Adv Syst Sci Appl 2020; **03**; 50-72
Published online at https://ijassa.ipu.ru.

Value Potentials in Innovation, Resources, Strategic Networks and Blocks

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Abstract: The present globalizing world of business has been witnessing the emergence of unprecedented kinds of markets. These new kinds of markets post significant challenges to the world of learning and decision-making managers, entrepreneurs and alike. To confront these challenges, this paper investigates the potentials of value creation and value capture at the firm level from different perspectives. By employing systems methodology and the logical reasoning that parallels the one commonly used in mathematics and natural science, this paper establishes 16 formal propositions on value creation and value capture from the respective perspectives of market competition, innovation, resource, inter-organizational network, and direct association of sellers and buyers. In particular, this work points out (1) when innovation provides additional potentials for value creation; (2) when resources' latent values can be practically made visible through value creation; (3) how markets' mutual forbearance and relatively sustainably increased profitability are positively related, (4) why a firm's systemic hole position offers advantages and profitability to the firm, (5) how a firm's profitability is positively affected by its membership in a strategic block of increasing market influence; and (6) when a firm creates and maintains convenient platforms it will readily create and capture values. This paper concludes with some practically reliable general recommendations and a few topics and directions for future research.

Keywords: market competition, product, profitability, supply-chain network, system, systemic hole

1. INTRODUCTION

With economic globalization, there have appeared new ways for businesses and individuals to create wealth [33]; and the once accustomed form and rule of competition have been changing. All these fast-paced changes and emergence of opportunities have been posting challenges to scholars, decision-making managers and entrepreneurs from around the world [47], and led to accelerated knowledge development and acquisition and sharing of information and know-hows [5]. However, accompanying the expanding literature on value creation and capture, most studies provide managerial suggestions of limited validity due to their various empirical constraints. So, theoretically, the following question arises naturally: Based on the pioneering works of empirical studies, seen in the literature, on issues and matters of value, can one establish generally valid conclusions that do not suffer from data- and/or anecdote-specific constraints? That is, the gap this paper strives to fill is bridging conjectures developed on empirical studies to generally-true principles by introducing a new methodology. In particular,

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this gap of the literature appears due to at least two reasons, for details, see the literature review below and the relevant references quoted there: the key concepts of concern, such as innovation and resource, cannot be directly measured numerically, and each sample of data only reflects certain specific and limited aspects of the environment from which it is from.

There is no doubt that this question is theoretically essential, because attempts of addressing it will potentially lead to breakthrough(s) in terms of methodology that can be used widely to develop useful conclusions in business studies. And this is also a practically significant question, because the business world is currently situated in the era of transient competitive advantages, where consumer preferences change quickly, while once sustainable competitive advantages become short-lived [66]. To this end, the current paper attempts to address this question at least partially by establishing a series of 16 formal propositions by employing the logical reasoning that is commonly used in mathematics and natural science and systems thinking [61] through respectively looking at innovations, resources, networks, and platforms that directly connect sellers and buyers. Specifically, among others, this paper establishes the following general conclusions, among others:

- When a market operates under the condition of free competition, protective property rights and complementary assets are positively correlated to the effectiveness of innovations' value creation. In this case, exchanges that take place in the market help dormant values of resources emerge.
- The more mobile resources are, the more capable value creation is.
- The level of profitability of a firm can likely be sustained in a state of mutual forbearance.
- When an inter-organizational network experiences its expanding market influence, it provides its members with a positive effect on their profitability.

The rest of the paper is organized as follows. Section 2 provides a literature review and introduces the basics of systems science. Section 3 presents our main results on value creation and capture. In this section, we establish propositions on value creation in a market of free competition by means of innovation and resource, and study how such phenomena as market forbearance, supply-chain networks and strategic blocks can positively affect member firms' profitability, and how firms grow by joining inter-organizational network(s) and by making use of platforms that directly connect sellers and buyers. This presentation is concluded in Section 4 with practically useful recommendations for managers, entrepreneurs and retailers.

2. PREPARATIONS

This section provides the literature review and necessary background knowledge.

2.1. The Literature

This paper contributes to three literature areas related/focused on value: innovation, resource and business networks. In the following, this literature review will look at each of these three areas individually by focusing on only closely related studies and then respectively explain how this work enriches these relevant areas. First, let us look at the literature area of innovation. Adam Smith [86] (1776) is the first person on record to realize the importance of innovation in wealth creation. Since then, many scholars have been involved in the investigation of the concept of innovation and consequent value creation and capture. Even so, the main focus of research has been on what factors determine the innovativeness of a firm [3,13]. In terms of innovations and accompanying values brought forward by scientific and technological progress, Baizakov et al [6] study how an economic entity evolves over time – the dynamics of an economic entity – by examining the relationship between incomes and expenses, as characterized by the coefficient of scientific and technological progress. Different from this literature, this work presents a brand new approach of reasoning and modeling so

that a much clearer relationship is established between protective property rights (and complementary assets) and the effectiveness innovations have in terms of value creation.

Secondly, regarding resources, Penrose [73] is the first scholar who recognizes the important role of organizational resources played in firms' success. On top of many scholars' works, the so-called resource-based view of the firm begins to emerge in the 1980s [54,79,91] for the reason that resources can logically explain synergistic and differential effects of various factors on firms' performance [27]. For example, Cacciolatti and Lee [17] employ resources to analyze the capability-performance relationship, and explain how different types of marketing capabilities contribute to firm performance. Ombaka et al. [72] reveal the fact that resources possess mixed influences on firm performance indicators, although resources have a statistically significant influence on the non-financial performance of insurance companies. Enriching this literature, this paper shows that the capabilities of a firm also stand for resources for the firm, in what possible ways resources' latent values can be mobilized, when resources can create value, and when they are inimitable and not readily substitutable.

Thirdly, other than looking at firms as atomistic actors that compete against each other, they should be treated as indispensable members of networks (or systems) of various businesses and exchange relationships [36-38]. Such realization helps explain why firms' conduct and performance need to be studied by examining relationships, in which the firms are part of. Additionally, firms, when positioned in strategic networks, have access to information, resources, markets, and technologies, with advantages of learning and economies of scale and scope. Such advantages bring these firms multiple steps closer to materializing their respective business objectives [41]. In terms of business networks, Harrigan [44] and Kogut [52] consider the formation of inter-firm partnerships, Baum and Dutton [12] study the behavior and performance of firms, Forsgren [34] considers the Uppsala internationalization process model, Öberg [70] investigates innovation and several relevant issues, among others. Building on this literature, this work shows

- Why within a supply-demand network systemic holes convene control and represent profitability for firms that occupy the positions of the holes;
- Why inter-organizational networks that possess expanding market influences can provide their member firms with increasing levels of profitability; and
- Why creating and maintaining platforms that directly connect sellers and buyers can be enormously beneficial for the underlying firms, among others.

