

GOVERNING LOCAL AREA DEVELOPMENT THROUGH DYNAMIC PERFORMANCE MANAGEMENT

Towards an inter-institutional outcome-based perspective.

Several attempts of local areas development fail due to a predominant attention to the internal performance of public organizations. The perspective of local area development may enhance performance management in public entities by considering: a) their outcomes in the local area; b) the inter-institutional relationships actable with other local areas' organizations to achieve such outcome; c) the improvement of the activity of other social institutions, enterprises and families, through networking and trust. This paper proposes a dynamic performance management (DPM) conceptual model to govern local area development and includes a case study of the Integrated Water System of Agrigento, Italy.

Keywords: Dynamic Performance Management (DPM) systems, local area development, social capital, outcome, public organization.

1. Introduction: Performance and outcome in actual public entities

Over the last two decades, the public sector institutions have been subject to the application of the principles of accountability and transparency in public administration, advocated since the early 90's by New Public Management (NPM). Such movement has resulted in the progressive establishment of structures in public companies and formalized operational mechanisms for the design and adoption of "performance management" systems (Bianchi and Rivenbark, 2013). At first, these systems attempted to quantify the effects produced by public policies through the typical stages of planning, measurement of results and performance evaluation (Bergamin Barbato, 1991; Bouckaert and Halligan, 2008; Brunetti, 1985; Flamholtz E., 1996; Mussari, 2001; Van Dooren et al., 2010). At present, they find more and more application in the design phase of the policy itself: the performance management is shifting from collecting and reporting of data to using them for selecting policy alternatives that present the best performance simulation.

At an institutional level, performance is assessed primarily in relation to the effects produced by decision-makers on their own institution. At the inter-institutional level, performance is assessed in relation to the effects produced by decision-makers on the wider system, e.g. either a bounded territorial area or the industry to which they belong (Bianchi, 2010). Despite the fact the inter-institutional level of performance shows a growing interest among private sector companies, it is still a rather undiscovered territory for public entities.

The reasons that have prevented such discovery are traceable in the features of stability, division in sub-units and impersonality of rules concerning the structure of bureaucratic organizations. In particular, three sets of dysfunctions have been pointed out by March and Simon (1993) and Merton (1949), and reported by Salaman (2001): "The first derives from the emphasis on control. This can prompt rigidity of behavior and defensive routines. The second focuses on the implications for the behavior of sub-units. Division of task and responsibility can elevate departmental goals above whole system goals – that is, lead to sub-optimizing behavior. And thirdly, as a result of impersonality of rules the minimal acceptable standard can become transformed into target and behavioral norms. Rules and procedures can also become ends in themselves". Such dysfunctions may explain how still today the performance evaluation in public administrations operates in most of the cases according to a bureaucratic logic whose performance indicators are formal parts of organizational P&C and do not reflect the real outcome generated in local areas.

An outcome represents a specific result (or objective) a program wants to achieve. An outcome is not what the program actually produced itself (the output), but the consequences of those products and services in the local areas of competence. The awareness of public organizations of the outcome generated in the local area may allow avoiding the closure of such organization vis-à-vis local area and open to this a perspective where it is an active player of local area development.

In relation to the awareness of outcomes generated in the local area, it is possible to distinguish between different approaches in public performance. Such approaches may be identified, firstly, through an analysis of

the degree of public organization commitment to be beneficial to the local area. By using this criterion, two types of approaches may be envisaged: a) The organization that considers its performance in terms of compliance with internal indicators such as cost efficiency, financial balance, and stability - set from the top of bureaucratic structure: the interaction with the recipients and the commitment to local areas are strictly limited; b) The organization “market-oriented” that sees its performance also in the shape of an outcome generated for recipients: such organization has effective performance management systems that include internal indicators of performance and outcome indicators to check the level of service provided to recipients and the effects generated for the local area.

Secondly, further approaches to the public performance may be recognized by analyzing the level of coordination of strategies and actions with other public or private entities to fulfill institutional activities. Therefore, two types of approaches may be further identified: a) The organizations that run its activity in the absence of coordination with other institutions; b) The organizations that run their activity within a network of institutions.

Matching the two criteria in the matrix below, one can distinguish four kinds of public organizations with four approaches to performance. The first is that of a “Stand alone” organization: characterized by a low commitment to the local area development, low coordination with other institutions and low interaction with recipients. Its vision of performance is basically focused on internal economic and financial indicators.

COMMITMENT TO LOCAL AREA DEVELOPMENT	HIGH	OUTCOME ORIENTED	LOCAL AREA DEVELOPMENT ORIENTED
	LOW	STAND ALONE	COORDINATION BY LAW
		LOW	HIGH
		COORDINATION	

Figure 1: The matrix of the approaches to the public organizational performance

The second one is that of a “Coordination by law” organization featured by a low commitment to local area development that runs its activity in coordination with other institutions, where relationships are set by the top of the bureaucratic structure or by law. The vision of performance is similar to that of “stand alone” organizations. The third is that of an “Outcome-oriented” organization: featured by a commitment to the local area development, the performance is assessed in relation to internal indicators of performance and outcome indicators to check the level of service provided to recipients and the effects generated for the local area. The last one is that of a “Local area development-oriented” organization (“outcome-oriented”) that runs its activity within a network of institutions and is able to broaden its outcome perspective by taking into consideration “cross-institutional” dynamics to achieve the outcome in its local area. Local area planning is enhanced through a shift from a “fixed-goal” approach to a “process-based” approach, which may trigger the participation of main stakeholders into the planning activity.

