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A dynamic performance management approach to support local strategic planning

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In spite of efforts devoted in the last decades to local strategic planning, such field of research and practice has been frequently characterized by a lack of implementation. We argue here that this phenomenon is due to the limitations of the static and linear approach to local strategic planning in fostering the development of common shared view among policy makers on the relevant system's structure and behavior. By means of a case-study, we illustrate how an approach based on system dynamics modeling applied to Performance Management can be useful to overcome such weaknesses. The proposed approach enhances a better understanding of the causes and effects related to adopted policies, undertaken actions and targeted results. This helps key-players in an area to overcome possible barriers to collaboration, and therefore to adopt a combined "institutional and inter-institutional" perspective of performance.

Keywords: dynamic performance management; system dynamics; local strategic planning; case-study

The path from government to governance towards local strategic planning

This paper discusses the benefits of dynamic performance management (DPM) to support decision makers in designing and implementing local strategic plans.

Local strategic planning is a crucial topic for sustainable development (Haughton & Counsell, 2004). This field of study and practice underlies a method to enhance an effective implementation of the 'metropolitan governance' principle, i.e. "the process by which citizens collectively solve their problems and meet society's needs, using 'government' as the instrument" (OECD, 2000, p.1).

The concept of competitiveness, when applied to local government, goes beyond a mere aggregation of the competitiveness of companies or other single organization located in a geographic area. In fact, a geographic area can be considered an independent economic agent, competing on a global scale, with its own capability to attract and retain strategic resources to further improve its competitiveness, to preserve or increase quality of life and social wellness (Begg, 1999).

Geographic areas may compete to attract and retain strategic resources, such as: mobile investment, public funds, infrastructures, companies, population, human capital, tourism, arts, and global events (Jessop & Sum, 2000; Lever, 1999; Porter, 1995,

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1996). In pursuing local competitiveness, mutually reinforcing relationships between such resources are fostered by local decision makers. For instance, human capital, companies, infrastructures, knowledge networks and the transparency of public sector authorization processes, may further attract new companies, projects, and skills.

The capability of a geographic area to attract, retain and deploy such resources may foster the acquisition of further strategic resources that cannot be gained through 'market-like' competition such as: quality of life, social capital, citizen satisfaction, trust in government, and reputation. Within a geographic area, human, social and relational capital are crucial strategic resources to pursue competitiveness; they are necessary preconditions to strengthen employment stability and mutuality, and to foster the development of local well-being and wealth (Camagni, 2002).

However, the governance of local areas is not that simple due to a number of factors, including fragmentation of jurisdictions, lack of coordination among them, blurred decision-making, chronic difficulties in financial management and fiscal policy making, lack of accountability and of outcome-driven vision (OECD, 2000). Changing attitudes and developing a culture of governance has been indicated as a pre-requisite to improve the capability of metropolitan areas and smaller municipalities to pursue local development (OECD, 2001, p. 13). More inclusive and participatory governance approaches should replace traditional and sectoral "top-down" rule-driven systems (OECD, 2000). This implies a shift from "government" to "governance" (Cavenago & Trivellato, 2010). In this context, governmental institutions are expected to take an active role as leaders of a change and learning process, implying a constant interaction, not only with other public sector organizations, but also with the civil society.

This paper is structured in three parts. In the first part, we explore the logical foundations of local strategic planning as a complex field in performance management; we argue the need of an interinstitutional approach; we outline DPM as an approach to enhance sustainable local strategic plans. In the second part, we illustrate a case study of a local strategic plan that was drawn up through a static and linear approach. In the third part, we discuss main limitations of such approach to strategic planning in dealing with dynamic complexity, in relation to the case study. Based on such analysis, we provide insights on how DPM can be applied to overcome such limitations.

Outlining local strategic planning as a complex field in performance management: the need for an interinstitutional perspective

Though local government is a traditional field of study in performance measurement/management (Ammons, 2001; De Lancer Julnes - Holzer, 2014; Kelly – Rivenbark, 2011), the governance of local areas is a relatively new topic. In fact, the efforts produced by both researchers and practitioners in the last decades have been mainly focused on an organizational (i.e. institutional) sphere, with the intent to set performance standards that can be used as a basis to foster coordination among decision makers and the accountability of managers on achieved results. Conversely, the governance of local areas requires a focus on a multi-organizational (i.e. inter-institutional) sphere, where performance measurement/management is expected to foster coordination among different players to pursue a learning oriented strategic planning.

The culture and practice of local strategic planning has evolved since the 1960s through three main stages (Tanese - Di Filippo - Rennie, 2006, p. 17). A first generation of plans (Structure Plans) was mainly developed in the UK since the '60-70s, according to a systemic – but static – approach. This approach has been used to

provide a long-term guide for changes to land use, buildings and public spaces. A second generation (City Strategic Plans) was borrowed from the business practice, based on the pioneering work of Arthur Andersen in 1982 in the city of San Francisco. A third generation (Local Strategic Plans) started emerging from the early '90s to foster the governance of towns and districts, through the involvement of public and private stakeholders, according to a pluralistic and participative perspective. Local strategic planning is an ongoing activity, whose purpose is to guide action. It aims to support an understanding of the driving forces of a geographic area's performance, to foster consensus building among different stakeholders, whereas a single player (e.g. a Municipal administration) takes a leading role to frame the dynamic complexity affecting performance into the strategic planning process.