Other than the afore-described contributions this paper makes, another important contribution is the introduction of systems methodology into the study of value creation and capture. This methodology is generally applicable to studies of organizations, business evolutions and interactions without suffering from limitations of data, anecdotes and relevant methods of analysis. That is, conclusions developed herein can be employed to produce general recommendations in practice instead of suggestions provided by most of the relevant studies in the literature.

2.2. Some Background Information

Because the systems methodology employed in the current work is not widely employed in the literature of relevant studies, this subsection presents the basics for the purpose of making the rest of this presentation self-contained.

By system it stands for an abstract concept that models business entities as organizations and structures so that components, treated as isolated in classical sciences, along with their associations with each other become organic wholes (or systems) [56]. So, systems are everywhere in life, because organizations (and structures) are the main features of the world. That is the reason why this concept of systems has appeared in discussions of business-related matters and issues [28,80,81].

Indeed, both numbers and systems are rooted in the same world. However, they reflect two completely opposite aspects of physical and intellectual existences, where numbers come into

being when internal structures either do not exist or are ignored, and systems focus on internal structures. Speaking differently, numbers and systems are different in two major ways:

- When one looks at a small scale, regional phenomenon, one can mostly make use of numbers. But, when one studies a large-scale existence or phenomenon, such as organizations or structures, he or she will need to employ the concept of systems (Lin, 1999); and
- Only with the existence and occurrence of events, numbers appear. In the contrary, systems surface instantaneously with existences and occurrences [61].

These differences explain why systems logic and methodology represent more appropriate tools than those developed on numbers for the investigation of economic entities where internal structures do play a role.

Due to its general applicability, scholars from different disciplines have defined this concept of systems by using diverse languages since the time when it was initially proposed by von Bertalanffy in 1924 in biology [90]. For our purpose, a system is identified with an ordered pair $S = (M, R)$ of an object set M and a relation set R [60]. In particular, M consists of all the isolated objects of system S and R a set of relations that connect the objects in M. For example, each business firm is composed of a set of employees, properties, equipment, etc. This set is collectively known as that of objects of the organizational system of the firm. More importantly, these objects are associated with each other through a set of particular relations. It is through particular relations that the whole is acknowledged as a functional firm.

For theoretical completeness, a discrete system $S = (M, R)$ is such a system that satisfies: $R = \emptyset$ or $R = \{\emptyset\}$ and $M \neq \emptyset$, where $\emptyset$ stands for the empty set. In other words, a system S is discrete when it consists of isolated objects only. A system $S = (M, R)$ is said to be trivial, if $M = \emptyset$. Theoretically, the concept of trivial system is equivalent to that of zero on the real number line.

For a given system $S = (M, R)$, another system $S_1 = (M_1, R_1)$ is said to be a subsystem of S, if M_1 is a subset of M and $R_1 = R|M_1$, consisting of relations in R but restricted on M_1. That is, for each relation r in the subsystem S_1, there is a relation s in R of the original system S such that r consists of all relationship descriptions in s of objects except those descriptions involving objects outside the subset M_1. For convenience, we write the subsystem S_1 as $S|M_1$.

Let $S_i = (M_i, R_i)$ be a system for each $i \in I$, where I is an index set. If for any two systems S_i and S_j, $i \neq j \in I$, their objects sets are disjoint, then the free sum of this collection of systems, denoted $\bigoplus \{S_i : i \in I\}$ or $S_1 \oplus S_2 \oplus \ldots \oplus S_n$, if $I = \{1, 2, \ldots, n\}$ is finite, is simply defined as the system whose object set is equal to the totality of the objects in the given systems, and whose relation set that of all the relations in the individual systems. That is,

$$\bigoplus \{S_i : i \in I\} = S_1 \oplus S_2 \oplus \ldots \oplus S_n = \left(\bigcup_{i \in I} M_i, \bigcup_{i \in I} R_i\right).$$

Mathematically, we can show that for any set of systems, its free sum exists uniquely up to a similarity [60].

A connected system $S = (M, R)$ is such a system that satisfies: for any m_1 and $m_2 \in M$, there are a sequence $n_1, n_2, \ldots, n_k \in M$, and a sequence $r_1, r_2, \ldots, r_{k+1} \in R$, for some natural number k, satisfying that r_1 relates m_1 and n_1, r_2 relates n_1 and n_2, …, r_k relates n_{k-1} and n_k, and r_{k+1} relates n_k and m_k. That is, a system is connected if any two objects in the system are related through a finite number of relations of the system. Otherwise, the system S is known as a disconnected system, meaning that the system is really equal to the free sum of two or more subsystems.

At this junction, let us emphasize that beyond adding additional explanatory power to the existing knowledge on value creation and capture, applying systems methodology enables the discovery of new conclusions and provides general and practically applicable

recommendations. Unmistakably, such outcomes stand for an academic endeavor that is worthy of further pursuing, within which the true power of systems methodology lies.

To help with the smooth flow of logical reasoning, assume that each business firm considered herein exists to satisfy a particular market niche with its operation financially maintained by a positive cash flow from the product market. Such positive cash flows used to be backed by firms' performance and profits [87]. But, it is no longer the case. For example, in recent times online retailers have focused on pumping up their future promises and potentials so that they continuously attract sufficient venture capitals by placing emphasis on increasing their market shares. As a matter of fact, some of the well-known retailers have been losing money one year after another since their inception [59].

Although it is defined differently by competing schools of economics, by value in this paper it means the benefit offered by a product, service or good (such as informational goods). By value creation, it means a process a firm goes through to offer its output with value-added. By value capture, it stands for the value the firm, which implemented a process of value creation, actually captures from satisfying market demand(s). By consumers, it means the end-users of what is offered; and, by customers those firms that employ their inputs to produce their outputs. By virtual market, it means such a setting that the internet infrastructure helps facilitate business transactions and deals, where the internet helps create virtual communities and unconventional commercial arrangements [42]. It helps make it possible for sharing knowledge and know-hows among firms and information about products and services instantly available to consumers.

The following game-theory based result [30] will be used in the rest of this paper:

Theorem 1:

Assume that an oligopoly market is perfectly competitive without any outside interference. Then, in the Nash equilibrium, at least one new enterprise enters the market competitively and profitably, if and only if there is a market segment of switchers who make purchase decisions based on which supplier's price is lower.

3. MAIN RESULTS

This section focuses on various potentials of how values can be either created or captured.

3.1. Potentials of Value Creation

This subsection focuses on various potentials of how values can be created from two angles: innovation and systems of resources. It consists of two subsections accordingly.