2. A dynamic performance management (DPM) system for developing local areas

In the previous paragraph, four approaches were underlined regarding public organizational performance according to the intrinsic structure and vision of the organizational activity. Within the upper right quadrant of the matrix, the “outcome-oriented” public organizations are included. Such organizations are the most suitable for local area development since their policy makers “identify those strategic resources which most determine

success in the environment, ensure that the endowment of such resources is satisfactory over time, and keep a proper balance between the different relevant strategic resources” (Bianchi, 2010; Bianchi and Rivenbark, 2012; Bianchi and Williams, 2015).

To this end, such organizations may experience shortcomings in terms of effective analytical tools. Traditional Performance Management (PM) systems often fail to capture the dynamic complexity of managerial decision-making. In fact, “they may omit to consider a number of relevant factors influencing organizational performance. Such factors can be associated with delays, non-linearities, intangibles, and to the unintended consequences on human perceptions and behavior” (Bianchi et al., 2013). Moreover, public planning requires a “process-based” approach including dynamics of the local area’s main stakeholders to increase the effectiveness of public policies. Thus, a “dynamic” perspective is required by nature of the activity itself of the “local area development oriented” organizations. This implies the “identification and analysis of end-results, value drivers, and related strategic resources’ accumulation/depletion processes, according to a “cause-and-effect” perspective. A feedback analysis may allow decision makers to better frame the relevant structure underlying performance and, consequently, to design and assess a set of alternative strategies to adopt” (Bianchi et al., 2013).

To support decision-maker strategic learning processes and policy design, traditional PM frameworks may be combined with System Dynamics (SD) modeling. This represents the core of DPM systems. In relation to the aim of this paper, DPM may sustain policy makers in adopting a broad enough perspective to understand the inter-institutional driving forces affecting achieved results in local areas (Bianchi, 2015). It may also allow a deeper comprehension of how delays influence strategic resources, achieved results, and become a key issue to manage performance in dynamic complex systems (Forrester, 1969).

The DPM is based on the “instrumental view of performance” (Bianchi, 2012) that explains: a) How strategic resources’ accumulation and depletion processes are triggered by the use of different policy levers affecting performance drivers; b) How performance drivers affect outcome indicators; c) How outcomes will affect endogenously strategic-asset accumulation and depletion processes (Bianchi, 2012).

By applying the “instrumental view of performance” to DPM systems for local area development, it follows that the activity of policy makers should be run according to the following steps: a) Identification of a local area’s strategic resources, the underlying strategic horizon is evidently the long term since is related to the local area’s assets and not directly to end-results; b) Identification of drivers to develop local area strategic resources through policies, such drivers are necessarily associated with critical success factors (Bianchi, 2012); c) The activation of drivers produce end-results; d) End-results increase endogenously the stock of strategic resources.

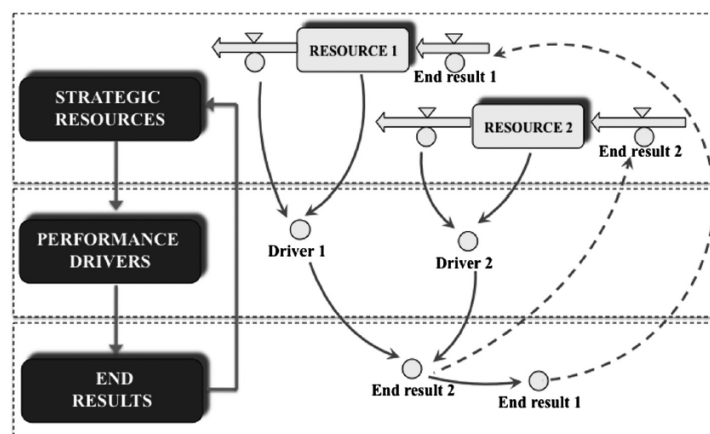


Figure 2: Scheme of the instrumental view of performance in DPM systems (Bianchi, 2016)

The process of accumulation and depletion of strategic resources can be modeled respectively as in- and out-flows of strategic resources (represented as stocks). In- and out-flows change over time according to the end-results produced by public policies, thus end-results provide an endogenous source to the accumulation and depletion processes affecting strategic resources. End-results are fashioned according to performance drivers that are measures of factors on which to act in order to produce end-results. The stock and flows structure of DPM systems allows for taking into consideration the time dimension of the process of accumulation and depletion since flows operate at a rate per unit of time.

DPM may be applied to govern local areas' development by considering the "cross-institutional" dynamics responsible for local area development. Such dynamics belong to four main interdependent sub-systems: a) the organization system, b) the institutional system; c) the political system; d) the socio-economic system (Borgonovi, 1996; Bianchi et al., 2010).

The first sub-system relates to processes, roles and responsibilities, planning and reporting, career and reward/incentive schemes) inside each organization. In a perspective of a local area the activity of such sub-system is enhanced (or hampered) by the activity of other sub-systems with whom an organization in the public sector interacts (Bianchi et al. 2010). The institutional system, composed by the rules and legislative schemes, codifies in a formal way the relationships among a local area's organizations while an informal political system defines how power is actually exerted and how the different roles which are ruled by the institutional system are played. Ultimately, both the institutional and political systems are an expression of the emerging (or leading) culture and values arising from the underlying wider socio-economic systems.

In a local area, the sub-systems seen above behave in a way so as to influence the development or the depletion of the local area's strategic resources. When the four sub-systems cooperate each institutional decision maker is able to increase the mix of strategic resources and such increase is not obtained by reducing the endowment of the wider strategic resources in the local area. (Bianchi 2012).

