MANAGING BUSINESS RELATIONSHIPS: BETWEEN SERVICE CULTURE AND A VIABLE SYSTEMS APPROACH

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Summary: 1. Interactions among Systems in light of the Viable Systems Approach; 1.1 The Viable Systems Approach (VSA); 1.2 VSA Foundations; 1.3. The emergence of networking and systemic relationships; 2. Relationships between Business Systems; 2.1. Relationships between service logics and network theories; 2.2 System Relationships and Service Systems; 2.3 Networked Interactions and Service value Networks; 3. The contribution of the VSA; 3.1 Relational value-creating Systems in the VSA; 3.2 Advances in Service Systems, a “viable” perspective; 4. Final remarks and future research.

ABSTRACT
Today's business arena, as is the case in everyday life, is increasingly interconnected, highlighting the importance of relationships among people and business actors. Service culture is centred on the valorisation of relationships with clients and other interested parties in the attempt to maximise overall satisfaction, and complex service systems represent an emerging model for business experiences and competition, strengthening inter-firm relationships for the benefit of competitive advantage and long-term survival. The Viable Systems Approach (VSA) is a theoretical proposal centred on relational harmonisation among systemic actors. The purpose of this contribution is hence to deepen business relationships, attempting to analyse how to direct and manage them to promote diffuse value creation and competitiveness. This paper introduces the Viable Systems Approach and the concept of system thinking, which derives from the shift in attention from the part to the whole, implying a perception of reality as an integrated and interacting unicum of phenomena, where the individual properties of the single parts become indistinct as the relationships between the parts themselves and the events that they produce through their
interaction become more important because system elements are rationally connected. The paper then examines in greater depth the specific contributions of the VSA to inter-firm relationships within network contexts and environmental relationships, illustrating its interesting proposals and how much they are coherent with recent service research theories.

**KEY WORDS** Viable Systems Approach | Inter-firm relationships | Service systems | Service culture | System interactions.

### 1. Interactions among Systems in light of the Viable Systems Approach

Nowadays, nothing is still anymore. Everything changes rapidly depending on its characteristics and the external conditions affecting its development. Additionally, every economic entity is subject to change, to evolution, and to modifications of the relationships within its context. Because there is a strong need to control this evolutionary path, there is also a need for a government capable of checking things out, of an authority at the top of every business who is in charge of aligning this evolution with internal and external conditions.

The government, in fact, has always played an important role within the firm, but now that “the firm is inevitably a developing system, or rather, a changing system […], this development must be directed and governed. Firms are not controlled by autopilot” (Paci, 1998). Now more than ever, in this rapidly evolving world, we find that the government’s role is crucial. This is basically the reason why we believe very interesting to go for a brief overview on how the place of the government has been interpreted within business studies, with a particular focus on how it manages business interaction within the surrounding environment; we consider the firm an open social system identified by continuous exchanges of energy, matter and information within the environment (Golinelli, 2001). This deep understanding of the relationship between the firm and the environment and their reciprocal interdependence has been accepted in doctrine for some time now and is continuously verified empirically. In effect, the business arena nowadays shows that no firm is completely free from external influences, just as there are firms capable of influencing the conditions of the market in which they operate.

We can observe how, in a Fordist economy, the government was concentrated on abundant resources and production optimisation, assuming that there were no limits to mass consumption. Relationships were not strategic, and there was no attention to clients, stakeholders, or social actors. Throughout the 1970s, the crises in this type of industrial development were due to a lack of organisation and the inability to coordinate internal
productive systems with the needs of an increasingly unstable socio-economic context. However, this crisis gave way to the development of inspiring ideas about new ways of implementing government action and relationship management.

Throughout time, structural limits placed on the ennobling of relationships have suggested a lack of government focus on economising internal production processes instead of identifying consumer needs. Among scholars, this evolution has been seriously observed; in fact, at this time, models and theories were proposed highlighting the growing importance of relationships moving from Porter’s value chain (Porter, 1986) to Normann’s value constellations (Normann and Ramirez, 1995), which are more open to taking the expressed and implicit needs of every actor into consideration, and finally to service-oriented culture, highlighting the importance of other parties’ satisfaction. The interactions among systems have been deeply analysed by the VSA, which considers the search for harmonisation among businesses and other system actors the only way to achieve viable and sustainable behaviour.

