



From competitive advantage to nodal advantage: Ecosystem structure and the new five forces that affect prosperity

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Abstract In today's interconnected world, a web of entities rather than predominantly a single firm coordinates a set of activities that deliver utility to mutually connected consumers, thus creating ecosystems. In this article, we suggest that in the current, ecosystem-based production and consumption environment it is important to identify a new set of factors that determines business success. We then propose that in order to develop a network-centric strategic mindset it is important to make a transition from the notion of firm-based competitive advantage to ecosystem-based nodal advantage by which products, services, or processes held by a single firm and affecting one or more ecosystems are exploited individually to improve business. To this end, we offer a new set of five forces that are likely to affect not only a node's financial profitability but also its vulnerability within its ecosystem and the survival of the ecosystem itself. Based on these forces, we recommend strategic triangulation and the formulation of policies to prevent infra-nodal substitution, increase nodal stranglehold, and improve nimbleness to accommodate ecosystemic transitions.

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1. Introduction

The strategy literature has long debated the relative contribution of firm versus industry related factors as the drivers of firm profitability. The industrial

organization perspective on this issue suggests that the structure of an industry is a key determinant of profitability (e.g., Porter, 1979). On the other hand, the resource-based view of the firm posits that strategic advantages conferred by firm-specific competencies translate into increased profitability (Prahalad & Hamel, 1990; Wernerfelt, 1984). These resources reside in unique and difficult to imitate tangible or intangible assets of the firm (Barney, 1991).

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Despite the debate surrounding the relative contribution of firm versus industry-specific factors to profitability, an understanding of the industry structure remains one of the cornerstones of strategy formulation in practice. The assumption underlying this approach is that industries differ in their profit potential because of the systematic influence of a number of common, identifiable factors. And, because industry structure is relatively enduring, the role of these factors is assumed to last for a substantial period of time. It is therefore believed that the long-term profitability of a firm is determined, at least in part, by the industry it belongs to. One of the recommendations from the strategy literature is that managers need to understand an industry's structure before deciding to participate in it as well as when crafting strategies to compete within it.

2. From industries to ecosystems

The traditional concept of an industry is output-centric (Scherer & Ross, 1990) and is based on the premise that mutually competing businesses that produce relatively similar products and vie for a share of a common product market can be grouped together. It is also entity-centric and implicitly assumes that monolithic firms are primarily responsible for category-specific outputs and are interested in maintaining their category membership over the long run. Therefore, firms are clustered into categories based on similarities in what they produce. For example, the SIC codes of industrial classification are based on firm outputs. Following such an approach, we can identify different industries. The members of each industry are then assumed to be interested in developing some form of competitive advantage over their peers in order to sustain their business.

Output-based clustering naturally results in defining an industry's boundary and identifying external entities, such as customers and suppliers. Firms that provide raw materials, components, and services are an industry's suppliers, while those that purchase its outputs are its customers. Therefore, automobile ancillaries, which reside outside the bounds of the automobile industry, are classified as suppliers, and individual buyers and fleet owners are classified as the industry's customers.

However, over the last few decades, we have rapidly moved into the age of interdependence, relationship networks, and multidimensional, holistic competition (Nohria & Garcia-Pont, 1991). The dramatic changes in technology over this period have resulted in a corresponding shift in how products and services are designed, produced,

distributed, evaluated, and consumed. In today's interconnected world, a web of entities rather than predominantly a single firm coordinates a set of activities that delivers utility to mutually connected consumers. Such networks can be thought of as business ecosystems whose producing and consuming members may be located all over the world (Dass & Kumar, 2014).

On the production front, ecosystems have helped distribute capacity and capabilities over a network of connected entities. For instance, the new Boeing Dreamliner uses six times as many foreign suppliers as did its predecessor, the Boeing 747. This network of over 400 partners, encompassing 45 major firms that contribute to the production of the new aircraft, includes specialists in management, design, materials, components, avionics, power systems, software, production, and testing. Similarly, many of Apple's well-known products are designed in California, sourced across the world, assembled in China, and distributed through a system of online and traditional retailers. In the food retailing business, produce, meat, seafood, dairy products, and baked goods are sourced through a tiered network of global suppliers, brokers, and facilitators, whereas franchisee networks often manage customer-facing, in-store operations.

Ecosystems have similarly evolved and become influential on the consumption front. For example, restaurant customers often make reservations on OpenTable, find discounts on Groupon, provide feedback through Yelp, and locate stores using Google Maps. Similarly, automobile customers evaluate products on Edmunds.com, compare prices on TrueCar.com, and may buy from AutoNation, CarMax, or Craigslist. Interconnections with these infomediary platforms increasingly determine customers' preferences, choices, and post-choice evaluations.

Individual firms are also building interlocking, multi-product ecosystems and competing aggressively to induce customers to migrate from rival ecosystems to their own. For example, Microsoft sometimes offers cash rebates to customers for trading in their iPads and abandoning the Apple ecosystem to migrate to Surface, a key component of Microsoft's own ecosystem. Similarly, Samsung restricted the initial compatibility of Gear, its smart watch, to Galaxy S3, its own smartphone, in order to build Samsung's mobile ecosystem. More recently, Apple is rumored to pursue a similar strategy for its iWatch wearable product. Along the same lines, Google Chromecast, Apple TV, Amazon Fire TV, and Roku are engaged in a battle of firm-centric consumption ecosystems as they make choices about the compatibility of their telecasting devices

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