3. Social capital as local areas' strategic resource

The World Bank (2008) defines social capital as "the institutions, relationships and norms that shape the quality and quantity of a society's social interactions." The growing interest in social capital results, in part, from empirical evidence pertaining to the role of networks and norms of mutual support in contributing to higher quality community governance as well as economic, social and personal development (Healy, 2002). The relationship between social capital and economic growth has been outlined by several authors (Putnam et al., 1993; Putnam 1995, 2000; Portes, 1998; Woolcock, 1998, 2000; Woolcock and Narayan, 2000; Narayan, 1999; Narayan and Cassidy, 2001) as well as institutions (World Bank, OECD). The aforementioned authors have also shown the potential of the concept of social capital in order to understand differences in economic growth among nations.

Adopting an institutional view (which inspires this present study), social capital can be understood as an attribute of society, and as a quality of networks and relationships enabling institutions to cooperate and act collectively (Putnam et al. 1993). Within this framework, social capital is based on the trustworthiness of public and political institutions, and on cooperation relationships among public and private institutions. For these reasons, social capital also facilitates the achievement of higher levels of efficiency and productivity within society (Mateju, 2002; Leonardi, 1995; Day, 2002). Such benefits arise from interactions at meso- and macro-levels of network aggregation, and create two types of social capital according to Woolcock (1998): a) "Bridging" social capital defined by ties among large groups of people from various levels of society. b) "Linking" social capital defined by the social and political environment that shapes social structure, i.e. the macro-level of institutional relationships among society's institutions as well as the political regime, the rule of law, the court system, and civil and political liberties. This focus on institutions characterizes the work of Douglass North (1990) and Mancur Olson (1982). Their vision, as well as that of the present study, resides in the fact that public institutions have a critical effect on the rate and pattern of economic development (Grootaert and van Bastelaer, 2001).

Considering the above, social capital may be considered, as it is, a local area strategic resource to be increased at least in the same measure of tangible capital. In particular, social capital reduces transaction costs between parties (belonging to the same or different type of institutions) who do not know each other. Furthermore, norms of reciprocity help to contain free-riding behavior in some institutions to the detriment of others. Lion (2005) has even considered social capital as an essential factor of production.

The contributions of the literature thus distinguish two fundamental end-results that increase social capital stock. On the one hand, networks and social structures and, on the other hand, shared norms, values, trust, and beliefs. It follows that the wider the network are and the levels of trust, the more local areas will benefit from higher quality community governance as well as economic and social development.

Developing network and trust has two implications for policy makers. The first concerns the network: the local area development requires the recognition of a plurality of institutions, outside the public organization, influencing policy success. This fact leads to the recognition that an organization does not operate alone but rather within a network of institutions, that policy needs to be fostered.

The second implication concerns the trust among the local area's institutions. The second element of social capital is strictly connected to sustainability of public policies. This has been analyzed with regard organizational strategies, by the theory of "holistic development". It is based on the assumption that a single action performed by an entity, either an individual or an organization, produces four types of effects or, in other words, it could be analyzed in its four dimensions (Sorci et al., 2007, Wojtyla, 1982): a) The action itself: it includes the immediate scope, the achievement of an objective result; b) The intentional or reflective one: it includes the action's capacity to improve or worsen the person or the entity that puts it into effect; c) The relational one: the action's capacity to improve or worsen the person or the entity who receives it; d) The socio-environmental one: the action's effects on society and the economic environment.

The "holistic development" theory excludes the maximization of a single success' dimension (e.g. profits, surplus in public accounts or debt consolidation) preferring an appreciable degree of achievement of all of them.

Since a holistic development strategy reconciles all dimensions of business success and creates benefits for all local area institutions, it consequently promotes trust, collaboration, shared norms and beliefs, mutual obligations, perceived fairness, reciprocity, transparency and network among local area institutions. Therefore, when public organizations operate according to the holistic development theory, they promote trust and, consequently, social capital otherwise decreases it.

Ultimately, the issue of measurement of social capital is addressed since it is relevant for the building of the following DPM system concerning Agrigento's local area. Measurement in the social sciences is an inevitably tricky business. Theories such as social capital comprise constructs that are inherently abstract and require subjective interpretation in their translation into operational measures. Such operational measures are invariably indirect surrogates of their associated constructs (Narayan and Cassidy, 2001). In the case of social capital, scholars have overcome the issue of measurement with the use of proxies, i.e. variables whose behavior can give a plausible measure of development (or depletion) of social capital. Proxies have been used in the research developed by Krishna and Uphoff (1999), Narayan and Pritchett (1999), Brem and Rahn (1999), Uslaner (2001), Grootaert (1998), Andriani and Karyampas (2009), Putnam (1993), Paldam and Svendsen (2002), Knack and Keefer (1997), and World Bank (2008). Nevertheless, different measurement methodologies adopted (quantitative, comparative and qualitative) have prevented the emersion of a commonly accepted measurement method.

4. The case of Integrated Water Service (IWS) of the Province of Agrigento, Italy

Girgenti Acque S.p.a. is today the concessionaire of the Integrated Water Service in the Province of Agrigento, on the basis of the concession signed on the 27th of November 2007 following the privatization of water utilities in Sicily. Before, the IWS management was fragmented among municipalities, too small to carry out maintenance to the network. Only a small part of the consumption billed to customers was actually collected by municipalities, a fact that determined heavy losses that were regularly offset by the Italian State through transfers. In addition to conceding the networks, the concession started in operating parameters for tariffs, equipment endowment and the return on new asset investments which must not exceed 7%.

The management activities of the IWS regarded the collection and conveyance of water, the management of networks (aqueducts and sewers) and plants (purification, treatment, sewage, and water lifting) of the 43 municipalities of the province of Agrigento. The reason of such aggregation resided in an integration and optimization of water management, aiming at more investments for a continuous improvement of the service for the benefit of the local area.

Today, a total of 27 municipalities are managed by Girgenti Acque since some municipalities have not handed in their network against concession provisions. In this case, the company acts as a wholesaler of water to municipalities that thereafter provide the service to customers.

