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Enhancing the Governance of Local Areas through Dynamic Performance Management

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Enhancing the governance of local areas through Dynamic Performance Management

Abstract

This doctoral dissertation applies the findings of explanatory studies in the field of Dynamic performance management (DPM) to the public sector.

Purpose. This work aims to show how DPM may support decision-makers in outlining sustainable policies for local areas. The study investigates local areas as meta-organizations.

Design. The research takes a relativist perspective and investigates social phenomena through a deductive-inductive approach where qualitative research strategies assume a descriptive account in accordance with management science and System Dynamics (SD) tradition.

The systematic review of the evolution of management models of public sector organizations sets the ground for arguing the need of DPM to implement public governance in local areas. The weaknesses of a linear approach to performance management underpin this emergence. Two studies support the conclusions of the thesis: i) a descriptive research frames the sources of the image of the "Taormina-Etna tourism district". The case study discusses what factors drive the local area image. An explanatory analysis further advances the DPM chart into an SD model, which unfolds the effect of the image on tourism presence. ii) An action research uses an SD-based interactive learning environment (ILE) to foster learning of decision-makers in tourism destinations.

Findings. The outcome-based DPM frames the sources of the image of a local area by identifying the linkages between output and outcomes, and simulations explain that advertisement campaigns lock system's performance into *better-before-worse* dynamics, while addressing structural contextual issues seems to be a sustainable *worse-before-better* policy.

The action research corroborates that SD-based ILEs enable policy-makers to: i) review their mental models, ii) understand strategies' interdependence, iii) perceive time delays between decision and results; and iv) link short-term with long-term sustainable policies.

Implications. The research demonstrates that DPM enhance the governance of a local area, and supports policy-makers in designing and assessing sustainable policies. Causal analysis and simulations allow decision-makers to revise and question their mental models by focusing on the factors affecting performance.

Originality. This work mixes a monographic profile of a doctoral thesis with a paper-based dissertation. A theoretical basis is provided by two initial chapters of literature review. This analysis sustains the findings and implications from the field analysis developed into four core chapters. A concluding section remarks theorethical, methodological, and practical findings.

The work is multidisciplinary: it is focused on local government issues, it investigates tourism destinations as meta-organizations, it uses a simulation-based methodology to understand performance dynamics, to assess policy's sustainability, and to foster a learning oriented perspective to planning.

Do. Or do not. There is no try.

- Yoda

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Preface

This work aims to show how dynamic performance management may support the governance of local areas in pursuing a sustainable development. The sustainable development of a local area is highly dependent on the capability of the public and private sector to coordinate their policies.

Over the last 30 years, main changes in management models of public sector organizations have increasingly underlined the relevance of performance even at an inter-institutional level. The effect of organisational output on the wider system's resources endowment, the design and implementation of sustainable policies, as well as urban resilience are central issues for local governments. Particularly at the local level, public governance appears to be an answer to them. However, current practice of governance seems to be mainly concerned about how rules, norms and actions structure the processes of interaction and the decision-making among the actors involved in a collective problem.

Today's communities are dealing with dynamic and complex challenges which require to be framed and managed, rather than reduced and simplified. Such a perspective implies a shift in the way local players conceive their relationships: they must adopt methods which may better connect and match the management of institutional goals with the broader inter-institutional dimension, while focusing on the accumulation and depletion process of shared resources.

To this end, this work focuses on tourism destination since they are meaningful example in which a sound governance is crucial for pursuing a sustainable development. Tourism destinations have multifaceted performance and are characterised by specific complexity factors. Both elements support the identification of such a local area as a meta-organization, which claim to go beyond the management of a tourist product. The perspective of public governance when applied to a local area is meant as conceptual framework which

can host the design and the implementation of performance management systems. The latter should enable organizations to link outputs with outcome, to foster coordination among them, and to embody in their targets a set of measures which captures the system's performance.

To address all of these challenges local governments need to adopt a perspective that may go beyond a static and linear view. The thesis develops the idea that the governance of local areas need to be enhanced through a "dynamic" outcome-based performance management. By merging the benefit of System Dynamics methodology with the methods and tools of performance management, policy-makers of a local areas are able to manage dynamic complexity and to assess long-term performance sustainability.

From the research emerges that the sustainable development of local areas lies on the inter-institutional coordination, an outcome view of performance, and on a learning oriented approach to planning.

Seven chapters compose this thesis: chapter 1 presents the research design adn focus, it delineates the background, the relevance of the study, and the research strategies used to conduct the research. chapter 2 provides a review of the existing body of literature in the field of public management and analyzes the key aspects of three management models: *Old Public Administration*, *New Public Management*, and *Public Governance*. It also illustrates how the shifts have affected the management of public sector organizations.

Chapter 3 argues the need of dynamic performance management for local areas. First, it frames a tourism destination as a system and defines its performance. Then, it discusses the traditional performance management framework and highlights the specific complexity of a tourism destination. Finally, it describes the evolution of performance management and illustrates the dynamic performance management approach.

Chapter 4 applies an outcome-based dynamic performance management at the inter-institutional level to describe the factors determining the image of a local

area. Chapter 5 advances such study into an explanatory one. Through a System Dynamics model, it unfolds the effects of the image on tourism.

Chapter 6 introduces an action research approach focused on the Governance of Castelbuono area and illustrates the challenges in designing a System Dynamics-based interactive learning environment.

Chapter 7 shows how a System Dynamics-based educational package may support the decision-makers of a tourism destination in understanding policy coordination as a relevant topic for sustainable development.

Both chapter 4 and 7 incorporate two papers I wrote and presented at national and international conferences, during my doctoral studies.

Chapters from 4 to 7 outline its conclusions and limitations, while the section "Discussion and Conclusions" recalls main findings of the work, and connects them all to the purposes of the thesis.

This work identifies two research domain in public management: the adoption of a set of principles that may foster the design of outcome-based performance management in local areas; the design and the implementation of methods that may support an assessment of local areas' policy sustainability. Both domains are related to the need of a "dynamic" performance management in public sector organizations.

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CHAPTER 1

RESEARCH DESIGN AND FOCUS

1. The governance of local areas: an outcome-based performance view

Throughout the last 30 years, the public sector of developed countries has experienced significant changes. Governments have striven to face budgetary downturns, technological development, market and media globalization, and international competitiveness.

Public sector reforms have covered various aspects of the public sphere. Authors unanimously argued that these changes has witnessed a paradigm shift from the classical model of public administration, dominant for most of the twentieth century, to *managerialism* or *New Public Management,* where management science gradually replaced the theory of bureaucracy in its governmental context. In fact, by the end of the '80s, public sector organizations started producing effort to combine the pursuit of their institutional mission with the target of financial equilibrium.

The first stream of big changes in public administration came after the ideas and experiences matured by the Anglo-Saxon countries which have been labeled as *new public management* (NPM) (Christensen & Lægreid, 2007a; Dunleavy & Hood, 1994; Hood, 1991; Hood, 1995; Larbi, 1999; Pollitt & Bouckaert, 2011).

The paradigm shift from old classic administration to NPM brought philosophies and tools of business organizations inside the public sector. NPM is a product of neo-classical economics and particularly of rational/public choice theory (Niskanen, 1971) with an intense focus on intra-organizational processes and management (Ostrom & Ostrom, 1971).

Despite innovations and improvements in service delivering, the NPM agenda – after 20 years of experience – revealed some weak points. Indeed, it has been

recognized that the NPM has put too much "emphasis on service inputs and outputs" (Osborne, 2006a: 383) and has overlooked the "services design" (Bovaird, 2005: 222), rather than the effect of these.

By the end of the '90s, Public governance (Borgonovi, 2002: 38-41) has shifted the root of the public sector reforms into organizational sociology and network theory (Haveri, 2006; Osborne, 2006a), and particularly in the work of Ouchi (1980), Powell (1990), Tsai (2000), and in the organizational studies of Williamson (1981).

Such a shift is of a particular importance because it has extended the scope of public administration. Indeed, public governance is a management model/theory concerned with outcomes, and indeed, it takes an inter-organizational focus than does the output and intra-organizational accent of the NPM. Even though it seems to have clear characteristics, public governance has been conceived as an "umbrella" term.

"Outcomes-based governance" (Talbot, 2009: 507) has also emerged as a new model of public governance, which emphasized how the end of production processes turns out: it focus was neither on inputs nor processes.

Public governance became an adopted theory in the field of governance of networks of public and private organizations. For instance, at the local level, an outcome-oriented governance allow cities, regions, and small towns to manage the decision-making process of a multitude of organizations, and it enables them to coordinate their policies, and to figure out their possible long-term impacts.

Governance emphasizes outcomes. Several measures may support policy-makers to gauge the contributions of public policies to long-term social goals. They may refer to both quantitative (e.g income, jobs, housing) and qualitative variables (e.g. health, education, safety, environment, civic engagement, access to services, community satisfaction, well-being). Although most of them may have place in performance measurement systems of public sector organizations, through governance they may be systemically connected each other. The practice of performance management in individual public sector organization is to measure

only organization's performance. In fact, shifting from output measures to indicators that focus on outcomes, it is possible to grasp, for instance, communities' quality of life in a particular place and also to reveal the extent of organizational contribution to this result. These measurements have arisen a number of issues for policy-makers. When the concept of performance is applied to a local area, it goes beyond a mere aggregation of the results of the organizations located in the same geographic area. In this case, if a narrow of performance is adopted, it heralds that the long-term sustainability of place is compromised.

There are many cases of places that are experiencing crisis. The cities of Turin (Italy) (Marra, Barosio, Eynard, Marietta, Tabasso, & Melis, 2016; Prat & Mangili, 2016: 210-231) and Manchester (UK) (Katz, 2016) provide examples of cities which during the 1990's lost their industrial appeal, and since them are facing the emergence of cultural renovation. This requires to foresee urban planning. Rome's citizens are experiencing a remarkable reduction in their quality of life due to low public service standards, an economic downturn, and a bad image of the city[1]. These outcomes are mainly the effect of the so-called "Mafia-Capitale" scandal, were the governance of the city has generated waste of public resources, corruption, and political bargaining (Savatteri & Grignetti, 2015). In the Middle-East of Europe, the city of Istanbul, for instance, is suffering a reduction in tourism presence due to the hazard of terrorist attacks[2].

On the contrary, Stockholm is attracting the headquarters of giant innovative companies (Giertz, Rickne, & Rouvinen, 2015), such as Ericsson, H&M, and the big music-streaming service Spotify. This city is the home of many of the fastest-growing private companies in Europe. Would such growth be sustainable and under what condition? A lesson can also be learned from the Spanish city of

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[1] See: Philipson, A. 2015. Italy is morally rotten, says lawyer at start of 'Mafia Capital' trial in Rome, http://www.telegraph.co.uk/news/worldnews/europe/italy/11978453/Italy-is-morally-rotten-says-lawyer-at-start-of-Mafia-Capital-trial-in-Rome.html

[2] Coldwell, W. 2016. Terrorism fears see UK tourists opting for 'safer' holiday destinations, https://www.theguardian.com/travel/2016/jan/27/terrorism-fears-see-uk-tourists-opting-for-safer-holiday-destinations

Valencia, which has undergone wicked problems with improper use of strategic planning (Miralles I Garcia, 2015). The famous architect Santiago Calatrava has drawn a project which was aimed to turn a dry riverbed into a landscaped cultural corridor. The regional government appreciated the project by investing more than a billion euros of public funds. During the peak of the boom, the coastal zone around the city was quickly paved over for hotels and second homes, while banks started giving credit for home construction and buying. Unfortunately, the capital market accounted for an over-sized economic boom of Valencia, and indeed in 2012 the unemployment rate was at 26%, and the plan resulted in huge amount of private debt, a waste of public money, and a dream that never came to fruition.

From these examples – and many others around the world – it clearly emerges that sustainability is a fundamental issue of successful local development policies, and at the local level a shift from government to governance is required to align politics, policy, and polity.

This work targets the outcome-based governance for local areas. The relevance of this study for public management discipline comes from the fact that local areas need to be (sustainably) managed in order to meet the expectations and the needs of their communities. If one analyzes these challenges from the perspective of public administration, main issues clearly emerge. To address wicked and complex problems organizations need to implement and enhance methods of public governance properly. It implies that administration should not be meant as following instructions, rather as a way to achieve results. Moreover, this point requires to adopt a strategic perspective in public management by connecting one institution performance (at "micro level"), with a system of institutions in a given geographic area (at "macro level"), while fostering a strategic dialogue between managers (as decision-makers) with politicians (as policy-makers).

Such a strategic perspective of management should focus on how to tie a territorial vision of development with organizational performance, whereby such outputs determine the impact of public policy on the broader context.

Table 1.1 shows the functions of general management, which can be clustered into three groups. Management does not imply just setting up a plan for an organization. It primarily requires managing internal resources to accomplish certain goals and to coordinate such activity with third-parties in order to ensure a real impact of intended strategy.

Table 1.1 Functions of general management (Allison, 1982: 17)
Strategy
i) Establishing Objectives and Priorities for the organization (on the basis of forecasts of the external environment and the organization's capacities).
ii) Devising Operational Plans to achieve these objectives.
Managing Internal Components
iii) Organizing and Staffing: In organizing the manager establishes structure (units and positions with assigned authority and responsibilities) and procedures (for coordinating activity and taking action); in staffing he tries to fit the right persons in the key jobs.*
iv) Directing Personnel and the Personnel Management System: The capacity of the organization is embodied primarily in its members and their skills and knowledge, the personnel management system recruits, selects, socializes, trains, rewards, punishes, and exits the organization's human capital, which constitutes the organization's capacity to act to achieve its goals and to respond to specific directions from management.
v) Controlling Performance: Various management information systems – including operating and capital budgets, ac- counts, reports and statistical systems, performance appraisals, and product evaluation – assist management in making decisions and in measuring progress toward objectives.
Managing External Constituencies
vi) Dealing with "External" Units of the organization subject to some common authority: Most general managers must deal with general managers of other units within the larger organization – above, laterally, and below – to achieve their unit's objectives.
vii) Dealing with Independent Organizations: Agencies from other branches or levels of government, interest groups, and private enterprises that can importantly affect the organization's ability to achieve its objectives.
viii) Dealing with the Press and Public whose action or approval or acquiescence is required.

Moreover, such perspective of strategic management does not mean merely to appoint functions to managers of public sector organizations. It also requires to

take into account four main interdependent sub-systems: i) the socio-economic system, ii) the political system; iii) the institutional system; and iv) the organizational system (Bianchi, 2004: 31; Borgonovi, 2002: 38). These attributes should be considered when organizational (even inter-organizational) change programs are designed (and even implemented) in the public sector.

Research in public management which focuses on the strategic management of local areas may support policy-makers because it investigates how public and private organizations design policies, describes how interdependencies affect shared and individual objectives, and how these shape systems performance. In order to assess performance' sustainability, the governance of local areas should be enhanced through a "dynamic" approach in performance management. This view implies organizations to identify end-results at both institutional and inter-institutional level, and to embody inside organizations' performance indicator a number of measures connected to either territorial outcomes and organizational outputs. A "dynamic" approach to performance management moves backwards by following a cause-and-effect perspective, and it shed light on performance drivers and related strategic resources accumulation/depletion processes.

These findings are part of the mission of public management scholars, which is not only to understand the behavior of public agencies but also to improve the performance of these agencies (Behn, 1995: 315). This work is based upon this conceptual framework.

2. Research goals and questions

The main goal of the thesis is to show how dynamic performance management may support policy-makers in outlining sustainable policies for local areas. The research also focuses on two aims:

    i)   To explain the relationship between the image of a local area and tourism.

ii) To show how a System Dynamics-based educational package may support the decision-makers of a tourism destination in understanding policy coordination as a relevant issue for sustainable development.

Figure 1.1 portrays an overview of the research layout and the thesis structure. The figure synthetically shows the logical connections between the chapters of the work, the aims and the research design.

Figure 1.1 A pictorial overview of the research's layout and thesis' structure
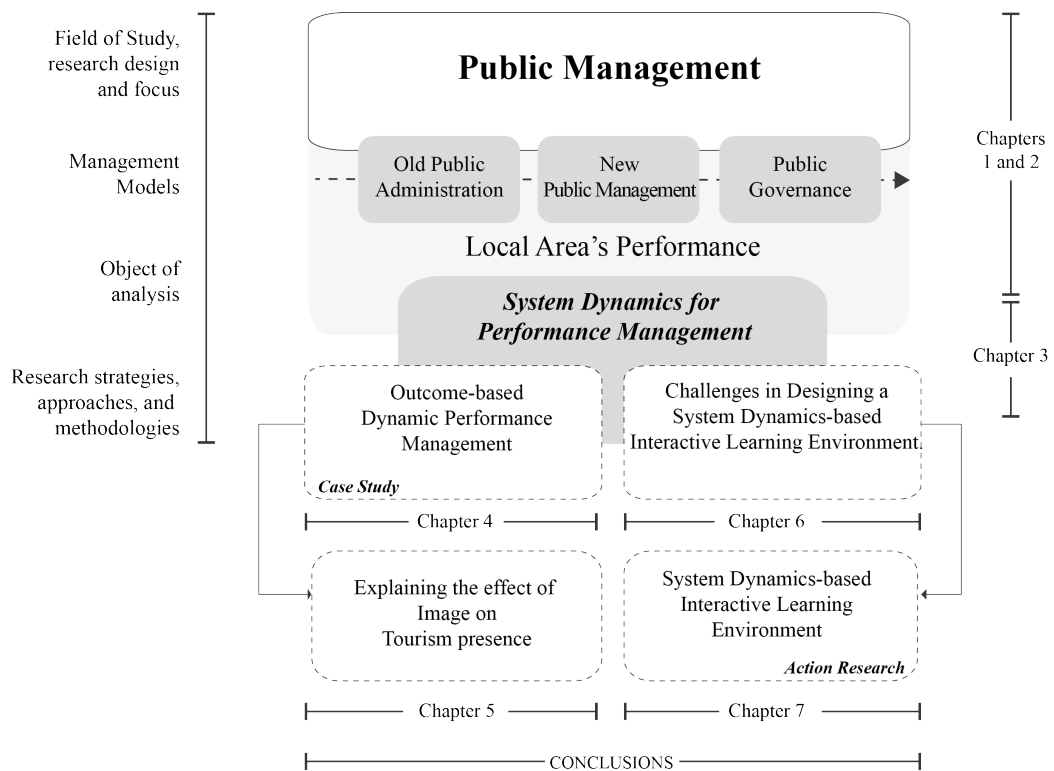
Literature review, conducted in chapter 2 and chapter 3 provides the basis for achieving this goals. The work investigates the main goal and the 1st and the 2nd aims through the following research questions:

i) Why do cities, regions, and local areas grow or decline?

ii) Can the body of knowledge in performance management enhance the governance of local areas?

iii)   Are there any gaps in the literature and practice in embodying an outcome-based view of performance management to enhance the governance of local areas?

iv)   What major challenges should be faced in order to make use of information systems in designing performance management systems for the governance of local areas?

v)   How to connect an institutional with an inter-institutional outcome-based view of performance to support the governance of local areas?

These questions are addressed essentially by the chapters 4, 5, 6, and 7. Within the scope and the structure of this thesis – outlined in this chapter – specific research questions for the aims as mentioned above sub i) and ii) are detailed in the chapters 4 and 5, and chapter 6 and 7 respectively. Without claiming to give them fully undoubtedly answers, this dissertation aims to shed light[3] on some crucial aspects of these issues.

3. Describing local areas' performance behavior through System Dynamics

Local government is a well-established field of study in public management (Ammons, 2001; Kelly & Rivenbark, 2015) but the governance of local areas is a relatively new topic (Bianchi & Tomaselli, 2015) especially when one considers the management of outcomes.

A local area is a system of interacting organizations, people, and institutions, where strategies, decisions, and results of several organizations are tightly connected. Managing a local area requires modes of governance "characterized by the promotion of local economic development by urban governments, typically in alliance with private capital" (Hall & Hubbard, 1996: 154). As Begg (1999b) pointed out, investment in intangible assets such as knowledge, or encouragement

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[3] Main findings of the thesis are reported in the discussion and conclusions section. Each chapter details results within a specific section.

of the propensity of the local area to foster entrepreneurship, especially in technologically advanced areas, are of great importance. Hence, public policies should be the companion of private assets in a local area. Looking at the government's role, Porter (1998: xxiii) stated that "old distinctions between laissez-faire and interventions are obsolete. Governments, first and foremost, must strive to create an environment that supports rising productivity".

