

BUSINESS ECOSYSTEM'S HEALTH REVISED

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Abstract:

Business ecosystems concept emerged and gained high attention from researchers and practitioners as well. This paper aims to present the linkage between business ecosystem architecture and its performance through business ecosystem's health assessment. According to the late findings in this field, business ecosystem's health can be defined through established strategic roles of business ecosystem: keystones, niche players, dominators and hub landlords. Thus it is important to understand and define them considering the life cycle of business ecosystem as well. From this point of view in this paper will be conducted a critical analysis of the most important theories of business ecosystem's health assessment. The foreseen result of this analysis is to identify existing roles, to fill the gaps between theories and to redefine the business ecosystem's roles according to the author's vision. Also this analysis will provide important insights for future research on development and performance assessment of the business ecosystem.

Keywords: business ecosystem, architecture, key roles, life cycle, typology

1. BUSINESS ECOSYSTEM CONCEPT

The roots of business ecosystem concept can be traced in theory of ecology (Moore, 1993). The author analysed and defined the concept based on the analogy with biological ecosystem. The main finding from this analogy presents the economic entities as well established and important “species”, who co-evolve in the same environment (Moore, 1993). As in natural systems, business ecosystem should attract different type of resources and to transform them into the final product. From this point of view, Moore’s main concern was to identify and to define the main species which can be found in business ecosystem framework: “predators and prey” (Moore, 1993). Simultaneously he defined the concept as a community of companies, who co-evolve “around a new innovation” (Moore, 1993, p.76) based on relations of cooperation and competition between them in order to develop a new product, to satisfy clients demands and needs and to develop and incorporate new innovations.

Further, this definition was extended and this concept gained new meaning by being defined as a various number of business networks and related elements (Moore, 1996). Other contributors to the concept, presented it as numerous interconnected organisations (Gossain&Kandiah, 1998; Peltoniemi&Vuori, 2005), a network (Der Hartigh& Van Asseldonk, 2004) or a coalition (Den Hartigh, Tol, & Visscher, 2006) of organisations, corporations and small and medium enterprises, evolving around a common technological basis or platform (Den Hartigh, Tol, & Visscher, 2006; Thomas & Autio, 2012).

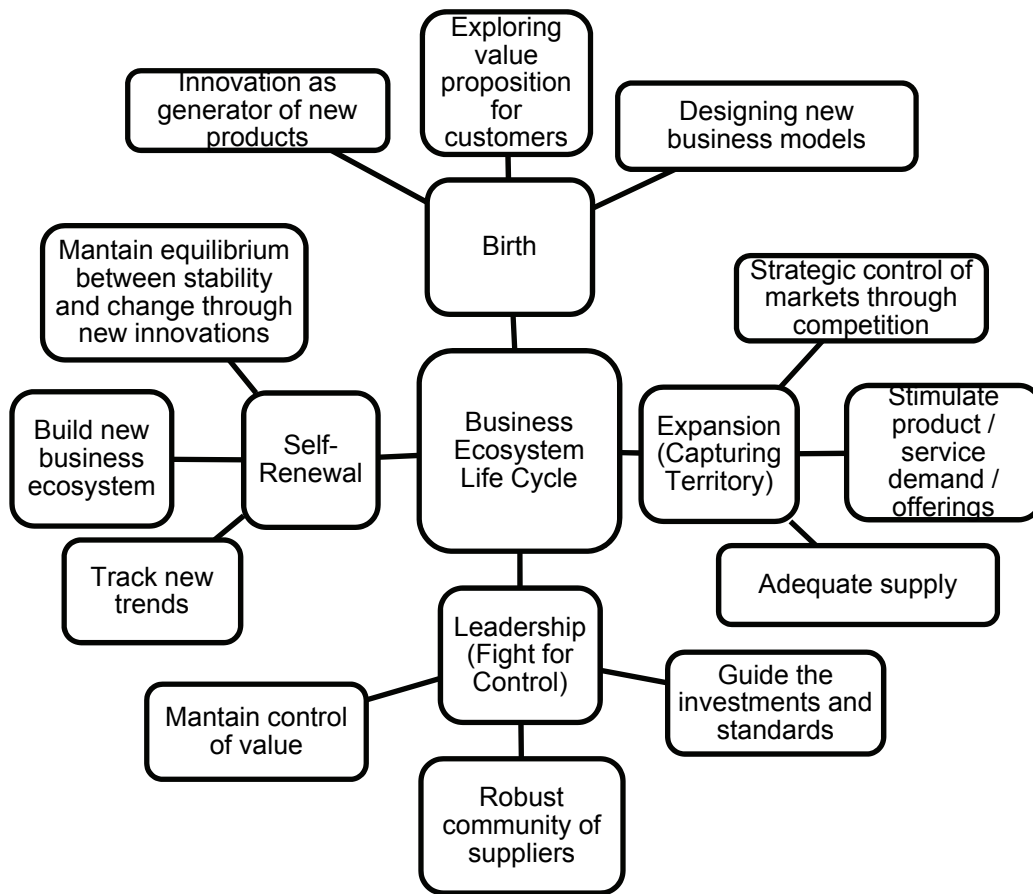
Opposite, to the usual considerations about business ecosystem definition, is the approach to business ecosystem limited to the boundaries and environment of a single organisation (Moore, 2006). Moore considered the business ecosystem as one of pillars of modern economy, whose main objective is to „reshape existing markets and hierarchies” (Moore, 2006).