There is a lack of literature addressing the specific complexity of the field, which requires a learning oriented approach to local strategic planning. A number of factors shape such complexity.

First, the planning effort is not primarily focused on a single institution; it is rather on a geographic area. In this perspective, the sustainable development of organizations is tightly related to the sustainable development of the local area where they are located.

Second, this requires a coordination between different institutions and an outcome view to investigate how adopted policies will impact on the performance of the area. Therefore, framing delays between causes and effects sharply characterizes the complexity of such field.

Third, a trade-off analysis (in both and time and space) is needed: a strategy might improve local performance in the short term, but it might also lead to unintended outcomes in the long term. Also, it might improve performance in a given industry to the detriment of another.

Fourth, the above mentioned complexity factors suggest the need of a feedback perspective. In fact, an input-output view may lead to a bounded identification of the relevant system generating local performance, and therefore to a poor identification of policy outcomes. This also requires a learning-oriented perspective: a cross fertilization between different professional profiles participating into the planning process should contribute to capture the systemic, complex and dynamic structure of the problem context.

We claim that a lack of perception of such complexity is a major cause of the ritual implementation of the governance principles that has been highlighted in the literature (Razumeyko, 2011, p. 406-408; Ricz & Salamin, 2010, p. 28).

To design and implement "robust" local strategic plans, a combined institutional (i.e. organizational) and interinstitutional (i.e. local area) perspective is needed. This is a quite new research area for performance management (PM), in respect to the assessment of policy outcomes. If framed under an institutional perspective, performance is primarily assessed in relation to the effects produced by decision-makers on their own institution (Bouckaert – Halligan, 2008, p. 45-66; Sanger, 2008; Ho – Ni, 2005). Conversely, at the interinstitutional level, performance results from the interaction of different institutions whose policies should converge into positive outcomes for the wider system (i.e. the local area) to which they belong (Bianchi, 2010; 2012). If we aim to evaluate policy outcomes in such a context, the interinstitutional system's performance would not result from a mere sum of the performance levels produced by each single institution. It would be, rather, the effect of the net synergies among the different institutions linked to each other.

An interinstitutional perspective identifies a local area as the relevant system within which the feedback structure (Sterman, 2000, chapter 4) between strategic resources, policies and performance drivers, generates a dynamic behavior (in terms of end-results) that should be analyzed in the strategic planning process. Both the aggregate performance of an area and the specific performance of each organization inside it are significantly affected by the accumulation and depletion processes of social capital (Putnam, 2000) and other strategic resources such as infrastructures and image.

In the described context, as referred at the beginning of this section, the traditional paradigms adopted by the performance management movement, focused on an organizational sphere, and implying that achieved results are primarily assessed in relation to the effects produced by decision makers on their own institutions, seem to have fallen short of expectations. In fact, setting outcome performance measures in an organizational context (e.g. a Municipality) often entails difficulties in framing the effects of the activities carried out by a single agency on the outer local system. Managing local performance implies new challenges for the design and implementation of performance management systems, leading to more "robust" local strategic plans, to deal with the dynamic complexity factors in local strategic planning that have been commented before.

System dynamics (SD) modeling can be used to enrich PM in local government, to foster a common shared view of the relevant system's structure and behavior among stakeholders in local strategic planning. SD is a methodology to map system structure to capture and communicate the behavior driving processes and the quantification of the relationships to produce a set of equations that form the basis for simulating possible system behaviors over time. Insight (qualitative) modeling focuses on mapping emphasizing approximate graphical representation of the system[1]. The principle is that, if process structure determines system behavior, and system behavior determines performance (Richardson, 1995; Sterman, 2000, pp. 28-29), then the key to developing sustainable strategies to improve performance is acknowledging the relationship between processes and behaviors and managing the leverage points. The advantage of using this approach is that it places performance measures within the broader context of the system, responding to the reality that even simple policy and process changes aimed at having an impact on specific outputs and outcomes are not likely to be that "simple" in organizations (Bianchi, Winch and Tomaselli, 2008).

The SD method allows us to carry out a structure-and-behaviour analysis based on which the reinforcing loops underlying growth can be identified and fostered by proper development policies. Also, reinforcing loops can be associated to corresponding balancing loops, which provide a source of limit to the growth of the investigated system. By promptly detecting and counteracting balancing loops, decision makers can foster sustainable development. Insight SD modeling is an established practice that can be used to inform the understanding of processes and is highly dependent on graphic demonstration (Wolstenholme, 1999)[2].