Local areas may face different situations: they can fall in trouble, decay, and be chronically depressed, they can grow and collapse, or eventually can develop sustainably over time. All of these system's behavior arises from its structures (Sterman, 2000: 107). The structure of a system results from the relationships among the agents and it is created by the physical and institutional interactions that occurs within the decision making process. The modes of behavior are identified by tracking the polarity of the loop structure behind them. Feedback loops can be positive ore negative. An exponential growth process is a product of positive (reinforcing) loop, while a goal seeking behavior is created by a negative (balancing) feedback.

Figure 1.2 Main scenarios associated with local areas performance (adapted from Bianchi 2016, 42).
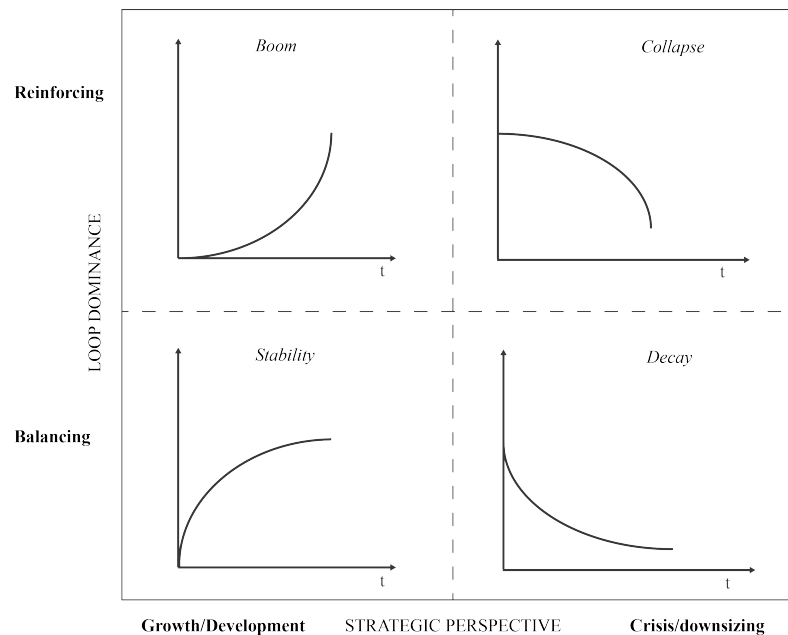
Figure 1.2 shows four essential scenarios associated with local area performance. The matrix connects the strategic perspective of management with the feedback loop dominance in the system.

These scenarios portray four essential behavior over time as result of two main feedback loops. Behavior such as boom and collapse are produced by a reinforcing loop, while stability and decay patterns by a balancing loop. In the first case, the behavior of the variable is goal divergent and it moves from the point of unstable equilibrium, in the second one it is goal-seeking an it adjusts the variable value towards a stable point.

A feedback structure drives a certain behavior; figure 1.3 shows a causal loop diagram which feedbacks may lie behind the patterns before described.

Figure 1.3 A feedback loop diagram responsible for local areas' scenario
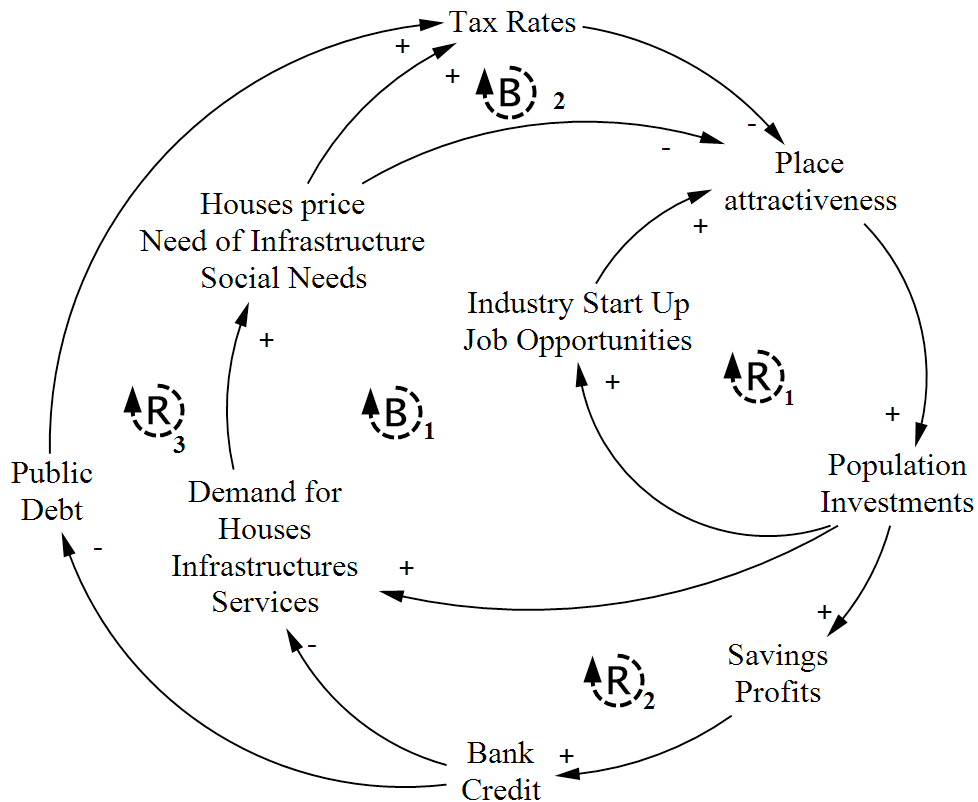
The polarity of a loop is inferred by multiplying all the signs in a loop. A plus sign means a direct relationship, while a minus sign indicates an opposite relationship between each couple of variables in a loop. By analyzing the structure of these feedbacks[4] is it possible to explain the main scenarios associated with local areas performance.

A local area has a good attractiveness since tax rates are kept low, houses are affordable, and social needs are satisfied. From this perceived condition, a first reinforcing process emerges: population and investments increases, and the number of business which provides new job opportunities increases too. They lead to improving the local area attractiveness. This improved condition, in turn, increases population and investment (R1). This positive loop produces a growth process like the one portrayed in figure 1.2.

Another loop can counterbalance the described reinforcing loop. An increase in population and investments in the local area may induce a rising demand for housing, infrastructures and social services, which cause a rise in houses' price, need of infrastructure, and social needs. The rise of these requests will cause, all other things being equal, a drop in place attractiveness, which in turn diminishes the population and the investments (B1). In such a way, the balancing loop moves the system toward a goal. A feedback loop of this kind can perform over time either stability or a decay behavior.

The loop B1 expresses the social demand for houses, infrastructures, and services. To deal with that, the local government increases tax rates which in turn affects place attractiveness. A lower attractiveness reduces the population and investments, which in turn decreases the demand for social services (B2). In the short run, these two feedbacks stabilize the place attractiveness' growth, but in a longer time horizon they may decay the places attractiveness. If the local policy-makers do not address these loops promptly, the shift in dominance will worsen

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[4] A feedback loop expresses causal relationship between the variables which it contains. Feedback labelled with "R" (reinforcing) represents processes of exponential growth or collapse, while the one labelled with "B" (balancing) identifies the loops which aim to move the system toward a goal.

the problems. In a situation where the loops B1 and B2 push the place attractiveness downward, the loop R1 may cause an exponential reduction in residents and investments, causing a further reduction in job opportunities an businesses, which in turn, determines a collapse in place attractiveness (R1), reinforcing the loop. At the same time, a reduction in resident and investment causes a drop in private saving and profits. The lower the savings and the profits are, the lower the bank credit will be. This credit crunch rises the demand of social needs and local government moves tax rates upwards, that, in turn, makes worse the place attractiveness and reduces population and investments. Such a moves will further shrink the bank credit (R2). A reduction in bank credit, sooner or later will cause public debt to rise. To face the burden, tax rates will go up, deteriorating the place attractiveness and further reducing the population. This will reinforce the regression spiral (R3).

Complex structures in system Dynamics take the form of multiple feedback loops, which involve stocks and flows, and nonlinearities. As Richardson (1995: 67) remarked "the concept of feedback-loop dominance is central to the system dynamics paradigm. In complex systems – high-order, multi-loop non-linear feedback systems – behavior over time depends on which of the many feedback processes in the system dominates. Endogenous shifts in loop dominance are responsible for shifts from, for example, exponential growth to decline or from stability to instability-they are responsible for bifurcations" Also Sterman (2000: 107) stated "oscillations are created by multiple negative feedbacks with time delays. More complex modes such as S-shaped growth and overshoot and collapse arise from the nonlinear interaction of these basic structures", and Forrester observed (1969: 108) "the interplay among these loops and the shifting in dominance from one to the other gives the complex system much of its character."

The interplay of these loops originates a variety of combination of the four essential behavior as figure 1.4 frames. The four relevant archetypes are connected with possible future development over time and corresponding shift in loop dominance.

Figure 1.4 Complex scenarios associated with local areas performance (adapted from Bianchi 2016, 43).
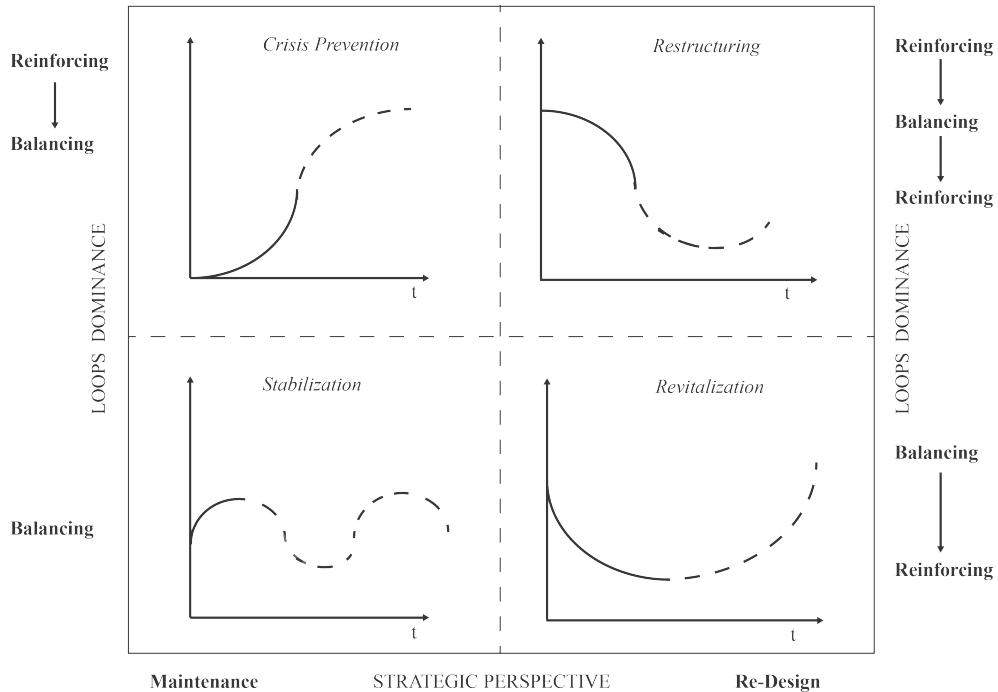
In Crisis Prevention, a balancing loop drives the system toward a sustainable goal. The Stabilization behavior may occur when multiple balancing feedback loops strive to find a sustainable condition. In this case, a policy lags or adjustments are too strong, or too weak, and performance oscillates. The Restructuring scenario presents a collapse pattern in the current performance which is driven by a reinforcing loop. Then corrective policies aimed at restoring resources are implemented through a balancing loop which stabilizes the system and allows the reinforcing loop to gain influence. The latter sustain a performance improvement. The revitalization relates to a decay process in the current performance, in which a balancing loop depletes the resources. Therefore decision-makers need to re-design the key success factor in order to support a possible future growth. A reinforcing loop drives this complex scenario.

Managing the performance of a local area entails the challenge to define what performance is, and to frame current results through one of the above-discussed complex behavior modes. Then, to identify, understand, and measure what are the driving factors of such performance. Based on those factors, identifying leverage points on which decision-makers may intervene to tackle problems and to design sustainable policies. Furthermore, the organisations comprised in the governance of a local area should embody within their performance management systems a number of performance indicators that refers to both institutional and inter-institutional performance. Then the organization through a comparison between strategic goals outlined and results achieved, should be able to understand how to close discrepancies and be accountable for them.

As a result of this process a local area outlines "the very future of the organization, establishing objectives and priorities and making plans to achieve these" (Hughes, 2003: 46). However, to achieve strategic goals organizations need to be purposefully steered. Bozeman and Straussman (1990: 214) remarked, indeed, that successful public management "inevitably requires a feel for strategy." By taking a strategic perspective, this research applies System Dynamics to performance management systems to show how dynamic performance management supports policy-makers and public organizations in assessing performance sustainability.

3. Methodology and research strategy

Public Management is a wide field of scientific interest, which includes analyses of public institutions, agencies, local government and the management of local areas.

This work applies the findings of explanatory studies into a research area which aims to "bridge the gap between Systems Dynamics and its applications in organizations, with a precise focus on performance management" (Bianchi, 2016: vii), with a specific focus in the public sector. This research agenda, known as

"system dynamics for performance management[5]", aims to contribute in answering to one of the Forrester's admonishment: "where are the people who can carry System Dynamics to the public sector?" (Forrester, 2007: 362).

System Dynamics may play a role in addressing public sector issues. "Despite the high applicability to public policy problems, system dynamics is currently not utilized to its full potential in government policy making" (Ghaffarzadegan, Lyneis, & Richardson, 2011: 23). System Dynamics may enhance performance management systems: a "mechanistic approach to planning & control systems design and implementation have often generated an illusion of control and a risk of manipulation in goal setting and performance evaluation" (Bianchi, 2010: 364). Other authors remarked the presence of a number of unintended effects generated by the introduction of formal P&C systems in the public sector (Boyle, 1999; Christensen & Lægreid, 2007b).

Public management is a field of research that investigates social phenomena, where individuals through organizations make decisions that shape the world. Decision rules reflect beliefs, perceptions, and possible responses of other actors or organizations. The reality is an ongoing process of interactions which emerge in collective behaviors that are in constant state of changes. From this viewpoint, it is possible to infer that reality, yet complex, is a social construction.

This research has adopted a deductive-inductive approach where theoretical frameworks have been intended as lenses through which one may investigates reality and explain phenomena. By following a relativist philosophy, qualitative research strategies have assumed a descriptive account.

A holistic case study was used to frame the sources of the image of a local are and to explain the relationship between the image and tourism presence. This research strategy refers to the longitudinal study presented in Chapters 4 and 5.

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[5] This agenda aims to contribute bridging a gap between System Dynamics and (more broadly) modeling research studies, and their applications in real organizations, with a specific focus on the public sector and on performance management. For more information about the research aims and scope.

The case study is "a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence" (Robson, 2002: 178). On the same idea also Berg (2001: 225) "case studies may focus on an individual, a group, or an entire community and may utilize a number of data technologies such as life histories, documents, oral histories, in-depth interviews, and participant observation" Yin (2003) also put emphasis on the importance of context, adding that, within a case study, the boundaries between the phenomenon being studied and the context within which it is being studied are not clearly evident.

The case study strategy has a considerable ability to generate answers to the questions "what and how" (Lewis, Thornhill, & Saunders, 2007: 139). Yin (2013) distinguishes between four case study strategies based upon two "discrete dimensions" (Lewis et al., 2007: 139):

    i)   single case vs. multiple cases;

    ii)   holistic case vs. embedded case.

A single case may be used for a unique or a critical case or even for the opportunity to analyze a new phenomenon. Multiple cases often used when there is a need to generalize – as large degree as possible – the findings, while holistic vs. embedded, relates to the researcher position in respect to the unit of analysis

Case study research strategy seems to diminish the comparability and the replicability of the findings because a single unit seems unable to provide a large degree of generalizability. The benefits of the case study method lie in its ability to open the way for discoveries (Shaughnessy & Zechmeister, 1985), indeed research based on case study aim to investigate specific issues. Moreover, when a research assumes a deductive-inductive approach, a case study may enable theory testing. This type of strategy provides empirical control regarding the validity of a given theory. "A well-constructed case study strategy allows to challenge an existing theory and also provide a source of new research questions"(Lewis et al., 2007: 140). A single case study "can easily serve as the breeding ground for

insights and even hypotheses that may be pursued in subsequent studies" (Berg, 2001: 231).

A second research strategy was used to show how a System Dynamics-based educational package may support the decision-makers of a tourism destination in understanding policy coordination as a relevant topic for sustainable development.

Action research represents a viable, practical strategy for social science studies requiring systematic, organized, and reflective investigation (Stringer, 2007). The origins of action research are not entirely in management. Holter and Schartz-Barcott (1993) and Adelman (1993) stated that action research originated in the field of psychology with Kurt Lewin (1946).

Action research can be understood as a means or model for enacting local, action-oriented approaches of investigation, and applying small-scale theorizing to specific problems, in particular, situations (Reason & Bradbury, 2007) or by emphasising the "appreciation of the capacity of humans to reflect, learn, and change" (Berg, 2001: 180).

Action research fulfills two primary tasks (Fals-Borda & Rahman, 1991; Reason & Bradbury, 2007):

i) to reveal or gather information and knowledge that will be useful to a group of people (through research, education, and sociopolitical action).

ii) to enlighten and support persons in the group, motivating them to take up and use the information gathered in the research.

Action research is a collaborative approach to research that provides people with the means to take systematic action in an effort to solve specific problems. This approach encourages people to examine reflectively their problems or particular issues affecting them. Indeed, it supports decision-makers to formulate accounts and explanations of their situation and to develop plans that may solve problems or improve their conditions. Whitehead (1994: 138) highlighted that "action research is a systematic form of inquiry undertaken by practitioners into their attempts to improve the quality of their own practice." This focus draws

upon the work of Argyris and Schon (1974) related to "double loop" and "deutero" learning (Argyris, 1976) and its role in developing an "action science" (Argyris & Schön, 1978). More recently Senge (1990: 237) argued that "action science aims at exploring the reading attitudes which underlie human action, and producing more effective learning in organizations and other social systems."

 "Action research process follows a kind of spiraling progression, rather than the more traditional linear one" (Berg, 2001: 180).

Figure 1.5 The iterative process of action research (Lewis et al., 2007:141)
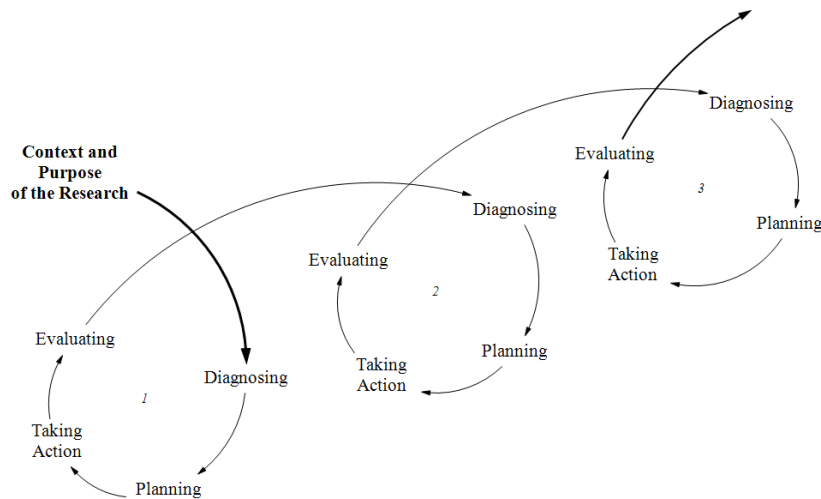
Action science follows an iterative process as figure C1-4 portrays. It evolves like a spiral that begins within a specific context and with a clear purpose, that is is likely to be expressed as the objective of the research (Robson, 2002). Diagnosis enables gathering information in order to answer the question(s), planning means analyzing and interpreting such information. This second step develops a project which is further implemented through actions. Afterward, the results are evaluated (cycle 1). Subsequent cycles involve further diagnosis, considering previous evaluations previous evaluations, planning new efforts, adopting these decisions and evaluating new outcomes.

Eden and Huxham (1996) argued that the findings of action research arise from involvement with members of an organization over a matter which concern to

them. Action research should have implications beyond the immediate project; it could inform other contexts. Thus, action research differs from other research strategies because of its clear focus on action, in particular promoting change within the organization.