1.1. Business Ecosystem Life Cycle

Similar to industry, a business ecosystem has its own life cycle. The analogy with biological ecosystem provided the most important findings for business ecosystem life cycle development. BE, as well as biological one, gradually evolved from “random collection of elements to a more structured community” (Moore, 1993, p. 76). From this point of view there were identified four distinct stages of development: birth, expansion, leadership and self-renewal of business ecosystem. Each stage comprises a series of transformations, with specific key features and characteristics (figure 1) which contribute to the business ecosystem development as a whole unit,

- *Birth*—at this stage it is defined the future value delivered by the product or service and there are declared the channels for value delivering. New members recruiting into business ecosystem through cooperation (Moore, 1993). Also it is the evolution level where new opportunities are identified in order to satisfy and create value for customer (Peltoniemi, 2004; Rong, Liu & Shi, 2011)
- *Expansion* – the stage in which innovation and creative thinking are the most important features for value creation for new customers (Peltoniemi&Vuori, 2004). The importance of scaling the potential opportunities and creative value creation was emphasised as two main conditions for this stage (Moore, 1993).
- *Leadership* – requires high profitability and growth of the companies from business ecosystem. The key aspect of this stage is stability of BE. This is the stage where control function is enabled, as result companies try to dominate most of the value’ elements.
- *Self – Renewal or Death*—characterised by high threats from new business ecosystem arising (Peltoniemi&Vuori, 2004) and new innovation development. Moore compared this stage to an earthquake and concluded that at this stage is defined by the major changes, such as new governmental settlements, “customer buying patterns” (Moore, 1993, p.81). Key factor influencing the future success of business ecosystem is its ability to gain long term progress and to renew itself.

Figure 1: Key features and characteristics of Moore's Business Ecosystem Life Cycle



Source: Moore, 1993, p. 75 – 86.

The theoretical contributions to this concept have been concretised through a various number of studies, whose main outcome was to redefine and reshape life cycle stages. Parize – Suffrin considered that expansion stage is more important for business ecosystem's analysis, than its birth (Parize – Suffrin, 2012). It is shown that value creation depends upon the business ecosystem's capacity to enhance and to share the common vision and strategy at its early stages of development (Moore, 1993; Rong, Liu & Shi, 2011; Li, Li & Zhang, 2012). Based on related theories (table 1) and by respecting the elements' co-evolution condition, it can be concluded that business ecosystem wits in a continuous growth. As result the life cycle stages can be defined as:

- Generation – this stage depends upon previous renewed business ecosystem. It can be characterised by proposing and assessment of new opportunities and value creation (Peltoniemi&Vuori, 2004) for future co-evolvement. The main contribution to this stage is brought by new participants of the business ecosystem, new innovation developers.
- Expansion – at this stage it can be seen the consolidation of relations (Li, Li & Zhang, 2012) between new entrants and the old participants. It can be observed the alignment to the common strategy and new entrants get to be in line with other entities by developing collaboration and cooperation. Also it is the stage where coopetition starts as new technology are brought and the influences of other business ecosystems are increasing. The BE gets new opportunities to fill new markets (Parize – Suffrin, 2012).
- Maturity – the key aspects of this stage are stability and profitability of value creation processes and the business ecosystem as a whole unit (Peltoniemi&Vuori, 2004). The main threat is defined by the leaders' domination inside the business ecosystem which can have a negative impact for the BE. New strategies and development or growth directions are established.

- Renewal –we agree with Moore and Peltoniemi that the competition from other business ecosystem is increasing. At this stage the participants are changing as the attractiveness of other BE is growing. This change of elements represents the main threat at this stage.