The case of the IWS of the Province of Agrigento is interesting given the number of public and private entities involved in Agrigento's local area development: a) Italian State: by Law 36/1994 parliament established

the Optimal Local Environments (OLE) and the Integrated Water Service (IWS) within each OLE. The Italian State is mainly responsible for the rule of law through tribunals, police, public agency scrutiny and the fiscal police. The State is also a recipient of the concessionaire of IWS through the income of national taxes. b) Region of Sicily: Regional Law 10/1999 has adopted State law 36/1994 in Sicily. Sicilian OLE, coinciding with the territories of the nine provinces, were determined by the decrees of the President of the Region n. 114/2000 and n. 16/2002; Presidential Decree n. 209/2001 has established the organizational provisions. The Region of Sicily is responsible for the authorization protocols of local investments, the issue of calls related to European Union funded investments and the administrative law tribunal. The Region of Sicily is also a recipient of the concessionaire of IWS through the income of regional taxes. c) Optimal Local Environments (OLE) of Agrigento is the Regional Agency charged with the management of the Agrigento's IWS concession. Forty-four members compose its board: the President of the Province of Agrigento and the 43 mayors of the municipalities included in the OLE. d) Municipalities: old concessionaires of IWS in their local areas. e) Local political parties: entities trying to accumulate consensus among citizens and power in local governments. f) Girgenti Acque: concessionaire of IWS and water utility provider. g) Local companies: businesses to which Girgenti Acque entrusts the construction and maintenance of aqueducts and plants. h) Families: companies' workforce and end-users of the IWS.

The aim of this research is to assess whether the development of Agrigento's local area, embracing institutions belonging to different sub-systems, is sustainable. Otherwise, does each institution pursue its own performance and the increase of its strategic resources is obtained by reducing the endowment of local area's strategic resources? This research aims to enlighten the dynamics that may foster or prevent the development of local areas.

4.1 Dynamic hypothesis*

The building of the DPM system may start from the local area's strategic resources whose development depends on interactions between organizational, institutional, political and socio-economic sub-systems. In the previous chapter, it was shown that the relationship between social capital and economic development, thus, in a local area's outcome perspective, two main strategic resources may be identified: social capital and tangible assets. Such strategic resources are represented by stocks whose accumulation or depletion essentially depends on end-results of actions undertaken by each local area's sub-systems. Social capital stock changes according to the results obtained in network building and trust among the local area's institutions while tangible assets according to private and public investments; the second is allowed by tax revenues which in turn depend on local companies' economic performance.

End-results are consequences of performance drivers depending on policy levers inside of each local area's sub-system. Trust and network changes, end-results positively or negatively affecting social capital, depend on performance drivers of each institution in the socio-economic environment of reference. Such performance drivers are represented in the DPM system by: a) families' income, b) companies' economic performance and public facilities, c) public entities' tax income and d) respect of mutual obligations represented by the number of disputes. In turn, such performance drivers depend on upward institutions' policy levers and behavior such as local government regulations, local parties' behavior and public entities promptness in supporting economic activity. In particular, this last factor not only affects network and trust but directly the economic performance of enterprises through public agencies efficiency and effectiveness.

An improvement of performance drivers regarding public entities, which benefits economically the local area, is triggered by a public commitment to developing the local area (in an outcome perspective). It similarly occurs when the local area's political parties perceive their responsibility for fostering trust in their local area. Otherwise, as in the case of Agrigento's local area, political parties may foster distrust to gain consensus from citizens: in the past, political campaigns have included promising free water while recently some mayors have even invited their citizens to not the invoices of the IWS concessionaire that operates in force of a public concession. Public performance drivers are not only connected to the commitment of public entities and parties

* In this chapter, the build of the qualitative model of the Agrigento's local area is provided while, in Chapter 4.2, the model analysis is performed through graphs of the local area's performance drivers.

to develop local area, but also to the means available to public entities to be invested in the local area. Such means, obtained through taxation, depends on companies' economic development as illustrated in Figure 3 by loop R9b.

Local area strategic resources behavior arises from a combination of major feedback loops along which act different institutions. Feedback loops may be reinforcing or balancing. A reinforcing loop is a cycle in which the effect of a change in any variable propagates through the loop and returns to the variable reinforcing the initial change. A balancing loop is a cycle in which the effect of a change in any variable propagates through the loop and returns to the variable with a change opposite to the initial one so to lead the system in a balanced condition.

They are 9 main reinforcing loops identifiable in the Agrigento's local area through the building of the DPM.

R1, R2, R3 are three loops whose strength depends on behavior of political sub-systems. In the case of Agrigento's local area, parties, in order to increase consensus among citizens, have pushed for new issuing of laws limiting and complicating the management of the concession of IWS as the Regional law 19/2015, even contested by the Italian State. Moreover, they have fostered into population a broad sense of disappointment with the IWS concessionaire and invited people to adopt deviant behavior such as to leave invoice unpaid and claim continuously against the activity of concessionaire. These phenomena have increased the number of local laws that limit the application of the rule of law of the concession, the number of disputes and the amount of bad debts while the level of service of IWS has increased over time due to investments of the concessionaire. The result is an impoverishment of the network and trust among citizens (who believe that they have been betrayed by institutions), local companies (the concessionaire and its local suppliers for the real ineffectiveness of the concession) and regional agencies like the OLE that, because of political pressure and continuous claims of citizens, delays its interventions set up in the concession to support the activity of the IWS concessionaire.

Both the number of disputes and the amount of bad debts affect the economic and financial balance of the IWS concessionaire. In turn, poorer performance by companies (of the concessionaire and local suppliers) reduces families' income and, as illustrated by loops R9a and R9b, the endowment of the local area's tangible assets through lower public and private investments.