3.1.1. Innovation and Value Creation

Because the concept of product used in management and marketing is different of that in economics (for relevant references, see the following discussions), let us introduce the following: By product, it represents a tangible or intangible thing or process, made available by a business entity, which consumer(s) demand to have or use. For example, an iPhone is a (tangible) product that consumers can physically use in their daily lives. An annuity offered by an insurance firm represents a (intangible) product, consisting of services and promises that consumers can count on when certain prescribed conditions are satisfied. Such services as self-serving laundry facilities, indoor tanning salons, etc., are products that consumers can 'receive' through using the facilities and salons. A consulting firm's investment recommendations are (informational) products (goods), produced by the firm through gathering, organizing, and analyzing facts. In real life, different kinds of products, such as a physical product and follow-up services, are usually bundled together to attract additional customers.

To make our logical reasoning flow smoothly in the rest of this paper, let us define the concept of innovation as follows, parallel to that defined for the manufacturing sector [31]: By innovation, it stands for a set of activities, which contains at least one activity, that is related to the production and/or offer of a product or a bundle of products, which produces

exceptionally added value for a firm when compared to other activities that are simultaneously taking place in the same economic sector. In terms of the literature, the concept of innovation has been conceptualized by many authors due to its theoretical and practical importance [13,18,22,48,56,75,77,83] and by the Organization for Economic Cooperation and Development [71]. However, the definition of this concept has been evolving with new particulars added over time in order to keep up with the pace of the constantly changing business world. Considering the objective of this research, the situation of such forever changing concept of innovation needs to be elevated to the height of general abstraction so that this work can potentially contribute to the long-lasting knowledge of value creation and capture. That is, the definition of innovation adopted here needs to be as general, as time invariant as possible. In the following paragraphs, let us illustrate this end in more details.

In this definition, the phrase 'the production and/or offer of a product' means implicitly the design of one or several original products that generates exceptionally added value for the firm. That is, innovation means any of the pertinent activities, such as the redesign of an existing business model, marketing efforts to adequately understand market signals, acquiring the necessary knowledge, converting know-hows to actual production, etc., that lead to the eventual introduction of the product(s).

In the contrary, the meaning of 'offer of a bundle of products' is profoundly different. It means placing several products, including relevant services, together in one delivery to consumers. Here, each of the bundled products may not be special or original on its own characteristics. The creativity that underlies a bundle of mundane products lies in the potential advancement of consequent simultaneous consumer utilities and multi-sided markets [95] with the former created for consumers who can use several products concurrently and the latter when different markets are served and pulled together.

Theoretically, the abstract concept of innovation and its emphasis on the comparatively added value implicitly make this notion include many applied aspects. For instance, the added value, as emphasized in the definition, suggests that

- Creativity can potentially develop over time;
- Market demands, either current or forecasted that are both comprehended within the firm and accepted externally, motivate the creativity,
- Intended values are actualized through introducing necessary processes to produce and offer products in order to create and capture the expected value;
- Other than inventions, this definition of innovation also implies translating inventions into products that satisfy the identified demand;
- This definition of innovation leaves the door open for the potential of the newness of product(s) and process(es); and
- It incorporates the role of technological changes in particular and processes and outcomes in general implicitly.

This definition of innovation directly indicates that innovative creativity leads to new and exceptional value, as maintained by Schumpeter in 1934 [83], and that innovation transpires from diverse contexts and in dissimilar means, such as design and offer of new products, new methods of production, procedures of additional efficiency, new markets, new sources of supply, and reformation of industries [83]. The inherent ability of collecting highly-priced rents is guaranteed by the originality and scarcity in various facets of innovation and tightly attracted entrepreneurs, although the values of these rents gradually diminish as the originality becomes routine industry exercises and the scarcity vanishes from the market. This end explains how the notion of creative destruction emerges [84]: The initial risks entrepreneurs undertake lead to the consequent originality and scarcity; and the insights that underlay entrepreneurial initiatives destroy themselves as knowledge accrues and spreads over time.

Summarizing what has been discussed so far, we conclude that each innovation can be seen as a collection of determined activities devised to satisfy an acknowledged demand of the marketplace, either large or small. The role played by technology in innovation is manifested

through the improvements it provides, including, but not limited to, making production more efficient, producing more targeted discoveries, reducing the overall expenditure, etc. With their individually different understandings of what the market demands, entrepreneurs provide their alternative innovations. Their joint efforts transform markets and industries, leading to continuous economic development.

Proposition 1:

Within a market of free competition, the effectiveness of protective property rights and complementary assets are positively correlated to the potential innovations have in creating value.

As a matter of fact, the previous discussion implies that free competition emboldens people's spirit of entrepreneurship. On top of this backdrop, if effective protection of property rights is in place, and mobilization of complementary assets is assured, then product markets will motivate enthusiastic participants to innovate. Here, the assumption of free competition means that the economy is not a shared one. For a related discussion based on anecdotes, see [88].

Proposition 2:

Within a market of free competition, exchanges facilitated by various markets help make resources' latent values practically materialized.

This result follows directly from Theorem 1. In particular, the assumed oligopoly market of free competition encourages consumers to make their preferences relentlessly and tastes more sophisticated. Such forever evolution in consumer preferences and tastes inevitably enlarges the market segment of consumer surplus. That subsequently intensifies the market competition among the incumbent firms. This reasoning explains how dormant values in resources become visible and practically developed through creative combinations of entrepreneurs' individually available resources. For related empirical studies, see [67]. And for the literature on what factors could potentially affect the innovativeness of a firm, see [13,47] and references listed there for relevant details.

Williamson [94] defines a transaction as such a trade that the ownership of a product is transferred across a technologically separable interface so that a cycle of production and delivery ends and another one starts. Demsetz [23] defines transaction cost as the cost of making a trade within a market, where the term 'trade' stands for buying and selling, as commonly known, daily emotional interactions, informal gift exchanges, etc. For our purpose, this work does not develop conclusions from the definition of transaction costs given by Cheung [20], although this definition is much broader than what is cited above.

Institutions, defined as rules accepted and followed by members in a society, are the essence in determining the level of transaction costs. And factors, such as trading frequency, specificity, informational asymmetry, uncertainty, limited rationality, opportunistic behaviors in small-numbers situations, etc., generally determine transaction costs [93]. That explains why companies, which are able to facilitate low transaction costs, can graciously increase their performance and improve growth [69]. Let us refer the capability for a firm to reduce its transaction costs more than its competitors to as the firm's transaction efficiency. Then we naturally have the following result.

Proposition 3:

Each specific transaction efficiency represents a source of value that can be created for consumers and captured by the underlying firm.

