

Reflections on Health Management from a Systems Perspective: A Reinterpretation of the Italian National Health System

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Abstract

The provision of health services represents a set of central activities in the social context since, through the offer of prevention, diagnostic, treatment, care and rehabilitation services, they allow the pursuit of the ultimate goal of any health system, the well-being of the population and public health. The considerable relevance of the topic, supported by the ethical-social purposes that the health system ultimately assumes, make it an important field of analysis in business studies in general, and in management in particular, considering the economic activities developed by the many actors involved in the dispensing process. The importance of these activities and their strategic nature make them a highly regulated context, in which over time the reference legislative framework has developed and articulated for the determination of reciprocal relations between the actors, for the regulation of the flow of resources, for the control of medical activities to protect citizens. However, the proliferation of laws and regulations at the various levels of government (community, national and regional) has contributed to increasing the interpretative complexity of the health system. This work proposes the use of the Viable Systems Approach (VSA) for the interpretation and management of complex phenomena in the health sector, concerning the Italian National Health System (NHS). The deepening of the implications arising from the analysis enables the VSA as a useful approach to the advancement of research in health management, through the understanding of complexity, stimulating the observer with analysis methodologies capable of better understanding the health context under exam.

Keywords: viable systems approach (VSA), national health system (NHS), complexity

1. Introduction

The provision of health services represents a set of central activities in the social context in as much as, through the services of offer of prevention, diagnostic, treatment, care and rehabilitation, pursuing the ultimate goal of any health system, the well-being of the population and public health. The considerable relevance of the topic, which is supported by the ethical-social purposes, in the last analysis assumes that the health system is an important area of analysis in general in business studies, and in management in particular, in consideration of the importance of the economic activities developed by the multiple actors involved in the disbursement process. Moreover, in recent decades, the sector has been characterized by strong changes that over time, have transformed the political-institutional structures, the way it functions, the organization at the territorial level, the relationships between actors who, in turn, have been subject to changes in shape and type (Del Vecchio, 2003; Polese et al., 2018).

Furthermore, trends have emerged among the actors that have favored market logics, characterizing the sector from competition mechanisms typical of other industrial and/or service sectors (Troisi et al., 2019a). The above-mentioned changes, over time, have stimulated public and private actors in the health sector to evolve the underlying logic and look for new, and more competitive, organizational models. To address these competitive innovations, the need for new models of analysis of the health phenomenon has arisen but also for theoretical and, possibly managerial ideas, capable of directing the observer, or the director, or the manager or the simple operator, to a greater understanding of the intrinsic complexity of the system. The importance of these activities, and their strategic nature, make them a highly regulated environment, in which over time the legislative framework of reference has developed and articulated for the determination of the reciprocal relationships between the actors, for the regulation of the flow of resources, for the control of medical activities to protect the citizen. However, the proliferation of laws and regulations at the various levels of government (community, national and regional) has

contributed to increasing the interpretative complexity of the health system. In the end, this work proposes the use of the Viable Systems Approach (VSA) for the interpretation of phenomena and the management of complexity in the health sector, concerning the Italian National Health System (NHS).

In this perspective, the specific contribution of the Viable Systems Approach related to the study of systems operating in conditions of rapid change and instability, as opposed to what could be the study of systems in stable conditions. In fact, the VSA, based on the 'viable system model', from this it draws its inspiration, but it differs from it, mainly because it addresses the implications of governance and management deriving from the high environmental dynamism, characterizing the environment of social economy of today in which complexity appears to be the central element with which socio-economic actors are confronted. The rest of the work is structured as follows: paragraph 2 presents the theoretical background, concerning the origin, evolution and characteristics of the Italian SSN; paragraph 3 focuses on the methodology and on the VSA proposed as a key to understanding the Italian health system; paragraph 4 highlights and discusses the results resulting from the rereading of the Italian SSN dynamics using the VSA prepositions; paragraph 5 is devoted to conclusions and ideas for future research.

2. Theoretical Background

2.1 *The NHS in Italy: The Origin and Its Evolution*

Starting from the years that have followed immediately the constitution of the Unitary State until the modification of Title V of part II of the Constitution, two distinct approaches to the National Health Service have nonetheless established themselves. The first approach is based on the enhancement of the constitutional principle of social solidarity, where the basic assumption is that the right to health is inevitably linked to the condition of citizenship, making the enjoyment of the Essential Levels of Assistance (ELA) unacceptable by citizens according to the choices of local governments. It follows that the regionalization does not conflict with the organization of the NHS understood as a set of functions and assistance activities of the Regional Health Services. It is precisely in this way that the ELAs act as the binder of the system and their distinction (at the national level) constitutes the premise for organizational autonomy at the regional level. On the other hand, the second approach focuses on the individual and the personalization of the response, based on the individual needs deemed more easily satisfying in conditions of somewhat (or un) regulated competition.