As mentioned at the beginning of this section, this research aims to contribute to the research area focused on the application of System Dynamics for performance management into public sector organizations. Such an approach is required because a local area, alike any other system, is characterized by dynamic complexity. Hence, System Dynamics[6] methodology may give a better comprehension of the causal relationship underlying the problematic behavior. System Dynamics is firmly rooted in the relativist philosophy of science (Barlas & Carpenter, 1990: 152) which assumes that models lie on a continuum of usefulness according to the given the purpose of the research. It differs from the logical empiricist philosophy, which rather implies that a model is an objective and absolute representation of a real system.

Both research strategies choose a mixed model research technique to collect, analyze and mix data. System Dynamics modeling requires to integrate information from many different database (Forrester, 1992: 55-56). Quantitative data have been collected from statistical database such as *ISTAT*[7] and *Osservatorio Turistico Region Sicilia*[8]. Interviews and surveys as primary data have been handled with the help of Atlas.ti[9] on the basis of the themes running

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[6] Chapter 3 gives references on System Dynamics methodology.
[7] www.stat.it
[8] It is the web-based information system to acquire and manage data about the hospitality sector in Sicily. It has been founded by the July 25th decree of Regional Minister of Tourism, sport and performance arts. Available online at https://osservatorioturistico.regione.sicilia.it
[9] The purpose of ATLAS.ti is to help researchers to analyze and systematically work with complex phenomena treating unstructured data. The program provides tools that let the user locate, code, and annotate findings in primary data material, to weigh and evaluate their importance, and to visualize the often complex relations between them.

through the text. Qualitative and quantitative data have been used as source of a System Dynamics model built with iThink[10].

Figure 1.6 The research design onion
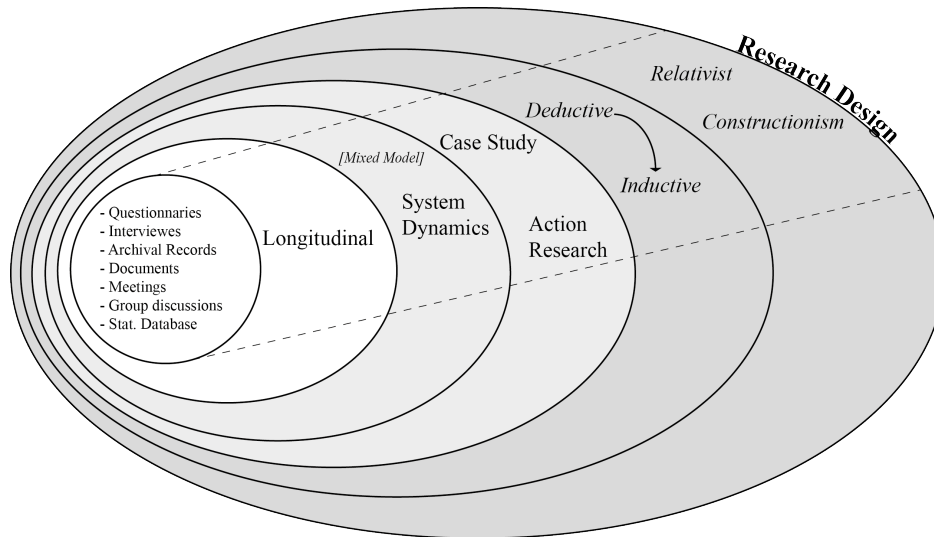
This thesis has been conducted by following ethic principles of the APA[11]. As Lewis, Thornhill & Sanders (2007: 178), clarified "research ethics therefore relates to questions about how we formulate and clarify our research topic, design our research and gain access, collect data, process and store our data, analyse data and write up our research findings in a moral and responsible way".

Consent was obtained by the interviewed people as well as the participant of action research process were asked permission to report the data for the purpose of

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[10] iThink and STELLA (short for Systems Thinking, Experimental Learning Laboratory with Animation; also marketed as iThink) are visual programming language for System Dynamics modeling introduced by Barry Richmond in 1985. The programs, distributed by iseesystems allows users to run models created as graphical representations of a system using four fundamental building blocks. iThink is used in academia as a teaching tool and is adopted as tool in a variety of research and business applications.

[11] American Psychological Association. 2002. Ethical principles of psychologists and code of conduct. *American psychologist*, 57(12): 1060-1073. Available at http://www.apa.org/ethics/code/index.aspx

the study. The research has used the public database and no property rights, or privacy rights were infringed.

Lastly, the bibliography has been handled with EndNote[12], the in-text citations, footnote, and reference list has been formatted according to the Academy of Management Journal style guide for authors (2011).

4. Structure of the thesis

Seven chapters structure this doctoral thesis. Chapter 1 illustrates the research project, it draws the background and provides an orientation to the research design. Chapter 2 reviews important pieces of the existing body of literature in the field of public management. It analyzes the key aspects of the three management models: *Old Public Administration, New Public Management*, and *Public Governance*. The chapter also illustrates how these paradigm shifts have affected performance management systems of public sector organizations.

Chapter 3 argues the need of dynamic performance to implement public governance for Local Areas. The chapter frames a local area as meta-organization, then it models local area's performance and highlights how to introduce performance management systems to support the inter-institutional governance of local areas. To this end, the chapter introduces the dynamic complexity which involves governance of local areas and dives into specific challenges for tourism destinations. Then it presents System Dynamics as a methodology that may enhances performance management systems. Finally, it depicts the dynamic performance management framework.

Chapter 4 presents an application of dynamic performance to identifies the factors impacting on the image of a local area. The chapter also explains the relationship between output and outcome, and presents performance measures and gives qualitative policy insights. Chapter 5 develops the study presented in

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[12] EndNote X8 is a reference management software package, used to manage bibliographies and references when writing essays and articles. It is produced by Thomson Reuters. Available at http://endnote.com

chapter 4. It explains the effects of the image of a local area on tourism. To this end, the dynamic performance management chart – used for the analysis in chapter 4 – is advanced into a System Dynamics simulation model. The chapter goes through the model sector by sector, then it comments the policies by presenting simulation outputs. Finally, model validation, limitations, and parameters and stock initialization value concludes the chapter.

Chapter 6 introduces to the action research and discusses challenges in designing a System Dynamics-based interactive learning environment. Chapter 7 shows how small town policy-makers may understand understand governance and coordination as relevant issues for sustainable development through a System Dynamics based interactive learning environment.

"Discussion and Conclusions" summarize main findings of the thesis at the end of the work.

CHAPTER 2

PUBLIC MANAGEMENT AND PUBLIC GOVERNANCE TWO PARADIGM FOR LOCAL GOVERNMENT

1. Introduction

Since the late 1970s, Western countries inaugurate a season of reforms. A shared path among these reforms had been found despite national adaptations (Ongaro, 2009; Pollitt, 1990; Pollitt & Bouckaert, 2011; Pollitt, Van Thiel, & Homburg, 2007a). The public sector of Western countries shifted from *Old Public Administration* to *New Public Management* (NPM), to *Public Governance.*

This path is the object of this chapter; it aims to understand how public sector has changed to face the new challenges of our societies. Initially, the chapter frames the shifts in the "dominant modes" of public management (Osborne, 2006a: 377); secondly, it outlines how they turned performance management system. The chapter illustrates the factors were driving the NPM reforms; it follows describing what has triggered the managerialism in the public sector, also by attempting to identify the main trends in NPM; then the limitations of the NPM, and the characteristics of the public governance are emphasized. Finally, it dives into the need of outcome measure in the public sector.

The public sector has been defined as different from the private sector, because it "is the arena in which public choice is exercised in order to achieve a collective purpose" (Bovaird & Löffler, 2009: 4). A big distinction between public and private "derives from the duality of publicness: the need to enable citizens in their plurality to express their contribution to the life of the community and out of that plurality, to enable a process of collective choice and the government of action in the public interest to take place" (Ranson & Stewart, 1989: 5). Thought it may seem that a straight difference exists between public and private sector, a separation line among them is blurred. This is also within the traditional core

functions of government (e.g. defense, education, justice, and healthcare), where there are overlapping areas of competencies between public and private domain. With a great extent, private companies provide many "public services" such as local transportation, communication, or residential garbage collection. Nowadays, complex societal problems are addressed by organizations often located in the middle of a continuum from public to private. It was not always like this.

Probably, Woodrow Wilson would not recognize the field he first[13] formally characterized in 1887 with "The Study of Administration[14]."

During the last decades, public sector organizations witnessed deep transformations aimed at facing the new challenges that came about with the evolution of the socio-economic context of post-industrial societies. The large, hierarchical, uniform and bureaucratic organizations have been replaced by organizational networks where public needs are addressed through inter-organizational multi-level programs. Mostly, interconnected clusters of firms, government bodies, and associations come together within the framework of these programs (Hjern & Porter, 1981: 212).

2. From old public administration to new public management

For more than a hundred years, Western public sector institutions have been conceived according to what is usually known as the o*ld classic public administration paradigm*. The Weberian ideas of bureaucracy[15] influenced the structure and the process of public institutions in Europe, while the thoughts of

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[13] Wilson is widely recognized one of the field's founders, along with Max Weber and Frederick Taylor. See Hood. 2000. The Art of the State: Culture, Rhetoric, and Public Management: Clarendon Press.

14 Although Wilson indicates in the article that colleges were already teaching administration in the 1880s, it was considered a sub-field of political science. Wilson argued that it should be treated as its own field of study, with public administrators being directly responsible to political leaders. He believed that politicians should be accountable to the people and that political administration should be treated as a science and its practitioners given authority to address issues in their respective fields.

[15] For a detailed discussion of the *old classic public administration* see: Waters and Waters. 2015. Weber's rationalism and modern society new translations on politics, bureaucracy, and social stratification. Basingstoke: Palgrave Macmillan.

Woodrow Wilsons and Frederick Taylor[16] have led the public administration studies and practices in the United States. These two classic paradigms have worked uninterruptedly – for almost a century – until the early '80s of the twentieth Century, when a set of "deliberate changes to the structures and processes of public sector organizations with the objective of getting them (in some sense) to run better"(Pollitt & Bouckaert, 2011: 2) have been undertaken.

The o*ld public administration paradigm* was grounded on a native distinction between public vs. private. At that time, the presence of a thick net of laws, rules and procedures to comply with were intended as a mean to run (well) the services.

The "welfare state" can be considered as a by-product of the o*ld public administration paradigm.* The social support characterized many developed countries from the early 1970s since the ability of this paradigm to meet social and economic needs of citizens was supposed to be. Unfortunately, the o*ld public administration* paradigm failed its courageous mission, therefore critics followed, and the welfare state started to be dismantled.

Table 2.1 summarizes the essential elements of the *old public administration* paradigms as they are identified by two prominent authors.

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[16] Taylor in his seminal book, defined "the principles of scientific management": i) replace rule-of-thumb work methods with methods based on a scientific study of the tasks. ii) Scientifically select, train, and develop each employee rather than passively leaving them to train themselves. iii) Provide "Detailed instruction and supervision of each worker in the performance of that worker's discrete task" (Montgomery 1997: 250). iv) Divide work nearly equally between managers and workers, so that the managers apply scientific management principles to planning the work and the workers actually perform the tasks. See: Taylor, F. W. 1911. The principles of scientific management: Harper.

Table 2.1 Essential elements of the Old Public Administration (OPA) paradigm	
The key elements of OPA according to (Osborne, 2006: 378)	Principles of OPA according to (Pollitt et al., 2007a: 3)
i) the dominance of the 'rule of law'; ii) a focus on administering set rules and guidelines; iii) a central role for the bureaucracy in policy making and implementation; iv) the 'politics – administration' split within public organizations; v) a commitment to incremental budgeting; and vi) the hegemony of the professional in the service delivery system.	i) Hierarchy and rules ii) Permanence and stability iii) An institutionalized civil service. iv) Internal regulation. v) Equality.

The research community has agreed upon three foundational characteristics of the *old public administration*: task separation, management by rules, and hierarchical structure of public bodies (Borgonovi, Fattore, & Longo, 2009).

A new perspective in the study of public administration was promoted. The idea that the rational individual of our societies may expect to get better results by having access to a number of different public services characterized such viewpoint (Ostrom & Ostrom, 1971: 211).

Dunleavy (1985: 300) in dealing with the impact of public choice theories in political science, outlined "an alternative analysis of bureaucratic behavior, one in which budget maximization is a more remote or unlikely influence upon agency policies". Also from a political viewpoint, Mischra (1984) stated that in varying degrees and forms, the welfare state throughout industrialized West is in disarray. He also argued that the New Right hold to blame competitive politics to causes parties of both *right* and *left* to promise more and more.

In the early 1980s, a new set of public administration ideas began to displace the *old public administration*. A crucial work – and also a best seller book – published in 1993 was *Reinventing Government. How the entrepreneurial spirit is transforming the public sector* (Osborne & Gaebler, 1993). This book suggested ten principles that are intended as a roadmap for any (entrepreneurial) government.

Figure 2.1 The shift from Old Public Administration to New Public Management as departure from high density of rules and insularity (Dunleavy & Hood, 1994: 10).
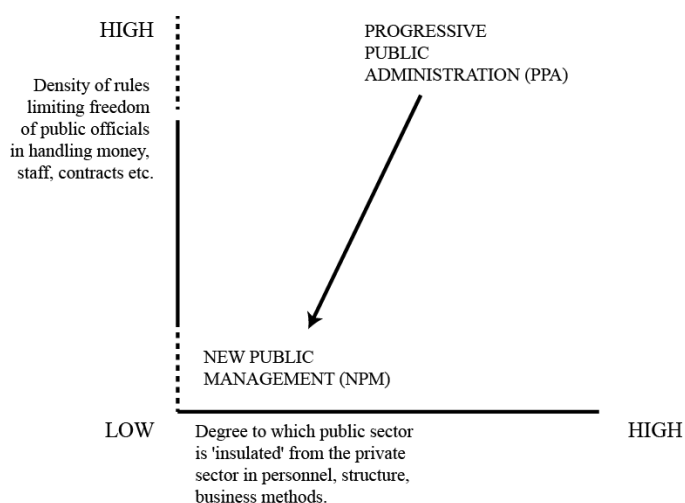
Figure 2.1 synthetizes the shift from *old public administration* (termed as progressive public administration) to NPM. This first move has reduced the tendency of public official to simply adhere to rules by reducing the density of the latter. At the same time, public sector organizations started to borrow best practices from businesses, made agreement and partnerships with private sector organizations. Through the use of these instruments, public sector reduced its segregation from the management model of private organizations.

The literature on NPM (Hood, 1991; Hood, 2005; Larbi, 1999; Pollitt & Bouckaert, 2011) identifies the forces which have driven changes in public sector. These forces, although not completely new (Hood, 2001: 12554), moved also the public management discipline within management and business schools, in the Anglo-Saxon countries, closer to political science and law studies in southern-Europe (Osborne, 2006a: 379).

On the ground of the first shift there were both theoretical paradigms as well as operational solutions to arising problems. Neoliberal view held bureaucratic organizations accountable for inefficiencies in public service delivering (Lindblom, 1977). The liberal ideas by Hayek and of the public choice by

Niskanen and Buchanan sharply criticized the bureaucratic model of administration. These theories created a common belief about the ineffectiveness of public sector in favor of market institutions (Ferlie, Ashburner, Fitzgerald, & Pettigrew, 1996; Pollitt, 1990). During the late 1980s economic and fiscal pressure have hurt Western countries. Governments mainly identified the cutback of social support's budget, privatization of national agencies, and contracting-out of public services as solutions to overcome deficit spending and control fiscal burden (Boer, 1997). From a functionalist point of view, the bureaucratic model was unable to support any result improvement. The development and the availability of information technology were intended as a leverage for performance and a tool to implement managerial reforms (Greer, 1994). Private organizations connected output's optimization with reward systems, and strategies started focusing on delivery rather than merely on productivity and efficiency. Scholars and practitioners started questioning how to introduce these management innovation inside the public sector.

During the decades NPM was a stamp which has been put on top of any reforms. In facts, "the doctrines of public sector management encompassed by NPM have been variously described by different commentators" (Hood, 1995: 95), (with different words in Hood, 1991: 4). With the same flavor, "there is some tension between the different intellectual streams that feed into the NPM" (Pollitt & Bouckaert, 2011: 10).

There have been several attempts to delineate the core elements of the NPM reforms; Dunleavy (2005: 470) summarized it with three words: disaggregation, competition, and incentivization. The OECD defined NPM as "lean and more competitive while, at the same time, trying to make public administration more responsive to citizens' needs by offering value for money, choice flexibility, and transparency" (OECD, 1993: 9). An embraceable approach recognized NPM as "two level phenomena" (Dunleavy, 2005: 469). At the top level, the idea that the public sector can be improved by importing concepts, techniques, and values from the private sector; at a more operative level the belief that NPM is a "bundle of

specific concepts and practice" (Pollitt & Bouckaert, 2011: 10). Other scholars distinguished between "a hard and a soft version of NPM" (Ferlie & Geraghty, 2009: 431).

NPM does not have universal characteristics it is rather "a chameleon-like and paradoxical creature" (Pollitt et al., 2007a: 4; Pollitt, Van Thiel, Homburg, & Van Thiel, 2007b: 4). The next section explores which set of similar doctrines and approaches have characterized the NPM.

3. Conceptualizing new public management

NPM was defined as "a vision, and an ideology or a bundle of particular management approaches and techniques" (Larbi, 1999: 12). It was also defined as a "market-based public administration" (Lan & Rosenbloom, 1992: 535). NPM is "managerialism" (Pollitt et al., 2007b: 1) or a result of "reinventing government" (Osborne & Gaebler, 1993: 1), or just a "post-bureaucratic model" (Barzelay, 2001: 153). In its most extreme form, NPM asserted the superiority of the private sector managerial techniques over those of public administration, by taking for granted that such techniques would have led improvements in the efficiency and effectiveness of public services delivering (Osborne, 2006a: 379; Thatcher, 1993).

Key elements of NPM approach have been identified by the literature (Osborne, 2006a; Pollitt & Bouckaert, 2011; Pollitt et al., 2007a). To unbundle NPM one must begin with the set of ideas which have informed such an approach. NPM in various degree blended a stream of managerial ideas in the public sector (Merkle, 1980; Pollitt, 1990) seeking to integrate administrative procedures with result-oriented managerial methods. At a higher level of inference, this shift is also grounded in the new institutional economics[17] which borrowed ideas from economics, law, organization theory, political science, and sociology to explain

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[17] The purpose of this theory is to explain institutions, investigate how they emerge and their goals. According to these, how they evolve and can be reformed. See: Williamson, O. E. 1975. Markets and hierarchies : analysis and antitrust implications. London: Free Press.

institutional environment and arrangements. In the process of reforming public sector organizations, well-established theories had an influence. The public choice theory provided explanations of political behavior and suggested a framework for the analysis of collective decision-making[18] (Black, 1958); the transactions cost theory exposed the conditions under which organizations should opt for services internalization instead of outsourcing them; the principal-agent theory[19] revealed that the agency dilemma influences both organizations's and individual performance (Niskanen, 1971). The main elements of the NPM reflect such a theoretical background. The underlying values of public administration moved from universalism and fairness to individualism, efficiency, and productivity (Hood, 1991: 3). Reforms attempted to retrieve efficiency changing the focus of management from inputs/process to outputs, and introducing performance measures and indicators. During the late 1990s, public organizations begin to be evaluated for their effectiveness and timeliness to address problems. So the public domain moves toward specialized, lean and autonomous organizational forms, rather than large, plethoric and vertically integrated bureaucratic forms (Hughes, 2003: 54). In this period, there was a diffusion of market-like mechanisms to run services (Lane, 2002). Public/private partnerships, hybrid organizations, and agency substituted hierarchical relationship (Lynn, 1996: 137). Best practices from the private sector were introduced inside the public arena. This effort is witnessed by the growth of hands-on management, by the separation of powers, by a focus on entrepreneurial leadership within public service organizations.

The main elements of NPM can be positioned along a continuum where they respond to specific needs which, in turn, can be inferred from the theoretical perspectives before reported.

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[18] Public choice or refers to the use of economic ideas to deal with traditional problems of political science. See:Black, D. 1958. The Theory of Committees and Elections. Cambridge: Cambridge University Press.

[19] The principal–agent theory identified, in political science and economics, the dilemma according to which an agent is motivated to act in his own best interests, which are opposite to those of the principal. Principal and agent can be both people and organizations.

Table 2.1 details the main elements of NPM and clusters them in keywords which move from one theoretical approach to the other one. The table connects keywords to prominent authors in the field of public management.

