



Business ecosystem as the new approach to complex adaptive business environments

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Agenda

- Different views to ecosystem analogy
(biological, industrial, economy as an ecosystem, digital business ecosystem)
- Different interpretations of business ecosystem
- Relevant complexity concepts
- Relevant areas in economics
- Our own interpretation



Biological Ecosystem

- A system of organisms occupying a habitat, together with those aspects of the physical environment with which they interact
(The New Shorter Oxford English Dictionary 1993)
- A community of living organisms with air, water and other resources
(The Merriam-Webster Third New International Dictionary of the English Language 1986)
- Ecosystems do have some kind of extended web structure
(Kauffman 1993)
- Not unambiguous how to distinguish biological ecosystems



Industrial Ecosystem

- Environmental protection by the means of nature
(Frosch & Gallopoulos 1989)
- All material is recycled infinitely and efficiently
- Co-operate by using each other's waste material and waste energy flows as resources
- Minimum input of virgin material and energy
(Korhonen et al. 2001)



Economy as an Ecosystem

- Social science approach
- Eyes global economy as an entity
- Organizations and consumers are the organisms of the ecosystem
- Competition, specialization, co-operation, exploitation, learning, growth
(Rothschild 1990)



Digital Business Ecosystem

- “Digital environment” populated by “digital species”
- The environment enables species to behave like species in natural world
 - Evolve
 - Interact
 - Become extinct(Nachira 2002)
- EU funded program to enhance the development of SMEs in software business



Social Ecosystem

- System theoretical view
- Each organization is a fully participating agent which both influences and is influenced by the social ecosystem made up of all related businesses, consumers, and suppliers, as well as economic, cultural, and legal institutions
- Interdependence of all entities

(Mitleton-Kelly 2003)



Business Ecosystem: J. F. Moore

- “An economic community supported by a foundation of interacting organizations and individuals – the organisms of the business world”
- Customers, lead producers, competitors, and other stakeholders
- “The keystone species”
- Four phases



Business Ecosystem: Ansiti & Levien

- A large number of loosely interconnected participants who depend on each other for their mutual effectiveness and survival
- Keystone, dominator, hub landlord, niche player
- Productivity, robustness, niche creation



Business Ecosystem: Power & Jerjian

- E-business view
- Integrated electronic business:
Ecosystem consists of an interacting system of web sites and physical entities
- There is often one highly linked species
- Gradual birth of new businesses and the death of old ones



Complexity concepts

- Self-organization
- Emergence
- Adaptation
- Co-evolution
- Fitness
- Fitness landscape
- Selection



Economics

- Evolutionary economics
 - Variation, search and selection
 - Selecting the smudge of sufficient efficiency
(Nelson & Winter 1982, Potts 2000)
- Agent-based computational economics
 - The computational study of economies modeled as evolving systems of autonomous interacting agents
 - Multi-agent simulation modeling
(Tesfatsion 2002)



Conclusions

- The ecosystem analogy has been widely used
- Different interpretations emphasize different aspects of ecosystem and thus do not have much to contribute to each other
- Economy as an ecosystem and social ecosystem are the closest analogies to business ecosystems
- Business ecosystems are as difficult to outline as natural ecosystems



Our Interpretation

- Business ecosystem is an interconnected population of organizations which forms a dynamic structure
- Business ecosystem is self-sustaining and develops through self-organization and co-evolution
- Competition and co-operation are present simultaneously
- Boundaries are possible to find by examining the web structure



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