This approach, alongside vertical and horizontal (Polese, 2013) subsidiarity, underlines the aspect of private initiative and the laws of the market, reinterpreting the autonomy of the Regions as a function of lightening the health organization itself, which now acts as an instrument of rupture between the right to health and organization of the NHS on a public basis (Catellani, 2010). Also as a result of the organization described and the set of laws issued by the Italian Republic Constitution to date, the health system is separated from the system of local autonomies and from some policies such as those relating to the environment, the territory, local communities, to families and finally to the individual citizen. After the constitutional revision of 2001, the determination of the fundamental principles in health matters was reserved exclusively to the state. The guiding principles on which the NHS has been based since its establishment are universality, equality and equity. In practice, the NHS applies these principles through the promotion, maintenance and recovery of the physical and mental health of the entire population, with a capillary organization throughout the national territory whose services are provided by Local Health Authorities (LHA), by Hospitals and from private affiliated structures: all guarantee the population uniformly the ELAs.

Therefore, concerning the services of the NHS, the criterion for selection is represented by the appropriateness, understood as clinical appropriateness of the services and as a provision of the service more effective, but at the same time with less consumption of resources (efficiency), with evident repercussions on the system's ability to ensure fairness in the provision of services. It is easy to imagine that a system subjected to excessive demand, not valued and potentially inappropriate, is unable to provide everyone with what is most needed. At the same time, the provision of services under the most economically onerous regime prevents the finalization of resources towards the areas of greatest need. Precisely, following this perspective the traditional idea of equality, according to which individuals with the same state of health (or need) must be treated equally, has gradually been accompanied by the belief that individuals with worse health or with greater need must be treated more favorably - vertical equity. This development of the principle of equality has made it possible to focus on three different areas in which the principle of equity must be concretely implemented: access to health benefits and services, health outcomes for individual subjects, the allocation of resources and services as needed.

2.2 *The market logics of the Italian NHS*

In recent years, the hospital network has undergone an incisive restructuring process, which has entailed, firstly, a conspicuous reduction in the number of public and equivalent hospitalization facilities and, secondly, substantial

maintenance, followed by a progressive increase, in the last four years of accredited private structures. Recent years have seen a gradual reduction in the average size of all types of companies, in particular, Polyclinics and Hospitals Companies (HC). Since 1992, the Local Health Authorities (LHA) have undergone a progressive reduction and, at the same time, an increase in size. In recent years, the need to reallocate resources and services towards the territory has resulted in considerable strengthening of the territorial structures, whose management is increasingly entrusted to private actors (limited assistance dialysis centres, hydrothermal establishments, mental health centres, maternal and child clinics and district centres) and semi-residential structures. Primarily, NHS was created to implement the right to health services, including prevention, treatment and rehabilitation, through the interaction between public authorities and private institutions. The “structure” of the Italian NHS is very complex. There are different hospitalization facilities and their distribution is not homogeneous. The health service is guaranteed to all citizens, but accessibility suffers from some logistical difficulties and significant territorial disparities to the disadvantage in particular for the Central-SOUTH Regions, both in terms of the number of hospitalization facilities and regards the percentage of LHA.

Table 1 describes the geographic distribution of the hospitalization facilities in 2011. It is noted that the number of private health facilities is significantly higher than that of public facilities, 494 public hospitalization facilities compared to 676 private facilities (of which 612 accredited and 64 non-accredited). The data relating to public structures show a prevalence of direct management facilities by the LHA (384 in total) distributed mainly in the Central-Southern regions (76%). On the contrary, most of the hospital units are located in the North (68% of the total).

The IRCCS (Institutes of Hospitalization and Scientific Care), on the other hand, are concentrated mainly in Lombardy, 25 (of which 20 are private) out of a total of 60 (of which 38 are private). A very significant figure concerns the University Polyclinics, public and private (8 and 2 respectively) which are present only in Lazio and in the South.