Though urban studies are a tradition in the SD literature (Forrester, 1969), this paper outlines a relatively new stream of research and practice to propose 'dynamic' Performance Management as an approach applied to local governance. This research approach is also based on insights from a conceptual modeling on an exemplary case study to link a local area's performance drivers and end-result measures in a feedback systems analysis. It builds on the research of Ghaffarzadegan, Lyneis, and Richardson (2011) and of Kim *et al* (2013), where small SD models were used to enhance public policy and decision-making.

The next sections of this paper will show how a DPM approach may help key-players in an area to overcome possible barriers to collaboration, and therefore to adopt a combined "institutional and inter-institutional" perspective of performance. In fact, it may support them to detect how pursuing a sustainable development in the area's performance will impact on the sustainability of each single institution belonging to the area itself.

A dynamic performance management approach to enhance sustainable local strategic plans

A critical tipping point in managing organizational and local area's performance is associated to the capability of policy makers to: identify those strategic resources which most determine success in the environment, insure that the endowment of such resources is satisfactory over time, and keep a proper balance between the different relevant strategic resources (Bianchi, 2010; Bianchi & Rivenbark, 2012; Bianchi & Williams, 2015). SD can then be used to enrich PM in local government, focusing specifically on how the development of conceptual and simulation models can foster a common shared view of the relevant system among stakeholders.

According to a DPM perspective, each strategic resource should provide the basis to sustain and foster others in the same system. For instance, both workers and equipment provide capacity, which affects perceived service quality. This affects a geographic area's attractiveness, which, in turn, influences population dynamics. A change in the population that a municipality must serve will affect workload and perhaps the stock of available financial resources, and eventually capacity and service. The feedback loops underlying the dynamics of the different strategic resources imply that the flows affecting such resources are measured over a time lag. Therefore, understanding how delays influence strategic resources and achieved results becomes a key-issue to manage performance in dynamic complex systems (Forrester, 1969).

Another key issue suggested by a DPM view is the need to adopt a broad enough perspective in order to understand the driving forces affecting achieved results. This implies that the number and range of stakeholders involved in making decisions influencing strategic resource dynamics— and, therefore, the relevant system's performance — are often located in several agencies in a local area.

Figure 1 illustrates how the *end-results* provide an endogenous source in an organization to the accumulation and depletion processes affecting strategic resources. In fact, they can be modeled as *in-* or *out*-flows, which change over a given time span the corresponding stocks of strategic resources, as a result of actions implemented by decision makers. End-results that most synthetically measure the overall organizational performance are flows affecting the accumulation of corresponding strategic resources that cannot be purchased. These are: 1) resources generated by management routines, and 2) financial resources (Bianchi, 2012).

Figure 1 also highlights that *performance drivers* are a measure of factors on which to act in order to affect the final performance. They can be measured in relative terms, i.e. as a ratio between organizational or a local area's performance and a benchmark, or target. Such denominator must be gauged in relation to either the performance perceived by the community or specific groups of service users, or to users' expectations, or even to competitors' (e.g. other geographic areas') performance. For instance, if related to an end-result such as the number of new business initiatives undertaken in an urban area in a given time span, corresponding performance drivers could be associated

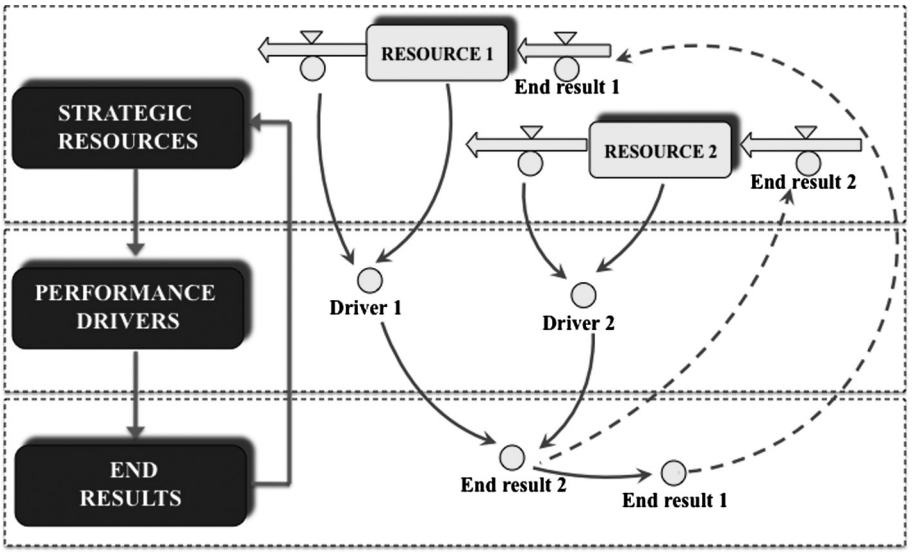


Figure 1. A dynamic performance management view.

to the perceived stability of a local area, and to the perceived transparency and promptness of the public sector (e.g., in terms of authorization protocols or supply of various services, such as those related to security, transportation, social assistance, housing). In order to affect such drivers in the desired direction, each decision maker must build up, preserve and deploy a proper endowment of tangible and intangible strategic resources systemically linked each other.