1.1 The Viable Systems Approach (VSA)

The Viable Systems Approach (VSA) represents a Grand Theory both proposing a new representation of the behavioural approach to business and the relative interactions with its own context (the theory) (Beer, 1975) and suggesting a new interpretation of consolidated strategic organisational and managerial models (the practice); it is linked with network analysis and based on general system theories and social analysis. Accordingly, organisational behaviour is interpreted within a dense pattern of relations and interactions involving fundamental elements but also composed of more complex systems (supra-systems and sub-systems). In this sense, every entity as a system (firms as well as individuals) can be considered a micro-environment with many parts or structures (Parsons, 1965); it is made up of a group of interlinked sub-components working towards a common goal (which makes the aggregate a system).

The VSA then enables the analysis of the relationships among enterprises’ internal components as well that of the relationships between enterprises and other systemic entities in its environment. Hence, each enterprise develops as an open system characterised by

- Many components, both tangible and intangible;
- The interdependence and communication between these components;
- The activation of these relationships to pursue the system finalities.
These considerations are indeed related to the system’s ability to direct and manage its relationships according to shared rules for the satisfaction of every systemic entity involved (Golinelli, 2000; Golinelli et al, 2002). Developed as an interdisciplinary theory that lies between holism and reductionism and works according to system thinking and its implications about relationships, the VSA is based on the concept of systems and intended for use in interpreting system construction and organisation, system behaviour and evolution, and system interactions and relationships.

System thinking comes from the shift in attention from the part to the whole, considering the observed reality as an integrated and interacting unicuum of phenomena in which the individual properties of the single parts become indistinct (Pels et al, 2010) as the relationships between the parts themselves and the events that they produce through their interaction become much more important (“system elements are rationally connected” – Luhmann, 1990). Based on the analysis of the elementary components of a phenomenon, it is always possible to observe (and then to explain) a phenomenon in its entirety (von Bertalanffy, 1968)

1.2 VSA Foundations

The VSA is finalised to the observation of complex entities. It is founded upon various multidisciplinary pillars, developing its theoretical basis around several key concepts derived from relevant aspects of other disciplines: system thinking (openness); natural and ecological sciences (organic and thereby involving homeostasis and equifinality); chemistry and biology (autopoietics), sociology and psychology (its cognitive aspects), and information technology (providing its cybernetic qualities).

The foundational elements of the VSA are thus system characteristics (like openness, homeostasis, self-regulation, autopoiesis, equifinality, variety, variability, indeterminacy, common finality) and system actions (in terms of adaptation, viability, consonance and resonance, relationship development, complexity, governance, decision-making, context and the improvement of environmental relationships, resource availability).

In considering the system characteristics of the VSA, we can identify 10 basilar principles of its theoretical proposal (Barile and Polese, 2010b) that are rooted in various founding disciplines: i) a multidisciplinary interpretative approach (between holism and reductionism); ii) open systems (from system thinking); iii) system boundaries (from system thinking); iv) autopoiesis and common finality (from chemistry and biology); v) homeostasis and self-regulation (from the natural and ecological sciences); vi)
structures, systems, and equifinality (from the natural and ecological sciences); vii) consonance and resonance (from sociology and psychology); viii) system viability (from system thinking); ix) adaptation and relationship development (from the natural and ecological sciences); x) complexity and decision-making (from sociology and psychology).

Among these, the following concepts are interesting to consider in further depth and are particularly significant in light of relationships management:

**Open systems**
According to the VSA, an open system exchanges information, energy, and matter with the environment in pursuing the system’s goal (Barile, 2008), while a closed system exchanges only energy (with no exchanges of information and matter); an isolated system does not exchange any of these elements. However, there are few isolated systems or even closed ones. Most systems (firms, individuals, districts, nations, customers, markets, and communities) are open systems because they are related to many other systems with which resources (energy, matter, and information) are exchanged.

**Homeostasis and self-regulation**
A system is able to maintain a state of internal equilibrium by adapting within the limits determined by its own structure (Hannan and Freeman, 1977). Living organisms are typically able to preserve their vitality and stability by creating an internal environment that is able to respond effectively to exogenous stimuli. In accordance with this principle of self-regulation in living beings, the notion of system ‘homeostasis’ has arisen (Beer, 1975). According to this principle, a system does not maintain its own specific identity by modifying its internal features excessively to achieve internal and eternal equilibrium. According to the VSA, the homeostasis of a system is determined by both the external normative regulatory environment (e.g., statutory legal requirements) that every system has to respect and the internal self-regulatory environment (such as codes of firm behaviour). In other words, every system possesses an adaptive mechanism that keeps the system in equilibrium within the limits of its structure and the constraints of the outside world (Beer, 1975).