Table 1. Number of hospitalization facilities by type

Regions of Italy	Direct management facilities directly at LHA	Hospital Companies	Establishments of Hospital Companies.	UHC integrated NHS (Polyclinic Univ.	IRCCS public	TOT. Structure of recovery public	IRCCS private	Polyclinic Un. private	Hospitals classified	Private garrisons - LHA	Research entities	Private accredited nursing home	TOT. STRUCTURES OF RECOVERY	Private unaccredited nursing home.	TOTAL CC PRIVATE	TOT. STRUCTURE OF PRIVATE RECOVERY
Piemonte	22	8	15		0	30	2			7		39	48	9	48	57
Val d'Aosta	1	0	0		0	1	0					1	1		1	1
Lombardia	1	29	97		5	35	20		6			72	98	12	84	110
PA Bolzano	7	0	0		0	7	0					5	5	1	6	6
PA Trento	7	0	0		0	7	0		1			6	7		6	7
Veneto	21	2	3		1	24	2		6	6		15	29	1	16	30
Friuli VG	8	3	7		2	13	0					5	5		5	5
Liguria	6	0	0		2	8	1		2			4	7	2	6	9
Em. Rom.	21	5	5		1	27	0					45	45	2	47	47
Toscana	32	4	4		0	36	2		2	1		29	34	3	32	37
Umbria	8	2	2		0	10	0					5	5		5	5
Marche	13	2	5		1	16	0					13	13		13	13
Lazio	37	5	8	1	3	46	5	2	8	2		62	79	29	91	108
Abruzzo	18	0	0		0	18	0					11	11		11	11
Molise	3	0	0		0	3	1			1		3	5		3	5
Campania	33	7	15	2	1	43	1		3	1		64	69	5	69	74
Puglia	28	2	3		2	32	3		2			34	39		34	39
Basilicata	7	1	2		1	9	0					3	3		3	3
Calabria	29	4	9		1	34	0					30	30		30	30
Sicilia	54	5	12	3	1	63	1		1	1		64	67		64	67
Sardegna	28	1	1	2	1	32	0					12	12		12	12
Italia	384	80	188	8	22	494	38	2	29	18	3	522	612	64	586	676

Source: Oasi elaboration on SDO 2011 data, Ministry of Health.

The distribution of beds on national level is not homogeneous for the entire country, as shown in Figure 1.

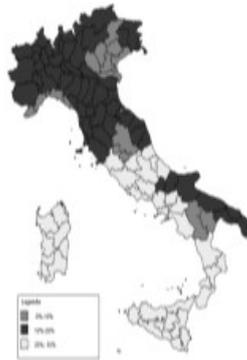


Figure 1. Percentage of accredited private beds out of the total number of beds for acute and non-acute in 2009

In general, in Italy the greatest number of useful beds is present above all in hospitals and polyclinics, which are often operating in collaboration with universities for this reason. From a dimensional point of view, the types of structures that have the greatest number of beds used in 2009 are the HCs (considered together with the HCs integrated with the University) and the UHCs integrated with the NHS (Public University Polyclinics) with an average, respectively, of 628 and 610 places in 2009. On the other hand, the directly managed facilities, IRCCS and classified Hospitals are placed at an intermediate dimensional level, with 189, 223 and 211 beds respectively and, finally, private nursing homes reach on average just 83 accredited beds. Table 2 also shows how, in addition to the number of structures, between 1997 and 2009, it is registered also a reduction in their size, especially for the HC (-24.7%), the UHC integrated with the NHS (-28.7%) and accredited nursing homes (15.8%).

Table 2. Average size (no. Beds used for ordinary hospitalization) by type of hospitalization facility (1997-2009)

Structure typology	1997	2000	2005	2008	2009	Variation 1997-2009
HC and HC integrated with University	834	774	660	630	628	24,7%
Directly managed LHA facilities	199	184	193	192	189	-5,0%
UHC integrated with NHS	856	832	620	621	610	-28,7%
IRCCS public and private	243	247	224	227	223	-8,1%
Classified hospitals	234	223	211	213	211	-9,8%
Accredited nurses home	98	89	85	84	83	-15,8%

3. Methodology: The VSA as an Interpretative Contribution of the NHS

The Viable Systems Approach is a research field developed in the Italian scientific community in the last 15 years (Golinelli, 2000, 2005, 2008, 2011; Barile, 2000, 2006, 2008, 2009) which represents an advance compared to the proposed Viable System Model by Stafford Beer. The VSA, developed as part of business studies, has enhanced ideas from multiple systems theories finalizing them to the study of the company; among these stand out the theories on open and closed (Von Bertalanffy, 1950) systems, those on socio-technical (Emery et al., 1960) systems, the law on 'necessary variety' (Ashby, 1958) and the dynamics of systems (Von Foerster, 1981). VSA is a multidisciplinary theory deriving from various disciplines including the concepts of: i) homeostasis and equifinality drawn from ecology (Hannan & Freeman, 1977); ii) autopoiesis, drawn from chemistry and biology (Maturana & Varela, 2012); iii) cognitivism, drawn from sociology and psychology (Clark, 1993); iv) self-regulation and information technological, taken from the studies of cybernetics. Indeed, according to Golinelli, the

VSA perceives any organization and socio-economic subject as "... an open, finalized, organic, cognitive, cybernetic system" (Golinelli, 2005, p.33). Therefore, the approach, offers a new conceptualization of phenomenological reality, capable of synthesizing instances derived from philosophical, sociological, mathematical, physical and biological ideas. The purpose of the VSA, has been high-level since its origins since its main objective is to develop and propose a methodological approach capable of facilitating the understanding of the observer struggling with the dynamics of systems in conditions of complexity. In fact, the VSA, postulates that such systems have the goal of achieving systemic viability through a sustainable governance approach, within a dynamic context that offers many opportunities but places as many constraints. In this context, the VSA immediately proposed itself as an interpretative methodology useful for stimulating *governance* models, capable of offering contributions deriving from systemic thinking for the understanding and management of socio-economic organizations, due to the fact that this approach offers a general framework that takes into account both the structural configuration and the dynamic functioning. Its general schemes, in fact, appear useful for the interpretation of complexity, due to the fact that these schemes show its systemic nature and support the investigation of its implications for *decision making* (Barile et al., 2017).