This conclusion follows readily from Theorem 1: each transaction efficiency can directly lower the selling price of the underlying firm's product. That surely helps the firm to maintain

its existing loyal consumers while attracting the entire consumer surplus. Realistically, this fact means that the firm has created value for its consumers and captured value for itself.

For related empirical discussions on how firms are aware of the need to lower costs, the risks of coordination and transaction and how information technology can help reduce costs and risks, see [21]. And for empirical cases on how the internet or any other networked environment can help lower transaction costs, see [24].

By combining what is obtained earlier and Proposition 3, it follows that a firm can create and capture value through the reduction of such determinants of transaction costs as informational asymmetry, uncertainty, complexity, limited rationality, and bargaining behavior in small-numbers situations. Hence, firms, capable of economizing on transaction costs with innovation, are able to extract values from their business transactions. Additionally, humanizing reputation, trust and transactional experience (e.g., frequent transactions) can help lower the cost of idiosyncratic exchanges among firms. That, of course, will in turn improve the transaction efficiency of a firm.

3.1.2. Uniqueness of Resources and Value Creation

A resource stands for an asset that can be either tangible or intangible [43] a firm can mobilize to introduce and implement its strategies and to accomplish its objectives [9]. That is, a resource is such a thing, which can take a physical, or financial, or intellectual, or organizational form, that a firm can utilize to actualize its business objectives. Capability generally refers to an information-based process that empowers a firm to organize its resources in its effort of reaching its objectives [64].

Proposition 4:

Any firm-specific capabilities are also unique resources of the firm.

By combining all the discussions above, we can identify each firm with its system of firm-specific resources, where the resources organically relate to each other for particular purposes. Consequent to this identification between firms and their individually different systems of resources, the well-known resource-based view or theory (RBV) of the firm [54] follows naturally based on the following three basic, while also intuitive, axioms [32]:

Axiom 1 (Resource Heterogeneity):

Different firms possess individually different systems of resources, even when firms operate within the same industry.

Axiom 2 (Resource Immobility):

These differences in systems of available resources persist over time, because of practical difficulties of trading resources across firms and of connecting available resources in particular ways.

Axiom 3 (Different Levels of Efficiency):

Firms' performance differences stem from differences in their systems of available resources and intrinsically different efficiency levels of available resources.

A resource is said to be valuable to a firm [8], if the resource permits the firm to increase its profits through executing a particular strategy by considering external opportunities and threats beyond the case of not having the resource. Through combining the RBV and the concept of value creation, we have the following result:

Proposition 5:

Assume that a firm possesses the control of some valuable and rare resources. If the firm can mobilize these resources, then it is able to create values.

This conclusion follows from the resources' scarcity and the firm's capability to mobilize these resources. It is because the scarcity and capability jointly enable the firm to create certain advantages that few other firms can compete with until the scarcity diminishes.

Proposition 6:

Assume the same as in Proposition 5. If the management and stakeholders of the firm have non-conflicting interests, then the firm is in a good position to create value through utilizing its resources.

In fact, the assumption that the management and stakeholders have non-conflicting interests implies that the firm's valuable and rare resources can be effectively exploited by the management. So, Propositions 4 and 5 jointly indicate that this firm is capable of creating value by employing these resources.

Proposition 7:

When a firm is able to work adequately and jointly with such capabilities as marketing, research and development (R&D) and operation, the firm will be able to create value.

In fact, for any firm, its marketing capability associates the firm with markets by identifying what the firm is, what the product market demands for, and what changes the firm needs to make in order to accomplish its goal [53]. That is, marketing helps a firm know and expect in terms of its current and future competitions [50]. In other words, a firm's marketing affects the firm's orientation of innovation and operation and presents the firm to the market and what the market demands to the firm.

A firm's R&D capability translates the vital information of the market, acquired through marketing, into the terms that are specific to the firm and into designs and production of relevant products for potentially satisfying consumers' forever evolving demand. Such capability establishes barriers for competitors to imitate the new products [49]. Strong and reputable track records of a firm's R&D help the firm enhance its image and create favorable consumer expectations.

The firm's operational capability practically actualizes the information and knowledge acquired by marketing efforts and R&D's ideas of new products into deliverable offers.

When the information and knowledge gained from marketing is novel, the R&D's designs of new products are of state-of-the-art, and the corresponding operations are appropriate and accommodating, the entire chain of the firm's activities will become practically mobile and imperfectly imitable. In such circumstances, the firm is in a perfect position to create values. That is, the conclusion in Proposition 7 follows readily from Propositions 4 and 5. For related anecdotal and empirical discussions, see [46,66].

In summary, what are established above implies, from the point of view of the RBV, that marshaling a system of specialized valuable and scarce resources can potentially lead to value creation. Speaking differently, when a firm is identified with its individually unique system of resources, the firm can potentially create value out of its valuable and rare resources. For related empirical considerations of this conclusion, see, for example, [4,7,74,91].

If the concepts of resource and capability, as previously defined, are seen as time-dependent or functions of time, then one can readily develop a general resource-based theory of firm evolution. In particular, a resource's scarcity is clearly time-dependent; the real worth of $1 million investment is a function of time; an inimitable resource gradually becomes imitable as time elapses. From this discussion and Proposition 4, it follows that each capability

in real life is truly time-dependent or a function of time. Therefore, the so-called dynamic capability [89] is really a special case of the concept of capability defined in this paper.

With time introduced implicitly, one can readily use the resource-based theory to address such questions as

- How are values claimed and demanded?
- How can competitive advantages be sustainable [7,66]? And
- How are the positions of valuable resources established over time?

It is not a simple mental exercise to consider each resource (or capability) as a function of time. Such consideration is indeed entrenched deeply in how firms' operations consist mostly of managerial and organizational processes, be they aimed at forming coordination, accomplishing integration, materializing a revitalization, or necessitating a transformation [26,89], or learning [57]. Such time-dependent resources/capabilities as strategic decision-making, knowledge acquirement, product development, how-to skill creation, social network formation, etc., facilitate firms to create and capture values practically through Schumpeterian rents [89].

Proposition 8:

With the emergence of virtual markets, the sustainability of each created value is reduced, and new opportunities for value creation and capture appear.

This conclusion holds true, because virtual markets operate on the widely available Internet, which makes financial exchanges convenient and readily accomplishable. And the Internet plays the role of a constantly available platform for entrepreneurs to uncover new kinds of resources, to explore potential complementarities among resources, and to exploit available resources. On top of this discussion, Proposition 2 explains why virtual markets provide new opportunities for value creation and value capture.