**Consonance and resonance**
Consonance represents the compatibility between systemic actors. It refers to a static vision and indicates potentially harmonious relationships. Res-
onance is effective harmonic interaction, thus referring to the dynamic vision. These conceptual categories are both connected to the structure/system dichotomy. Consonance is “structural” and is linked to relationships. Resonance is instead related to the system, concretising the compatibility between interacting entities.

System viability
According to the VSA, a system’s ability to survive is determined by its capacity to demonstrate consonant and resonant behaviour over time. A viable system can dynamically adjust its structure and behaviour to achieve consonance within its environment and thus preserve its stability. Organisations then are able to preserve their viability and stability, creating their own internal environment able to respond effectively to stimuli at all levels coming from the external environment.

Adaptation and relationship development
To ensure viability, systems must analyse external changes in demand and their competitors’ behaviour. They then must adapt in a manner consistent with Darwin’s theory of the adaptive capacity of organisms for survival. Organisations are considered viable systems if they are able to survive in a particular context thanks to iterative dynamic processes of adaptation initiated through several kinds of internal changes (business adaptation, which involves the relationships and peripheral components of the selected structure; business transformation, which is related to the design of the organisation; business restructuring, which has to do with the organisation plan; and business rethinking, which concerns business ideas and/or changes in business identity) (Golinelli, 2010).

According to the VSA, relationship development among organisations is related to a new interpretative framework of interactions between consonance and resonance that can assist in business survival in the long run. According to the Viable System Model (Christopher, 2007), for instance, competitive firm behaviour is strictly linked to the ability to identify and manage functions and relationships, establishing communication channels, organising information flow, and therefore rationalising and harmonising firm development as aligned with all external relationships.

Complexity and decision-making
Complexity represents is a core scientific and epistemological debate today with connections to all disciplines based on its cross-cutting content. Its prevalence reflects the attention that researchers in different disciplines
give to this issue and underlines the contradictions and incongruities re-
related to methodological approaches and the study of disciplines (Barile,
2009). Complexity is a relative concept, never definable in an absolute
sense but only understandable in terms of specific contexts of reference;
it refers to the qualitative traits of the observed phenomenon, a combina-
tion of multiplicities and autonomies (Barile, 2009).
The concept can be simplified with a holistic interpretation of an observer
in conjunction with the observed reality, just as with networked systems,
where we can detect three parameters of complexity: variety (possible vari-
ants that a phenomenon may present to the observer), variability (an ad-
ditional kind of variety that can be observed over time) and indeterminacy
(linked to the ability to fully understand a phenomenon) (Barile, 2008;
Golinelli, 2010).
By applying this sort of personal interpretive scheme, the decision-maker
can begin to achieve a better understanding of the observed complexity
and achieve viability. In the systems approach, the decision maker,
analysing the structure of his own system and the structure of the supra-
systems, employs attenuating and amplifying organizations’ actions that
are supportive of survival, thus modifying the borders between the system
and the individual supra-systems.
In this framework, the border (and thus the context) appears to be much
more unstable, depending directly on the observer/observed relationship.
Considering system development from the VSA perspective, we can take
into account many considerations related to the concept of and relation-
ships, with the latter referring to the firm’s interactions with its environ-
ment (as a set of business supra-systems) as well as with other interested
entities. Among these aspects, there are some that are particularly inter-
esting: viable organisation governance, environmental relationships and
resource availability.
a) Governance. The governance of viable organisations must direct the
system towards a final goal by transforming static structural relation-
ships into dynamic interactions with other viable systems. The ability
to organise relationships delineates the efficiency of government action,
which is a main characteristic of viable systems, contributing to the
equilibrium of the system (the internal viewpoint), and the satisfaction
of the supra-systems (the external viewpoint).
b) Context and the improvement of environmental relationships. Adopting
the systems approach implies redefining the concept of environment.
The system concept is not connected with the objective sphere; rather,
it refers to a specific point of view that varies from actor to actor; it
strictly depends on the contextualised perception of systems in time and space. “For a given system, the environment is the set of all objects a change in whose attributes affect the system and also those objects whose attributes are changed by the behaviour of the system” (Hall and Fagen, 1956).

c) Resource availability. In the system framework, the availability of every resource may be guaranteed by a satisfactory relationship between the viable firm and its supra-systems, reinforcing the coordination and harmonisation of the relationships created with them (business owners, the financial system, the workforce, clients, etc.), to better manage the acquisition of resources and the improvement of specific skills, enabling firms to create value for their relevant supra-systems.