The VSA allows the identification and qualification of the relevant actors, who influence decisions in complex contexts, and the actions that must be pursued in order to achieve sustainable behavior. The fact that it offers both a methodological key for understanding complexity and a governance approach to complexity itself highlights the potential of the VSA in supporting the decision-maker's abilities in uncertain conditions (Polese et al., 2018). On the other hand, complexity implies uncertainty and choices lacking rational bases (Barile, 2009b) and, therefore, acting in such contexts requires companies and decision makers a strong endowment not only of experiential techniques and tools (Troisi et al., 2019b), but also of interpretative schemes sufficiently general to be compatible with any problematic situation or decisionmaking context. In this sphere, the usefulness of the VSA is manifested in supporting the decision-maker, since it suggests an orientation to the decision when all the traditional approaches do not seem adequate in determining the choices. In order to illustrate the concepts, schemes and criteria underlying the VSA, the basic elements of this approach are proposed below, as a general interpretative scheme. The Viable Systems Approach is a scientific contribution to management theories originating in Italy and strongly embedded in the European tradition of systemic studies in numerous disciplines. It focuses on the analysis of the relationships between socio-economic factors in search of viable interaction conditions (Golinelli, et al., 2012).

Furthermore, the basic assumption of the VSA is that each entity (be it an organization or an individual) can be considered as a system made up of multiple parts or structures (Parsons, 1965) and, therefore, it is made up of a series of interconnected sub-components with the aim of achieving a common result. In this context, the VSA facilitates the analysis of the relationships existing between the internal components of the organizations, as well as an analysis of the relationships between the organizations themselves and the other systemic entities that populate the reference context.

According to the VSA, an organization develops as an open system characterized by many components (tangible and intangible), by an interdependence and communication between these components, by the activation of these relationships to achieve systemic goals. The VSA, developed as an interdisciplinary theory capable of catalyzing both a holistic and a reductionist approach (Von Bertalanffy, 1950), analyzes the ability of systems to manage their relationships in accordance with shared rules for the satisfaction of all entities involved in the system (Golinelli, 2000). In this framework, the VSA, tries to interpret the construction and organization of the system, the interactions and relationships of the system, the behavior and evolution of the system. It tries to enhance a vision placed between reductionism and holism, with a shift from the parts to the whole. In other words, it considers the observed reality as an integrated and interacting set of phenomena, in which the individual properties of the isolated parts become indistinct, while the relationships between the parts (and the events produced by them through the interaction) become relevant. By adopting a reading that postulates "rationally connected systemic elements" (Luhmann, 1990), the VSA observes, and therefore tries to explain, the phenomenon in its entirety. Therefore, with these aims, it proposes 10 fundamental concepts (see tables 3 and 4) described below (Barile & Polese, 2010).