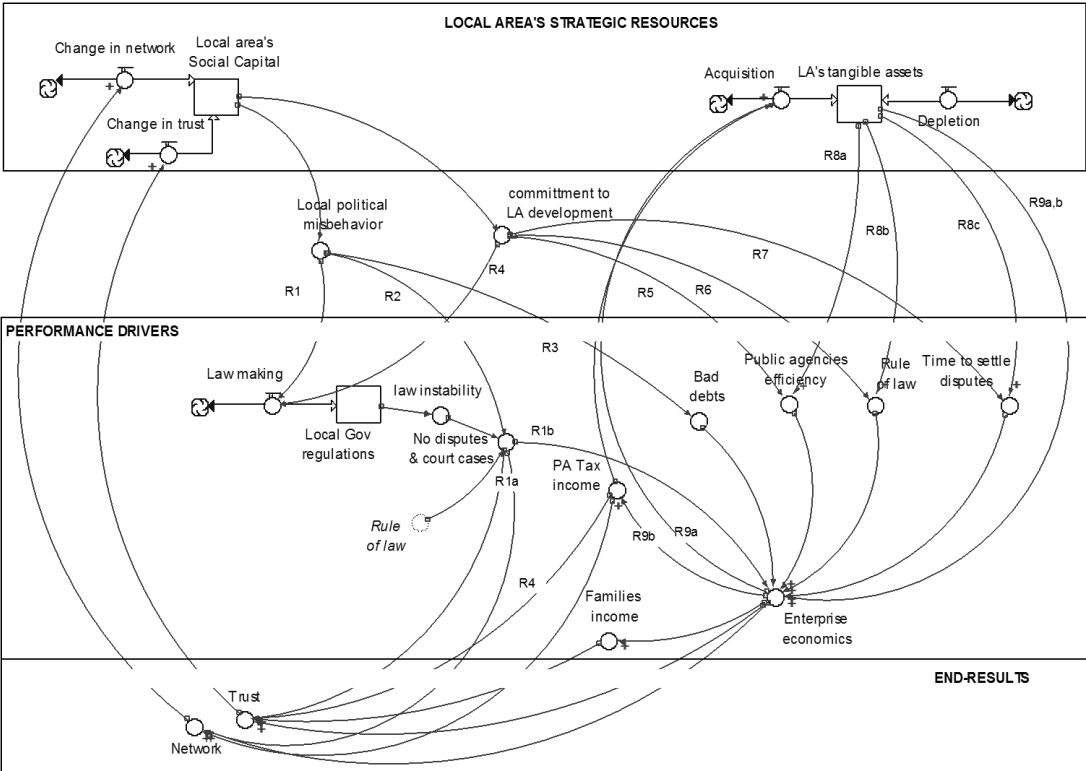


Figure 3: DPM system of Agrigento's local area

R4, R5, R6, and R7 are four feedback loops whose strength depends on the quality of governance and by the level of public institutions' commitment to develop the local area. If such awareness and commitment are high, public institutions operate to simplify regulations (loop R4), to increase efficiency and effectiveness of their services (loop R5), to enhance the rule of law (loop R6) and to reduce the time to settle disputes (loop R7) in order to benefit the local area by providing a real and prompt application of law. The improvement of public services firstly affects the economic activity of the local area's institutions, thus benefiting the downward tax income and local area assets endowment due to the public and private investments. Secondly, such improvements influence trust and cooperation (network building) of local area institutions. In the end, an increase of local areas' social capital is reinforced by the reiteration of loops pertaining to the commitment of public institutions, companies' competitiveness, and trust within the local area.

R8a, R8b, and R8c are three variants of the increase of public services efficiency due to local area infrastructure. Such improvement allows enterprises to work better and, consequently, more local area asset endowment due to public and private investments.

R9a, R9b loops work in a similar manner as with those indicated previously: more local area asset endowment increases enterprises' performance which further increases local area investments through tax income and private investments.

The feedback loops identified above provide an explanation of how end-results of network and trust, increasing endogenously social capital, originate from the behavior of a local area's institutions belonging to the four sub-systems described above. Such behavior affects the local area's performance drivers that that can be duly measured as proxies of the change in the local area's network and trust. Ultimately, such changes provide a measure of the accumulation and depletion of social capital.

4.2 Model analysis

The above model illustrated how performance drivers are affected by endogenous dynamics identified in 9 major reinforcing loops. By reiterating such loops over time, the model explains how an initial absence of commitment of a local area's public agencies and political parties triggers a critical exponential growth in the behavior of performance drivers. These are responsible for more and more negative end-results and an acceleration in the depletion of social capital.

a) Behavior of loops R1, R2, and R3

Such loops show a reinforcing of negative behavior due to the poor performance in the number of disputes, court cases, bad debts and legal stability caused by the influence of local parties. Some facts may help the comprehension of loops' behavior: a) On 25th March 2008, through the concession of IWS, all 43 municipalities of the Province of Agrigento had to hand in their networks. At of today, 16 of them are yet to comply. Local authorities have not intervened to establish the rule of law, so two long legal cases have been started and continue until today due to lengthy dispute resolution time frames; b) While the concession established the parameters to allow an increase of tariffs, local parties have used this to accumulate consensus among citizens and gain power in the municipalities by fostering deviant actions such as paying a concessionaire's invoices with long delay, leave them unpaid, or even filing thousands of disputes and court cases; c) Local parties have started to push local governments against the concessionaire. This has led to continuous attacks to limit the activity of the concessionaire till the Regional law 19/2015 that, against State law 36/1994, Regional law 10/1999 and the concession, stated that water is a public good and municipalities may organize the service independently from IWS concessionaires. d) Following the Regional law each of the said 43 Municipalities communicated a formal exit from the concession.