1.3. The emergence of networking and systemic relationships

According to the Viable Systems Approach, within business development, the identification of external entities is important in potentially providing input and acquiring the planned output and establishing the relationships between the components of the actual structure and the other entities in many different kinds of relationships, such as

- The relationships between a physical components that shapes a given entity in a particular context.
- The relationships between various logical components of an entity in a particular context.
- The relationships between the various physical components and various logical components of the external entity.

In line with a relational view (Gum-messon, 1993; Prahalad and Ramanswamy, 2000) of business performance, network theories consider every actor as a dynamic, operant and active resource that enables reticular/net-worked interactions (Lovelock and Gum-messon, 2004; Achrol and Kotler, 2006), and organisations and their activities are closed to many relationships (Gum-messon, 2008). In this view, system relationships lead business components, behaviour, strategies, policies, and organisations; these relationships are then consciously determined and finalised to necessary mutual satisfaction (Womack and Jones, 2007; Lusch, Vargo and O’Brien, 2007) through systemic consonance and competitiveness (Golinelli, 2010). According to the VSA, the concept of competitiveness (related to system viability) is strictly linked to the consonant and resonant interactions among systems that share their own resources for the system’s benefit in a win-win relationship in order to capture and manage its component dy-
namics, especially with reference to the variation between internal “characteristics” and external “opportunities”. Emerging relationships are very much related to individuals who interpret and realise business missions, strategic actions, and management practices through their values and cultural identity (Golinelli, 2010). This kind of social relations can be defined as a “relational pattern that characterises every individual in a business and that involves personal, business and stakeholder relations” (Polese, 2010); in social relationships, thus, the consensus is favoured when systems are mainly constituted by cohesive, interpersonal, fiduciary, long-term relationships that are based on values rather than rules.

2. Relationships between Business Systems

Much has been written about relationships over time. However, changes in global trends and new dominant approaches call for the reconsideration and evaluation of the role of relationships in business competitiveness and survival within a much more turbulent environment; they are considered a real “distinctive resource” to be valorised and defended. This analysis suggests a sort of evolution within the context of the scientific contributions arising from service theories (S-D Logic and Service Science) – focused on the new definition of service, on the conceptualisation of “service systems” and on the identification of service-oriented relations – and within the context of other theories derived from network approaches that are oriented towards the concept of reticular interactions and aligned to developments in value co-creation processes.

2.1. Relationships between service logics and network theories

With the growing relevance of services in all business activities (including manufacturing), today’s firms are oriented towards service, focusing many of their business functions on service logic based on the evolving concept of “Service”. This service-oriented framework influences business models, decision-making and relationship management, stimulating organisations to continuously analyse business strategies and practices, reviewing their role and its relation to the market (Rullani, 1997; Grönroos, 2000), within our Service Economy (Levitt, 1981).

From a traditional point of view, service is generally regarded as work performed by one person or group that benefits another; it is an activity rather than property, provides assistance and expertise rather than a tangible product, and entails a provider/client interaction that creates and captures value; “normally, an element of service is a process – or a diverse collection
of activities – applicable in principle to business, education, government, and personal endeavours” (Katzan, 2008).

According to Service Dominant logic (S-D Logic), service is defined as the use of specialised competences (operant resources—knowledge and skills), through actions, processes, and performance for the benefit of another entity or the entity itself (Vargo and Lusch, 2008). According to Service Science, Management, Engineering and Design (SSMED), service is considered a system of interacting and interdependent parts involving people, technologies and business activities that are constantly connected to the outside; these components are used to harness the firm’s own distinctive characteristics and to achieve and maintain sustainable competitive advantage (Maglio, Srinivasan, Kreulen and Spohrer, 2006; Maglio and Spohrer, 2008).

In general, “services are intangible activities customised to the individual request of known clients” (Pine and Gilmore, 2000); the related customisations lead to co-productive relationships, and interactions with clients as participants in the service process represent the real key characteristic that differentiates a service system model from the traditional economic transactional one.

Services can also be defined as a series of activities in which resources (employees, physical resources, goods, systems of service providers) are used in interaction with the customer to find a solution (Grönroos, 2008); from this perspective, service involves both a provider and a client seeking and providing solutions, and their relationship can be viewed as a system of parts that interact when a service is provided.