Table 2.2 Theoretical approaches to NPM, authors, keywords, and "ingredients"

Managerialism		
Hood, 1991 Dunleavy & Hood, 1994	Freedom to Manage Search for Efficiency	· hands-on professional management shift to disaggregation of units into quasi- contractual or quasi-market forms; · shift to greater competition and mixed provision, contracting relationship in the public sector; opening up provider role to competition; · stress on private sector styles of management practice; · greater emphasis on output controls explicit standards and measures of performance; · stress on greater discipline and parsimony in resource use; reworking budgets to be transparent in accounting terms;
Pollit, 1993; 1994	Innovation Devolution	· decentralizing management authority within public services; · breaking up traditional monolithic bureaucracies into separate agencies introducing market type mechanisms clearer separation between purchaser and provider function; · stress on quality, responsiveness to customers; · performance targets for managers; · capping/fixed budgets; · changing employment relations;
Ferlie et al. 1996	decentalization Contracting-out Transparency	· decentralization; organizational; · umbundling; new forms of corporate governance; · split between strategic core and large operational periphery; · elaborate and develop quasi- markets as mechanisms for allocating resources within the public sector; · split between public funding and independent service provision; · major concern with service quality; · more transparent methods to review performance; · strong concern with value-for- money and efficiency gains; · downsizing; · deregulation of the labour market;

Boris, 1994 Commonwealth, 1996	Incentives	· increased autonomy, particularly from central agency controls; · receptiveness to competition and an open-minded attitude about which public activities should be performed by the public sector as opposed to the private sector; · creating synergy between the public and private sectors; · providing high-quality services that citizens value; · service users as customers; · organizational and individual performance-based reward systems; · performance-based budgeting;
Osborne & Gaebler, 1992	Marketisation/ competition	· decentralization, flattened and flexible form of government; · catalytic government: steering not rowing; · competition even within public services; · driven by mission not rules; · result-oriented government: funding outputs not inputs; · enterprising government: earning not spending; · market- oriented government: leveraging change through the market; · anticipatory government: prevention rather than cure;
New institutional economies		

This section has illustrated the main features of NPM. These new ideas have produced changes and innovations in public sector organizations, but after a period of reforms, some issues have been raised.

4. Main limitations of the new public management

A recent work defines NPM as the combination of "decentralization, competition, and incentivization" (Dunleavy, Margetts, Bastow, & Tinkler, 2006: 470). Decentralization gave raise to a proliferation of agencies, lack of coordination, and sometimes inconsistency and incoherence among policy programs (Halligan, 2010: 235; Pollitt & Talbot, 2004); putting this shortly: it caused fragmentation.

Critics argued that NPM is not a unique phenomenon or a single paradigm: it is instead a cluster of several paradigms (Ferlie et al., 1996). The international

experience of the NPM reforms does not provide a straightforward "yes" or "no" answer to the question about their success. Attempting and answer involve difficulties in systematically[20] evaluates large-scale public management reforms (Pollitt & Bouckaert, 2011: 15).

Kickert (1997: 731) critically examined the adequacy of the businesslike concept of "management" to be transposed to the public sector. Farnham & Horton (1993: 254) stated that "through radical, market-led governmental policies, the new public service managers (an alternative way to term NPM) have to some degree politicized the managerial role in their organizations."

With their "Public management in flux. Trends and differences across OECD countries"[21], Matheson & Kwon (2003: 42) questioned the reader: had reforms undertaken in OECD countries over the past fifteen years produced the desired results? The answer the authors provided is "efficient but insufficient." Also, Allen Schick (1996: 87), in carrying out carry out an independent study of the New Zealand State sector management framework, pointed out that "objectives of the first generation of reforms: many of these improvements are a matter of technical or operating efficiency – more outputs produced with fewer inputs […] But as important as it is, efficiency in producing outputs is not the whole of public management. It also is essential that government has the capacity to achieve its larger political and strategic objectives. [...] It will have to move from management issues to policy objectives, to fostering outcomes."

The *old public administration* had the attitude to take into account the public policy-making process. However, the implementation phase was meant as a "black box," with no tendency to unbox the implementation of public policies (Schofield, 2001). Under the *old public administration* paradigm, indeed, public

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[20] To examine NPM-based reforms and results, Pollit and Bouckaert introduce a fairly orthodox framework within which to discuss "performance." Their analysis point out the trade-offs and/or the inconsistencies between different content of performance such as efficiency, effectiveness, utility and sustainability, outcome. For a detailed analysis see Pollitt, C. & Bouckaert, G. 2011. Public Management Reform: A Comparative Analysis - New Public Management, Governance, and the Neo-Weberian State: OUP Oxford.

[21] Matheson, A. & Kwon, H.-S. 2003. Public management in flux. T. Bovaird & E. Loffer.(2003). Public Management and Governance. London: Routledge.

managers were depicted as villains "thwarting the resolve of their political masters and often subverting the intentions of new policy to their own ends" (Osborne, 2006a: 380).

By contrast, the NPM has addressed precisely the complexities of such "black box." In "Increased Complexity in Public Organizations – the Challenges of Combining NPM and Post-NPM"[22], Tom Christensen and Per Lægreid discussed the effects and challenges of complexity on public sector organizations. They have related political and administrative control and institutional autonomy to NPM and post-NPM reforms. The two authors clearly stated that NPM reforms have advanced the autonomy argument, by stressing structural devolution, and also have increased the distance between executive and politicians (Christensen, Lie, & Lægreid, 2008); while post-NPM reforms have underlined control and coordination aspects of public management (Christensen & Lægreid, 2007a; Christensen & Lægreid, 2007b).

NPM reforms have diminished the legitimacy of public policy in favor of market institutions. In other words, both the managerialism view and the new institutional economics – albeit with a varying degree – imposed unreasonable constraints to the democratic principles. The NPM agenda turns out to a problem of governance: "the bureaucracy, by most objective standards, is performing fairly well while the electoral institutions seem to be deteriorating. To solve this problem, the public administration needs to revisit its past and reincorporate the study of electoral institutions into the field. This is a normative orientation, with public administration concerned with how governance should be structured and operated rather than just how the bureaucracy should implement public policy" (Meier, 1997: 197). As a consequence, an urgent request for a more holistic approach to public management emerged. Scholars started argue to go beyond the sterile dichotomy of "administration versus management" (Osborne,

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[22] For a in-depth analysis about complexity in public sector see: Christensen, T. & Lægreid, P. 2010. Increased complexity in public organizations—the challenges of combining NPM and post-NPM. In P. Lægreid & K. Verhoest (Eds.), Governance of public sector organizations: 255-275: Springer.

2006a: 380), hitherto stressed. The studies on management of public sector organizations began to integrate "different types of values," "different types of policy-making process," and "different types of organization and stakeholder" (Bovaird, 2005: 218). Such holistic management model may well be the public governance.

5. Public governance: combining the internal with the external perspective of performance

Within the public management literature, there is a wide area of approaches – termed as "governance" or as "public governance" – which locate a long-standing theoretical debate in the field. For at least the last twenty years – from late 1990s till now – governance has been a prominent subject in public management studies (Frederickson, 2009: 283), with manifold roots of interest (Bovaird, 2005), owing to a considerable prior theoretical and/or ideological baggage (Osborne, 2006a: 381). Despite such debate, no unanimous definition of governance has been denoted.

In the attempt to devise a meaningful definition of governance, authors as well as scientific institutes come up with several of explanations of governance.

- Governance is the exercise of political power to manage a nation's affairs (World Bank, 1989: 60).
- Governance comprises the traditions, institutions and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern (Canadian Institute on Governance (www[dot]iog[dot]ca).
- Governance is the way in which stakeholders interact with each other in order to influence the outcomes of policies (Bovaird & Löffler, 2009: 7);
- The pattern or structure that emerges in a socio-political system as a "common" result or outcome of the interacting intervention efforts of all

involved actors. This pattern cannot be reduced to [the outcome produced by] one actor or groups of actors in particular (Kooiman, 1993: 258).

· Governance as "self-organizing inter-organizational networks" that function both with and without government to provide public services (Kickert, 1993: 199).

· Governance is "about managing networks." Governance as "minimal state, socio-cybernetic system and self-organizing networks" (Rhodes, 1997: 53).

· Frederickson (1999: 702) argued that "public administration is steadily moving […] toward theories of cooperation, networking, governance, and institution building and maintenance."

· Salamon (2002: 8-9) used "governance […] to put emphasis on the collaborative nature, on the reliance on the wide array of third parties in addition to government to address public problems and pursue public purposes."

· A holistic approach to governance where outcome/outputs of policy programs are a function of environment, users, activities, structures and managerial role (Lynn Jr, Heinrich, & Hill, 2001).

In outlining public governance, scholars did not focus on results, as they did in NPM, they have rather stressed interaction, coordination, and outcomes that citizens as stakeholders aim to achieve (Bovaird & Löffler, 2009: 3-12).

Jon Pierre & Guy Peters in their book (2000) asked provocatively: if governance is much more than government "Does government still matter?" An answer can be found in Löffler (2003: 166). In arguing about the changing role of government from policy making to regulating, she rather asked "When does government still matter?" The answer provided[23] is the following: "there is a lot of empirical evidence that the public sector still has a very powerful problem-solving capacity with regard to some issues in some contexts." The same answer by

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[23] Concluding the "VII Azienda Public Workshop, Palermo 25-27 May 2016" prof. Elio Borgonovi, expressed the same concept.

Rhodes (1997: 57) "the state becomes a collection of inter-organizational networks made up of governmental and societal actors with no sovereign actor able to steer or regulate."

Governance is a management mode of the public sphere with an inter-institutional focus, and it has been conceived as the natural evolution of NPM which was mainly focused on output and intra-organizational aspects. Public governance filled the gap of NPM in various aspect: the emphasis on users and community satisfaction, the search for efficiency, as well as the capability to engage stakeholders, and – particularly through networks at local level – to deliver services together with private organizations. Through governance, both public and private sector organizations may improve coordination and experience new effective ways to satisfy public needs (Borgonovi, 2002).

Table 2.3 compares governance to NPM and *old public administration.*

Table 2.3 Elements of Public Governance in contrast to Old Public Administration and NPM (Osborne, 2006a: 383)

	Old Public Administration	**New Public Management**	**Public Governance**
Theoretical roots	Political science and public policy	Rational/public choice theory and management studies	Organizational sociology and network theory
Nature of the state	Unitary	Disaggregated	Plural and pluralist
Focus	The policy system	Intra-organizational management	Inter-organizational governance
Emphasis	Policy implementation	Service inputs and outputs	Service processes and outcomes
Relationship	Potential elements of the policy system	Independent contractors within a competitive market-place	Preferred suppliers, and often inter-dependent agents within ongoing relationship
Governance mechanism	Hierarchy	The market and classical or neo-classical contracts	Trust or relational contracts
Value base	Public sector ethos	Efficacy of competition and the market-place	Neo-corporatist

As the table shows, substantial differences emerge when public governance is compared with the other management model. Public governance, indeed, turned the theoretical roots of public management into sociology and political science by focusing on the management of inter-organizational networks. Such horizontal approach to government of network is based on trust relationships, rather on hierarchy or pure market. The value of this approach also moved from the classical ethos to the relevance of stakeholders. The last difference concerns the emphasis of the model: outcomes of policies vs. input/output vs. processes.

The systematic review of three model contains labels which distinguish a model from another. If on dive into a critical examination of public governance, moving from the question "whether or not public governance is a new paradigm for the delivery of public services" (Osborne, 2010: 2) the distinction between the past is not sharp as it may seem to be.

As Kickert (1997: 735) remarked: "in public governance, interaction with the socio-political environment plays an important part. It is not merely an internal organizational matter, […] Public governance is the "management" of complex networks, consisting of many different actors from the national, provincial, and local government, political and societal groups, pressure, action and interest groups, societal institutions, private and business organizations. The management of such public networks is a form of external government steering."

Performance management has been central in the evolution path of public management models. NPM introduced the performance cycle which includes the activities of "setting objectives and quantified targets for future achievements, the selection of indicators to measure progress, gathering data against these indicators, formally evaluating whether progress is being made, and taking corrective action when required" (Walker, Boyne, & Brewer, 2010: 26).

In order to assess the capability of the single institution to affect the performance of a local area, public governance takes an inter-institutional perspective. The emphasis of governance is on outcome, on the (long-term) impact of policies, which may yield – if coordinated and coherent – *shared*

resources (Bianchi, 2010, 2015; Bianchi & Tomaselli, 2015) to the benefit of the inter-institutional system.

The classic logic of performance measurement based on efficiency, effectiveness, and economy (the so-called "3Es" model) was thus extended. Performance management systems began to include other crucial dimensions to measure such as equity, transparency, ethics, quality, economic, social and environmental sustainability, accountability (Long & Jefferson, 1999: 386). These innovations in performance management were aimed to face the increasing complexity of public domain (Christensen & Lægreid, 2010) as well as a response to the call for outcomes measurement which became more intense as a result of the "reinventing government" movement (Lægreid & Verhoest, 2010). Therefore, scholars juxtaposed governance and its focus on the inter-institutional system to the policies' impact determined by such system.

6. An outcome-based approach to implement public governance

Post-NPM reforms have significantly innovated the performance management systems of public sector organizations. Institutions, agencies, and public entities increasingly shifted away from the measurements of inputs and processes, toward an attempt to manage internal results and outcomes (OECD, 2007). In fact, modern textbooks on performance measurement/management discourage to measure just inputs even in combination with output indicators, but rather emphasis should be on outcomes indicator.

Public sector organizations perceived the need to monitor and manage their policies, to understand whether they achieve their objectives, to keep under control how resources are used, to figure out how processes can be improved and productive raised (Williams, 2003). Quoting Romzek (2000: 32) "contemporary government reforms seek to shift evaluations away from a rules […] to shift performance measures toward output and outcome measures. In contrast to inputs and process orientations, a focus on outputs and outcomes emphasize deliverables

of work." Moreover, Flynn (2001: 72) highlighted "a tendency to move toward management through effectiveness and management of outcomes clearly requires integration rather than analysis." In other words, a top-down approach – which moves from synthesis to analysis – may help in setting up an outcome-based performance management framework. It should start from the outcome identification, then moves backward by defining indicators and measures that capture crucial aspects of complexity, against which the policy can be further assessed.

A discussion about outcome within the framework of performance management is provided in chapter 3, but before addressing that, the current section endeavors to conceptualize the outcome.

The term outcome refers to different perspectives. Kruijf & De Vries (2016) identified several dimensions of the outcome. First of all, outcomes are connected with the general systems theory of the political system of David Easton (1953). Easton's works refers to a model in which decisions/policies that produce outputs. Such outputs feedback on the input to the political system by changing "demand or support" (1957: 384). As von Bertalanffy (1968: 161) suggested "the basic model is a circular process where part of the output is monitored back, as information on the preliminary outcome of the response, into the input, thus making the system self-regulating; be it in the sense of maintenance of certain variables or of steering toward a desired goal." According to this perspective, the outcome of a policy feedbacks on the input and it may – or may not – restore the input.

A second classification identifies outcome as the consequences of output. It means that outputs are seen as mechanisms that in combination with the context result in outcomes. This view explains why something works for certain circumstances, and why something does not. As Pawson & Tilley (1997: 57) synthetized it "outcomes = mechanisms + context." Putting it differently, while measuring outputs means gauging numbers of tasks accomplished, for the outcome, this refers to grasp their impact on the environment (Forsythe, 2000).

In defining the outcome, the time span matters too. Outputs refer to the immediate results of policy, whereas outcomes are usually conceived as the long-term effects. In fact, Afonso, Schuknecht & Tanzi (2010: 15) stated: "the distinction between output and outcome [..] should be fundamental in the analysis of the efficiency of public spending." Another perspective of outcome implies an estimation of the worth of what has been delivered by public sector organizations. In this sense, while the output measures a quantity, the outcome proxies the quality of such quantity. "Such a view implies the existence of an identity of the form: Outcome = Valuation (output * quality)" (Smith, 2013: 2).

Table 2.4 recalls the different definition of outcome and connects each of these to the authors.

Table 2.4 Definition of outcome and authors (adapted from Kruijf & De Vries, 2016)

Definitions of outcome	Authors
Outcome as change in the input.	David Easton, 1953, 1957 von Bertalanffy, 1968
Outcome as the consequences of output	Pawson & Tilley, 1997 Forsythe, 2000
Outcome are usually conceived as long-term effects	Afonso, Schuknecht & Tanzi, 2010
Outcome gives an approximation of the quality of that output	Smith, 2013

To understand how a policy turns out or to assess a program, a comprehensive definition of outcome which combines the four perspective is likely to be the best way. Public policy produces effects on the external environment which should reduce the demand for that specific public support. This change happens, if the output of a decision yields to consequences that improve in the long run the qualitative conditions of that given system.

A sound definition of outcome should take into account all of these aspects, since the measurement of such results is essential to assess public sector's policies. Indeed, a public organization can perform well in achieving internal targets, but these results produce a poor impact on socio-economic context. This

important distinction allows one to identify an internal and an external effectiveness (Bianchi, 2004; Cosenz, 2011): the first one is a comparison between objectives and result; the second captures the ability to meet public needs (Ammons, 2001).

The multidimensionality of performance entails to measure/manage different perspectives of results. Figure 2.2 portrays the full extent of performance which can be measured in terms of economy, efficiency, effectiveness, productivity, and trust.

Figure 2.2 Span of performance in the public sector: an analytical framework (Bouckaert & Halligan, 2007: 16)
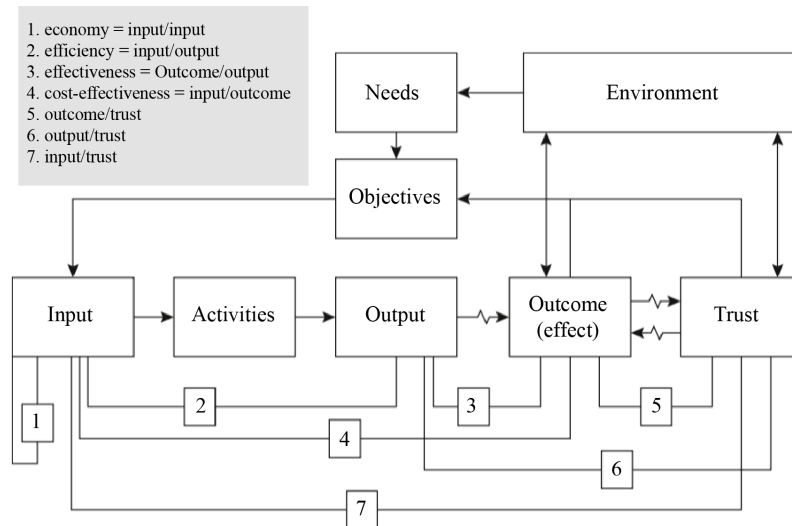
These measures can be referred to input, activities, outputs, outcomes, and trust. Indeed, organizations can measure the resources deployed (1), the efficiency in using them and the volume of output (2), the impact of such quantity (3), and the cost-effectiveness (4). Trust measures capture the ability of outcome (5), outputs (6), and input (7) to build consensus around organization's policies and decision rules. Trust may increase or decrease the effect of policies on the environment.

The ultimate end of a public organization is not to just finalize outputs. In fact, quite often an output of a public institution is a means through which private

organizations or citizens may generate value. A construction permit is an output provided to construction firms in order to build up houses and apartments. Communities recognize as part of the mission of a municipality to allow them to construct. The number of people who had a surgery treatment in a year is a result of a public hospital. Expressed in this term it measures an output, a volume. The number of people who are still alive five years after a liver transplant – when compared to that output – is a measure of outcome. "Outcomes or effects are everything beyond outputs, […] public sector performance measurement systems should not just be organised at the individual organisational level but at the level of a policy field" (Bouckaert & Halligan, 2007: 16).

The span of performance put emphasis on the measurement of outcomes. The effects of a policy quite often depends on the coordination among a variety of organizations, especially for local areas. The measurement of outcomes connects public governance principle with the discussion on the performance of public sector organizations. To manage the performance of a local area, the organizations embodied in such inter-institutional system through governance may enlarge the perspective of their performance management framework. In a local area a leading institution should go beyond a model of performance based on economy, efficiency, and effectiveness evaluations. Such a progress implies to understand the limitations of technical efficiency and integrate them with allocative efficiency measures (Boyne, 2002: 17-19).

A local government needs to add a range of additional dimensions to its organizational performance (Walker, Boyne, & Brewer, 2010: 10). Such an organization may well be the institution which takes a leading role inside the local area. Table 2.5 shows an example of this "integration", where a performance domain is characterized by a range of sub-performance domain. Within each of these sub-dimensions a number of performance indicators can measure the full extent of local area's performance.