Following these facts, the model reports exponential growth in the behavior of performance drivers included in loops R1, R2, and R3 due to local political parties' misconduct. Except for commercial disputes, all of the performance drivers displayed above show an exponential growth which is typical of reinforcing loops. In the following graphs are illustrations of the number of court cases per year against the IWS concessionaire (Figure 4); accounts receivable and bad debts (Figure 5); the number of legal notices for payment and commercial disputes (Figure 6).

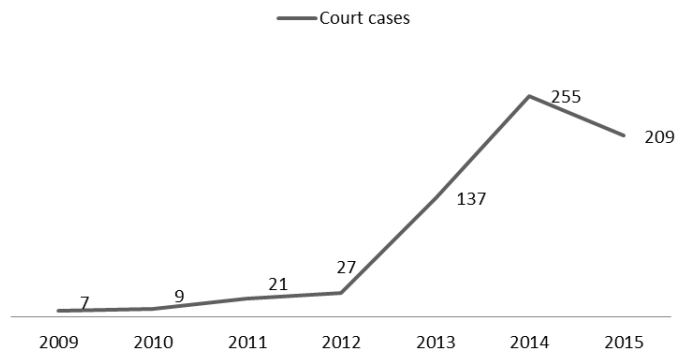


Figure 4: Girgenti Acque's court cases (source Girgenti Acque 2016)

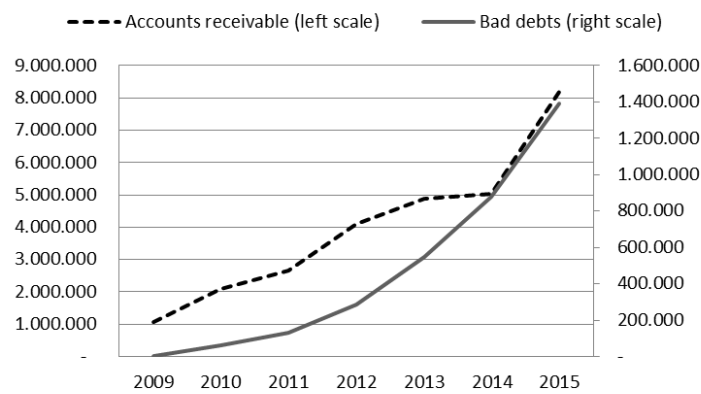


Figure 5: Girgenti Acque's financial performance (values in Euro, source Girgenti Acque 2016)

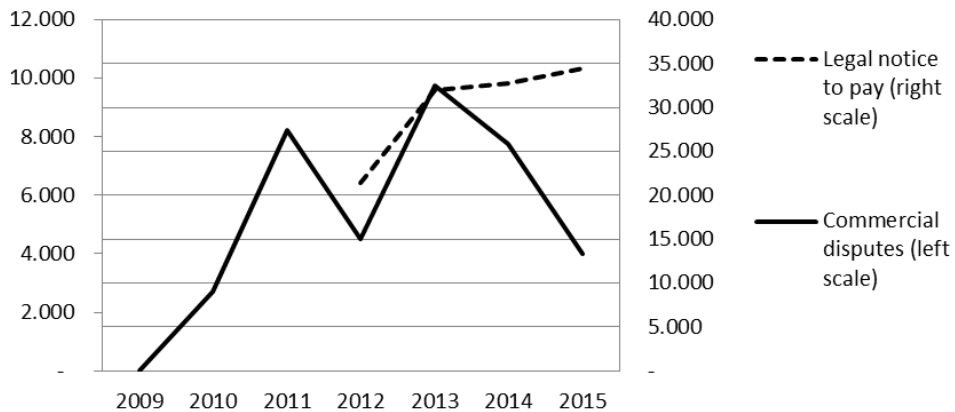


Figure 6: Girgenti Acque's legal notices to pay and commercial disputes (per year, source Girgenti Acque 2016)

The reinforcing loops analyzed above contribute to the depletion of social capital and of tangible assets within the Agrigento local area. By reiteration of such reinforcing loops, the model in Figure 9 will show an exponential decay in the behavior of social capital due to the exacerbation of relationships among the sub-systems in the local area.

b) Behavior of loops R4, R5, R6, and R7

Such loops show a reinforcing of negative behavior due to the poor performances in terms of rule of law, duration of dispute resolution and public agencies' efficiency depending on public institutions' commitment to develop the local area. In relation to the first performance driver, the case of the Agrigento's local area shows an

incapacity of local authorities to uphold the rule of law settled in the concession while a measure of second one is given by the average time to resolve disputes: 522 days in the court of Agrigento versus 208 days in Alessandria (Ministero della Giustizia, 2014), which has a court of the same size for the numbers of cases, judges and local area inhabitants. As a measure of public agencies' efficiency, Figure 7 reports the amount of investments in Agrigento's local area, deliberated in 2012 by CIPE (Comitato Interministeriale per la Programmazione Economica, an Italian State Agency for public investments) and OLE, to be financed and completed by end of 2015. Such investments considered the extraordinary maintenance of networks and the construction of new ones within the Agrigento's local area. The financial coverage of each investment was entrusted to the concessionaire (30%), the Italian State and Region of Sicily (70%) benefiting of European Union financing. At the end of 2015, only the 13.7% of such investments were financed by Italian State and Region of Sicily out a total of €127 million.