Based on previous interpretations, service can be represented as “a kind of interaction between entities in a reticular system, finalised to improve value co-creation outcomes under a win-win logic inside interrelated processes” (Polese, Russo and Carrubbo, 2009).

Under S-D logic, integrated and relational service provision systems must be reinforced by relationships between organisations. Actors in service ecosystems are conditioned (or positively influenced) by many system elements (like technological, economical, political and social influences); all business processes are therefore characterised by dialogue, continuous interactions, and updating. All business can then be understood as conducting relational service activities. In Service Science, relationships among active participants in service systems (Alter, 2008) are fundamental to sustainable development; hence, all interacting systems should rely on their own environments to provide services.

In the specific vision of systems and related internal and external relation-
ships, network theories also make a significant contribution, clarifying how visible and invisible interactions, common purposes, and resource-sharing can reinforce system performance and development opportunities. In terms of relationships, today we observe how networks can take precedence over single nodes because they cannot be reduced to the sum of individual nodes, links and interactions. It is apparent that organisations are not autonomous entities but rather are dependent upon individuals and the networks of relationships that exist among them (Vicari, 1991). The development of such a form of governance in networks requires certain social patterns to be applicable to enterprises as well as to individuals, requiring a sort of “cultural attitude” that is capable of influencing individuals and thus business behaviour (Polese, 2010). Based on network features, the value of solutions is generated through interaction; the firm’s ability to communicate with its individual customers and its capacity to obtain advantages from them are based upon iterative successful interactions. If a firm does not interact with other actors, it cannot maintain long-term relationships and there will be no sort of reticular system created. In such a case, we would see only a set of simple business units, a potential business centre with stand-alone hypothetical connections, as shown below (see fig.1). Is this a system yet? The VSA refers to the systems in this developmental stage as “embryonic systems” because they have the potential to be effective but are not effective yet.

In this sense, such a system seems to lack the centripetal aggregating forces represented by positive mutual interactions among network participants. In fact, “win-win” relationships develop only through the development and maintenance of relationships with interested parties and through a common willingness to favour co-creation processes (through non-opportunistic behaviour, by creating long-lasting relationships and through shared values). One must recall that “life consists of a network of relationships in which we interact”, (Capra, 1997) and that “life is a network of relations, and so is business” (Gummesson, 2005).

2.2 System Relationships and Service Systems

Developments in global economic trends, such as demographic shifts, self-service and web-based technologies, outsourcing and off-shoring, are transforming the ways of doing things (Maglio and Spohrer, 2008), leading us to understand and manage advances in our ability to design, improve, and scale service systems for business and societal purposes (e.g., efficiency, effectiveness, and sustainability).
Service systems represent value-co-creation configurations of people, technology, value propositions connecting internal and external service systems, and shared information (e.g., language, laws, measures, and methods; Spohrer, Maglio, Bailey and Gruhl, 2007). They represent an assemblage of entities united by some form of regular interaction or interdependence. Every service system is both a provider and a client that is connected by value propositions in value chains, value networks, or value-creating systems (Normann, 2001; Vargo, Maglio and Akaka, 2008). Service systems can be divided into “front stage” systems (related to provider/customer interactions) and “back stage” systems (related to operational efficiency), and service performance relies on both elements, putting people (customers and employees) rather than physical goods at the centre of its organisational structure and operations (Qiu, 2009). Firms and customers are then complex service systems, performing actions in the market with the aim of reaching desired outcomes such as solutions and experiences (Polese and Mele, 2009; 2010).

A service system primarily has to do with customer-provider interactions and is an open system (Golinelli, 2005; 2008) capable of improving its own state and that of others by acquiring, sharing or applying resources with the aim of creating a basis for systematic service innovation. Service systems therefore act as resources integrators, understandable in terms of elements of a work system (Spohrer, Anderson, Pass, and Ager, 2008) within the organisation and through the network, pursuing resource specialisation involving operand and operant ones (Vargo and Lusch, 2008), such as knowledge, skills, know-how, competences, people, products, money, etc.

A service system is any number of elements, interconnections, attributes, and stakeholders interacting in a co-productive relationship that creates
value and in which principal interactions take place at the interface between the provider and the customer (Spohrer, Vargo, Maglio and Caswell, 2008). Service systems are thus capable of enabling connections and interaction among all parties involved within service exchange, and the technological infrastructure upon which they rely smoothens the communication channels between B2B, B2C/C2B, C2C, B2S/S2B C2S/S2C (where B stands for the business, C for the customer, and S for the stakeholder, with the first letter representing the actor initiating the interaction) (Gummesson and Polese, 2009).