Table 2.5 Dimensions of organizational performance in local government (Walker et al., 2010: 11)	
Performance domain	*Sub-performance domain*
Outputs	Quantity Quality
Efficiency	Cost per unit of output
Service outcomes	Formal effectiveness Impact Equity Cost per unit of service outcome
Responsiveness	Consumer satisfaction Citizen satisfaction Staff satisfaction Cost per unit of responsiveness
Democratic outcomes	Probity Participation Accountability Cost per unit of democratic outcome

In addition to the traditional domain of performance such as outputs and efficiency, a local government must include other dimensions. For instance, with service outcomes an organization may capture the effects of the output on the external environment (e.g. the change in the number of patients effectively recovered from illness through cares, the change in the graduate students which belong to the lower income brackets). Measuring responsiveness it is possible to grasp the ability of the system to provide on-time, appropriate, and effective responses to citizens' needs (e.g. the average waiting time for a surgery treatment, capacity to evacuate people in order to rescue people from the earthquake). Lastly, local governance must also encompass democratic outcomes to address specifically its publicness (e.g. the change in the number of citizens who participate in forum about public issues, the disclosure regarding mangers' achievements)

These domains of organizational performance enable the governance of a local area to embody within the scope of local government's organizational results the inter-institutional system performance. In this way, governance also match the

theory of stakeholders (Mitchell, Agle, & Wood, 1997) both internally and externally.

Bovaird & Löeffler (2003: 317) highlighted that there are "two key areas in which measurement is required: improvements in public policy outcomes; and implementation by all stakeholders of a set of principles and processes by means of which appropriate public policies will be designed and put into practice."

Performance management systems need to be tailored to the specific context as well as to embody outcome measures and short-term performance indicators. At the same, a framework for managing performance should also ensure the coordination of policies set up by the inter-institutional system. Consistency and congruency among objectives may be achieved, despite the risk of mission fragmentation still exists. To overcome such likelihood performance management systems should:

- to well-balance the introduction of business-like concepts and ideas, with the institutional system, the political system, and the socio-economic context (Borgonovi, 2002: 38);
- to enhance organizational learning and human capital development (Bianchi, 2001; Bianchi, 2016; de Geus, 2002; De Geus, 1988a; Senge, 1990);
- to manage the dynamic complexity in framing the linkages between outputs and outcomes;
- to support coordination at the organizational level between elected officials, administrators (strategic and tactical level), at the inter-institutional level between different independent organizations (Bianchi, 2010).
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7. Concluding remarks

The changes occurred in the management modes of public sector organizations concerns the innovations these approaches have brought into public domain.

Traditional elements of bureaucracy such as input control, hierarchical relationship, equality of service, and administration by rules have been progressively dismissed. The first wave of reforms has introduced management tools and techniques from private organizations. Concepts such as efficiency, effectiveness, and management became popular in most Western countries, particularly when reforms were undertaken on a large scale. Users satisfaction, accountability, and transparency were also included inside the ends of public sector organizations.

Even though NPM reforms were committed to improving the results of public sector organizations, the implementation of such reforms were limited by the intra-organizational emphasis and the output orientation of performance management/measurement systems.

A second wave of changes – either in research and practice – shed light on the missing link between output and outcome of public policies. Scholars dived into governance and turned their attention to the inter-organizational setting of public domain, to the relationship with stakeholders, and to the need of outcome measurement in the public sector.

Authors recognized that performance management systems have become crucial. The next chapter illustrates how to design performance management systems which enable public sector organizations to connect the dots mentioned above.

CHAPTER 3

IMPLEMENTING PUBLIC GOVERNANCE THROUGH DYNAMIC PERFORMANCE MANAGEMENT FOR LOCAL AREAS

1. Introduction

As discussed in the previous chapter the paradigm shifts in public management – from o*ld public administration* to *public governance* – have turned the perspective of performance management systems from inputs and processes, to outputs and outcomes. The private sector is no more meant as an alternative to the public sector, but rather as a continuum from "pure public" to "pure private" (Scholes & Johnson, 2001: 1).

The purpose of these innovations was to improve the scope and the quality of services (compared to the public needs) and to create value for the community (Moore, 1995). The paradigm shifts have pushed public sector organizations to combine the internal with the external perspective of performance. Although, it may seem that national agencies, ministerial departments, hospitals, public utilities have started to measure the impact of their policies, public governance has different implications for the performance of local areas.

A local area does not have a single organizations which is responsible for performance of the entire region. The latter moves from inside the single institutions embedded in that geographic area toward the inter-institutional system. In such a system there is the need to improve local area's performance and to manage a set of shared resources (e.g. natural environment, image of the region, cultural resources). For a local area to manage performance at the inter-institutional level, such system must be framed as a meta-organization and then identify the outcomes which affect the territorial resources.The performance management of a single institution should not concern only on organizational

results. It must regard how these contribute to the outcome of the local area since long-term organizational results depend on the shared resources' endowment.

By embodying the inter-institutional performance inside single performance management of each organization comprised in the local area, it is possible to coordinate policies and manage shared resources sustainably. Hence, implementing public governance for local areas is possible.

This perspective claims for a strategic approach to the management of local areas, particularly when public value takes the form of outcome (not merely output), and it is delivered inside an authorizing environment (Alford, 2001: 6), where political bargaining and short-term orientation characterize negotiations and prioritization (Bianchi, 2004; Lax & Sebenius, 1987).

The goal of performance management systems is to improve organizational results trough a "process of deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the politics that are to govern acquisition, use, and disposition of these resources" (Anthony, 1965: 24).

This chapter set the ground for the application of dynamic performance management for local areas. It suggests an approach that:

    i)   support the governance of local areas in managing the outcomes for the inter-institutional system;

    ii)   enables decision-makers to manage the dynamic complexity rather than simplify it;

    iii)   moves from synthesis to analysis in cascading objectives from strategic planning to management control, and to operational control;

    iv)   supports policy-makers in understanding – and be aware of – the causality of performance.

In arguing the need for dynamic performance management for local areas, the chapter frames local areas as meta-organizations, then it models local area's performance and highlights how to design performance management systems to support the inter-institutional governance of local areas. To this end, the chapter

introduces the dynamic complexity which involves governance of local areas and dives into specific challenges for tourism destinations. Then it presents a methodology that enhances performance management system in dealing with these challenges. Finally, this chapter depicts the dynamic performance management framework and reviews its major application in public sector issues to account the implications of such an approach.

2. A local area as a meta-organization

The diffusion of public governance principles changed the way in which local institutions deliver public services. Public and private organizations have attempted to coordinate their policies in order to address the needs of respective users and/or customers. Tourism destinations are examples of collaboration between public and private sector. Tourism involves several economic fields ranging from accommodations and hospitality to culture and traditions, to infrastructures and transportation service to advertising and promotion.

In tourism destinations, likewise for private organizations, there are assets to manage: the natural environment, culture, tradition, historical buildings, attractions, and many other resources. These inputs, when mixed in group of services can be delivered to the market. In this way, a local area configures a product(s) which targets a specific market demand (Sainaghi, 2006).

In governing an area public institutions may have a coordinating role, can lead the collective decision-making process, or even protect "public goods." (Rigall-I-Torrent, 2008; Samuelson, 1954). Public governance may also prevent that businesses overexploit natural and intangible shared resources (Blanco, Rey-Maquieira, & Lozano, 2009), or that political bargaining waste public funds. Both opportunistic behavior may compromise the sustainable development and resilience of the region.

To coordinate the inter-institutional system and to achieve consensus on a set of strategies, the governance of a local area should undertake a number of steps

(Deming, 2000): 1) analyze the strengths and weaknesses of the place, 2) engage stakeholders, 3) sketch a strategic planning, 4) evaluate results accomplishment, and 5) evaluate strategic areas which require further improvements. The development of a local area must be measured (and managed) under economic, social, and environmental perspective. This framework is "an innovative attempt to evaluate sustainability holistically, by defining specific targets through the definition of indicators suitable to measure and evaluate the temporal evolution of development policies, mainstreaming sustainability to reduce adverse effects on the environment and promoting conservation of local and traditional values" (Castellani & Sala, 2010: 871).

Sustainability is a central concept for local development, particularly relevant in managing a tourism destination. It implies to manage the different phases of the S-shaped "destination lifecycle[24]" (see figure 3.1). "Although a consistent evolution of tourist areas can be conceptualized, it must be emphasized – again – that not all areas experience the stages of the cycle as clearly as others" (Butler, 1980: 10). When a tourism destination enters into maturity phase it starts experiencing a critical range of capacity where a new strategy should start to be implemented to prevent a crisis. Hence, the inter-institutional governance should be able to understand systemically the possible future dynamics and to counteract arising problematic behavior promptly (Bianchi, 2004: 19). The authority, the strategy, and even the people which lead the destination in some stages may not suitable when the local area is in a different phase.

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[24] To find applications of the lifecycle concept in tourism industry studies see: McTaggart. 1980. Tourism and tradition in Bali. World development, 8(5): 457-466, Rushmore. 1984. The appraisal of lodging facilities-update. Cornell Hotel and Restaurant Administration Quarterly, 25(3): 35-46, Meyer-Arendt. 1985. The grand isle, Louisiana resort cycle. Annals of tourism research, 12(3): 449-465.

Figure 3.1 The "lifecycle" of a tourism area (Butler, 1980:7)
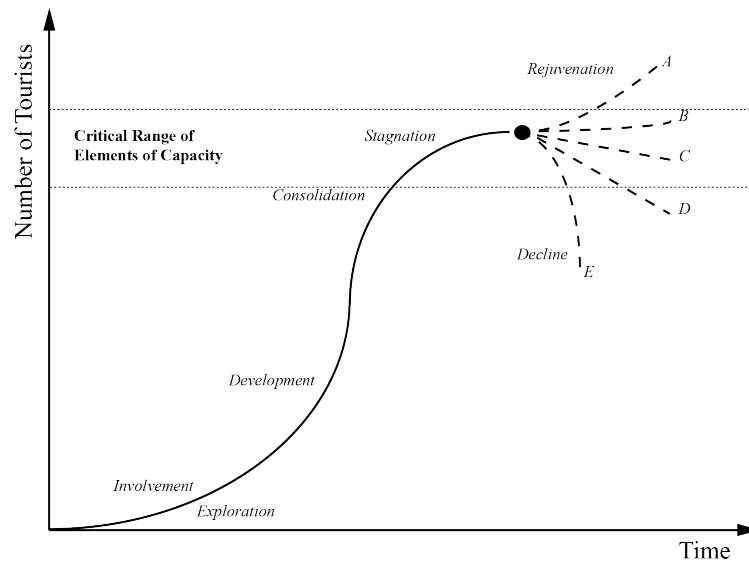
The strategic planning of a local area involves both public and private actors at different levels (Hall, 2008). The governance of a local area must adopt a systemic perspective in outlining an inter-institutional strategic framework (Coda, 1995; Davis, 1984). Local organizations should analyze together the relationships between i) the tourism experience (the product); ii) the project developed by public and private organizations, and iii) the geographical area which includes natural, political and socio-cultural dimensions (Della Lucia, Franch, Martini, & Tamma, 2007: 16; Matzler & Pechlaner, 2000: 111). These three elements develop a triad: *product-project-area*[25]. This triad structures the decision-making process by connecting the local players who have a stake in the system, and is a means to achieve a sustainable competitive advantage (Della Corte, 2013: 343).

Destination management is the term used to label such process, and it is close to *meta-management* (Normann, 1977). Coda, Invernizzi & Molteni (1992: 14) argued that the *meta-management* ensures the decision-making process; it

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[25] The close relationship between *product-project-area* (as geographical context) was investigated by the theory of agglomeration of Alfred Weber (1929), by the industrial district of Marshall (1920), by the milieu of Beccattini (1962), and by the cluster of Porter (1990).

supports local actors in doing their operations and motivates stakeholders to participate in the governance of local areas.

Destination management is a field of study which is a branch of management science. Such branch focuses strategic, operational, and organizational decisions through which a given geographical area promotes and markets itself as a tourism destination.

Laws, Richins & Agrusa (2011: 2; OECD, 2006) advocated a "whole of government approach to tourism policy, moving beyond tourism-specific policies." This systemic approach which is proper of public management is even relevant for destination management.

Given that, a local area is more than a simple "geographic area," it configures an integrated inter-institutional system of horizontal and vertical relationships around the triad *product-project-area* which is the pillar of local area's performance.

3. Modeling a local area's performance

A destination is a system managed by an inter-institutional governance. It owns critical resources to achieve desired results, though no one can manage them directly[26]

Research on destination management have brought scholars attentions to two main set of problems: i) institutional problems, and ii) functional/managerial problems. The first concerns the distribution of powers, norms, roles, and the jurisdiction of local institutions. The second refers to the principles, the conceptual model[27], activities, tools, organization aspects which enable purposeful decision-making processes (Della Corte, 2000) aimed at improving local area's

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[26] The literature distinguished between "corporate destination," where an organization play a leading role, and "community destination" where resources and attractions are managed by several organizations. Flagestad and Hope. 2001. Strategic success in winter sports destinations: a sustainable value creation perspective. Tourism management, 22(5): 445-461: 452.

[27] A detailed analysis of a managerial model and its implications for destination management is presented in chapter 7, sections 2 and 3. The conceptual model also includes three dimensions of performance: time horizon, level of performance, and the strategic extent of results.

performance. This work takes the second perspective, since it focuses on the governance of local areas under a managerial perspective and investigates the implication from the adoption of performance management for such governance settings.

The concept of performance links the system (or one of its sub-unit) with the results that such system may achieve (Cosenz, 2011). The results of a system may concern several dimensions. Indeed performance "is not a unitary concept, within an unambiguous meaning" (Bouckaert & Halligan, 2007: 14). It must be understood as a "set of information about achievements of varying significance to different stakeholders" (Bovaird & Gregory, 1996: 147). Performance is indeed, a multidimensional concept (Coda, 2010; Kaplan & Norton, 1996), which implies to be measured under qualitative, quantitative, financial, tangible, and intangible point of view.

Three elements are important to shape the key components of local area's performance: resources, competences, and activities.

Figure 3.2 Dimensions of local areas' performance
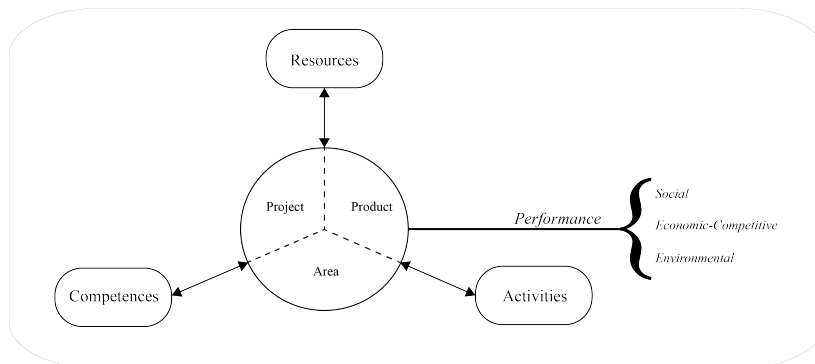
As figure 3.2 shows, the performance of a local area arises from the triad *project-area-product*. It can be framed by involving the economic sectors of the area, systemically connecting the projects they develop and driving them in

innovating/promoting the tourist products. Such a triad relies on the capability of the governance to manage local competencies, strategic resources, and the activities undertaken to match them (Della Corte, 2013: 335). The performance of a local area is then well-balanced when it includes three different perspectives of results: i) social, ii) economic-competitive (Coda, 1984), and iii) environmental (Della Corte, 2013: 45).

Local areas must be concerned about the sustainability of performance since it has multiple implications for the governance of a region. By an economic point of view, sustainability means the enduring capability to remunerate/restore resources (Airoldi, Coda, & Brunetti, 2007: 163; Giovanelli, 2011: 66). This aptitude is grounded in the internal equilibrium between resources acquired and utilized, and on the tendency to achieve a positive difference between the value of services provided and their costs (Anselmi, 1995: 63; Bianchi, 2004: 6).

Local areas should sustainably use natural, cultural, and economic resources, by keep going a dynamic equilibrium between the resources exploited against the quality and quantity of services provided to address public needs (Zangrandi, 2008: 36). These comparative relationships synthetically measure the long-term sustainability of performance with respect to three dimensions i.e. i) the endowment of financial resources and tourists flow; ii) the ability to comply with stakeholders requests, and iii) the use of the natural resources and the productivity of local heritage.

The organizations belonging to an area must combine their strategic and operational goals which are consistent with those of the inter-institutional system. The design of organization's performance management systems should take into account the goals and dynamics of the socio-economic context. In such a way, the governance of a local may manage shared resources and lead the local area toward these objectives. The following sections will illustrates how performance management systems may enhance the governance of a local area.

4. Supporting inter-institutional governance through performance management systems

Performance management[28] concerns a set of activities, tools, and organizational mechanisms aimed at measuring and evaluating results in order to continuously improve performance. It goes against the so called conformance management which focuses the people behaviors rather the results (Fattore, 2009).

The concept of performance management dates back to Anthony's taxonomy (1965) that identifies a set of functions consisting of three levels:

i) strategic planning focuses the setting of the objectives of the organization, the resources to be used in achieving them, and the policies for governing acquisition and use of these resources;

ii) management control points on how resources are obtained and used effectively and efficiently in the accomplishment of organization's objectives; and

iii) operational control focuses on how specific tasks are carried out effectively and efficiently.

The term "control" should not be understood as inspection (Bianchi, 2004; Brunetti, 1979: 9), it rather refers to the activity of a "staff unit in the organizational chart" (Bianchi, 2016: 32) that "should construct and operate a system through which management exercises control" (Anthony, 1965: 28).

The role of performance management is to support a strategic dialogue by linking political goals with managerial objectives. It also covers inter-departmental/inter-institutional coordination between strategy design and

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[28] An introduction to performance management can be found in Amigoni, F. 1978. Planning management control systems, *Readings in Accounting for Management Control*: 174-185: Springer; Anthony, R. N. 1965. *Planning and Control Systems: A Framework for Analysis* [by]: Division of Research, Graduate School of Business Administration, Harvard University; Flamholtz, E. G. 1983. Accounting, budgeting and control systems in their organizational context: theoretical and empirical perspectives. *Accounting, organizations and society*, 8(2): 153-169; Flamholtz, E. G., Das, T., & Tsui, A. S. 1985. Toward an integrative framework of organizational control. *Accounting, organizations and society*, 10(1): 35-50; Hofstede, G. 1978. The poverty of management control philosophy. *Academy of management Review*, 3(3): 450-461; Hofstede, G. 1981. Management control of public and not-for-profit activities. *Accounting, Organizations and society*, 6(3): 193-211; Maciariello, J. A. 1984. Management control systems: Prentice Hall; Merchant, K. A. 1981. The control function of management. *Sloan management review*, 23(4): 43-55.

implementation (Otley, 1994: 290). Simons (2013: 303) remarked that "strategic control is not achieved through new and unique performance measurement and control systems, but through belief systems, boundary systems, diagnostic control systems, and interactive control systems working together to control both the implementation of intended strategies and the formation of emergent strategies."

The control function is essentially connected with the planning function (Brunetti, 1979: 11) which defines strategic objectives (planning), allocates resources (budgeting), defines targets (measures and indicators), and manages the organization toward results. Planning and control functions verify and assess the results achieved against the planned one. Then, they analyzes internal and external discrepancies for each level of organizational strategy (Bianchi, 2002; D'Alessio, 1992; Vergara, 2004).

The planning and control system rely upon structural, organizational, and informative systems (reporting models); it configures a process which involves in public organizations both politicians and managers. Traditionally, the cyclical process begins with the identification of standard operational conditions (Coda, 1970: 37-40) and moves through five steps: i) planning, objectives setting, and budgeting; ii) performance measurement; iii) measurement of discrepancies between actual performance and planned objectives; iv) discrepancies analysis; v) identification and implementation of corrective actions or realignment of the objectives.

As Ouchi (1979: 843) claimed "a new and somewhat revolutionary view of organizational rationality is developing which has direct implications for our view of designing control mechanisms. This new view, which is coming to be known as loose coupling, implies that bureaucratic forms of control are unsuitable for many contemporary organization." To overcome such needs of control, local areas may implement different kind of control[29] which should be tailored according to the degree of complexity which involves the results achievement.

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[29] For an exhaustive explanation of the different kind of control see Bianchi. 2004. Sistemi di programmazione e controllo per l'azienda «Regione». Milano: Giuffrè: 111-125.