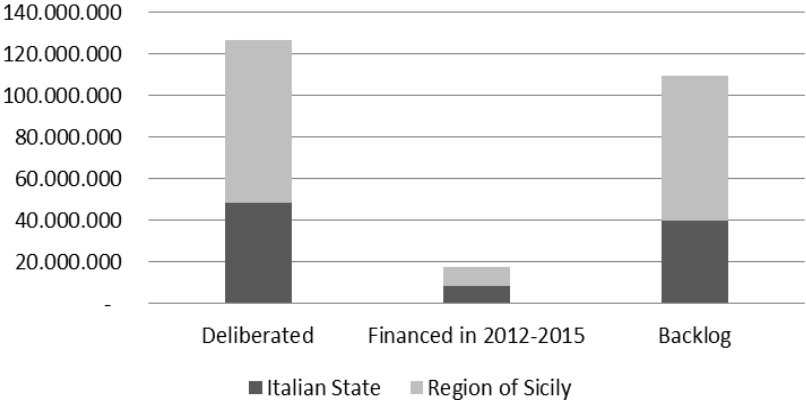


Figure 7: Co-financed investments for the Agrigento's IWS (values in Euro, source Girgenti Acque 2015)

Over the same period, the concessionaire has undertaken crucial investments in networks maintenance. This behavior is shown in Figure 8. Such investments have allowed an increase in service quality: in 2008 in the municipality of Agrigento, the water was distributed three times per week, today the concessionaire guarantees a 24h service (source Girgenti Acque S.p.a.).

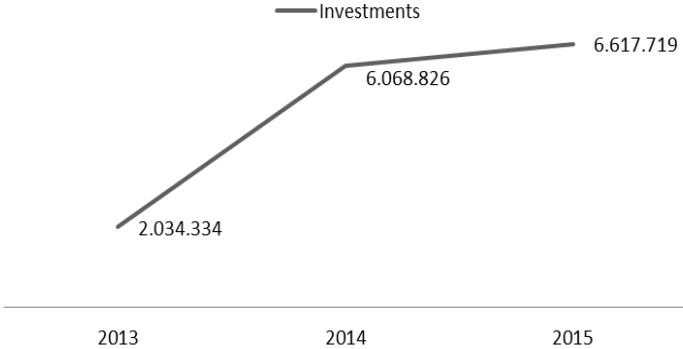


Figure 8: Concessionaire's investments (per year, values in Euro, source: Girgenti Acque 2016)

The performance drivers of rule of law, dispute resolution times and public agencies' efficiency have a direct effect on the economic performance of the concessionaire and its suppliers while indirect effects originate from taxation and employment dynamics: lower levels of private sector investment, public agencies' efficiency and local infrastructure induce firms to produce less. Thus, public agencies experience a decrease in tax receipts and families see a reduction in their income. This is the reason why not only such feedback loops are responsible

for the depletion of local areas' tangible assets but also for the drop of network and trust, the end-results of which have an impact on social capital. Eventually, a decrease in social capital causes a further reduction in public commitment to improve quality of services for local area development: by reiterating such reinforcing loops, the DPM system shows an exponential decay in the behavior of social capital due to the exacerbation of relationships among the sub-systems in the local area (Figure 9).

4.3 Behavior of social capital

Ultimately, the behavior of all performance drivers is analyzed in a same-time graph to enhance their comprehension in relation to their effects on local area social capital. Figure 9 illustrates not only such dynamics, but also the delays existing among variables within the feedback loops described above. Such loops are reinforcing and show exponential behavior since at every loop reiteration the effect of a change in any of the variables propagates through the loop and returns to the variable reinforcing the initial change.

Local parties' misconduct causes an exponential growth of accounts receivables and bad debts. In other words, it fosters deviant behavior in citizens.

The commitment of public organizations initially records a slight decrease thus representing the indolence of public institutions in front of service improvements requested by the local area, and then the commitment records an exponential decay due to limited financial resources, the pressure of local parties weakening the rule of law and poorer relationships with the local area's institutions.

The inefficient rule of law and legal instability have the effect of increasing the length and quantity of court cases, while a drop in public commitment creates a huge backlog of investments in the local area's infrastructure and a loss of funding related to them.

Network and trust, as results of performance drivers, change negatively and the strategic resource of social capital depletes overtime with an exponential decrease in behavior (same behavior but opposite variation with respect to performance drivers).

The social capital depletion exacerbates relationships among the local area's institutions by reinforcing the negative behavior of the local area's performance drivers.

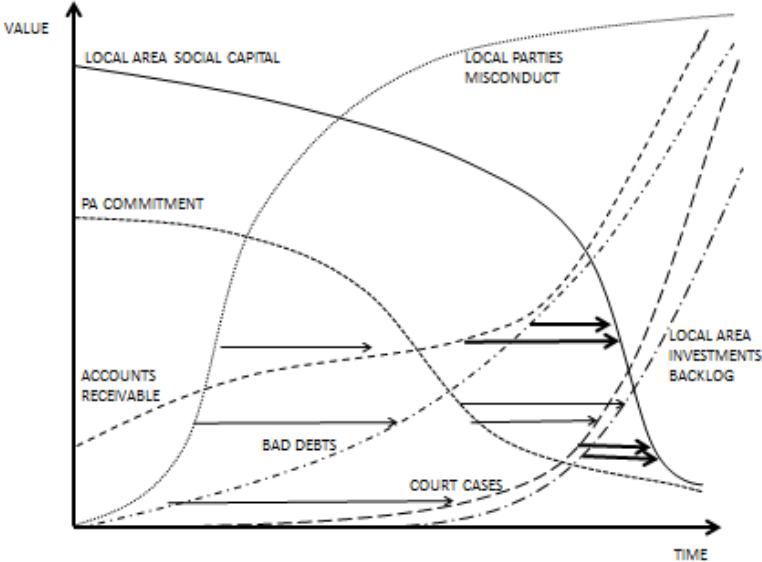


Figure 9: Time graph of relevant dynamics of Agrigento's local area

In relation to delays, these influence strategic resources, achieve results, and become a key issue to manage performance in dynamic complex systems (Forrester, 1969). In Figure 9, such delays are divided into two groups: those between actions of local parties and public agencies and performance drivers (represented by thin

arrows); those between performance drivers and social capital accumulation/depletion (represented by thick arrows).