Table 3. The 10 fundamental concepts (FC) of the VSA – description and comments

	Fundamental concepts of VSA	Comments
FC1	Individuals, organizations, social institutions are systems as interrelated sets of parts directed towards a specific purpose.	People, families, communities, networks, businesses, public and private organizations are complex entities that can be qualified as systems.
FC2	In the context of the recursion of systems, each system (of level L) identifies a series of reference supra-systems, located at a higher level: level (L + 1), and a series of related sub-systems, located on a lower floor (L-1).	The hierarchy between systems is the result from time to time of the specific observation perspective, which can make the placement of the systems vary between the various observed planes. The identification of supra-systems and sub-systems for a system is, therefore, subjective.
FC3	The interpretation of complex phenomena requires interdisciplinary approaches and must combine the reductionist vision that analyzes the specific constituent parts (including the relationships between them) with the holistic vision capable of observing the whole.	In the passage from the parts to the whole and vice versa, it is necessary to focus on the contribution of relationships (structural, static) and interactions (systemic, dynamic) between the parts since these play a fundamental role within the observed phenomenon (reality).
FC4	Systems are open because they relate to many other systems with which they exchange resources. The boundary of a system acts as a filter with respect to external complexity. It is changing and includes the set of activities and resources that the system needs in the context of its evolutionary dynamics.	Nothing happens in isolation. The exchange of information and services of open systems is essential in the context of the evolutionary dynamics of each system. Within the confines of the system, not only proprietary resources are used, but resources available and, therefore, accessible to the system although owned by other systemic actors.
FC5	Viable systems are equipped with autopoiesis and selfregulation: they have the ability to self-generate internal conditions which, through self-regulation mechanisms, make it possible to achieve equilibrium conditions, synthesis of internal possibilities and external constraints.	Every viable system is autopoietic, it is important to say that, it is capable of internally generating new conditions. It is also self-organizing (possible changes are always within the limits of structural tolerance) in the sense that it constantly seeks to align internal complexity with external complexity. These two distinctive features are fundamental for sustainable behavior, and therefore for the satisfaction of constraints and opportunities.
FC6	Each organization is characterized by a structure made up of a set of components with assigned roles, activities and objectives that are carried out consistently with constraints and rules. A system emerges from the structure through the transformation of relationships into dynamic interactions with sub-systems and supra-systems.	The transition from structure to system involves a transition from static to dynamic and the focus shifts from individual components and relationships to a holistic view of the observed reality. From the same structure, multiple systems can emerge as a result of the different combinations between internal and external components according to the various objectives that the system can pursue.
FC7	Relationships between viable systems can be consonant and resonant. They are consonants when there is potential compatibility between the components of the systems. Resonant relationships develop when there is an effective harmonic interaction between systems.	Consonant relationships refer to the static moment (referred to the structure) in which only the possibility of establishing a harmonic relationship can be evaluated. The resonant relationships refer to the dynamic moment (referred to the system) within which it is possible to evaluate the interactive harmony.
FC8	The viability of the system is determined by its ability to develop over time a behavior in harmony with sub-systems and suprasystems through the development of consonant and resonant relationships.	The concept of the viability of a system is therefore linked to its competitive capacity, to its capacity to create value.
FC9	Business dynamics and the search for viability are linked to dynamic and repeated processes of structural and systemic modification to align the internal structural potentials with actual contextual needs.	The evolutionary dynamics of viable systems highlights how these are in constant realignment between internal conditions and external needs.
FC10	Viable systems must continuously pursue an alignment between external complexity and internal complexity in order to better manage the tumultuous developments that impact on viability. The decision-maker in the cognitive processes is influenced by value categories, interpretative schemes and information units.	The alignment between internal and external complexity is achievable through a cognitive alignment, a path of approaching knowledge that passes through the phases of chaos, complexity, complication and certainty (through abduction, induction and deduction paths).

Source: Barile & Polese, 2010.

4. Findings and Discussions

The 10 fundamental concepts of the VSA can be adopted as interpretative schemes and contributions in numerous application fields of management, including healthcare. With this goal, a reading of the 10 fundamental concepts of the VSA follows, contextualized in the health sector.

FC 1 – Systems Approach

The VSA affirms with FC1 that the various socio-economic actors, be they individuals, families, networks, businesses, public and private organizations, are all interpretable as systems. In healthcare this assertion can be translated into interpreting which systems the various actors operating in this context, such as patients, clinical operators, specialist and general practitioners, communities, ASLs, clinics and hospitals, research, pharmaceutical companies and pharmacies, etc.

Thus, in the Italian health context there are: competent Ministries (Ministry of Health), Superior Council of Health, Higher Institute of Health, Higher Institute for Prevention and Safety at Work (ISPESL), Pharmaceutical Agency, Local Health Authorities, Hospitals, Districts, Residential Health Care Residences, Municipalities, Voluntary Associations, Region, State, Orders professional, scientific communities, trade union organizations and universities, citizens, suppliers of goods and services to health authorities. Such actors are systems as interrelated sets of parts oriented towards a specific purpose (Beer et al., 2005)

FC2 – Hierarchy of the systems

The FC2 of the VSA states that the hierarchical relationships of each system are a function of the observation perspective. It follows that the positioning of a system at a super-ordered level, with respect to the main system, implies that it is a supra-system with respect to the latter. Likewise, the positioning of a system at a lower hierarchical level implies that this is a sub-system of the system itself. Therefore, the identification of supra-systems and subsystems is subjective and it depends on the observation perspective: by identifying the system at the level L it is possible to identify higher-order supra-systems, placed at a level L + 1, and lower-order subsystems which, placed at a level L- 1. Supra-systems lead and hold critical resources for system viability; subsystems are coordinated, directed and managed by the system itself. Reading the health context through the hierarchy of systems is, indeed, illuminating and the parallel with the levels of the NHS comes naturally.