Structured and linear approach to performance management, essentially relies upon a feedback mechanism. These approaches suppose the automatic alignment among objectives, resources, activities, and results. The setting of managerial objectives, actions, and targets rather implies a thorough understanding and communication of the strategies outlined by the political level (Bianchi, 2016: 32). The absence of a strategic conversation – even within the inter-institutional system – may generate the illusion of control and administrative schizophrenia.

The inappropriate use of performance management systems may also cause: high costs of measurements, due to the intricacy of performance measures and indicators; unawareness of a phenomena, due to partial measurements; performance gaming and paradox, due to the absence of hierarchy in measures (Van Thiel & Leeuw, 2002); resistance to change, due to political pressure (Fattore, 2009: 262-263).

Performance management systems enable organizations to plan, control, evaluate and manage performance (in terms of output and outcomes). Such processes by promoting shared goals and introducing an ongoing based control, also allow organizations to improve culture, enhance reporting system, and increase resources productivity (Amaratunga & Baldry, 2002; Ferreira & Otley, 2009).

Although, all these elements are the core of performance management in the private domain, it seems that the experiences matured in the last thirty years in the private domain cannot be easily transposed to the public sector (Bianchi, 2016: 58). Performance management covers a wide area of both research and practice, however in the public domain the discussion[30] has been focused on tax revenues and public expenditure rather than on "achieving" (Talbot, 2009: 494).

Performance management systems may play a crucial role for the governance of a local area, if they support coordination and consistency among the strategies

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[30] Concerning this issue Colin Talbot gave an overview about some justifications and doctrines that have been developed in support of performance measurement and reporting. He also examined some models of performance commonly employed. Talbot. 2009. Performance Management. In Ferlie, Lynn and Pollitt (Eds.), The Oxford Handbook of Public Management: Oxford University Press.

of the several agencies involved in a policy program. At an inter-institutional system's perspective, managing performance requires not only a focus on the single organization's results, but also on how such results contribute to the wider system's performance (Bianchi, 2010).

The complexity of the problems organizations face have considerably increased over the last thirty years, therefore approaches to performance management have evolved accordingly. As the complexity rises, performance scope increases and stakeholders extent broadens. In facts, the evolution of performance management systems moved from measurement/evaluation to performance management which also includes evaluation (Bradley, 1996; Kaplan & Norton, 1996; Medori & Steeple, 2000).

The initial building block of all performance management initiative may be termed as performance measurement recommendation, then a second building block is performance measurement framework (Folan & Browne, 2005: 665). A third block is the performance management system, which embodies either a structural and a procedural performance measurement frameworks.

Figure 3.3 The evolution of performance management (Folan & Browne, 2005: 675)
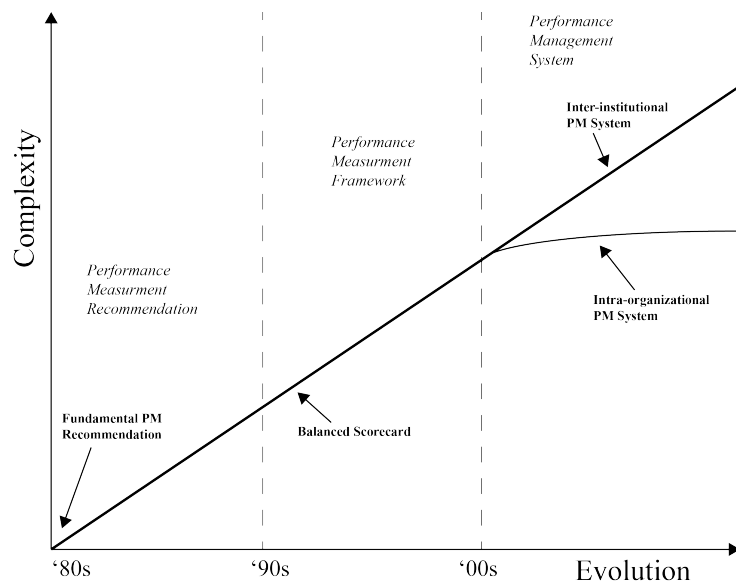
Figure 3.3 portrays the evolution pattern of performance management in respect to the degree of complexity. By the end of 1990's the focus of performance management systems has been duplex: on the intra-organizational aspects of performance – as it was before –, as well as on the results of the inter-institutional system.

Since 2000's, studies in performance management aimed to connect the external with the internal perspective of performance, alike in public management field with the rise of public governance models. "The immediate future of PM research may increasingly lie in its inter-organisational context: […] attention is turning to how inter-organisational performance management will impact upon the research that has already taken place at the intra-organisational level"(Folan & Browne, 2005: 679).

At the institutional level, performance management system takes the point of view of a single organization, where the results can be improved by managing how the different units inside the organization contribute to final performance.

4.1 Embodying inter-institutional performance inside organizations' performance management systems

When the outcomes of public policies are evaluated/managed, namely when one consider the governance of local area, the perspective of performance management systems moves upward at the inter-institutional level. In this context, a public institution, usually a local government, may have a coordinating role, and the system's performance depends on the net relationship among different institutions (Bianchi, 2012: 147). This is the case to embody inter-institutional performance inside the performance management systems of the single institutions.

This two perspective of performance are not insulated; as figure 34 portrays they are rather complementary, the "top level" and the "bottom level" affects each other. The inter-institutional system's performance affects the results of the

organizations embedded in a give geographic area. Institutional performance, in turn, feedbacks on the wider system performance.

Figure 3.4 The institutional and the inter-institutional levels of performance (adapted from Bianchi, 2012:148)
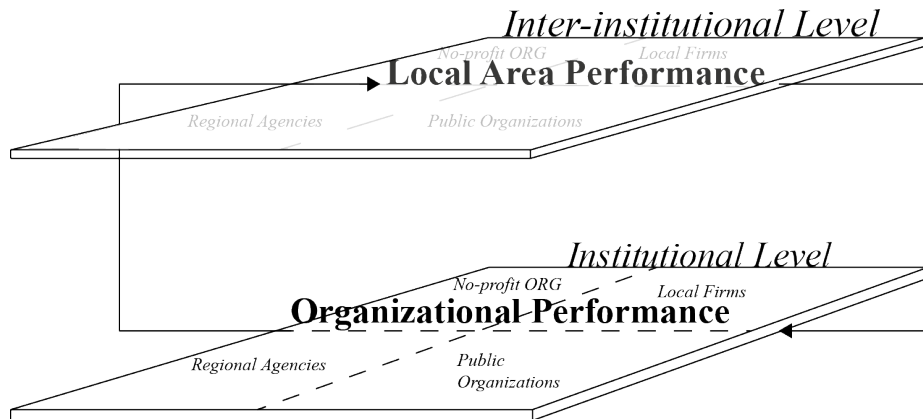
Organizations embedded in an inter-institutional system share a set of resources, and both organizational and inter-institutional performance depends on the way in which these resources are managed. This task is crucial for the governance of local areas. For instance, a short-term orientation at the political level may neglect the need of infrastructure in favor of promotion campaigns. This policy may threaten the potential of local businesses, and it is likely to cause an income worsening in the long-run. Such organizational decline, in turn, will impact – sooner or later – on the local area's performance, reducing tax bases, and rising unemployment. To tackle these social problems local governance will reinforce a short-term policy.

Another case could be represented by a local area which is well-known for being a place where an high-quality standard product is made. The reputation of such a local area may be dramatically affected by an opportunistic behavior of few domestic firms when the governance of a local area does not measure

performance and does not manage resources properly. Just imagining the effect of a steep increase in the annual production rate of the Barolo[31] wine on the reputation of the area nearby Cuneo, in Italian Piedmont. Currently, a rise in short-term profitability of the product is pushing some producers of other wines, and even newcomers businesses, to start "Barolo" production. These investments if not supported by a fair respect of soils use, seasonality, and other technical requirements will definitely worsen the quality of such high-end product. The governance of such a local area should manage these drivers of production quality by embodying within the performance measure of the Barolo producers association a set of indicators that may capture reputation's threats. At the same time the producers should integrate – with the same language – their contribution to local area's performance inside their performance management systems.

Managing the performance of a local area entails dealing with both level results accordingly. In other words, it requires to sustainably match inputs, activities, outputs, and effects/outcome with achievable strategic and operational objectives (Bouckaert & Halligan, 2007: 26). In fact, the feasibility of a strategic plan which incorporates either organizational and inter-institutional objectives depends on the capability to manage the accumulation and depletion process of strategic resources at both levels. Strategic assets are stocks and their values at a given time is the results of the dynamics of the in-and-outflows which incorporate policies and decision rules.

Figure 3.5 illustrates how strategic resources at the inter-institutional level are increased by an inflow which depends on the performance of *Agency α* and by the cumulative performance of *Agency β*. The figure also shows that the inter-institutional performance affects the institutional performance of *Agency α* and how the results of the two agency influence each other.

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[31] Barolo is a red wine produced in the northern Italian region of Piedmont. It is made from the Nebbiolo grape and is often described as one of Italy's greatest wines.

Figure 3.5 The accumulation and depletion process of strategic resources as determinant of institutional and inter-institutional levels of performance (adapted from Bianchi, 2012:148)
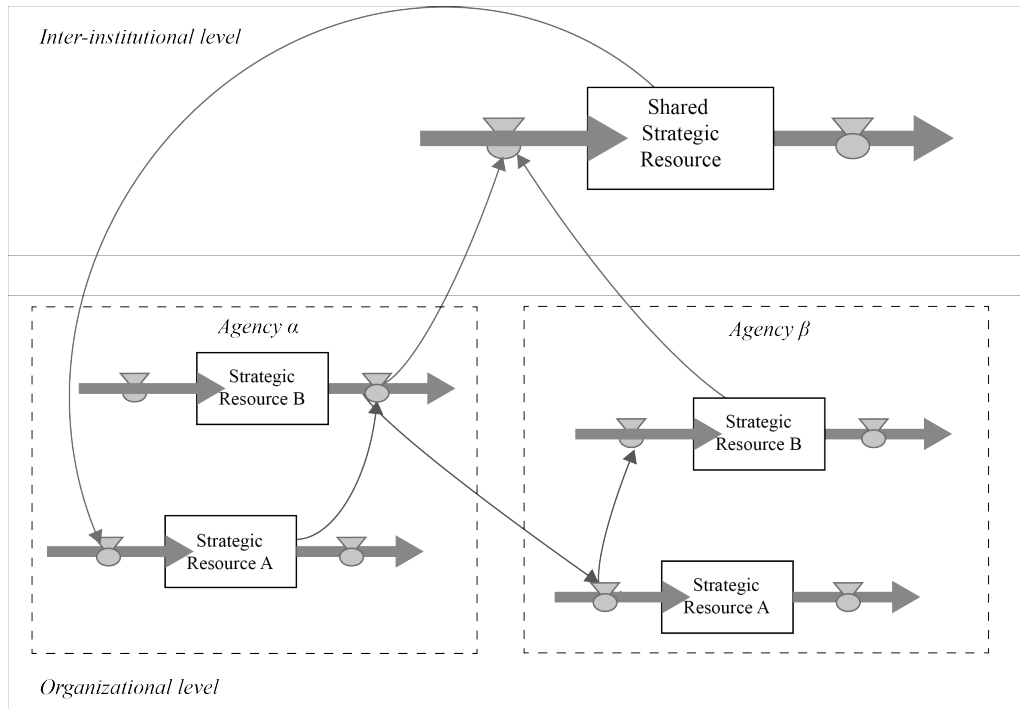
The inter-institutional system's performance of a *high-tech industrial district* is, for example, the *Retention Rate* of the graduated inhabitants. This outcome is a flow rate which measures the people who find a job in a local firm each year. As As figure 3.6 shows, this flow will increase the resources of *Graduated Working in the distric*t. The *Retention Rate* is affected by the *Hiring rate* of the firm(s) located in the district, which, in turn, depends on operational income and productivity. The latter is a function of qualified workforce and *infrastructures*. These tangible assets are managed by the local development agency. Both the municipality and firm have a partnership with the local agency. Two indicators grasp local area's performance. The probability to find a job in a district's firms is an output indicator and depends on the *total vacancies* compared to the *studying population*. The job positions available at firm level are an organization's outcome since only a growing cash flow allows businesses to hire. The *Graduated local*

workforce ratio is an outcome indicator which captures the ability of the district to retain the graduated inhabitants.

Figure 3.6 Embodying inter-institutional performance inside organizations' performance management systems
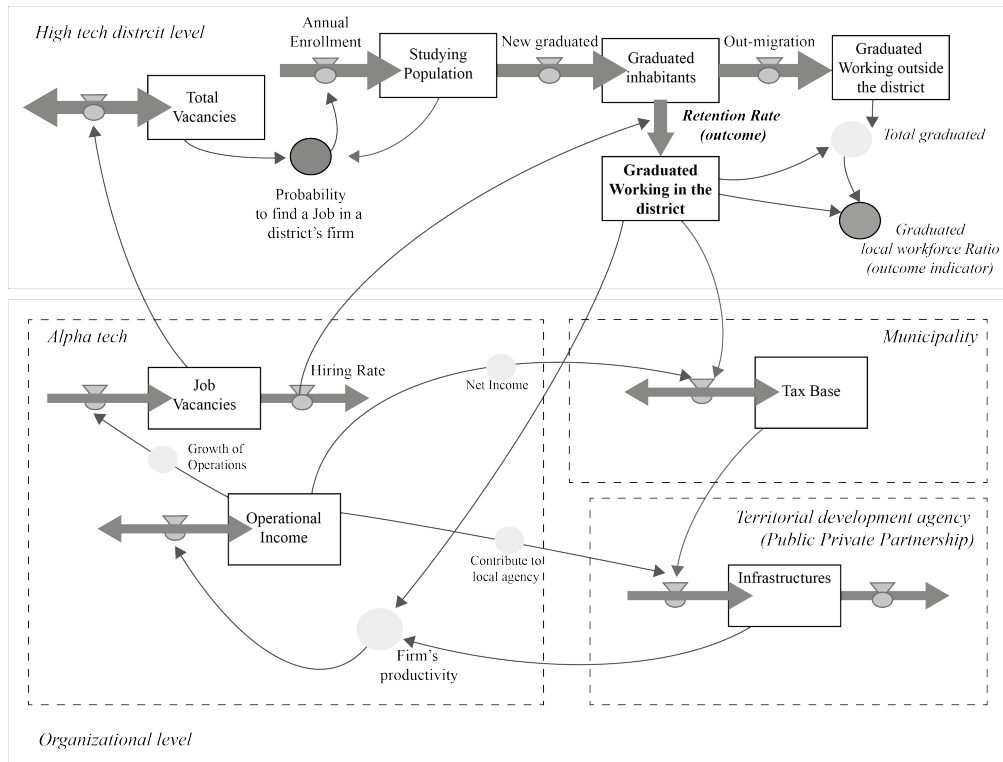
Both indicators are relevant for the performance of the three organizations because their results depends on the inter-institutional outcome and vice-versa. As figure shows the *Graduated workforce* affects *operational income, change in tax base, and* – through private and public contribution – *new infrastructures.*

If each local organization embodies inter-institutional indicators, the organization's performance measures are consistent with the a desired performance defined by the local area's governance. In such a way, shared resources are managed and both levels of performance are coordinated.

In order for a local area's governance to assess the sustainability of its achievements, should focus on the interplays between the two levels and understand how organization's policies may affect results in the long run. Such

perspective of sustainability implies to cope with the dynamic complexity of the system. Therefore, the governance of a local area needs to be enhanced through an approach which supports policy-makers in managing performance at both institutional and inter-institutional level and provides them with proper lenses for interpreting such phenomena.

5. Performance management in dynamic and complex systems

Traditional performance management systems rely on structured and linear approaches, based only on a feedback mechanism. Moreover, these approaches reveal their limitations when it comes to supporting decision-makers in adopting unstructured decisions since the adopted framework may encourage organizations to reduce rather than to manage the complexity. As consequences, information about performance is reduced only to financial results, and organizations and managers run the risk tho rest embedded in the long term planning because they are guided to adopt a vision of the future which consists of the flow of current and inertial decisions (Bianchi, 2004).

Decision making processes are characterized by bounded rationality (Simon, 1957), correlation heuristics (Cronin, Gonzalez, & Sterman, 2009; Korzilius, Raaijmakers, Rouwette, & Vennix, 2014), habit, routines, rules of thumb (Sterman, 2000) and incrementalism (Lindblom, 1959; Quinn, 1980). Performance management systems may set organizations to be "in search of a descriptive theory" (Simon, 1979: 500) of the problems they face. Even though they can subdivide problems into small parts and relate the small pieces to specialized units, this does not imply that "choices are consistent and mutually supportive" (Morecroft, 1985: 901).

Inconsistency arises from the misperception of the feedback structure (Moxnes, 2004; Sterman, 1989a), in fact, a decisions taken in a part of the system affect another part of the same system: "viewing a manager as an information converter shows immediately why we are interested in decision-making and information

flows" (Forrester, 1992: 43). The characteristics of decision-making process and the structural components of social systems have been termed as "dynamic complexity" (Sterman, 2000). Forrester (1969: 107) in describing the nature of complex systems refers to them as "high-order, multiple-loop, non-linear feedback structure. All social systems belong to this class. […] Feedback loop is the technical term describing the environment around any decision point in a system."

Dynamic complexity arises from the interactions among the agents and their decisions over time, or as Sterman (2000: 21) put it "most people think of complexity in terms of the number of components in a system or the number of combinations one must consider in making a decision." Dynamic complexity is different from detailed complexity, (Sterman, 2000: 22 table 1-3) it can be detected in those systems which are: (a) constantly changing over time, (b) tightly coupled and interacting, (c) governed by feedbacks, (d) non-linear, with a changing dominant structure; (e) influenced by history, (f) self-organizing, (g) adaptive, (h) counterintuitive; (i) policy resistant; and (j) characterized by trade-offs.

All of these elements of a social system have a significant influence on the results of an organization; therefore performance management systems should be designed in a way in which decision-makers may:

i)   overcome bounded rationality in decision-making

ii)   understand dimensions of performance and manage the factors which drive results;

iii)   selectively plan strategic objectives – from synthesis to analysis – and link them to a set of measures which are connected with the structure of responsibility in an organizational system;

iv)   manage delays in accumulation and depletion processes of resources, and the effect of perceptions and intangibles on performance;

v)   identify the weak sign of crisis and counteract possible unintended side effects of adopted policies;

vi)   deal with policy resistance;

vii)   foster a learning oriented approach to planning.

Like all social systems, a local area shows disequilibrium conditions and performance evolves over time. Moreover, the existence of multiple feedback loops do not allow decision-makers to isolate the effect of one variable on another.

5.1 Specific complexity of tourism destinations

A local area, such as a touristic area, has major specific complexity aspects, which increase the need to enhance its governance through a dynamic approach.

A tourism destination can be defined as "a country, state, region, city or town which is marketed or markets itself as a place for tourists to visit" (Beirman, 2003: 2). It refers to a place in which tourists, citizens, and organizations interact together. Specific challenges for the governance of a tourism destination have changed over the last decades: tourism destinations are facing globalization and localization of demand (Della Corte, 2013: 47). Indeed, potential tourists/visitors pertain to both global scale and proximity market (those who live nearby) and have quite different needs. Such polarizations of demand turned into a request for tailored services. Therefore, – from the supply side – the local areas inter-institutional system strives to achieve and maintain a competitive advantage, and not so infrequently, long-time successful strategies have revealed their weaknesses.

Complexity arises from the multitude of stakeholders and actors both within a given destination or external to it (Laws et al., 2011). The inter-institutional system of a tourism destination comprises several local actors with different roles and tasks (Stocchiero, 2000):

- The elected officials and public managers, which should govern organizations taking into account the increasing competitiveness for attracting national and European funds.
- The local entrepreneurs who may increase productivity only through collaboration and horizontal specialization.

- Citizens and non-profit organizations which pay attention to themes such as local culture, place identity, natural environment, pollution, and give a significant contribution in co-production of services (Bianchi & Bovaird, 2016; Bovaird, Stoker, Jones, Loeffler, & Roncancio, 2015).
- The capital market that should finance local businesses and families.

Other elements of complexity emerge from stakeholders' interaction. In fact, it is not uncommon that organizations among themselves exhibit inconsistency in objectives, build conflicting capabilities, manifest low commitment to cooperation, show lack of cohesion and non-cooperative decision-making processes. Moreover, the impact of decisions taken at the regional, national level, or even by external actors (e.g. transportation companies or hotel chains) will lift the complexity to uncertainty.