The growth of a single organization and of a community (like an urban area) embracing different institutions can be sustainable if the rate at which end-results change the endowment of corresponding strategic resources is balanced. This implies that each institutional decision maker is able to increase the mix of strategic resources and that this increase is not obtained by reducing the endowment of the wider strategic resources in the local area.

Such dynamic complexity factors justify the use of SD as an approach to frame local area's performance processes, and to improve decision makers' mental models and policy design. In the context of this paper, SD provides a supporting methodology to address the described critical issues for the development of a strategy focused on a local area. Our approach implies a 'shift of mind' in local area planning, i.e.: from a "fixed-goal" to a "process-based" approach, which may trigger the participation of main stakeholders into the planning activity (de Geus, 1988).

A local strategic planning case-study: Caltagirone

In this section we will illustrate a local strategic planning case to show the weaknesses of a traditional approach to local strategic planning in enabling decision makers to frame sustainable strategies and to implement them in a complex and dynamic environment. The analysis of such weaknesses will provide the basis to describe the benefits of a DPM approach applied to local strategic planning.

The case-study refers to municipality of Caltagirone, a small town in the province of Catania. Located in central Sicily (Italy), the city has a glorious past since it has been for over two millennia the privileged stronghold of Byzantines, Arabs, and Normans. Rich of churches, valuable palaces and eighteenth-century villas, due to the exceptional value of its architectural heritage, in 2002 its historic center was awarded the title of World Heritage Site by UNESCO, together with the neighbor "Val di Noto".

In spite of its small size (approximately 38,000 inhabitants), due to its geographical position, the city has been a hub for a territory located in the neighbor plains of Gela and Catania. Such area overall counts about 325,000 inhabitants. It is famous for its ceramics handcrafts, an industry that has been flourishing since the era of the ancient Greeks.

The strategic plan of Caltagirone (Comune di Caltagirone, 2004) was promoted in 2003 by the newly elected mayor of the City with the intent to support local policy makers to identify and frame the factors impacting on the area's performance, which is affected by different local public and private sector institutions.

By that time, a number of programs mainly funded by the European Commission encouraged the start of several initiatives in the area, with the aim to draw up and launch urban redevelopment projects. It also facilitated the start-up of new businesses, especially in the industries of artistic ceramics, tourism and agro-industry.

Despite such initiatives, the overall development of the area was unsatisfactory. A number of factors contributed to this outcome. The first factor was a weak entrepreneurial culture, due to an individualistic search of a safe and easy employment in the public sector. Other factors include: a fragmentation of initiatives to promote the area; a lack of coordination and consensus among different involved actors (e.g., local government, entrepreneurs, banks, and education institutions); and a fragmented policy view of the broad area of South-Eastern and Central Sicily.

In a medium-term (2003-2006) the plan aimed to create an attractive environment for private initiatives and investments promoted by local and outside actors, and to increase the opportunities for youth employment and entrepreneurial growth. This goal was pursued by (1) enabling the city of Caltagirone to play a more important role in the area of central-southern Sicily, based on a strengthened co-operation with the main neighbor towns, and by (2) improving the citizens' quality of life.

In a long-term perspective (2004-2010), the goal was to create the necessary conditions to internationalize the local area and prepare it to take advantage from the opening of the free trade area of the Mediterranean Sea. This goal would have been pursued by fostering the exploitation of the distinctive assets of the Caltagirone district, and by leveraging on them through the promotion of joint investments with players in the Mediterranean area. In such view, the role of the Municipality was to act as an integrator among the different stakeholders who were invited to become the actors of the planning process, through their participation to roundtables, think tanks, brainstorming sessions, etc.

To draw up the strategic plan, a team of consultants supported the Municipality of Caltagirone. One of the co-authors of this paper was a member of this team. The project team spent 18 months to collect data to feed the planning process, to identify main stakeholders in and outside the region, conduct interviews with them, and support the local administrators in outlining realistic goals and actions. The plan was issued in 2004.

Based on a prior socio-economic analysis of the area and on the ideas, suggestions, and requests raised by different stakeholders, the plan defined a set of "visions" for the

future of the city and the surrounding area. Such visions were then structured around a system of strategic goals, strictly intertwined each other. The guidelines for development (missions) were listed as follows: (a) develop and disseminate a strong culture of quality; (b) enhance the history, traditions, environmental resources of the area; (c) embellish/make the city more welcoming; (d) internationalize culture and trade relations; (e) adapt services to international standards; (f) focus policies on an area wider than the city, as a basis to increase the value provided by Caltagirone; (g) extend production chains; (h) combine innovation and tradition, but also art and technology.

The overall logic pursued by the plan was essentially based on framing the "drivers" of such development. For instance: which role would have played an improvement of key production chains, of local product and service quality, so to make the area more attractive to outside investments? This analysis would have involved the companies of the area in new projects aimed to generate a stronger business culture and to foster the development of professional services to local enterprises.

Provided that the focus of our analysis is to discuss the use of proper methods to design and implement local strategic planning, rather than to illustrate a case-study per se, we will limit the case discussion to the revitalization strategies for ceramics handcrafting designed in the plan.