The national level, which has the role of direction, control and coordination of health policies and the supervision of clinical and scientific research activities, represented by the Ministry of Health, the Superior Health Council, the Higher Institute of Health, the Institute Superior for Prevention and Safety at Work (ISPESL), from the Medicines Agency. Then there is a second level, the regional level, located on a lower level than the first; the regional bodies operate on this level, including the Department of the Regional Health Management, which is responsible for the organization of health facilities and services and ensuring essential levels of assistance (ELA). At a level that is still subjected there are also local health companies, accredited private structures and any other actor operating on a territorial basis, such as pharmacies, pharmaceutical companies, diagnostic centres, nursing homes, general practitioners, etc. The actors described exchange goods and information. An example of this is the information flows for monitoring activities and reporting that the hospital exchanges with the Region and the LHA. The same hospital exchanges information with its suppliers for the purchase of goods and services (drugs, aids, equipment, clinical and other services, other).

Furthermore, for the provision of the primary service, the hospital interacts with general practitioners and citizens. The LHA interacts with the accredited and affiliated health authorities for the accreditation procedures and subsequently for the control procedures. Still, it seems worth noting the reference to the collaboration between Ministries and Government Bodies for the provision of benefits and new incentives, or even the collaboration between LHA and general practitioners, as regards the exchange of personal data, personal and historical data of patients, etc. Finally, with regard to the process of interaction between the academic world and clinical research, researchers and diagnosticians exchange programs, research and experimental studies, sharing experiences and know-how at the interface between scientific and applied research, in order to achieve ultimate goal of so-called translational medicine, namely the discovery of cures for human diseases.

FC 3 - Reductionism and holism

FC3 appears fundamental in its proposal for the synthesis and enhancement of the holistic vision and the reductionist vision of the observed phenomenon. The concept is interesting when interpreted in the complex healthcare context. For example, let's look at the relationship between a prescriber and a patient. A reductionist vision would stop the analysis at the relationship between the two interlocutors, analyzing patient satisfaction and

the results of the treatment or treatment prescribed, its cost or its side effects. However, this analysis, would be highly incomplete if devoid of considerations associated with a broader, holistic vision of the reality under consideration. How can we not include an analysis of the existence of more up-to-date, more valid and therefore more effective treatments and cures than those prescribed? What may happen if the drug indicated by the doctor was more expensive than alternatives proposed by other pharmaceutical companies? Furthermore, there are cases in which treatment does not appear to be the best solution, represented instead by more or less important surgical interventions. Finally, the prescribing doctor and the patient himself have the task of pursuing behaviors and actions capable of preventing diseases and dysfunctions (Ciasullo et al., 2018), therefore these elements are necessary to acquire an exhaustive picture of the effective and concrete virtuosity of the prescriber-patient relationship.

FC 4 - Open systems and system boundaries

FC4 of the VSA assumes that nothing happens in isolation and that the development of systems occurs through the interaction between them. In the health context, it implies the observation of how crucial it is for the achievement of the systemic purpose (public health) the contribution of all the actors interacting with each other, and the provision of their respective resources, which, in this perspective, lose a purely proprietary connotation, since the availability of these resources for the higher purpose is desirable. In this regard, the perception of the boundaries between health workers, interrelated in evolutionary mechanisms of an interconnected and reticular nature, vanishes.

FC 5 - Autopoiesis, homeostasis and self-regulation

FC5 emphasizes the autopoietic nature of each system, or its ability to generate new internal conditions to achieve equilibrium with external conditions. This ability, like the homeostatic and self-regulatory characteristics, appears to be fundamental in any dynamic context and, therefore, particularly profitable in the observation of the healthcare context. The latter, is certainly characterized by a high rate of change and technological innovation, the result of scientific research and the constant search for new cures and treatments, the updating of therapeutic protocols and, ultimately, the evolution of the pathologies that afflict humankind. In such a changing context, how can a pharmacist, for example, consider his knowledge static and invariant over time? He will have to inform himself, study, follow refresher courses, in order to be constantly up to date with the minimum information equipment necessary to correctly perform his role. The same is true for the self-regulation mechanisms implemented by the pharmacist in the context created in recent years in Italy with the increase in competitive pressure represented by the emergence of pharmacies and with the diversification and qualification of the services offered in the pharmacies themselves. This latest evolution of traditional pharmacies has been made possible by self-regulation mechanisms that have reconfigured the components and resources available, increasing the benefit and services offered to customers, as well as qualifying the role of the pharmacy in its territory.