Additionally, the Internet offers timely sharing of information and knowledge either freely or at very low prices. That affordability and convenience of sharing accelerate the circulation speed of knowledge. So, various know-hows that were once difficult to acquire become almost instantly available on fingertips. That explicates why the sustainability of each created value is reduced.

3.2. Potentials of Value Capture

As the title suggests, this subsection studies potentials a firm can mobilize to capture value. It consists of two subsections. The first one focuses on those potentials brought forward by the state of market forbearance, supply-chain networks, and strategic blocks. And the second subsection looks at opportunities that exist along with inter-organizational networks and direct seller-buyer platforms.

3.2.1. Mutual Forbearance, Supply-Chain Network & Strategic Blocks

In the present global economy, when firms compete with each other autonomously in the marketplace for advantages in general and for profits in particular, firms are also parts of inter-organizational networks. They collaborate with each other both socially and professionally [36].

By a strategic network, it stands for an established network of inter-organizational ties that are strategically formed to develop certain advantages for all partner firms [41]. For example, as an input-output system, each firm is naturally a part of a supply chain (or ecosystem network), consisting of upstream components and downstream complements [1]. Here, suppliers of a firm are some of the upstream components, while customers, supporters and assistants who help to make the product of the firm available to consumers are the downstream complements. In this ecosystem network, supporters and assistants are literally not any part of

the firm's direct supply chain. However, they have to invest and develop the necessary infrastructure for the firm to make its product practically offered to the ultimate consumer.

The beauty of strategic networks is that they provide their member firms with access to information, markets, and technologies [41], opportunities of risk sharing, economies of scale and scope [85], as well as knowledge sharing and advanced learning [25]. The symbiotic activities of these networks help their member firms harvest the resultant benefits [15].

Proposition 9:

If a mutual forbearance exists among the incumbent firms in an oligopolistic industry, then the incumbents enjoy increased profitability that is relatively sustainable until the state of mutual forbearance breaks down.

By mutual forbearance, it represents such a situational state that all incumbent firms lighten the intensity of their rivalry by dividing their market into segments proportional to the firms' individual strengths [14]. So, each firm cedes its dominance to stronger ones in those segments where it is less competent [58]. Consequently, these incumbent firms become inter-reliant on each other in their effort to dominate the market. Such state of affairs motivates the firms to restrain their rivalries [96], leading to a decreased number of entries into and that of exits from the market [25], while inter-firm hostility lessens [45].

Due to their strengths of dominance, market controls relative to upstream components and downstream complements, and deepened extents of collusion, tacit, etc., the incumbent firms exert an extensive influence on their industry's profitability. In addition, the strongly fortified barriers hinder the entry of any new firm into the industry. Hence, the profitability of these firms increases with the strengthening of the state of mutual forbearance and can be seen as relatively sustained. Here, the word 'relative' stands for the situation that the profitability sustains until the incumbent firms, or at least some of them, can no longer keep up with consumers' evolving preferences and tastes (Theorem 1).

For relevant empirical studies, see [36,82]. These scholars show that both dense and strong ties among incumbent firms within an industry or market can be conducive to oligopolistic coordination, tacit or otherwise. And, Podolny [78] finds how top-tier banks employ their associations to maintain their good returns within the banking industry.

For a connected system $S = (M, R)$, if there is an object $m \in M$ such that

$$S' = \big(M - \{m\}, R|(M - \{m\})\big) = S_1 \oplus S_2 \oplus \ldots \oplus S_k,$$

where $S_i = (M_i, R_i)$, i = 1, 2, …, k, is a connected system and $M_i \cap M_j = \emptyset$, for i, j = 1, 2, …, k, satisfying $i \neq j$, for a whole number $k \geq 2$, then we say that the object m is a (systemic) hole of the original system S. Speaking less mathematically, an object in a connected system is a hole, if removing the object from the system makes the originally connected system into at least two separate systems, each of which is still connected.

To help with an intuitive understanding of this concept, let $S = (M, R)$ stand for the systemic structure of a complete supply chain, where the topmost upstream players are the providers of raw materials and the bottommost downstream players the consumers or the end-users. That is, the object set M of this model consists of the set of all players, such as suppliers, producers, retailers, consumers, etc., in the specified supply chain, and the relation set R describes how these players are associated with each other based on how their corresponding inputs and outputs are connected into each other. For example, we say that two players m_1 and m_2 are associated, if the outputs of m_1 are the inputs of m_2 either directly or indirectly. In this systemic model, a particular player $m \in M$ is a hole in this system S or supply chain, if when this player m is removed from this system, this supply chain S falls apart into two disjoint subsystems, neither of which constitutes a complete supply chain, as follows:

$$S_{up} = \big(M_{up}, R_{up}\big) \text{ and } S_{down} = (M_{down}, R_{down}),$$

where the object set M_{up} of the upstream system S_{up} contains all the components that are upstream to m and the object set M_{down} of the downstream system S_{down} all the downstream complements to m.

The reason why these two sub-supply chains S_{up} and S_{down} is not complete is that the outputs of the former cannot eventually reach the demands of the latter, while the latter cannot produce its product(s) without the input from the former. In business terms, in the customer-supplier network of an industry, if two trading partners can only complete their transactions through a specific focal industry, then this particular industry is a systemic hole in the entire supply-demand network. Figuratively, Fig. 1 demonstrates the concepts of systemic hole m, supply-chain system S, and the disjoint subsystems S_{up} and S_{down}. The arrowed curves represent the direction of the input-output flows of the supply chain S.

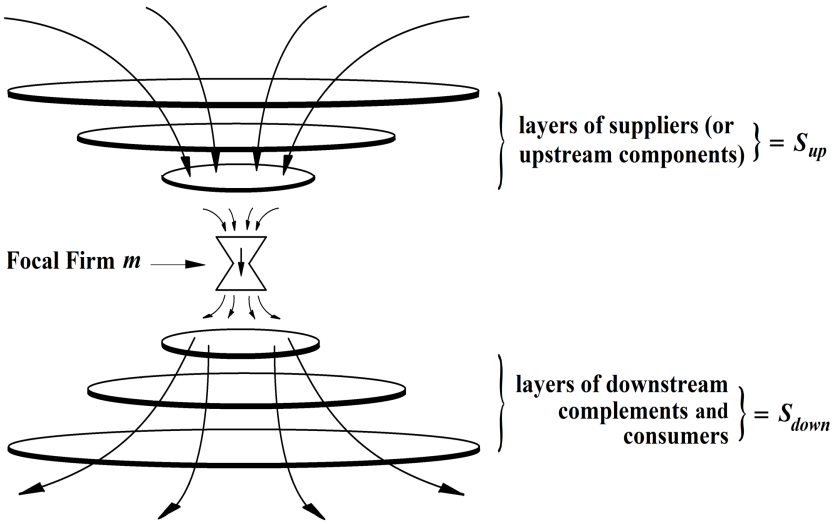

Fig. 1. How a systemic hole appears in a supply-chain ecosystem

Proposition 10:

In each supply-demand network, a systemic hole assembles power and profitability because of its controlling location advantage.