The smallest service system is a single person, while the largest is the global economy. A service system is essentially a social-technical system focusing on engineering and delivering services using all available means to realise value for both provider and consumer (Qiu, 2009). It can be simply a software application or a business unit within an organisation, from a project team or business department to a global division; it can be a firm, institution, governmental agency, town, city or nation; it can also be a combination of numerous connected service systems within and/or across organisations (Qiu, Fang, Shen and Yu, 2007).

Because interactions and ties among actors and shared experiences in service systems represent an important part of the system, it is important to deepen relationships within networks, starting with the analysis of the entities (internal and external) participating to the value creation processes of today’s service systems. The constitution of reticular systems depends on the capacity to improve relational connections between Net’s Hub and Business Knots, reinforcing system advantages (shared resources, common finality, group power, etc.) and contributing to the creation of value for the system as a whole (see fig.2).

Source: Developed by the authors
As we can see, the common intention to create a visible system depends on the capacity to contribute to value creation processes in terms of cooperation and to live inside a definable system (or a service value network) not only with simple static reticular relationships but also with improving continuous interactions between system elements where resource allocation, collaborative advantages, alliances, specific roles, and cooperative strategies are essential (Castells, 1996). Furthermore, we can note how this emerging or “developing system” can spring, according to the VSA, from a system in which relationships among systemic actors are still being developed, where the relational patterns among the actors are not fully activated; it is like a performing car with the engines off. Service systems are socially constructed collections of service events in which participants exchange beneficial actions through a knowledge-based strategy that captures value from a provider-client relationship; they are based on a theoretical framework for creating economies of coordination. Research on service systems incorporates a detailed analysis of various diverse service events so as to develop a view of the servicescape (Katzan, 2008). From this perspective, service involves both a provider and a client seeking and providing solutions. Their relationship can be viewed as a system of parts that interact to perform a service. This service system is not simply the sum of its parts; the interactions also form a higher-order construct (Lusch, Vargo and Tanniru, 2009).

In sum, interaction becomes the driver of value, the way through which service systems develop a joint process of value creation: Service systems can create competitive advantage by improving reticular relationships.

2.3 Networked Interactions and Service Value Networks

Continuing to deepen our understanding of relationships’ relevance for business activities and competitiveness, hereafter we attempt to refer to networked interactions according to the new concept of service value networks.

Networking relationships are related to an increase in connections among firms characterised by the exchange of information, continuity in relationships, and a developing sense of commitment, trust, and collaboration (Richardson, 1972). Various terms have been used to describe these voluntary ties among firms and other economic actors, including “heterarchy” (Hedlund, 1986) and “polycentric structure” (Forsgren, Holm and Johanson, 1991); however, the term “network” has now become generally accepted as describing this type of emerging economic entity. It is possible to ap-
approach network research by analysing phenomena in terms of organisational forms including nodes, connections, and aggregating forces as well as net organisational forms (Richardson, 1972); by focusing on the governance of networks and deepening issues related to autonomous nodes, central control, the notion of dynamic equilibrium, and the phenomenon of structural variability management; or by examining network strategies such as resource-sharing and common goal achievement (Jarrillo, 1988).

If we consider the evolution of international models of competitive advantage, we can identify multiple helpful contributions to the value creation process inside observed systems; the traditional supply chain has been replaced by a logic of co-production as in constellation systems or, even better, by new frameworks: service value networks in which organisations’ needs are satisfied within a hypothetical virtuous cycle.

According to the traditional conceptualisation of the value chain, the distinctive resources within a service value network are related not only to individual actors’ capacities, but also to every actor’s ability to reconfigure its own service systems in accordance with its own competitive strategies and with the other actors; thus, every actor works daily to provide benefits for the whole system, and every system is the result of collaborative efforts on the part of its own active elements.

In the present day, resource allocation and distribution, collaborative system advantages and the relevance of alliances, network roles and rules, and cooperative strategies all contribute to the conceptualisation of the service value network (Allee, 2000) in which, according to the concept of “embeddedness” (Granovetter, 1985), economic actors cannot be considered apart from other organisations or their operating context. The activation of reticular relationships between system elements and system government allows for the improvement of dynamic system interactions, strengthening its chances of competing successfully, gaining system advantages and ultimately surviving (see fig.3).