FC 6 – Structures and systems

The VSA through FC6 suggests an iterative shift of the focus from the structure to the system and vice versa, in the search for understanding the phenomenon observed by enhancing both a static and a dynamic vision. Hence, in planning the specific components and the relationships between them of a hospital company, for example, it will be fundamental, according to the population served and the relationships between the company itself and the other structures in the area, to size an offer able to guarantee the essential levels of assistance. This reductionist, static, potential vision of the hospital company must however be integrated with a holistic, dynamic, effective vision of the company itself, materialized through real interaction with the population served. It means that the set of structural components (doctors, nurses, hospital wards, clinicians in general, etc.) provides services that can more or less satisfy patients, depending on the interaction both between components endogenous to the system “hospital company” and between the system and other territorial actors (Regional Department, Pharmacies, Local Health Authorities, accredited / affiliated structures, Diagnostic centres, etc.). At the same time, it is observed that a vision limited to the effect (result), to the concrete provision of health services, appears inadequate for an understanding of the dynamics in progress, since it must also be integrated and strengthened with the search for the causes and determinants that have generated the service. Therefore, the concept of structure and system, and the continuous, repeated transition from the static structural vision to the dynamic-systemic vision strengthen the ability to understand the healthcare context.

FC 7 - Consonance and resonance

The FC7 of the VSA correlates the consonant relationships to the static and structural vision of the observed reality, through which it is possible to evaluate only the possible positive interaction between the parties. On the other hand, FC7 itself attributes, resonant characteristics to the interactions referred to the dynamic (systemic) vision in

which it is possible to evaluate the concretization of effective harmonic and positive interactions, that is able to satisfy the various parties involved. The transition from consonant to resonant interactions is illuminating for a greater understanding of complex phenomena, such as health. The process of providing the service, in fact, is the result of an initial design and an effective response with the delivery itself. In addition, the observer in order to maximize the ability to understand the phenomenon, its strengthened by an analysis directed both towards the structure and the possible positive relationships (consonance), and towards the system, and furthermore the actual positive interactions (resonance). Consider, for example, the design of a hospital emergency room. From the structural point of view it will be necessary to design and define the minimum equipment in terms of structural equipment, machinery, human resources, medical specialists, physical environments. Then, it will be essential to design interaction and communication through information systems, both with the territory and between the emergency department and all the other hospital departments. An analysis of these components highlights the possible positive relationship between the interlocutors and, therefore, any consonant relationship between the interested parties. However, this happens when the hospital is not functioning. The observer's (as well as the patient's) entry into the emergency room, and the assessment of how the before mentioned structural components actually behave, in interacting with each other for the provision of the service, brings out considerations related to the concrete realization resonant phenomena, since they are harmonious and satisfying for the actors involved. On the other hand, it is not possible to arrive at the concrete observation of resonant experiences in the absence of a design and planning capable of conferring the minimum requirements and the right structural equipment to the components of the hospital in question.

FC 8 – Viability of the system

The VSA and FC8 introduce the concept of viability referring to the natural inclination of each system to its own sustainable and long-lasting path. This is true in the health context when the purpose of each actor included in it is interpreted. If it is true that the overall purpose is public health, it is also, equally true that this objective can only be achieved with the contribution of all the actors, each with its own specific purpose. FC8 suggests that the contribution of health professionals to the achievement of the overall purpose is expressed with greater incisiveness if and only if each system manages to pursue its purpose in a compatible and convergent manner with the purpose of the health system itself. Moreover, the reasoning is “scalable” by passing between the hierarchical levels that describe the relationships between systemic actors in health care and ennobles the reading of the behavior and dynamics that characterize each actor. Since it is possible to attribute to the latter a double responsibility, in order to pursue its own purpose and contribute to public health in the long term. Only by adopting such a perspective and following this behavioral model, each actor can increase their own systemic skills and pursue paths of viability.

FC 9 - Adaptation and development of relationships

The FC9 of the VSA correlates with the evolutionary dynamics of viable systems in search of a continuous alignment between internal potential and external expectations (Golinelli et al., 2010) Therefore, it proposes an impulse adaptation of healthcare professionals in constant search of a positive interaction with all other interlocutors. The dynamism of the health system, as well as the high degree of interconnection between actors (who share resources) for the achievement of public health, places the emphasis on enhancing the relationships between actors within the health network.

FC 10 – Complexity and decision-making

FC10 appears necessary for understanding the healthcare context as it highlights the importance of learning and knowledge paths in conditions of uncertainty and complexity. The decision-maker operating in health care should be oriented to broaden the knowledge and information bases of his analyzes and to strengthen the knowledge, both specific (reductionist) and general (holistic), of the observed phenomenon. The more incisive this cognitive path will be, the more the health care worker, as a decision-maker, will be able to operate in conditions that pass from chaos, to complexity, to complication and, finally, to certainty (Barile, 2009a).