A tourism destination should ensure a fit between the kind of tourism offered to the market and the target to which it is offered (Della Corte, 2013). From this simple marketing equation, a set of dynamic issues for local areas come the light: How does a local area develop strategies? How does a tourism destination prioritize needs? How do decision-makers balance the short-term decisions with long-term plans? How does the governance of a local area manage the local resources?

The dynamic complexity which characterizes a tourism destination has implications for the governance of local area: performance management systems should provide organizations a set of tools which enable decision-makers to define goals compatible with the sustainable development of both organizations and local area. Such performance management systems must embody the key results for the local areas, also showing how policies impact on the system's behaviors over time.

To this end, System Dynamics has been identified as a methodology to explore and manage the complexity of the social system through the identification of cause-effect relationships between system's variables. Performance management

systems can be enhanced by the use of System Dynamics methodology. This is the domain of dynamic performance management (Bianchi, 2016: 13).

6. The dynamic performance management framework

Dynamic performance management is an approach that matches traditional performance management methods and techniques with System Dynamics modelling and simulation. System Dynamics is a methodology used to frame complex systems' structure and to simulate their behaviour over time (Sterman, 2000). Before illustrating the framework the following section review some major application of System Dynamics in public sector.

6.1 System Dynamics and its application in public sector issues

System Dynamics is a methodology developed at MIT (Cambridge, USA) by Jay W. Forrester. System Dynamics bridges two branches that have been traditionally kept separated: the formal quantitative-mathematic approach aimed at finding optimal solutions to business problems, and the management experience-based point of view. System Dynamics models are based on a feedback view of systems (Forrester, 1969: 108), such a view can be *external* when the model frames "cause-and-effect relationship underlying the relevant system's behavior, from a point of view that may go by far beyond that each of the involved players may take" (Bianchi, 2016: 18); or *internal* when it "focuses the wide relevant system by primarily taking the observation point of one of the players (or institution) affecting the system's behavior" (Bianchi, 2016: 18).

System Dynamics has been proved as an effective methodology to address public sector issues (Ghaffarzadegan et al., 2011). A first application dates back to 1969 when Jay W. Forrester with his seminal book *Urban Dynamics,* developed a theory of the growth process of urban areas. Meadows (1974) explored new theoretical basis to assist worldwide decision-makers in understanding the

dynamics of growth in a finite world. The book *Dynamics of growth in a finite world,* build upon the implication of *Limits to Growth* (Meadows, Meadows, Randers, & Behrens, 1972) which is probably one of the most famous System Dynamics work.

Applications of System Dynamics have covered a wide range of field. It was used for the evaluation of exhaustible resource of petroleum and natural gas (Sterman & Richardson, 1985). Yet in oil and energy production, System Dynamics was used to model the life cycle of the petroleum resource in the United States and to show how the interaction between technological progress, depletion, imports, and the development of substitutes creates the life cycle by altering the dominance of the feedback processes in the system (Davidsen, Sterman, & Richardson, 1990). In health care, System Dynamics played a role as a method to elicit information and structure management problems (Vennix & Gubbels, 1992), or as a way to develop national policy guidelines for the U.K. health service (Wolstenholme, 1999a). In the tourism sector, a feedback analysis was applied to manage a cultural tourism destination in order to prevent a commodification and the risk to turn the site into a thematic park four tourists (Honggang, 2003). In the same field, a simulation model was also used to provide a long-run forecast that can support policy-makers in achieving a balanced strategic management plan (Fritz, 1989). In fishing industries, Moxnes (2005) argued that it may be just as important to test the sensitivity of policy recommendations to uncertain assumptions, and he found that the policies are not very sensitive to the choice of biological model (aggregated or age classes), while they are highly sensitive to uncertain assumptions about nonlinear economic relationship. Barlas and Diker (2000) presented an interactive simulation model through which the academic aspects of university management can be analyzed and alternative management strategies can be tested. Bianchi, Bivona, Cognata, Ferrara, Landi & Ricci (2010) used three case studies to discuss the role of System Dynamics in supporting strategic dialogue between political and managerial level. Dyson & Chang (2005) used a model to forecast municipal solid

waste generation in a fast-growing urban region. Bianchi & Montemaggiore (2008) used a "dynamic" balanced scorecards to improve the planning process in a municipal water company significantly. To understanding short- and long-term implications of "myopic" fleet maintenance policies of a city bus company Bivona & Montemaggiore (2010) developed a large simulation model with a management control panel.

The works mentioned above are just a sample of the inquiries in the public sector domain that can be conducted with System Dynamics modeling.

When applied to performance management framework, System Dynamics enhances planning and control functions by supporting decision-makers in dealing with the dynamic complexity of the system. The measurement of intangibles, the detection of delays, and the ability to detect trade-offs in time and space are some of the benefits of this approach. Moreover, simulation models enable decision-makers to focus on performance's development over time and to understand what the driving factors of that performance are. Subsequently, decision-makers may link these factor with assets which are strategic to achieve the results. This is the rationale of dynamic performance management, which is outlined in the next section.

6.2 The instrumental view of performance

At the core of dynamic performance management, there is the instrumental views of performance, which provide a framework to assess performance sustainability.

As Bianchi (2016: 72) stated: "the instrumental view implies that alternative means for improving performance be made explicit. In this regard, it is necessary to identify both end-results and their respective drivers. To affect such drivers, each responsibility area must build up, preserve, and deploy a proper endowment of strategic resources that are systemically linked to each other."

End-results provide endogenous sources of accumulation and/or depletion of resources which are strategic for the performance i.e. cash flow accumulates into the bank account; the rate of the problem solved at customer services depletes the backlog of problems to be solved.

End-results are flows which capture both output and outcomes, and they can be modeled as in-and-out flows of strategic resources[32]. Strategic resources can be classified in physical resources referring to the ones which can be purchased on the market (inventory, employee, capacity), and resources generated by management (internal) routines (reputation, organizational climate, skills, solvency) that can be obtained only through efficiency or effectiveness of operations.

Figure 3.7 The instrumental view of dynamic performance management (Bianchi, 2012:153)
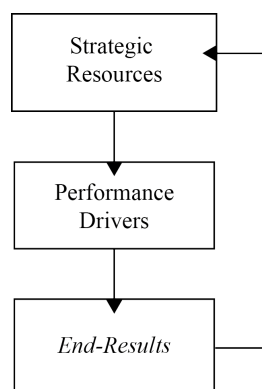
If the first step in applying the *instrumental view* is the identification of end-results, the second phase requires recognizing performance drivers. Even though they are short term measure of plausible end-results accomplishments, they are not gauged as milestones. In fact, performance drivers compare the actual performance in terms of efficiency, productivity, and effectiveness in the use of the set of strategic resources against a benchmark: for instance: *skills/desired*

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[32] For a detailed account of examples see Bianchi, C. 2016. Dynamic Performance Management: Springer International Publishing.

skills affect service delivery failure rate; *actual service time/expected users waiting time* affects the users satisfaction; the number of *administrative tasks/ administrative tasks threshold* affects *the costs per paperwork.*

As a third step, the *instrumental view* supports decision-makers to outline the policies to adopt in order to affect the strategic resources (i.e. the stocks of tangible and intangible factors to build-up and deploy together with others) that will influence performance drivers, and through them the end-results, which will feedback on the strategic resources (Bianchi, 2016).

This section has described the three perspectives of dynamic performance management, next section reviews major works which adopted such framework in dealing with public sector issues.

6.3 Findings and insights from the adoption of dynamic performance management

Dynamic performance management is a powerful method to enhance traditional performance management systems since it adds the perspective of performance sustainability in organizations. Moreover, when applied to the public sector, it fosters the shift from administration or *conformance management* to management, which is not meant as a mere aggregation of objectives from the bottom line upwards to the managers. This shift requires rather consider the specific complexity of public sector organizations (as remarked in chapter 1, see also Borgonovi, 2002: 1-24), and to move the other way around, from synthesis to analysis. In other words, by cascading strategic goals into operational objectives and connecting them coherently with the financial budget.

Despite the formulation "dynamic performance management" is relatively recent (Bianchi, 2012, 2016) the framework has a background of twenty years of research (Bianchi, 1996; Bianchi, 2001, 2004). In facts, this approach has been

used to deal with a number of issues related to the management of both public and private organizations[33].

A variety of research has used dynamic performance management to investigates many issues in public sector organizations. Such studies investigate the complexity of public sector and analyzes aspects that affect and describe planning, policy design, and management in such kind of organizations.

Cosenz (2011) applied dynamic performance management to improve the results of "Research & Development Department" of the University of Palermo. In particular, his analysis focuses on research performance as one of the three elements which matter for the Ordinary Ministerial Funding. Through qualitative modeling, he mapped processes, discovered trade-offs, suggested performance indicators and measures in regards to a number of academic products such as publications, patents and spin-offs, external-founded research projects, agreement with third-parties, and Ph.D. programs.

Bianchi & Rivenbark (2014) developed a "conceptual dynamic performance management model to illustrate the hidden feedback structure underlying the service delivery system's performance" (Bianchi, 2016: 151) of Garbage Collection service at the City of Winston-Salem. Through a case study, they aimed to show how performance drivers can be used to support local government in the understanding of the residential refuse collection system. They fund that dynamic performance management may also address "what factors promote data use in local government and what factors prevent data use" (Bianchi & Rivenbark, 2014: 954).

Dynamic performance management was also used to illustrate how such an approach may "prevent, detect, understand, and counteract behavioral distortions caused by improper setting of performance measures" (Bianchi, 2016: 199). The

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[33] For a detailed review of the application of dynamic performance management to enterprises see Bianchi, C. 2016. ***Dynamic Performance Management***: Springer International Publishing: 200-246; Bianchi, C. 2009. ***Modelli di System Dynamics per il miglioramento della performance aziendale***. Verso un sistema di programmazione e controllo per lo sviluppo sostenibile. Milano: Ipsoa editore: 267-351. With a specific focus on knowledge management see: Bivona, E. 2012. ***Processi di accumulazione e degrado del «capitale intellettuale» nel governo dello sviluppo aziendale***. Una prospettiva basata sulla dinamica delle risorse strategiche. Milano: Giuffrè.

research of Bianchi & Williams (2015: 397) frames the CompStat program, adopted in 1994 by the New York Police Department through the lens of dynamic performance management. The qualitative model they developed clearly show that an improper design of performance management system – i.e. too much stress on quantitative/statistic indicators – can intensify the behavioral distortion, though they are a product of human nature.

Dynamic performance management recently was used to deal with the governance of local areas. Prior studies, refer to the management of systemic areas and can be found in Bianchi (2001: 712-736; 2004: Chapter 8).

Navarra & Bianchi (2013: 23) focusing on the environmental policies in the city of Hammarby, remarked that the inter-institutional perspective of dynamic performance management supports decision-makers to affect "improvements in the environmental quality of urban and […] in the development and implementation of climate change policies."

At the inter-institutional level dynamic performance management has been applied to support decision-makers in designing and implementing local strategic plans. Bianchi & Tomaselli (2015) addressed the main challenges connected with the revitalizations of the ceramic industry in Caltagirone. The case study they developed focuses on the strategic planning sketched by the local municipality together with the ceramic business sector. The research identified the possible long-term effects of a policy which combines tradition and innovation in the ceramic industry. The findings of the work suggest performance measures and reveal a potential trade-off associated with the management of the ceramics product portfolio.

The research presented above are only a few examples of issues that can be effectively addressed through dynamic performance management. Nonetheless, from findings and insights it is possible to present major implications and remarks.

7. Implications and closing remarks

The shifts in paradigm of public administration theories makes public governance a good mode of management for local areas. However, such a model shows some weaknesses when the outcome of an inter-institutional system are to be managed. In a local area there is not a responsible authority for the performance of the entire region. A local area is a meta-organization which comprises the single institutions embedded in that geographic area. To improve the local area's performance there is the need to enhance governance in away that organizations can manage shared resources (e.g. natural environment, image of the region, cultural resources). Local area's organizations may address such need by embodying the inter-institutional performance inside the performance management of each organization comprised in the local area. In this way performance management system support the implementation of public governance for local areas.

Dynamic performance management allows organizations' decision maker to combine the external to the internal perspective of performance when framing the outcomes of inter-institutional systems. Such an approach, by explaining causality of performance and simulating policies' effect on system's behavior over time assess performance sustainability and trade-offs in time and space. As a consequence, dynamic performance management improve coordination between public and private organizations operating in a local area and foster the relationship between political and managerial level.

The next chapters present two application of dynamic performance management for local areas. The first study, presented in chapter 4, develops a case study in which an outcome-based dynamic performance management was used to frame the sources of the image of a local area. Chapter 5 advances the study by explaining the effect of the image on tourism presence through a System Dynamics model. The second study, illustrated in chapter 6 and 7, unfolds an action research. This latter work adopts a System Dynamics-based interactive learning environment to support the decision-makers of a small town to

understand the relevance of policy coordination and governance to outlining sustainable policies for local ares.

Chapter 4

Framing the Sources of Image of a Local Area through Outcome-based Dynamic Performance Management

Title	Framing the Sources of Image of a Local Area through Outcome-based Dynamic Performance Management
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Abstract

Although there exists a broad body of literature on place and country image, this field of research is mainly addressed from a marketing perspective. There is a lack of holistic and explanatory research that aims to frame the sources of the image from an endogenous perspective. Indeed, the majority of the studies consider the image of a place as an exogenous variable. Those approaches are unable to explain what policies a local area had to undertake to improve the system's outcomes.

The paper addresses the following issues: what are the factors impacting on the image of a local area? How does a local area measure the results of its strategies? How can one design performance management systems to frame the relationship between outputs and outcomes?

To this end, an outcome-based dynamic performance management (DPM) perspective is adopted. DPM is an approach that applies System Dynamics (SD) modelling to performance management. A DPM approach can support the understanding of the factors impacting on results – both outputs and outcomes – as well as the performance drivers on which to act to influence those factors. The analysis is based on a case study: the "Taormina-Etna District." It was established in the 2000s as Public-Private Partnership, it links 61 municipalities and about 270 local firms located in and between the areas of Messina and Catania.

Findings reveal the usefulness of a DPM approach in framing the sources of the image of a local area and in describing the connection between outputs and outcomes.

1. Introduction

It is important to understand the processes that lead to local area success. National or local "prosperity is created, not inherited […] nations have become more, not less, important" (Porter, 2011: 1). Nations, regions, cities and local areas compete on a global scale (Begg, 1999; Cavenago & Trivellato, 2010; Porter, 1995); and governments increasingly recognize that they require a new way of assessing identity and strategies, if they want to prosper sustainably. Ever since domestic firms have been looking to expand their markets overseas, country image has become a crucial success factor, thus governments are called to manage their country reputation. Local areas have to act alike, if they want to attract business ventures and tourists or to export local products.

Managing the image of a local area entails the challenge to first, frame the sources of that image, secondly, understand what the driving factors are, and thirdly, identify some leverage points suitable for sustainable public policies. It demands for an outcome-based performance management system which allows decision-makers to measure the "output" or the amount of products and services completed or delivered, as well as to capture the "outcome," the results or the consequences of service delivery that are important to the public (Ho & Ni, 2005). "Outcomes or effects, intended or unintended, gross or net, are everything beyond outputs. Since effects or outcomes are realized by a range of organizations, public sector performance measurement systems should not just be organized at the individual organizational level but at the level of a policy field or a product/ service chain as well" (Bouckaert & Halligan, 2007: 16).

The majority of studies about place-image relationships point at the national level and focus on marketing. A common explanation lies in the fact that the image of a country is not under the marketer's control – unlike product or in corporate brand – but it has a big impact. "In fact, there remains much misunderstanding and many commentators and some consultants and academics still interpret 'place branding' as simply the application of product promotion,

public relations, and corporate identity activities for countries, cities, or regions, as though they are mere commodities" (Morgan, Pritchard, & Pride, 2004: 1).

As Matarazzo (2012: 38) pointed out, despite a significant amount of works published in the field, only a few scholars have addressed the country image from a managerial and institutional perspective. Moreover, there is a paucity of studies using qualitative techniques; in fact, they have mostly employed quantitative approach by which to measure a limited set of categories resulting in a lack of explanatory research.

This paper aims to explain the sources of the image of a local area, through a case study. To this end, the paper applies an inter-institutional outcome-based dynamic performance management (DPM) perspective to understand what are the driving factor of the image of a tourism destination. DPM is an approach that applies System Dynamics (SD) methodology (Forrester, 1961; Forrester, 1969; Sterman, 2000) to performance management systems (Bianchi, 2016).

The structure of the paper is the following: after the introduction, the second section investigates the concept of place image, and also provides a literature review. It discusses the relevant theoretical frameworks, highlighting their major limitations. In light of those limitations, section 3 argues the case for an outcome-based inter-institutional approach, and section 4 outlines the DPM approach. Section 5 introduces the case study "Taormina-Etna district," compares the district's results with the overall performance of the local area, identifies performance drivers and proposes measures. Section 6 discusses the DPM chart and reveals managerial evidence. The concluding section elucidates implications of the findings and outlines policy suggestions.

2. On place image

Places, like brands, have an image. For business, the marketing department influences products and brand image. The latter, "represents a promise of value and performance, incite beliefs, evoke emotion and inspire behaviors" (Kotler &

Gertner, 2011: 35), it enhances the perceived utility of a product and customers are willing to pay higher prices.

For places managing their image is not an easy task. It is "the sum of beliefs and impressions people have about places. The image represents a simplification of a large number of associations and pieces of information connected with a place. They are a product of the mind, trying to process and pick out essential information from huge amounts of data about a place" (Kotler, Haider, & Rein, 1993: 14). Place image represents knowledge structures related to places, which are long-lasting and difficult to change (Morgan et al., 2004). Place image is "the total of all descriptive, inferential and informational beliefs one has about a particular country(Martin & Eroglu, 1993: 193). Images represent a simplification of a large number of associations and pieces of information connected with a place (Gertner & Kotler, 2004).

The relationships between image and place have been investigated traditionally at a country level. However, during the last few years, a growing body of research focusing on a more localized scale is emerging. There have been two important constructs used in place image studies. This literature distinguishes them as the "Country of Origin Effects" (CoO), and the "Competitive Identity."

2.1 *"Country of Origin effects"*

The "Country of Origin Effects" represents the influence – either positive or negative – that the country of origin of a product has on consumer behavior (Bursi & Galli, 2012). Academic interest in CoO was initiated in 1965 in an article of Schooler (Andehn & Berg, 2011). Many studies pointed out that the place image represents an "extrinsic cue" (Dinnie, 2004; Peterson & Jolibert, 1995; Roth, Diamantopoulos, & Montesinos, 2008; Verlegh & Steenkamp, 1999) that, like the price and qualitative characteristics of the product, can influence the choice behavior of consumers (Bertoli & Resciniti, 2013). Then, the tight association of a

brand(s) or product(s) with a "made in" label can determine its success (Bursi & Galli, 2012).

Two formulations classify the CoO: *halo* and *summary* effects (Han, 1989). The *halo* effect is the influence made by the country of origin on consumers' purchase intention when there is a lack of experience with a given product. Potential customers evaluate products using their perceived country image; that rely on the general knowledge they have about the country itself, including its people, and its level of economic, political and social development. Han (1990), testing the role of country image in consumer choice behavior, suggested that country image may be more important in the evaluation of brands from a familiar country, rather than from an unfamiliar country. This because consumers are more likely to have confidence in the quality of products from the country they have had more experience with. "Consumers may tend to infer specific attributes of a country's products by their overall perception of the country image" (Matarazzo, 2012: 30). As the casual model developed by Han (1989, 1990) has demonstrated, through country image, consumers may develop an attitude toward a brand. Therefore, their purchase intentions mature. The *halo* effect has the following relationship:

Country Image → Beliefs → Brand attitude

Summary effect takes place when consumers are unfamiliar with a product from a particular country, but they have experiences with other products from the same country. Hence, consumers may use their experiences, as well as mass media information or word-of-mouth, to develop an attitude toward that product (Johansson, 1989). Han (1990) clarified that when it comes to the *summary* construct, consumers derive a country image from products information about product attributes.

Beliefs about product → Country Image → Brand attitude

The two effects are highly connected (Bursi & Galli, 2012). Jaffe and Nebenzahl (2006) presented a dynamic model that includes both *halo* and *summary* constructs. Without product familiarity, the country image affects the

purchase decisions. After purchases, consumers mature experiences with products that allow them to adjust the country image according to the recent experience. The more the country image relies on the most recent experiences with products, the more it works as *summary* (Bursi & Galli, 2012). "The direct effect of country image reflects its use as a summary construct, while the indirect effect, through product beliefs, represents consumers' use of country image as a halo" (Matarazzo, 2012: 32).