Ceramics plays an important role in the economy of the area. A myriad of shops enliven the streets of the city by exposing the typical products of this ancient art (dishes, jars, vases, tiles, candlesticks) engaging almost two hundred artisans.

After a period of strong growth, the industry entered into a stagnation phase, due to a loss of quality and the failure in research on new techniques and materials, which determined a process of vulgarization of the product and widespread imitative phenomena. Many competencies and professional skills related to the creation of the forms of handcrafts are almost completely lost. Some ancient crafts, such as turners, for example, are no longer available in the area.

The plan described the critical issues about the development of the ceramics industry in Caltagirone. On this regard, it was envisaged that most local artisans were dedicated mainly to the production of traditional ceramics, often characterized by an inadequate quality level, if one considers the historical traditions of the city. Main customers were occasional travelers, tourists and a few residents. This trend had hampered the artistic quality of handcrafts and was a major cause of a more generalized decay generated by a lack of entrepreneurial spirit by local potters.

The sector also produced floor and wall tiles for kitchens and bathrooms with traditional design. This market segment required a set of key-competences, closer to those of 'mass' than to 'handcraft' production, and therefore needed a proper management of commercial issues and manufacturing techniques. In spite of these changes in the production system, local producers were still far from making a major shift from a traditional (but, mass-market and anonymous) production to the introduction of more advanced manufacturing and commercial methods.

Despite its history and ancient tradition, the State Institute of Arts was experiencing difficulties in interacting with local producers. There had been an increasing dichotomy between the policies undertaken by such Institute and the expectations of local craftsmen. This led to a substantial lack of communication between them.

The 'controlled designation of origin' recognition, which was attributed to Caltagirone's ceramics since the year 1993, never played the role of a driving force for the development of quality, production reliability and innovation. The launch of the DE.CO.P. brand (Municipal Controlled Designation of Origin), by the Municipality of

Caltagirone, in order to support and protect heritage, knowledge and experience of the ceramics handcrafting was still in its embryonic state.

There was still a need of leading actors, able to operate as driving forces for the industry, to network, foster a more market-oriented view, and to improve the capability to craft higher quality products, which may foster the pursuit of synergies with other sectors and other cultural domains of the area.

It was necessary to recover the past values of art, and consistently connect them to those related to design, so that they may mutually reinforce. An enhanced design, consistent with the historical roots of local art, was considered a fundamental means to increase the bounded production capacity of local craftsmen.

In order to face such challenges, the strategic plan identified three lines of action to boost the image of Caltagirone internationally as a center of innovation and artistic ceramic production quality. These included: (1) the pursuit of a stronger coordination between actors; (2) an improvement of the artistic and innovation skills of local artisan firms, and (3) the creation of favorable conditions to improve product innovation and a marketing effort to gain a good international reputation.

The first line of action implied the start of a new company aiming to promote the development of good practices along the supply chain and support local firms to refocus their design and commercial strategies, to better understand market structure and needs. The company's shareholders would have been the Municipal administration, the Sicilian Region's government, the local agency for development, a local bank, the Institute of Art, and local businesses in the ceramics industry. The second line implied a deep reorientation of the Public School of ceramics, to restore its ability to support the development of local firms, through proper training of craftsmen and professionals. The third line aimed to support startup firms in the ceramics industry in identifying their market segments, choose marketing channels (e.g., antiques dealers, jewelers, retail chains of high-class décor or design, high class hotels for higher quality products) and focusing other key players in the industry value chain (e.g.: designers, engineers, architects).

Although the efforts produced by involved actors to draw up the plan were substantial, and the goals and lines of action looked as consistent with the described challenges, the implementation was poor. In spite of the governance perspective that was nominally embodied in the plan, the workshops aiming to align the policies and actions of different public and private sector institutions in the area did not produce the desired outcomes. As a consequence, many of the announced actions were not undertaken. The weak entrepreneurial culture, fragmentation of initiatives, lack of coordination among stakeholders, and cultural resistance towards a local area perspective in policy making that characterized the context before the planning effort was undertaken were still unchanged.

Reframing the Caltagirone case-study through a Dynamic Performance Management Approach

The problems previously commented were primarily due to the adopted traditional local strategic planning method, i.e. to the static and non-systemic view through which the phenomena focused by the plan were framed. Though individual strategic resources (e.g. infrastructures, knowledge, businesses, cultural heritage) had been taken into account in policy design, the plan was not able to capture the effects that adopted policies might have generated on their accumulation and depletion processes, over time,

according to alternative scenarios. Also, the plan could not capture delays between causes and effects. For instance, it did not take into consideration the time that the designed policies to improve R&D and artistic/innovation skills would have required in order to generate the expected effects on ceramics quality. Furthermore, it did not consider the delays through which the planned investments to improve the quality of the city's museums might have generated an improvement in the area's image.