5. Conclusions

The interpretative analysis of the NHS by using the 10 FCs of the VSA highlights that healthcare companies do not create value in isolation (Hakansson & Snehota, 1995) but they are engaged in cooperative and sharing processes that include many actors and resources (Pralhad & Ramaswamy, 2004). Therefore, the 10 FCs of the VSA can be applied to the current healthcare context, since they are related to a concept of health as a shared value among many actors. This conceptualization shifts the focus from production to use, from product to process and from transaction to relationship, thereby increasing our sensitivity will be attributed to the complexity of roles and systemic actors. The latter, appear as integrators of resources, to contribute to the systemic benefit of the context in which they operate (Payne et al., 2008). The implications of VSA for healthcare shows how value in healthcare

is based on the ability of actors to exchange service and experiences with each other and dynamically satisfy needs (Polesse, 2009). It intrinsically implies the need for a system vision (Pels et al., 2012) and the search for conditions of viability in these systems (Golnam et al., 2011). It is precisely for this reason that the VSA is positioned as a useful approach to the advancement of research in health management. The contribution of the VSA to the understanding of complexity stimulates the observer and enriches him with analysis methodologies to be able to understand better the healthcare context in question. First of all, it appears essential to identify the health actors involved in the problem under observation and, therefore, to consider their perspectives.

Furthermore, it is advisable for the decision maker, or the observer, to choose the level of observation and the perspective adopted. However, these choices are changing over time, in the sense that, for a full understanding, it is probable that the observer must not only vary the level of observation (national or governmental plan, regional plan, business plan), but also, within the of each level, diversify the observation by adopting the different perspectives of the actors operating there. Regarding the ability of a system operator to understand the phenomenon, it is possible to observe if it is influenced by the lesser or greater involvement of the health worker himself. In other words, a specialist doctor expert in a particular surgical technique will evaluate radical innovations in a different way that make it outdated and / or inadequate, regardless of the skills and knowledge possessed, compared to a colleague indifferent to the evaluation itself.

These analyzes are invalidated for the professional involved who, as part of the system, is prone to a behavioral resilience that inhibits his evaluation and decision process. On the other hand, in this same case, it is worth observing that the more the specialist is experienced, competent, knowledgeable of the elements underlying the problem itself, the more he will be able to qualify the system as simple or complicated by delegating the complexity or the perception of chaos to less competent decision makers (Barile, 2009a). In fact, in difficult and / or complicated conditions, the health system actor, albeit with difficulty and commitment, moves in a context of “*problem solving*” in which it will always be possible to find the support of consolidated models, techniques and tools in able to suggest the solution. On the other hand, in conditions of complexity, this same actor finds himself immersed in a context of “*decision making*” in which the variables, in addition to not being measurable, could even be unknown, and the accredited techniques and models, if adopted, could be directed towards inadequate and unsatisfactory solutions. Whoever is called to make decisions in these conditions is not able to determine with certainty cause-effect links in the observed reality and, therefore, is unable to fully understand the emerging problems.

The result is a disorientation (Saviano & Di Nauta., 2011) and a tendency to rely on criteria and actions based mainly on emotional factors (Barile, 2009b). Regardless of considerations inherent in complexity in general, VSA represents for the healthcare context a methodology capable of strengthening the ability to understand the reality observed, although complex. In fact, it stimulates the emergence and identification of the crucial actors with whom it is necessary to interact (relevant supra-systems), it clarifies the logic of interaction with these systems also, stimulates a more incisive coordination of the internal components (sub-systems), and all for the benefit of the sustainability and viability of the system, or the pursuit of public health. In addition, through the VSA it is possible to reduce the complexity of the healthcare environment in which the various actors operate by ordering, simplifying, the complex conditions that characterize it. Furthermore, the relevant changes, stimulated by a customer-oriented culture, consumer behavior, globalization, ICT, suggest the need for a rethinking of healthcare management that contrasts the tendency to interpret healthcare as a super organized and isolated system. Precisely for this reason, it is clear how much health management can benefit from a broader perspective of interpretation of the discipline itself, through a transition from a reductionist descriptive approach to a holistic and generalizing approach (Gummesson, 2005).

It can be assumed that managerial research in healthcare reflects the evolution from a reductionist vision to a systemic vision, supporting a managerial approach and thus defining health as a system based on service (Golinelli et al., 2012). On the other hand, the research for service in general and the new managerial models try to overcome the traditional models of the last century and the discipline currently seems to have reached a turning point in search of more systemic and integrated approaches (Gummesson, et al., 2009). For this reason, there is a growing attempt to better use fragments of knowledge through their reconceptualization, consequently making the knowledge of the complex more coherent and presentable as it is never easy to ennoble the theory and place it on a higher level of abstraction (Gummesson, 2012). As mentioned before, VSA does not intend to replace and does not propose itself as a theory that solves the governance and management models to be adopted in healthcare, rather it supports research and practice in healthcare, integrating these theories with the impulse of systemic nature. The work does not propose the VSA as a set of operational models to be applied and does not propose optimal solutions, rather the approach is in general a ‘method to be adopted’ to increase the effectiveness of the operational

models of management, already consolidated, which are aimed at understanding the healthcare context. Therefore, the ASV as such, if used alone, is unable to resolve any issue of a practical nature.

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