To see why this conclusion holds true, let us model a general supply-demand network as a connected system $S = (M, R)$, where the object set M consists of all players in the network and the relation set R describes the supply-and-demand relationship of the players. Hence, if an object $m \in M$ is a systemic hole in S, then its locational advantage means that the object m can cut the network S into two disjoint and dysfunctional subsystems S_{up} and S_{down}, as defined previously. And no one in the bottommost layer of the subsystem S_{up} can find buyers for its products; no one in the topmost layer of the subsystem S_{down} can offer its outputs to downstream customers and consumers because of a shortage of necessary supplies. Speaking differently, this particular object $m \in M$ determines the survival of all other players in the network S. That power of life or death certainly points to profitability for object m.

In terms of the literature of relevant empirical studies, Burt [16] finds that industries that are in a position of systemic holes are capable of achieving good returns through appropriating over-weighted proportional large shares of resources.

Proposition 11:

If a focal firm is a member of a supply-chain network that experiences an expanding base of consumers, then the membership in this network boosts its profitability by improving its market position in a broader network of resource flows.

This conclusion follows directly from Theorem 1. In fact, the assumption that the said supply-chain network experiences an expanding base of consumers means that no new or existing competitor is taking market share away from the membership of the network (Theorem 1) in the sense of market percentages. At the same time, the membership in the network is attracting additional business over time. Jointly, these facts mean that the focal firm's position in the marketplace helps boost, at least potentially, its profitability.

On the other hand, if a supply-chain network suffers from a dwindling consumer base, then the focal firm's location in its broader network of resources, and consequently its profitability are unfavorably disturbed. For example, when the investment in the military of a nation weakens, the fortune of the defense industry suffers.

Let $S = (M, R)$ be a symbolic representation of the industry of concern, satisfying that each object $m \in M$ stands for the systemic expression of a firm within the industry and every firm of the industry has a systemic expression and is an object in M. If

$$S = \oplus_{i=1}^{n} S_i = S_1 \oplus S_2 \oplus \ldots \oplus S_n$$

such that each system $S_i = (M_i, R_i)$ is connected with its object set disjoint with any other firm system, that is, $M_i \cap M_j \neq \emptyset$, for any $i, j = 1,2, \ldots, n$, satisfying $i \neq j$, then each S_i is called a strategic block within the industry. Here, we borrow the term from [68], where these scholars studied the global automobile industry. Speaking in nontechnical terms, each block S_i stands for a group of firms that have formed a strategic alliance with each other but not with any other firms in the industry.

Proposition 12:

Each strategic block within an industry generally helps their member firms reach a certain level of profitability that varies from one block to another. If a strategic block experiences an expanding market influence, then its members enjoy a positive effect on their profitability.

The first conclusion is a direct consequence of the fact that each strategic block in real life implements an individually unambiguous strategy with its particular accent. Hence, different strategic blocks affect the market differently due to their differences in their employed strategies. That naturally means different scales of profitability for the blocks, causing firms with memberships in different blocks to enjoy different levels of performance. The second conclusion follows directly from Proposition 11.

For relevant empirical studies, see [11,76,98]. Specifically, by looking at strategic networks within the venture capital industry, Piskorski and Nohria find major variations in profitability among firms due to their varied memberships in different strategic blocks. By considering interactions between banking firms, Zaheer and Zaheer assess the competition in the global industry of currency trading. Through configuring alliances into networks, Baum et al. find it possible for startups in the biotechnology industry to improve their performance if these firms purposefully tap into the capabilities and knowledge of their alliance partners by using data from the Canadian biotechnology industry.

3.2.2. Inter-Organizational Networks & Direct Seller-Buyer Platforms

Riding on the discussions above, the emphases of this section are on the values of a firm's membership in an inter-organizational network(s), those in a strategic block, and what benefits a firm could enjoy from establishing a platform that bridges direct communication between sellers and buyers.

Proposition 13:

If a firm is a member of an inter-organizational network or a strategic block, then the membership generally represents the firm's resource that is inimitable and not readily substitutable by other firms and that the firm can potentially mobilize the resource.

Because each inter-organizational network helps its member firms maintain their profitability and boost their locational advantages in broader networks of resource flows, and because each strategic block provides its member firms relatively sustained levels of profitability, Propositions 8 – 11 jointly illustrate why the conclusion in this proposition holds true. Additionally, networks and strategic blocks practically serve as entry barriers for others to either enter an industry or move across strategic groups, either entering or leaving or both. So, both inter-organizational networks and strategic blocks represent opportunities, advantages and constraints for member firms.

On the other hand, Theorem 1 supports the conclusion in the proposition. Specifically, that theorem states that if sufficient demand exists, the market will invite additional competitions and innovations. However, due to their varied backgrounds, available resources and abilities to learn, firms receive the same invitation in their respectively different ways. When firms develop their respectively different answers to the market call, these firms demand appropriate innovations and supplies correspondingly from their upstream suppliers and from their downstream complementors in order to successfully offer their products to the eventual consumers [2]. Such cognitive variations in comprehending market signals, materialistic differences in available resources and in demands on upstream suppliers and downstream complementors make a firm's membership and association with other firms within an inter-organizational network and strategic block imperfectly imitable and imperfectly substitutable resources the firm can potentially mobilize.

Regarding the literature, Gulati et al. [41] derive a related but dissimilar conclusion. In terms of applications, a firm's membership in a network and strategic block provides the firm with access to significant external resources, such as relationships and information [39], knowledge, alertness and responsiveness [97], opportunities [92], capital, goods, services, technology, etc., [13]. All of these external resources possess the potential for a firm to enhance its competitive position in its industry. And because each inter-organizational network and every strategic block are distinctive and developed through history-specific paths, they are difficult, if not impossible, for others to imitate or substitute [40]. This end once again demonstrates why a firm's membership in an inter-organizational network and association with a strategic block are resources that are inimitable or extremely difficult to imitate by other firms and are not readily substitutable with any other available resources. It also confirms why that firm can enjoy and potentially mobilize these resources.