Such a static perspective underlies a bounded planning view, which is quite far from a policy outcomes evaluation. This implies a risk of inversion between means and ends. According to such view, building a strategic resource (such as knowledge, infrastructure, R&D capacity, a controlled designation of origin recognition) is implicitly considered as a goal to achieve, rather than a pre-condition to gain, in order to carry out effective policies aimed to affect the area's performance, in terms of both drivers and end-results (i.e., outcomes such as: employment and investment rates, or change in citizens' quality of life).

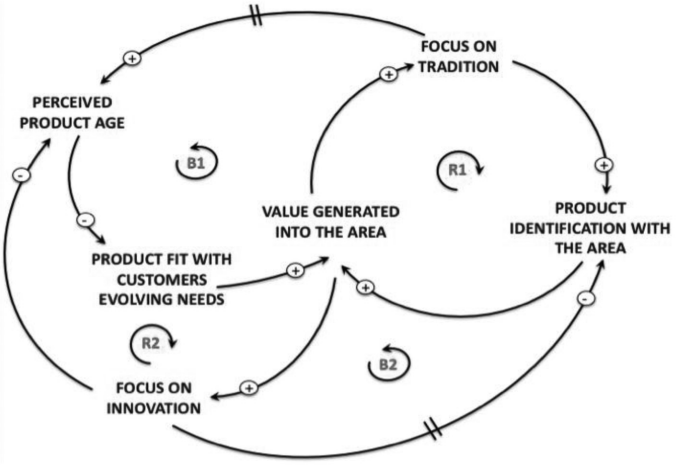
Furthermore, although the plan mentioned possible trade-offs and/or synergies in space, e.g. related to different industries (such as: ceramics *vs.* tourism, *vs.* agriculture) or to market segments (such as artistic *vs*. industrial), there was not an attempt to measure the effects of planned policies on performance drivers and end-results. All these weaknesses in the adopted approach to local strategic planning might have been overcome by using a DPM approach.

The remaining part of this section will be devoted to illustrate a few examples of how the proposed method can add value in this context.

An example can be referred to the trade-offs between innovation and tradition in ceramic handcrafting. For instance, in the short run, focusing policies on tradition and continuity with the historical roots of the area is likely to consolidate the product image and its identification with the geographic area. This would increase the value (e.g. in terms of sales turnover, profits, or new jobs) generated by the product, and might foster further efforts oriented to focus the local area's policies on tradition's preservation (reinforcing loop "R1" in figure 2). However, focusing policies on only this direction might generate product obsolescence in the long run. In fact, new market trends might require a gradual adaptation of the product characteristics to the evolving values and needs of new generations of customers. A misperception of this need would increase the perceived product age, which would reduce the product fit with customers' evolving needs. This would decrease the value generated by the ceramics industry (balancing loop "B1" in figure 2).

On the other hand, in the short run, an aggressive innovation policy (e.g. aimed to foster an hybridization of ceramic crafts to embody emerging artistic traits from other cultures) could allow the product/local area to stay in an early maturity stage of its life-cycle and to increase the generated value (reinforcing loop R2 in figure 2). However, in the long run an excess of focus on innovation might undermine the product identification with its area; this would reduce the value created by the industry to the benefit of the local area (balancing loop B2 in figure 2).

For instance, in the example portrayed in fig. 2, an effort is made in order to define for each variable in the feedback loop diagram one or more corresponding performance measures. Regarding such measures, a causal analysis is also done: end-results are affected by second level performance drivers, which are – in turn – affected by first level performance drivers. In this case, the average age of product portfolio is the first level performance driver, which is influenced by an aging chain of stocks depicting the number of ceramic models or forms in the area's "portfolio" (strategic resources) at



KEY:

A —(+)→ B = Direct relation between A and B

A —(-)→ B = Opposite relation between A and B

A —//→ B = Delayed relation between A and B

VARIABLE NAME	UNIT OF MEASURE	PERFORMANCE MEASURE TYPE
Perceived product age	Average age of product portfolio	1st level performance driver
Product fit with customers evolving needs	% Customer needs satisfied by product features Number of product forms and used raw materials	2nd level performance drivers
Product identification with the local area	% Products telling the history of Caltagirone	2nd level performance driver
Value generated into the local area	Cash flows, Profits, Employment rates, ...	End-results

Figure 2. Main feedback loops and performance measures associated to tradition *vs.* innovation policies.

each lifecycle stage (fig. 3). An aggressive product innovation strategy implies an increasing percentage of the new products stock on the total. Such state of the system can be pursued by alternative policies. In the Caltagirone strategic plan, the adopted policies were focused on a new company startup to foster R&D and on the strengthening of efforts to revitalize the School of ceramics. As remarked, the implementation of the two policies should not be evaluated in terms of simple output measures (i.e. number of started or accomplished projects), but especially in relation to their outcomes. Such outcomes can be detected based on the identification and measurement of the indirect policy effects on the identified performance drivers and end-results. A dynamic performance management synthetic view of the described context is depicted in figure 3.

