repositioning. Leaders who treat the

ecosystem as an extendable meta-organization rather than a fixed hierarchy sustain their advantage longer; complementors who navigate dependence strategically avoid commoditization.

Conclusion

This theory-development article has advanced an evolutionary framework for understanding competitive advantage in platform-dominated markets. By tracing the progression from firm-centric to platform-centric to ecosystem-centric logics, the framework reveals that advantage increasingly resides in the orchestration of network effects, the governance of hierarchical relationships, and the management of data-driven feedback loops. The six propositions articulate causal mechanisms linking network intensity, selective promotion, complementor positioning, value-capture asymmetry, data orchestration, and hybrid governance to sustained advantage.

For platform leaders, the implications are clear: dominance is maintained not by tightening control but by fostering generativity while preserving orchestration capabilities. For complementors, the message is equally strategic: moderate dependence, coupled with proactive reputation-building and multi-homing, offers the most robust path to value capture. Policymakers, in turn, can draw on the framework to design interventions that preserve innovation incentives without dismantling beneficial network effects.

Future research should test the propositions across empirical contexts—mobility, fintech, and entertainment—and explore boundary conditions introduced by emerging technologies such as generative AI and Web3 architectures. As digitally networked economies continue to expand, the evolutionary theory presented here provides a foundation for both scholarly inquiry and managerial action, illuminating how competitive advantage itself evolves in an era defined by platforms, ecosystems, and interdependence.

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