The so-called opportunism is defined as an observant policy and resultant advantage taking of circumstances, primarily driven by motives of self-interest(s) without considering underlying principles of any kind and consequences for others. The essence in the definition of this concept is the 'advantage taking of circumstances' without considering the underlying principles, which generally and assuredly exist with people, either individually or collectively [63]. Hence, no matter what specific case and context are concerned with, the 'advantage taking' happens within and on top of adopted philosophical beliefs and value systems that dictate what behaviors are considered right, acceptable and which ones are wrong and immoral. That explains why opportunistic behaviors (or opportunism) can be quite easily detected through comparing what is happening against the norms or principles, even though there is no universal standard of morality within any market of free competition except laws and regulations regarding contracts and transaction settlements. Our discussion here illustrates the concept of opportunism in detail while also demonstrating that there is no difficulty in defining what opportunism really means, as otherwise claimed by Chen et al [19].

Proposition 14:

Assume that an inter-organizational network contains member firms from different industries, and that a strategic block consists of firms within one industry. Then, within such a network and strategic block firm-level trust is generally enhanced, firm-level asymmetry of information reduced, and opportunistic behaviors of firms made costly.

By firm-level trust, it means the assurance that no firm exploits the weaknesses of any other firm [10]. Generally, business transactions take place within a historical succession of prior direct or indirect associations and a broad network of connections. Therefore, inter-organizational networks and strategic blocks play the role of important resources and necessary origins of referrals, where firms' characters are the basis of each referral. Although characters generally take time to develop and to be recognized, they can be destroyed quickly. Therefore, each inter-organizational network and every strategic block require or expect their member firms to behave appropriately within the bound of their norms and principles. That shows why inter-organizational networks and strategic blocks generally enhance firm-level trust and make opportunistic behaviors costly.

As for the reason why member firms' asymmetry of information within these networks and blocks is reduced, it is because through close associations, such as strengthened business ties and frequent business interactions in terms of their respective capabilities, resources and vulnerabilities, the networks' and blocks' very nature empowers their member firms to know each other very well. Regarding the relevant literature, Gulati et al. [41] developed the first draft of this proposition, although stated it very differently.

Transaction cost is a decreasing function of firm-level trust and opportunism cost, and is an increasing function of informational asymmetry. In other words, enhanced firm-level trust, dropped informational asymmetry, and elevated opportunism cost all help lower appropriation worries. So, we naturally have the following conclusion.

Proposition 15:

Assume that an inter-organizational network contains member firms from different industries and a strategic block consists of firms within one industry. Then the membership within this network and strategic block generally helps boost the member firms' value creation and capture.

By generalizing the concepts of strategic networks across industries and strategic blocks within an industry, one can develop such a network, or known as a platform, with members from the product market that directly connect competing sellers with buyers. Assume that a particular firm plays the role of a systemic hole between sellers and buyers. Graphically, Fig. 2 demonstrates this concept of networks within the product market that directly connect sellers and buyers with firm m being the systemic hole. So, we have the following conclusion naturally.

Proposition 16:

Assume that a focal firm offers a convenient platform for each buyer to reach multiple sellers simultaneously and each seller to reach multiple buyers concurrently. Then, this firm brings value to sellers and buyers at the same time, and is able to capture its share of value handsomely until such a time when similar platforms are widely available.

This conclusion follows directly from the result below developed by Forrest and Anderson [29]: In the consumer market, finding decided buyers represents a great challenge for sellers due to the availability of similar products and substitutes, and locating willing takers of bargaining bid prices denotes a major struggle for buyers. In particular, in the afore-described direct seller-buyer interactions on a convenient platform, all parties save hugely on their respective searches and information costs, bargaining costs, and policing and enforcement costs. So, when a firm develops a platform to connect a bid price to multiple sellers and each offer to multiple buyers, it practically creates values for both sellers and buyers. Simultaneously, the firm is able to capture its share of value continuously until its service is no longer a systemic hole within the network of various platforms that directly connect sellers and buyers (Proposition 10). That is the time when the total value potentially capturable by all platform providers has to be shared among many that offer similar platforms.

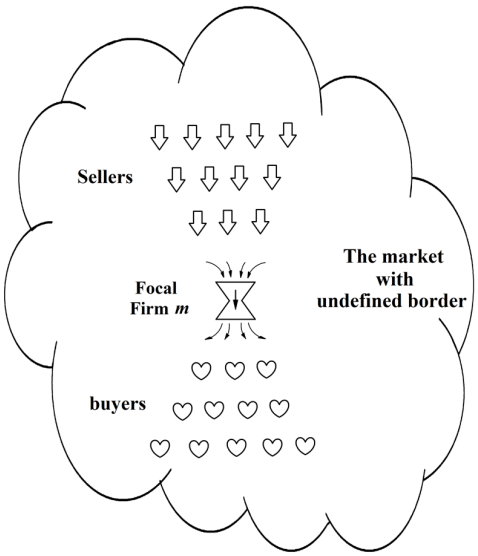

Fig. 2. A network where sellers and buyers connect directly

Additionally, Proposition 3 in a different light also supports this conclusion. It is because each platform that directly connects sellers and buyers in multiplicity increases the efficiency of transactions for the firm that operates the platform.

In real life, priceline.com, for example, has developed such a platform, as described above, that directly connects sellers and buyers. It forwards consumers' desired prices directly to multiple potential sellers. When a seller willingly accepts a bid price, the item, such as an airline ticket, car rental service, or hotel reservation, is sold over the Internet. To protect how its business transactions are completed, priceline.com has patented its innovative business method, making itself different from other online travel agencies [5].

4. SOME FINAL WORDS

In the current era of transient competitive advantages, business enterprises have to be constantly in the lookout for market signals that either are new or can be comprehended in an unconventional way, technological advances that are either incremental or disruptive and business paradigm shifts in order to create value and to capture value [66]. With globally widening range of application of the internet, the form and rule of market competition have been changing with accelerating speed. Platforms developed for buyers to place orders and for sellers to deliver products have become extremely effective at very low costs [5]. To cope with such fast pace of change both academically and practically, this paper investigates the potentials for a firm to create value and to capture value from various different angles, including innovation, resource, market forbearance, supply-chain network, strategic blocks, inter-organizational networks, and direct seller-buyer platforms. Due to the novelty of the methodology employed in this research, established conclusions herein are expected to provide managers and entrepreneurs dependable bases to make their decisions.

In particular, this paper studies the fast-changing world of business by using such logical reasoning that parallels the one commonly used in mathematics and natural science and systems methodology from the angles of innovation, resources, networks, and direct association of sellers and buyers. In the perspective of innovation, what is pointed out is when innovation provides additional potentials for value creation. In the perspective of resources, we show when resources' latent values can be practically made visible through value creation. In the perspective of networks and strategic blocks, we exhibit how market's mutual forbearance and relatively sustainably increased profitability are positively related, why a firm's systemic hole position offers advantages and profitability to the firm, and how a firm's profitability is positively affected by its membership in a strategic block of increasing market

influence. And, In the perspective of direct association of sellers and buyers, we show that when a firm creates and maintains convenient platforms that conveniently bridge market demands and supplies, it will readily create and capture values. To help the reader quickly glance over what are established in this paper, Table 1 lists all 16 propositions in four blocks in terms of value creation and capture.