In particular, fig. 3 aims to show how we suggest applying SD modeling (as illustrated in the example in fig. 2) to a geographic area's performance management. For simplicity, we consider here as an end-result only the financial value generated into the

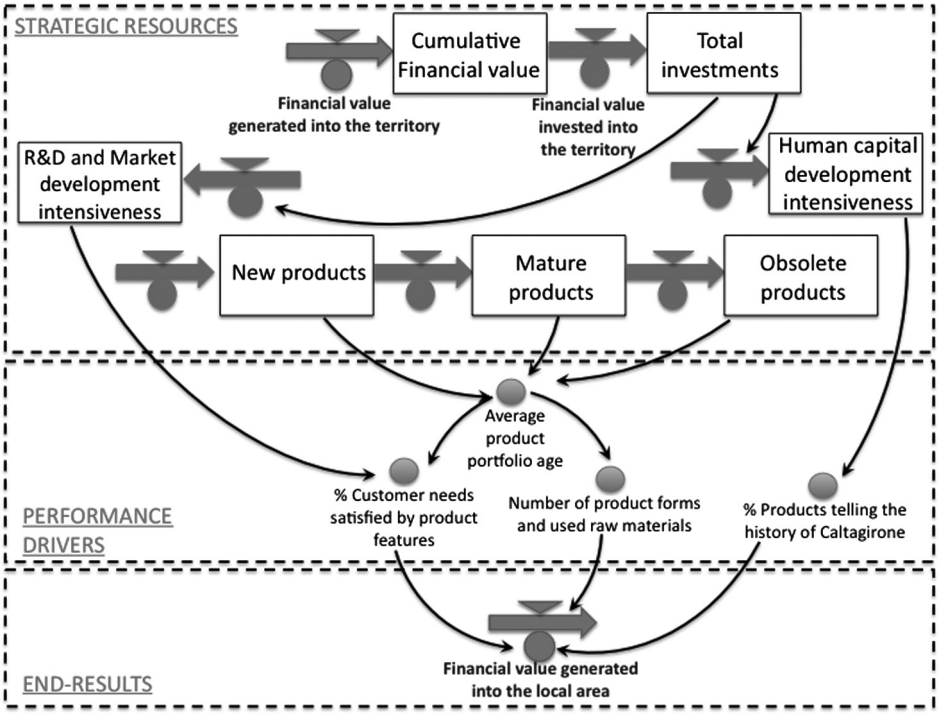


Figure 3. A dynamic performance management view of the tradition vs. innovation trade-off.

geographic area by the ceramics industry. This can be referred as a synthetic expression of the income or cash flows earned in a given time span (e.g. a year) by companies in the area. On the one side, the accumulation over time of this value contributes to increase the stocks of equity and financial resources of local companies. On the other side, it provides a basis for further investments in the area. Such investments are here depicted as an accumulation into two different synthetic strategic resources, i.e.: "R&D and Market development intensiveness" and "Human Capital Development intensiveness". The two stocks are an expression of the quality and volume of investments done in the area to ensure that the development activities focused on innovation and tradition will effectively impact on the key-drivers affecting end-results.

Overall, an effect of the static and non-systemic view that was adopted in sketching the Caltagirone strategic plan was a lack of attention on the role that an individualistic culture, a fragmentation of jurisdictions and administrative processes encompassing different public and private organizations in the area would have affected in delaying and tackling the implementation of the change process designed by the plan.

In the short term, a more realistic strategy might have been focused on the pursuit of a gradual improvement in key-actors' culture and knowledge, as well as in organizational management processes (i.e. R&D, production, commercial skills) along the ceramics value chain. A more open and collaborative culture and a stronger key-actors' knowledge of the historical roots of Caltagirone might have encouraged the start of partnerships on innovating projects in the field of ceramics, e.g. to feed the use of new materials in production processes (performance drivers), leading to the launch of new product lines, the search of new market segments, leading to an increased value

generated in the area – e.g.: sales volumes and revenues, profits, cash flows, employment rates, new companies (end-results). In the long run, such results would have significantly strengthened the socio-economic structure of the area and therefore would have increased its relative attractiveness towards an improvement in the net of partnerships, both on the international markets and on other adjoining industries.

Figure 4 shows how such long-term effects of policies, aimed to combine tradition and innovation in the ceramics industry, may improve the local area's attractiveness (performance driver). This would determine an increase in the stock of companies operating in the area in the ceramics and other adjoining industries (end-result). A higher number of companies located in a stimulating and competitive geographic area would contribute – other things being equal – to increase the intensiveness and inclination of players to network (performance driver). This would, on a side, further increase the area's attractiveness, which might also positively affect the population rate. On another side, it would also increase the number of partnerships and the employment rate (end-results). Such effects might further amplify the area's growth rate, since a higher stock of skilled employees in the area (strategic resource) would make the area more attractive to potential investors. Also, a higher stock of companies located in the area might further increase the intensiveness and scope of collaboration projects.