Table 1: Other contributions to Business Ecosystem Life Cycle

Contributors	Life Cycle Stages	Key aspects
Rong, Liu & Shi (2011)	Birth	<ul style="list-style-type: none"> • Set up a value chain for creating value for customers
	Expansion	<ul style="list-style-type: none"> • Value capturing for a large number of customers through new business ideas implementation
	Authority	<ul style="list-style-type: none"> • Stability of value adding components and processes • Attract new partners
	Renewal	<ul style="list-style-type: none"> • “a new business ecosystem emerges from the mature business communities by bringing new ideas and innovations”
Parize – Sufrin (2012)	Expansion	<ul style="list-style-type: none"> • Extended elements landscape and specific markets
	Maturity	<ul style="list-style-type: none"> • Establish common vision and knowledge for all entities to sustain their future actions
	Self-Renewal	<ul style="list-style-type: none"> • The emergence of new innovation based on previous business ecosystem’s landscape
Li, Li & Zhang (2012)	Exploit	<ul style="list-style-type: none"> • Conceive, design and establish a value platform • Provides greater value potential for business ecosystem’s elements
	Expand	<ul style="list-style-type: none"> • Value-sharing and value-balancing enterprises • Increase the cooperation with suppliers and distributors
	Authority	<ul style="list-style-type: none"> • Provide long-term value and value creation vision for new entrants • Core elements become core contributors • Alliances and cooperation continuously improved
	Rallying phase	<ul style="list-style-type: none"> • Reconstruction of value platform • Infuse new ideas or rebuilds technology and investment barriers

Source: Peltoniemi&Vuori, 2005, p. 6; Rong, Liu & Shi, 2011, p. 173 - 174; Parize – Sufrin, 2012, p. 85 - 86; Li, Li & Zhang, 2012, p. 83.

2. BUSINESS ECOSYSTEM HEALTH ASSESSMENT

The concept of Business ecosystem health was proposed by lansiti and Levien as alternative definition for business ecosystem performance (lansiti&Levien, 2002, 2004a, 2004b). The authors considered the strategy as an important and crucial element which contributes to performance measurement of the business ecosystem as a whole unit. Den Hartigh pointed the importance of biological analogy, according to this author the business ecosystem health is referred to “the status of the system or the specific species” (Den Hartigh,Tol, Visscher, 2006, p.2). From this point of view it was shown that “health” can be measured at two levels:

- Company level
- Business Ecosystem level (as a whole unit).

Basically Den Hartigh et.al proposed three types of analysis of business ecosystem health: analysis of business at company or participant level and compare it with others, analysis different species and analysis of individuals, the smallest participants of business ecosystem (Den Hartigh,Tol&Visscher, 2006).

lansiti and Levien pointed that business ecosystem’s health can be defined through dynamics of innovation and operations (lansiti&Levien, 2002). From this point of view they considered this concept

as an important indicator of business ecosystem performance. Extending their theory, they proposed three important measurements in order to achieve business ecosystem health: robustness, productivity and niche creation (Iansiti & Levien, 2004b; Hou, Lu, Shi & Rong, 2010; Den Hartigh, Tol & Visscher, 2006). Also it was pointed the importance of collective health (Iansiti & Levien, 2004b).

The assessment of business ecosystem health depends mostly on the roles the elements are performing and their ability to transform the inputs into attractive products, their adaptability to the changes of their environment (Iansiti & Levien, 2004a, and 2004b).

2.1. Business Ecosystem Roles

As it was mentioned before one of the important indicators of business ecosystem performance is the ability to create niches. This ability depends mainly on the adopted strategies inside and by the business ecosystems. The main arising question is about what strategic role should be perceived in order to achieve a successful and healthy business ecosystem. From this point of view Iansiti and Levien proposed and identified four main categories of specific roles: *keystones*, *niche players*, *dominators*, *hub Landlords* (Table 2).