5. Turnaround of Agrigento's local area

Which are the options available to policy makers to develop local areas? A first response come out from the abundant literature on social capital: increase the “quality of networks and relationships enabling institutions to cooperate and act collectively” (Putnam et al., 1993); enhance the trustworthiness of public and political institutions: the transparency, the accountability, the perceived fairness of provisions, the rule of law, the court system, the civil and political liberties, mutual obligations and shared norms and beliefs.

Such policies may have a first effect to weaken the reinforcing negative loops whose strength depends on public institutions' commitment and behavior of the political sub-system. The second effect is that they allow an exponential growth of social capital since in a reinforcing loop the effect of a change in any of the variables returns to the variable reinforcing the initial variation. This occurs for both negative and positive variations.

Figure 10 illustrates the dynamics of a possible turnaround in the Agrigento local area from the time 0. A commitment of the political sub-system and of public agencies to develop local area may trigger, at first, the improvement of the negative performance drivers impacting economic performance of enterprises (decreasing accounts receivable, bad debts, court cases, local area's investment backlog) and consequently of those concerning public institutions (through taxation) and families (employment). At time t+1, therefore after a delay, such improvements in performance drivers produce the effect to increase network and trust among the local area institutions, end-results increasing the strategic resource of social capital.

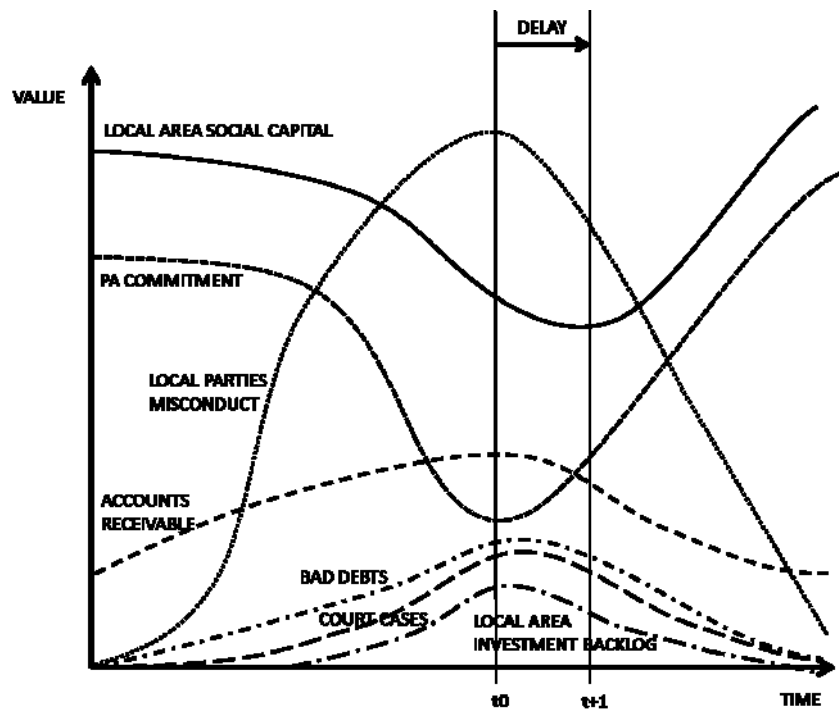


Figure 10: Turnaround of Agrigento local area

6. Conclusion and implication for further research

The case of Agrigento's local area is emblematic of how the local area development has been prevented by interactions of different institutions whose performance perspective does not feature the "outcome-oriented" or "local area development oriented" approaches. In fact, by applying the DPM system to local area development, the case study has shown that institutions operating in different sub-systems have operated seeking to increase their immediate interest regardless the outcome generated in the local area in terms of network and trust. Thus, local areas' institutions have unknowingly reinforced the dynamics responsible for the local area impoverishment by reduction of local areas' strategic resources: social capital and tangible assets.

Using DPM systems may help public sector managers and decision makers to widen the span of performance management and increase their awareness of "cross-institutional" dynamics of different sub-systems responsible for the local area development. In fact, the holistic behavior of a complex system as the one of the local area arises by several dynamics, represented in a DPM model by feedback loops. Managing the cross-institutional dynamics of the four sub-systems (organization, institutional, political and socio-economic) represents a crucial challenge for public sector managers and decision makers since the achievement of a harmonic collaboration among such sub-systems fosters social capital. The literature shows that, in a process of local area development, the advantage of social capital is indispensable in contributing to higher quality community governance as well as economic, social and personal development (Healy, 2002).

Notwithstanding the proven benefits of DPM systems, the use of these models appear in most public institutions hindered by a decision-making process of the type "incremental" (Lindblom, 1959) that does not move from the objectives to be achieved by a public policy, but from existing policies that have resulted in an agreement (Mussari, 2011). The decision covers, therefore, only incremental changes and adjustments with respect to an existing policy. Such adjustments concern not only the choice of policies but also the definition of the goals that are always recalculated according to the "perceived" means available to solve them. For Yehezkel Dror (1964), the "incremental" decision making reinforces the inertia and the path dependence from past policies and, being a keeper of the established order, this blocks innovation in redefining local area development.

Ultimately, the limitations of this research are addressed as well as the implications for further research. This research paper aims to build an analysis framework to increase policymaker awareness of local area development dynamics and to stimulate their commitment towards this field. Further research may extend the DPM system model by including other local areas' dynamics concerning the decisional processes or incentives which may facilitate the adoption of policies for local area development.

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