Fig. 3 - A completed system (Stage III)

Source: Developed by the authors
The actual activation of the relational pattern, finally, assists in the realisation of a “completed system” as defined by the VSA – or, essentially, an effective system. To facilitate interaction development and maintain system advantages, every system element must operate synergically to provide stability and equilibrium to all of involved entities (internal or external) and to the system as a whole. Among actors, customers play a key role because they demand a personalised product/service, high-speed reactions, and high levels of service quality, influencing every other actor’s behaviour in this way. Service providers are of course also part of the system, offering different kind of services and often anticipating customers’ needs. Another key element is represented by networks enablers, which favour interactive exchange processes and co-production, facilitating the essential development of relationships. In this sense, Service Systems can be represented as real networks in which the same entities combine their strengths through direct and indirect connectivity because they are oriented towards enduring competitiveness and daily interactions with other external interdependent service systems (Polese, Russo and Carrubbo, 2009). Besides considering the classic dyadic links known to every observer today, one must also consider the less visible relationships among all of the entities involved in network activities (suppliers, enterprises, individuals, clients, stakeholders), which really contribute to the competitiveness of the whole system (Polese, 2009). Each node that is part of the service business processes is a foundational partner and supports the whole system (because “nothing happens in isolation”, Barabási, 2002) in its enjoyment of network advantages (resource-sharing, synergic interactions, common purpose, group power) intended to create global value. Hence, service systems may be really intended to be networks in which the functional interdependencies adopted by every participating entity to face environmental complexity (Richardson, 1972; Hakansson and Snehota, 1995) stimulate interactions in the business, social, and political dimensions of every context. Indeed, focusing on service and on related relational logics, we can note that transactional models are now considered obsolete and that the linear sequential supply chain no longer matters.
3. The of the VSA contributions

3.1 Relational Value-creating Systems in the VSA

Here follows a deeper analysis of the VSA proposal intended to i) detect relationships’ relevance within service value networks; ii) realise the possible role of the system elements involved in the value co-creation process; and iii) understand the rules upon which reticular service systems are based for the benefit of their long-term competitiveness.

According to the VSA, organisations use their own competences and integrate them with other resources to pursue long-lasting shared benefits (value co-creation). This constitutes harmonic behaviour within systemic interactions among networked entities inside service systems, and the goal is to i) classify the external supra-systems (to understand which of them are more critical and influential for business behaviour) and ii) establish a qualitative method of measuring system capabilities to satisfactory behaviour (by defining resonance-accelerating processes based upon affinities that are themselves built on cultural, knowledge, value and other dimensions) (Barile and Polese, 2009; Barile and Polese, 2010a).

As shown below, inside a dense, articulated and complex pattern, we can find many kinds of systems with several differences in terms of features like synergies, interactions, resource-sharing, common finality, value co-creation, service-oriented structures, and viability; these features influence organisation strategies and policies (adaptation capacity, ability to foster potential connections and reticular relations, ability to maintain and improve system relationships within themselves and their system elements, the capacity to manage these relationships and to pursue efficient governance), supporting competitive behaviour in a modern economy (Rust, 2004) and creating the capacity for long-term survival (see fig.4).

In figure 4, we can distinguish the main characteristics of the evolution of business systems as mentioned; they are directly related to relationship development through networked interactions, synergistic relationships, resource-sharing, common finality, and value co-creation.

Decision-making according to the VSA is coherent with complex service system design and networks principles guide. The three theoretical approaches all take into consideration the complex governance mechanisms within technological systems in which ICT infrastructures must work to strengthen organisations’ computing and system performance (Demirkan and Gaul, 2006), enabling complexity management.

The informative variety and variability of possible reticular interconnections within service systems or service value networks are confident to forms of
co-operations and may be interpreted as relational interactions between many system actors. This harmony can be attained only if organisations are capable of mutual cognitive alignment.

At the same time, exploring the processes of service value creation in a network context and how system structure, system dynamics and customer expectations influence services’ “ecosystem’s complexity” (Basole and Rouse, 2008), we can note that service value networks’ complexity depends not only on the number of actors but also on the conditional probability that these actors are involved in delivering service to the consumer (Barile and Polese, 2009).

Regarding the role of the customer inside the production process, as participation by some of the system entities involved in a service network’s value co-creation, VSA consonant and resonant interactions among actors, strengthening value co-creation processes and experiences, represent just a part of the dense system patterns at play and are part of organisations’ viable behaviour as they attempt to increase internal capacities through external resources.