Table 2: Key aspects of business ecosystem roles

Keystones	Niche Players	Dominators	Hub Landlords
<ul style="list-style-type: none"> • Produce benefits for ecosystem (Iansiti&Levien, 2002) • Critical role for BE existence (Iansiti&Levien, 2002) • Maintains specific behaviours inside the BE (Iansiti&Levien, 2002) • Shapes the business ecosystem (Iansiti&Levien, 2002) • Increases resilience and diversity in BE (Iansiti&Levien, 2002) • Increase productivity of business ecosystem (Iansiti&Levien, 2004a) • Enhance robustness by incorporation of innovation (Iansiti&Levien, 2004a) • Offers innovative solutions for the participants of BE (Iansiti&Levien, 2004a) • “Ensure their own prosperity and survival” (Iansiti&Levien, 2004a, p.6) • Creates and share the value (Iansiti&Levien, 2004a) 	<ul style="list-style-type: none"> • Individually, do not have a great impact on BE performance (Iansiti&Levien, 2002) • Could be seen as result of business ecosystem activity (Iansiti&Levien, 2002) • “Aims to develop specialised capabilities” (Iansiti&Levien, 2004a) • Contributes to differentiation inside the business ecosystem (Iansiti&Levien, 2004a) • Exploits the resources provided by keystone or dominators (Iansiti&Levien, 2004a) • Innovation is a must for their survival (Iansiti&Levien, 2004a) 	<ul style="list-style-type: none"> • Can be easily recognised (Iansiti&Levien, 2002) • Do not encourage the diversity, this type of elements tends to take over the unoccupied niches or networks (Iansiti&Levien, 2002; Iansiti&Levien, 2004a) • Influence the behaviour of other participants (Iansiti&Levien, 2002) • Responsible just for the value they capture (Iansiti&Levien, 2004a) • Can be physical or value dominators (Iansiti&Levien, 2004a) • Do not sustain the business ecosystem, in contrary value dominator extracts the value (Iansiti&Levien, 2004a) • Can destroy the BE in the long term (Den Hartigh, Tol&Visscher, 2006) • Acts as an orchestrating leader (Williamson & Meyer, 2012) 	<ul style="list-style-type: none"> • Do not participate in value creation (Iansiti&Levien, 2004b) • Attracts the resources from business ecosystem (Iansiti&Levien, 2004b)

Source: Iansiti & Levien, 2002, 2004a, 2004b; Den Hartigh, Tol, Visscher, 2006, Williamson & Meyer, 2012.

2.2. Redefining Business Ecosystem Roles

Previously it was identified the key aspects of business ecosystems roles based on the most important theories. It can be seen that although initially Iansiti and Levien defined the roles, eventually they extended the definitions by adding additional features. Thus it can be observed contradictions in roles characteristics. Keystones defines initially as critical point (Iansiti&Levien, 2002) whose influence can be traced in all nodes of business ecosystems, acts more like a dominator (Iansiti&Levien, 2004a). This type of roles can be imputable to the participants who are preoccupied by own “survival” and benefits. Opposite, but also with great impact on business ecosystem health, are the dominators.

According to lansiti and Levien theories these are the roles perceived by large companies, corporations. This type of elements can be easily traced from the point of view of their size and physical position. The main common point between keystones and dominators is their impacts on the whole business ecosystem, dominator as well as the absence of keystone can lead business ecosystem to death stage.

Niche players detain a dual character. These are the elements which are defined as a result, but on the other hand they are the elements who co-exist in the shadow of keystones. The last role, hub landlords, can have a negative impact on business ecosystem health assessment, as their character by analogy with biological ecosystem is more likely to be seen as parasitic.

From this point of view the authors of this paper propose to redefine the roles as it follows:

- *Initiator*—this category comprise the elements that have a greater impact on the whole business ecosystem. Similar to keystones, these elements will provide an impulse in establishing the continuous development of BE and will play significant role in value creation process
- *Developer* – this role can be assigned to those elements who provide innovation inside the business ecosystems, have major importance for BE differentiation and contributes to value creation by developing new dynamic capabilities.
- *Dominator* –characteristic to those elements from business ecosystem structure who strongly influence the development of growth directions and opportunities identified of business ecosystem. From this point of it can be seen as a leader who orchestrates the activities of value creation and designing the main outcome of the BE.
- *Parasitic element*—these are the elements who co-exist with other participant in business ecosystem, but they do not participate and contribute to the value creation and other processes.

3. CONCLUSION AND FURTHER RESEARCH

This paper presents the most important features of business ecosystem domain. It was realised a literature review on the most important aspects in defining business ecosystems. The main purpose of this paper was to realise a comparative analysis of existing theories, especially those which represents the basis for this concept. As future research direction it was propose to redefine the business ecosystem life cycle and performing role. As it was described the birth of BE can be seen as generation. Also this paper can provide important insights for future business ecosystem performance measurements and will have an important impact for creating research framework.

The redefined roles are important in order to understand and to establish the main strategies of business ecosystems and provide interesting findings for value creation activities. The need to redefine the roles derive from the necessity to define new types of strategies and to link them to life cycle stages. From this point of view as a future research direction can be considered the assumption that at specific moment in time or life cycle stage the analysed business ecosystem can perform specific role.

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