Table 1. Four categories of all 16 established propositions

Value Creation	**Value Capture**
3.1.1. Innovation & Value Creation	*3.2.1. Market Association & Value Capture*
P1: Within a market of free competition, the effectiveness of protective property rights and complementary assets are positively correlated to the potential innovations have in creating value. P2: Within a market of free competition, exchanges facilitated by various markets help make resources' latent values practically materialized. P3: Each specific transaction efficiency represents a source of value that can be created for consumers and captured by the underlying firm.	P9: *If a mutual forbearance exists among the incumbent firms in an oligopolistic industry, then the incumbents enjoy increased profitability that is relatively sustainable until the state of mutual forbearance breaks down.* P10: *In each supply-demand network, a systemic hole assembles power and profitability because of its controlling location advantage.* P11: *If a focal firm is a member of a supply-chain network that experiences an expanding base of consumers, then the membership in this network boosts the firm's profitability through improving its market position in a broader network of resource flows.* P12: *Each strategic block within an industry generally helps their member firms reach a certain level of profitability that varies from one block to another. If a strategic block experiences an expanding market influence, then its members enjoy a positive effect on their profitability.*
3.1.2. Resource & Value Creation	*3.2.2. Networks/Buy-Sell Platforms*
P4: *Any firm-specific capabilities are also unique resources of the firm.* P5: *Assume that a firm possesses the control of some valuable and rare resources. If the firm can mobilize these resources, then it is able to create values.* P6: *Assume the same as in Proposition 5. If the management and stakeholders of the firm have non-conflicting interests, then the firm is in a good position to create value through utilizing its resources.* P7: *When a firm is able to work adequately and jointly with such capabilities as marketing, research and development (R&D) and operation, the firm will be able to create value.* P8: *With the emergence of virtual markets, the sustainability of each created value is reduced, and new opportunities for value creation and capture appear.*	P13: *If a firm is a member of an inter-organizational network or a strategic block, then the membership generally represents the firm's resource that is inimitable and not readily substitutable by other firms and that the firm can potentially mobilize the resource.* P14: *Assume that an inter-organizational network contains member firms from different industries, and that a strategic block consists of firms within one industry. Then, within such a network and strategic block firm-level trust is generally enhanced, firm-level asymmetry of information reduced, and opportunistic behaviors of firms made costly.* P15: *Assume that an inter-organizational network contains member firms from different industries and a strategic block consists of firms within one industry. Then the membership within this network and strategic block generally helps boost the member firms' value creation and capture.* P16: *Assume that a focal firm offers a convenient platform for each buyer to reach multiple sellers simultaneously and each seller to reach multiple buyers concurrently. Then, this firm brings value to sellers and buyers at the same time, and is able to capture its share of value handsomely until such a time when similar platforms are widely available.*

Regarding practical applications, conclusions developed in this paper can provide general recommendations instead of suggestions for decision-makers, such as entrepreneurs,

managers, and retailers. Specifically, this paper shows the critical need for entrepreneurs to spot innovatively market signals in their individually different ways so that they can produce their idiosyncratic products (Theorem 1) while positioning themselves in systemic hole locations (Proposition 10). To increase their likelihoods of success, this work explains why entrepreneurs need to join a supply chain or several that occupy an expanding market territory (Proposition 11) and inter-organizational networks (Propositions 12 – 15).

Second, this work shows that managers can potentially make their resources create additional values by encouraging information sharing and recognition of success, such as widely and openly recognizing employee contributions, offering financial incentives, promoting exchanges of ideas, and sharing resources (Propositions 1 – 2, 4). Managers need to adopt and implement policies and various procedures to acquire and mobilize their firm-specific resources (Proposition 5), while tying their interests with stakeholders' (Proposition 6). Recommended is that their marketing efforts, R&D achievements, and operational practicalities need to be seriously considered jointly in their decision making (Proposition 7). With such joint thoughtfulness, managers will foster collaborations within their organizations while more reliably create value for consumers and capture value for their firms. And, to grow their relatively sustainable performance, managers need to consider the potential of reaching a state of mutual forbearance with competitors by either joining or organizing inter-organizational networks (Propositions 11 – 15). On the other hand, even after having established in a state of mutual forbearance with competitors (Proposition 9), continuous innovations and introduction of new products are still necessary in order for a firm to stay ahead of the changing market environment (Theorem 1). And possibly, managers should go after such crucial innovations that would place their firms at systemic holes within their respective supply-chain networks and eco-systems (Proposition 10).

Some of the recommendations for retailers include:

- They need to incessantly make their transactions more efficient (Proposition 3);
- They need to take advantage of whatever new convenience, such as the Internet, instant messaging, etc., technology offers (Proposition 8); and
- They need to provide and recurrently advance their platforms that directly connect buyers and sellers conveniently and massively (Proposition 16).

Before our conclusion of this paper, there is a need to say a few words about the methodology – logical reasoning and systems thinking – employed in this paper. First, the logical reasoning used here parallels that successfully employed in Euclidean geometry and most parts of mathematics [51]. It starts with a few most basic and intuitive postulates (or axioms) in the development of generally true propositions. Such logical reasoning has been universally utilized for knowledge generation and won successes for such well-established disciplines as physics, chemistry, etc., where derived conclusions are not constrained by specific data and anecdotes [55]. Speaking differently, one can derive general managerial recommendations from our conclusions instead of suggestions of limited validity from data- and/or anecdote-based theories. So, the main difference between conclusions established in this paper and the related ones developed empirically in the literature can be articulated as follows: The latter represent pioneering works that reveal potential facts, while providing empirical supports or illustration for the truthfulness of the former. As for systems thinking, it has been gradually, while successfully, used in various studies on business-related topics [28,65,80]. Because of the new perspectives of systems methodology, brand new conclusions can be established.

As for the limitations of this work, first, there are many available tools in systems science developed specifically for analyzing organizations, their evolutions and interactions [62]. When these available tools of systems research are employed one by one in studies of business-related issues and problems, one will establish finer conclusions that are expected to be reliable when applied in real life. Second, all conclusions in this work are developed on the assumption of why a firm actually exists. But, in reality, firms exist for various reasons beyond that of

attempting to satisfy a market niche by generating positive cash flows from the product market. This end will stand for an important reason for why some applications of our general results developed in this paper might not work in practice, if the firms of concern exist not for this said purpose. These two limitations, along with many other ones, of this current work in fact open doors for future research.

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