The capability of players in the area to frame and affect the driving forces of such growth is a fundamental condition to ensure sustainable development. For instance, limits to growth might gradually originate from an increasing population, leading to saturation in the provision processes of different services in the area (e.g. housing, health

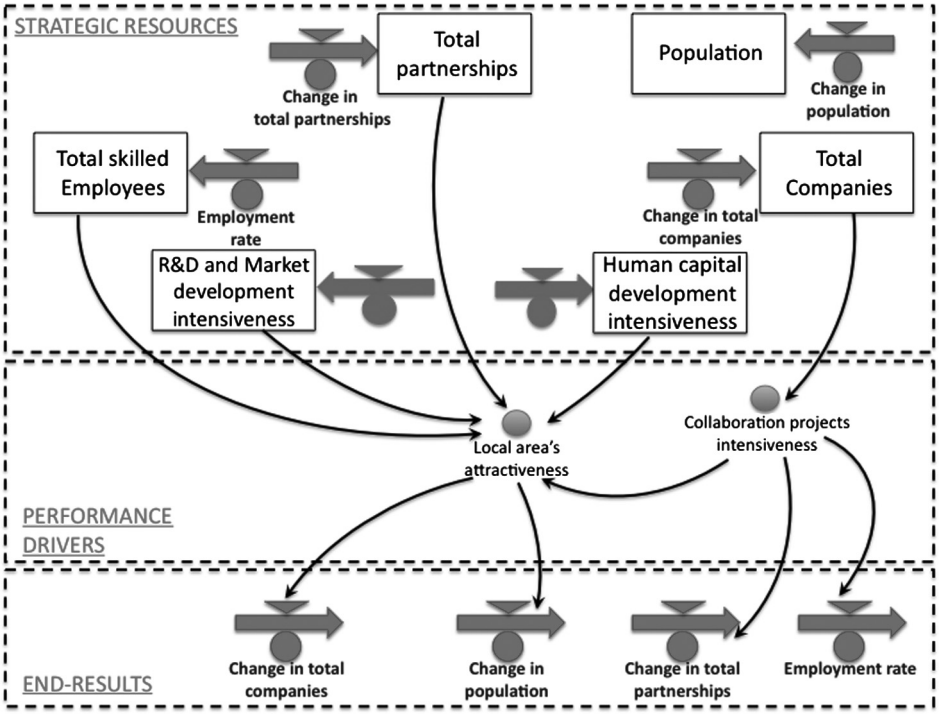


Figure 4. Long term effects of tradition vs. innovation policies on the local area attractiveness and collaboration projects intensiveness.

care, police, education, traffic). Ignoring such limits to growth might generate a shift from a development to a crisis pattern in the management of the local area.

The analysis shows that a DPM view can support local strategic planning by allowing decision makers to discern short from long-term policies; by supporting the linkage of strategic goals to appropriate measures aimed at gauging expected and emerging results. It also helps decision makers to clearly distinguish means from ends, and to indentify different "layers" of performance measures, starting from the identification of end-results and of corresponding sequentially related performance drivers. Overall, this approach may support decision makers to better conceptualize the relevant system related to the investigated problem behavior, and to better implement designed strategies.

Conclusions

This paper has discussed how DPM can reinforce the benefits of local strategic planning. Such approach contributes to fill a gap between the current methods adopted in performance management and the dynamic complexity characterizing local strategic planning. A case study of a small-sized local strategic plan was analyzed to show the limitations of the traditional static approach adopted in common practice, to illustrate how a DPM approach can be adopted and the benefits it can provide.

A number of insights have emerged for reframing the static strategic plan originally adopted by the decision makers. As shown by the case study, a DPM approach can be helpful to change the mental models of the key-actors in an area, and to support them to overcome collaboration barriers. In fact, it can enable each institution in a geographic area to detect how pursuing the sustainable development of the area may impact on its growth sustainability.

Furthermore, this helps public agencies to perceive that long-term performance cannot be only assessed in financial terms or bounded to output measures, but also in relation to the outcomes that public services will generate, i.e. in terms of their value transferred to their own geographic areas. Likewise, enterprises can be enabled to detect how their own performance will be sustainable in the long run if they will generate not only financial capital, but also social capital to the benefit of the other players belonging to their area.

Although the empirical analysis here developed focuses on a single case study, we argue that the methodological insights illustrated in the last section of the paper can be extended to similar contexts. Such similarity does not only concern the specific socio-economic issues profiling the described problem context, or the size of the local area, but also refers to the crucial issues for local strategic planning that an interinstitutional system implies.

Though we believe that the case analysis has shown the usefulness of the proposed method to enhance local strategic planning, we also are aware that further field research will be needed to combine qualitative modeling with simulation to enhance a DPM approach to local strategic planning. Such research endeavor will also need to contribute more on planners' capabilities to gauge proper local performance measures, to assess outcomes, and to embody DPM into local strategic planning.

Notes

1. It is not the purpose of this paper to illustrate the system dynamics principles. An in-depth analysis of such principles can be found in: Forrester, J. W. (1961); Sterman, J. (2000).
2. It should not be confused with quantitative parameter setting modeling, which sometimes occurs as a second stage of analysis. The point of such modeling is to identify areas where dynamic factors may have important influence on the way a process occurs.

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