Finally, considering service systems’ typical characterisations and metrics (for processes, resilience, speed, and efficiency, and for structures, complexity, variety, rhythm, and degree – with both used to describe any work system; see Alter, 2008), related connecting and interactive relationships
between events, perceiving a phenomenon as a single unit interpreted from a holistic point of view.

In other words, we are suggesting that the relation between service provider and service client introduced within service logics and network theories may be integrated via a methodology that helps to qualify these relationships both from a design point of view (designing service systems requires the preventive qualification of relationships among public and private bodies, organisations, individuals) and from a government and management point of view (to achieve diffuse satisfactory behaviour capable of promoting network value co-creation).

3.2 Advances in Service Systems, a "viable" perspective

Noting that the VSA is aligned with service logics and network theories related to consumer involvement maximisation, we know that a service-centered perspective creates opportunities for expanding the market by assisting the consumer in the process of specialisation and value creation (Barile and Polese, 2009) and that network’s perspectives create dynamic interaction that influences the design and management of positive interactions among actors. Every level of system development as represented from fig.1 to fig.4 essentially indicates has shown how every system includes several abilities and capacities that in time need to be valorised through systemic interactions via participation in an upper level system or network. From the embryonic stage through their development, systems change, and it is only when systems show effective positive interactions
(classifiable as consonant and resonant relationships) that they may be classified as completed systems with viability traits useful for their competitiveness (see fig.6).

In contrast with the simplicity of the above-introduced theoretical development stages, the business arena consistently confronts firms with challenges and more complicated business developments. Accordingly, it seems important to identify key elements of positive interactions between producers (providers) and customers (users) and determine how businesses can create a competitive offering in such a scenario. In light of the VSA principles, it is possible to analyse viability traits – deepening, for instance, the concepts of homestasis, openness, self-regulation, autopoiesis and equifinality as well as their effects on business behaviour insofar as they stimulate resource availability, system connections, consonance and resonance, and viability (see fig.7).

Based on the VSA, looking at the changes in firm performance when environmental contingencies occur, we can see that firms are able to survive in a particular context only if they improve their capacity to evolve and to make operations adherent to external changes. Indeed, the openness of investigated systems (service systems for service logics, value networks for network theories, viable systems for VSA) homeostatically leads to dynamic adaptation based upon external changes influencing business behaviour because their survival is directly connected to the ability to look for and foster dynamic satisfactory evolution (equifinality).

To put it in greater detail, the VSA contributes to a new way of directing and managing inter-firm relationships, strengthening the possibilities and the qualities of systems’ evolutions by focusing upon smart, adaptive and proactive behaviour. As the world is becoming better instrumented and interconnected and more intelligent, systems must become people-centric,
information-driven, e-oriented, and satisfaction-focused; this phenomenon should encourage people to collaborate and innovate (Qiu, Fang, Shen and Yu, 2007).

Thus, to improve firm competitiveness and system relationships, we must look for dynamic models based on multi-criteria decisions supporting systems that are capable of reaching satisfactory outcomes for decision makers as they search for continuous feedback on production processes to align their traits with consumers’ needs, considering the influence of the critical resource owners (supra-systems) and the relevance of sense-making (Weick, 1995) as crucial for context comprehension and for consequent system action that creates satisfactory processes with stakeholders, owners of critical resources (Barile, 2009).

4. Final remarks and future research

Today, viable system management has to lead systems towards a common final goal (system common finality) by transforming static structural relationships into dynamic interactions with other systems. It can also be said that the ability to govern relationships determines the efficiency of government action as the main characteristic of viable systems (Barile, 2000). To manage and coordinate system equilibria within its own pattern of re-
relationships, top decision-makers have worked to defend their interests (threats) and/or increase resources (opportunities) and guarantee its strength over time, favouring system needs satisfaction (resource availability). It is necessary to cultivate a continuous learning process to achieve effective, positive results, and changes should be constantly monitored and evaluated. Governments must consider system elements’ capacities (intra-system relationships), the interference of other closed and interested systems (inter-system relationships) and supra-system influences (supra-system relationships), structuring and coordinating their own tools, techniques and procedures and reinforcing firm knowledge and inter-firms communications to improve system competitiveness and chances for survival. This is a co-design solution, a co-production process; it is co-creation (Barile and Polese, 2009).

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