Business Ecosystem

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INTRODUCTION

As a consequence of the importance of technology platforms, it is almost impossible for firms to engage the competitive battle on their own. We therefore see patterns of competition emerge that do not match the economic models of perfect competition or even of oligopolistic or monopolistic competition. Rather, competition takes place between a few large coalitions, or networks, of firms around a common technological platform. Such networks, consisting of multiple firms performing different roles, are not unlike biological ecosystems. For such networks, therefore, the term *business ecosystem* is increasingly used (Den Hartigh & Van Asseldonk, 2004; Iansiti & Levien, 2002, 2004a, 2004b; Moore, 1993, 1996; Witte, 2004).

The term *business ecosystem* was coined by James Moore in his 1993 Harvard Business Review article *Predators and Prey*. Moore (1996, p. 15) defines a business ecosystem as "The term circumscribes the microeconomics of intense coevolution coalescing around innovative ideas. Business ecosystems span a variety of industries. The companies within them coevolve capabilities around the innovation and cooperatively and competitively to support new products, satisfy customer needs, and incorporate the next round of innovation." There is a strong analogy between business ecosystems and biological ecosystems, as implied by the "ecosystems" terminology.

BACKGROUND

We define a business ecosystem as a network of suppliers and customers around a core technology, who depend on each other for their success and survival. In our view, the essential characteristic of a business ecosystem is the mutual dependence of its members: when customers leave the network, the value of the network for other customers and for suppliers declines.

When a new supplier of a complementary product enters the network, the value of the network for all agents rises. Or, as Iansiti et al. (2004a, p.69) put it: "Like an individual species in a biological ecosystem, each member of a business ecosystem ultimately shares the fate of the network as a whole, regardless of that member's apparent strength."

What are the boundaries of such a business ecosystem? As with biological ecosystems, this is difficult to establish. We think the best way to judge which agent is and which is not part of the business ecosystem is the degree of compatibility and complementarity of the products or technologies the agent offers or adopts. For example, Apple will not be considered to be part of the business ecosystem around *Microsoft Windows* technology because the *Apple* operating system is a substitute rather than a complement for *Microsoft's* operating system. In this case, the Apple has its own business ecosystem around its OS technology. When we consider the business ecosystem around *Microsoft's Office* technology, we find that *Apple* will be part of it because *Apple's* operating system is complementary to this technology. Note that one and the same firm can be part of multiple competing business ecosystems at the same time. A printer manufacturer, for example, will be part of the business ecosystems around both *Microsoft's Windows* technology and *Apple's OS X* technology. The same is true for consumers, when they adopt products from different competing business ecosystems at the same time. For example, a customer can own two computers, one with *Microsoft's Windows* technology, the other with *Apple's OS X* technology.

Note also that a business ecosystem is determined by an anchor point (i.e., that which the researcher defines as the core technology). For example, when we define the anchor point as *Microsoft's Windows* technology, *Microsoft* is likely to be in the core and firms like *Intel* or *AMD* or the large computer firms are important members of the business ecosystem. Yet we may also define the anchor point as the *Intel Pentium* processor

technology. In this case, *Intel* will be in the core and *Microsoft* will be an important business ecosystem member. Consequentially, what we define as the business ecosystem is dependent on our research position. Firms and consumers can therefore be considered to be part of multiple business ecosystems at the same time. A consumer owning a computer may be part of the business ecosystems around *Microsoft Windows* operating system technology, *Intel's Pentium* processor technology, *Philips'* flat screen technology, *Adobe's Acrobat* software technology and many more.

How is a business ecosystem different from an industry? First, a business ecosystem does not necessarily—and not even likely—contain all the agents that populate the industry. Second, the network relations between the agents in a business ecosystem are not limited to industry boundaries (Iansiti et al., 2004a, 2004b; Moore, 1993, 1996). We fail to see, however, why this boundary crossing per se would be a prerequisite for calling a technology network a business ecosystem.

How is a business ecosystem different from a conventional supply chain? First, its relations are many-to-many (i.e., network) instead of one-to-one (i.e., chain). Second, a business ecosystem is not necessarily ordered according to a logical production sequence. Modern concepts of "networked supply chains" however, may come quite close to the concept of a business ecosystem.

MAIN FOCUS OF THE ARTICLE

Species in a Business Ecosystem

Like a biological ecosystem, a business ecosystem will be populated by a diversity of "species," each performing their own unique functions, having their own unique needs and wants, and each delivering a unique contribution to the survival and growth of the business ecosystem as a whole. Some examples provided by Iansiti et al. (2004a, p. 71) regarding *Microsoft's* business ecosystem are system integrators, development service companies, independent software vendors, trainers, small specialty firms, Internet service providers business consultants, media stores, applications integrators, and many others. In other words, all firms that provide products (goods or services) or technologies that are complementary and compatible to *Microsoft's* core

software technology. Their number may run into the tens of thousands. For our research, we also explicitly include customers in the business ecosystem.

Health of a Business Ecosystem

Similar to a natural ecosystem, a business ecosystem and its partners are more or less "healthy." Business ecosystem health represents the longevity and propensity for growth. Business ecosystem health represents partners' financial well-being and partners' impact in the network.

The health of a business ecosystem has two main components: partner health and network health.

Partner health is a (financially-based) representation of a partner's strength of management and of its capabilities to exploit opportunities that arise within the ecosystem (productivity). Healthy business ecosystems are composed of productive companies. Unproductive companies will have difficulty to survive and will therefore ultimately lower the health of the ecosystem. Partner health is a boundary condition for partner survival (robustness) and for partners' abilities to make innovative investments (niche creation).

Network health is a representation of how well a partner is embedded in the ecosystem as well as the impact the partner has in its local network. Healthy business ecosystems show many relations between the partners, a tight knit that is not easily destroyed or broken in upon (robustness). Partners with low connectivity to the system have less commitment to the technology platform, increasing the risk that the partner switches to another ecosystem. This would reduce the health of an ecosystem vs. that of a competitive one.

Further, healthy ecosystems show clusters of different types of partners that are intensely related. Such clusters act as niches in which innovations emerge (niche creation). This will only work when in such a niche there is a sufficient variety of partners. A cluster of three comparable partners does not contribute to partner or ecosystem health; because these partners will mainly compete instead of cooperate. With little variety in types of partners, the business ecosystem will become less innovative and slowly stagnate.

Finally, healthy ecosystems have many partners with high visibility in the market. Those partners have a high impact and therefore a positive influence towards customers and towards other partners. An ecosystem composed of low-visibility partners is less healthy.

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