Studies on CoO have investigated the consumer perspective as well as the implications for firms. The latter studies focus on how the CoO cue can benefit firms associated with countries possessing positive product-country image. Roth and Romeo (1992) stated that country image is product specific and it requires a match between product features and country image dimensions. This evidence has big implications for firms since managers can select or omit specific product or country information in their marketing communications according to this favorable and unfavorable match.

Papadopoulos and Heslop (1993) criticized the concept of CoO because it assumes a single place of origin for a product when it is common that a product may well be manufactured in one country but designed, assembled, branded in one or different countries. They proposed the term "Product-country Image" (PCI) and suggested firms highlight the country image suitable for their target markets.

2.2 Place image as "Competitive Identity"

A significant contribution to the study of country image is the work of Simon Anholt, whose framework regarding the issue is called competitive identity theory (Anholt, 2007). At the core of the theory, there is the idea that countries (and, by extension, cities, and regions too) are "judged by what they do, not by what they say. The notion that a country can simply buy its way into a better reputation has proved to be a pernicious and surprisingly resilient one. The national image has more to do with domestic and regional identity, politics and economics of

competitiveness than with branding as it is usually understood in the commercial sector" (Anholt, 2011: 21).

Although places do have brand images, they are not primarily about marketing, as has often been assumed. Place image is a perception and it does not reside in the municipality or tourist agencies' offices. It exists in the mind of the people; it is stored in a remote location, hence talking about the image of a place means to manage the attributes of this location and then the story told through media about this location (Kotler, Ravazzi, & Salinas, 1978).

According to Anholt's perspective, the most valuable asset for a country is the name of the country itself, which evokes its image. Governments, local administrations, and entrepreneurs – only to mention a few – are called to manage the world's perception of their place image and to develop a strategy for managing it.

Anholt developed a model which incorporated six areas of activities that a country should address to build a strong place image (figure 4.1).

Figure 4.1 The hexagon of Competitive Identity (Anholt, 2006: 26)
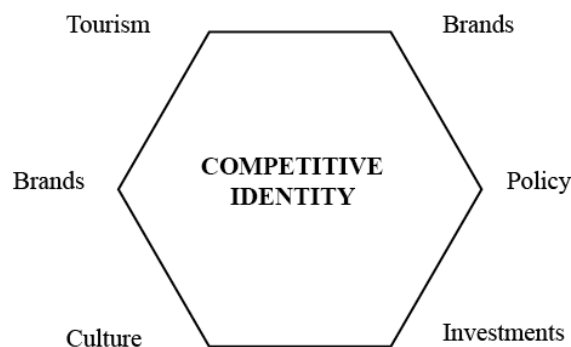
The six dimensions are the following:

i) tourism promotion activity as well as the experiences in visiting the place function as word-of-mouth mechanisms in influencing the image of place.

ii)   The products exported – they are ambassadors of a place; they communicate its value and tradition.

iii)   Policy, which reflects the political decisions as media report them as well as how they influence domestic activities.

iv)   The method used by a place to attract investments like businesses, human resources or foreign companies.

v)   Cultural exchange and activities. The international events a place hosts as well as the exports of local heritage through the museums, bands, and theaters.

vi)   How inhabitants behave abroad and the way in which they treat the visitors to their country, as well as the most famous people who live there.

The basic theory behind the hexagon is: for decision-makers to build a positive image, they have to develop a clear idea of what a place is and stands for and then they have to manage and coordinate all the six points of the hexagon.

What Anholt's approach emphasizes is that place image can be neither built nor changed through communication: it is not a marketing concern and communication may help only in spreading what a country makes and does. To build and manage a strong competitive identity, local decision-makers need to develop a "strategy" (goals), to create real "substance" (implementation actions) and do not overlook "symbolic actions" (communication) (Anholt, 2011: 28).

2.3 "Country of Origins" effect and "Competitive Identity" limitations

The concept of CoO communicates the effects the image of a place has on consumer behavior as well as the implication for firms that want to exploit its effect. What CoO studies are not able to explain is how a place can build such an image.

Even though the "Competitive Identity" hexagon tries to create a systemic way of looking at the image of an area, the research used statistical techniques that are

suitable for cross-national comparative analysis through indexes, but they are not able to explain the underlying causes of place's image dynamics.

The image of a local area does not rely only on what various public institutions do, but it is a multifaceted, synthetic, result of the overall geographic area including different institutions, public and private organizations, citizens, and firms too.

A local area is a characterized by a dynamic environment where public organizations are loosely coupled (Bianchi, 2004; Bianchi, 2012, 2016; Borgonovi, 2002; Meyer, 2002; Meyer & Scott, 1983; Scott, 2003; Weick, 1976): i.e. municipalities, as well as regional administration, are in charge of promoting tourism in the area, but they operate without any strategic alignment. There is a weak coordination in the interplay between public and private actors' strategies that lead to high degree of fragmentation of development policies. There are significant delays between policy adoption and related effect because the latter quite often depends on the availability of funds from the European Union and the investments lag behind formal decisions (Bianchi, 2010). Furthermore, each decision-maker operates in a silos because "the capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problem whose solution is required for objectively rational behavior in the real world or even for a reasonable approximation to such objective rationality" (Simon, 1957: 197).

To frame the sources of a local area image, it is necessary to broaden and enhance the standpoint, embracing an inter-institutional outcome-based perspective.

3. The need for inter-institutional approach in framing sources of the image of a local area

A local area needs to manage its image actively if wants to pursue sustainable development. Local actors are called to attract and retain strategic resources, such

as investments, public funds, infrastructures, companies, population, human capital, tourism, arts, and global events (Bianchi & Tomaselli, 2015). "Places compete in attracting visitors, residents, and businesses […] a place with a positive reputation finds it easier to vie for attention, resources, people, jobs and money; a positive place reputation builds place competitiveness" (Morgan, Pritchard, & Pride, 2012b: 3). Public and private organizations need to discover what the perception of their place is, and to develop a strategy for managing it. This implies consideration of a systemic approach according to which the performance of a local area lies behind the capability of both sectors to generate value individually (Bianchi, 2010). It requires coordination and an outcome perspective when assessing policies' impact on performance and sustainability.

It is necessary to blend span and depth of performance to make decision-makers aware of the system's key variables' behavior when it comes to designing policies aimed at fostering sustainable growth in a local area. In other words, it is required to integrate inputs, activities, outputs and effects/outcomes with strategic and operational objectives, at the organizational level (*micro*), at the policy level (*meso*) and inter-institutional level (*macro*) (Bianchi, 2010). The objectives derive from an environment whose structure influences the outcomes for the local area, and in turn its generation is essential for the overall system's development as well as to raise sufficient resources (Anselmi, 2014; Bianchi, 2004; Borgonovi, 2002) to maintain it. This integration results in a dynamic and variable span and depth of a performance platform for control (Bouckaert & Halligan, 2007).

At the inter-institutional level, the interaction among policies of different institutions strongly influences performance. The advantages to adopt an inter-institutional perspective is to capture the outcomes, as achieved by the broader context of the local area. Such a point of view could be defined as external, meaning that a "formal model can be considered to be objective instances of a reality domain" (Größler, 2010: 385) since it does not reflect the observation point of a specific decision-maker. If one takes this perspective, it is possible to draw the boundaries of the system around a local area, where resources, capabilities,

and management processes collectively interact and behave (Morecroft, Sanchez, & Heene, 2002). "Like all systems, the complex system is an interlocking structure of feedback loops" (Forrester, 1969: 107) that represents the environment surrounding any decision point in a system (Forrester, 1992). Therefore, the behavior of a system arises from its structures (Davidsen, 1991; Wolstenholme, 1990). Complex systems are characterized by a high levels of dynamic complexity (Sterman, 2000: 22), bounded rationality in decision making process (Simon, 1957) and misperceptions of feedbacks (Moxnes, 2004; Sterman, 1989b) that led people to adopt an event based mental model and an open loop causality map (Morecroft, 2015). "The robustness of the misperceptions feedback and the poor performance they cause are due to two basic and related deficiencies in our mental model" (Sterman, 2000: 27).

SD is a model-based methodology grounded in "Information-Feedback Control Theory" (Forrester, 1961: 14), it aims to observe and to identify the problematic behavior of a system and to create a validated representation (or model) of the system under investigation (Wolstenholme, 1990: 2). Indeed, it has been widely used to cope with the dynamic complexity of systems. Useful, reliable, validated, and effective simulation models (Lane, 1995a; Senge & Forrester, 1980) help to develop the learning process of decision-makers and support them in policy design. This because SD models are capable of reproducing the existing system behavior and facilitating the design of an improved policy.

Social systems cannot be modelled in a way that captures their entire complexity because "all models are simplifications of reality. If this were not the case, their usefulness would be diminished" (Ackoff, 1977: 2). SD models aim at producing "qualitative statements about modes of behavior, appropriate performance indicators and effective leverage points" (Lane, 2012: 591). Insight SD modelling is an established practice used to inform the understanding of processes (Bianchi & Tomaselli, 2015; Ghaffarzadegan et al., 2011) and depends heavily on graphic demonstration (Wolstenholme, 1999b).

DPM by combining SD methodology with performance management systems enriches the perception of the investigated problematic behavior. DPM through conceptual models identifies the structure behind problems and enhance the understanding of the causal connection of a given time development.

4. A Dynamic performance management approach to frame the sources of the local area image

A local area's development is highly affected by image improvement. Thus there is a need for a holistic methodology able to frame and assess system's outcomes. As Bianchi (2012: 149) pointed out "conventional financially focused P&C systems have been considered lacking in relevance since they are not able to provide information that can support either dynamic complexity management, the measurement of intangibles, the detection of delays and to deal with the sustainable growth".

According to Bianchi and Rivenbark (2012: 10), the growth can be sustainable if the rate at which end-results change the endowment of corresponding strategic resources is balanced. By taking this perspective, the accumulation and depletion processes of shared strategic resources strongly influence the local area's performance, which is greater than the sum of the specific performance of each comprised organization.

To manage a local area's performance, it is crucial to define firstly what performance is and secondly what are the key success factors driving such a performance. Figure 4.2 shows the relationship between strategic resources, performance drivers and end-results. DPM requires that end results be explicit. Consequently, it is necessary to identify performance measures related to both end-results and linked performance drivers. Drivers represent those measures able to capture, explain, cause, and fuel the end results. Ratios measure performance drivers (i.e. as a ratio between an organization or a local area's performance and a benchmark, or target).

Figure 4.2 The dynamic performance management perspective of performance determinants (adapted from Bianchi, 2016: 73)
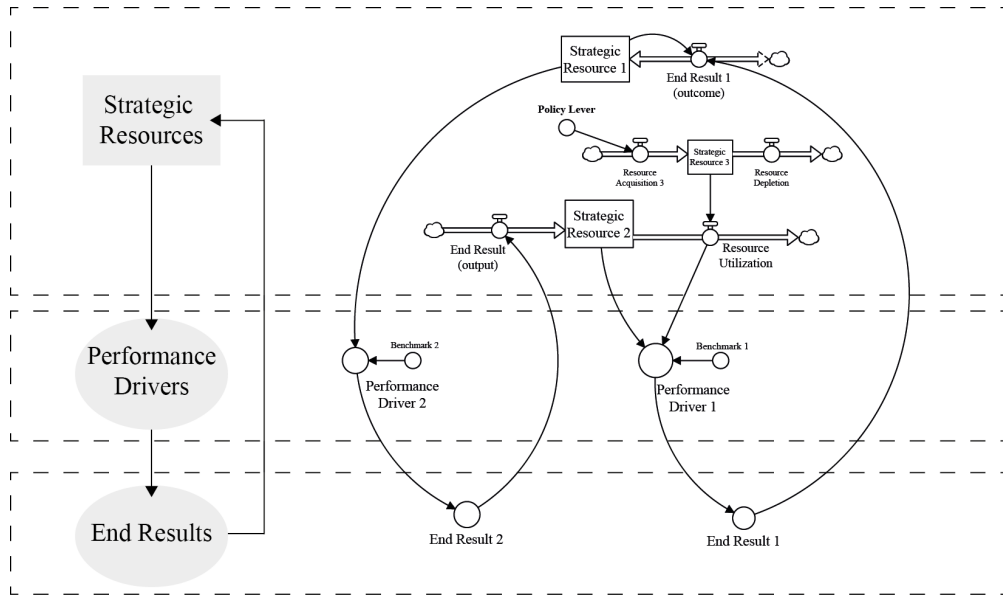
DPM requires that end results be explicit. Consequently, it is necessary to identify performance measures related to both end-results and linked performance drivers. Drivers represent those measures able to capture, explain, cause, and fuel the end results. Ratios measure performance drivers (i.e. as a ratio between an organization or a local area's performance and a benchmark, or target). The numerator of a performance driver is the current state of performance, while the denominator is the benchmark value. As figure 4.2 shows, decision-makers have to act on the upstream strategic resources level, if they want to affect performance drivers and, in turn, end-results. Is through the end-results that they can build up, preserve, and deploy strategic resources. Managing strategic resources to affect both performance drivers and end-results in accordance with the other system's players is a complex task. Maintaining a proper endowment of strategic resources is the only way to develop sustainably. Although intangible resources (i.e. image, reputation, social capital) are difficult to define as well as to measure, they play a significant role in affecting performance. Their unbalanced accumulation and depletion processes can be the result of erroneous policies or just of inertial

dynamics. Both need to be addressed, but inherent delays make difficult to perceive the effects generated by decisions. Thus they may cause trade-offs in time and space. DPM provides decision-makers with proper lenses through which they can understand and counteract such phenomena.

5. Case-study: "Taormina Etna district"

Since the beginning of the 1990's, Integrated Territorial Projects[34] (ITPs) defined Italian local development policies. These projects have become a powerful instrument to foster local sustainable development and a vehicle to involve the lowest levels of the Italian governmental in the long-term strategies. In Sicily, many municipalities have created agencies as a form of public-private partnerships aiming at i) coordinating growth strategies; ii) monitoring investments and secure funding from different sources; iii) supporting projects development to capitalize on local resources and tackle those factors limiting the socio-economic growth.

"Taormina Etna district" is the brand for a local development agency that supports firms and municipalities located between Messina and Catania, along the Sicilian East Coast. In its region, the district includes two famous icons of Sicily: the city of Taormina and the Etna volcano. The area characterized by a coastline includes three natural parks and four natural preserves, it is full of small villages rich in history, local cultures, products and popular traditions. Taormina has been an international icon of tourism since the end of World War II. It has been a destination for luxury tourism, intellectuals and VIPs such as writers, and royalty. Despite this glorious past, due to the earthquake of 1968 the Taormina' *dolce vita* was replaced by a mass tourism: hotels offered rooms to big tour operators and inhabitants started selling their houses and land. Hotels and summer houses

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[34] ITPs is a modality of implementation of European structural funds. ITPs were introduced for "objective 1" programs and were then extended to the other types of regions. ITPs are a combination of different measures deriving from the structural funds on the basis of local strategies designed by local partnerships. The selection of projects is usually made by regions on the basis of criteria agreed upon with local partnerships.

crowded messily the pristine land surrounding Taormina. The uncontrolled development, together with the mass tourism, have decayed the image of the city. Taormina holds an enormous heritage, e.g. the ancient theatre of *Tauromenion* built in the third century BC (Campagna, 2009; Rizzo, 1927).

Figure 4.3 The Taormina Etna district region
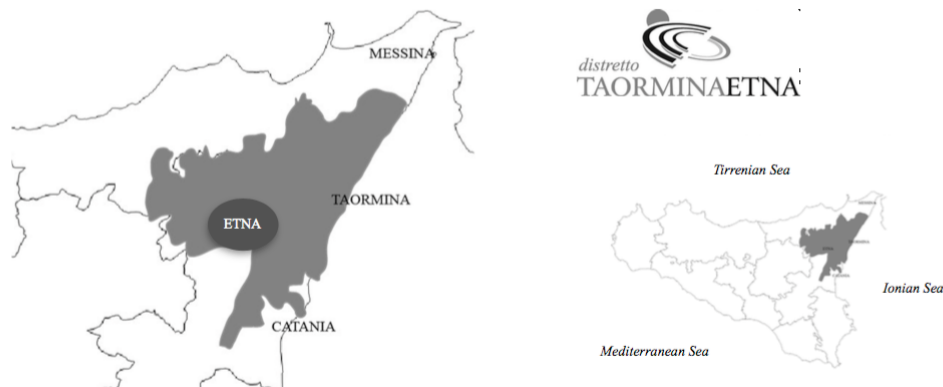
Another icon of the area is the Etna volcano that lies above the convergent plate margin between the African Plate and the Eurasian Plate. It is the tallest active volcano in Europe currently 3,329 m (10,922 ft.) high. In June 2013, UNESCO added ETNA to the list of World Heritage Sites. It represents a noteworthy attraction for tourists and a great resource for the local economy. The fertile volcanic soils support extensive agriculture, with vineyards and orchards spread across the lower slopes of the mountain and the broad Plain of Catania to the south.

In 2000 the incorporation of the two companies that were leading the ITPs for the local area ("Sviluppo Taormina Etna S.p.a" and "Società Consortile Taormina Etna"), established the "Taormina-Etna district".

The district governance (figure 4.4) consists of two agencies for local development owned by the same shareholders, that appoint a CEO. The public shareholders own 51% of the equity, while the private shareholders the remaining 49%, thus according to the Italian law, the district is a public organization.

Figure 4.4 The Taormina Etna district institutional framework
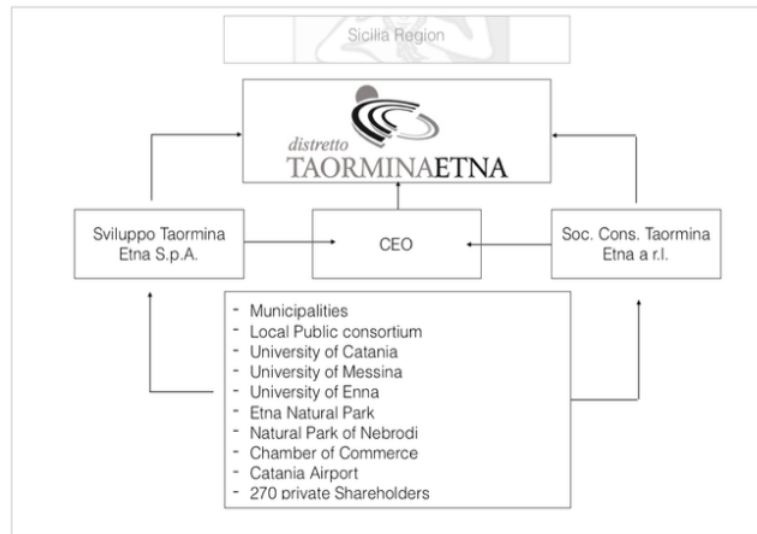
The aim of the district is to well manage local, natural, and cultural resources through the enhancement of hospitality infrastructures, the implementation, and promotion of local products and traditions as well as the education of human resources (DTE, 2009: 3). To achieve such goals "Taormina-Etna district" has operated through project-based activities aimed at attracting funds from national, regional, and European programs. The district received funds for 5 ITPs trough which it spent more than EUR150 millions (59% as public funds, 41% as private capital). The funds have been used to subsidize businesses, create public infrastructures, and support touristic marketing initiatives (DTE, 2015). Figure 4.5 shows the results of the 5 ITPs as presented by the district administration

The realization of the ITPs has created new business ventures and has provided opportunities for local entrepreneurs to increase the operations of their firms. The promotional initiatives have generated a certain amount of contacts between the district and the potential market. All of these results are at best output of strategies or indicate just an input acquisition since they represent a pre-requisite to produce value for the local community.

Figure 4.5 The results of "Taormina Etna district" from 2000 to 2015 (DTE, 2009; 2015)

In the next section, the results of the district will be layered up with the performance of the local area, trying to understand whether those results have increased the image of the local area.

5.1 Analysing the outcome of the local area

This paper aims to frame the sources of the image of a local area through an outcome based dynamic performance management. To this end, the first step is to identify the outcome and to analyze the results achieved by the local area. Essentially, the district has operated as destination agency because the main economic sector of the area is tourisms, and most of the activities are tourism-related. The tourism presence can be taken as measure of the effect of the image. Assuming that there is a causal and direct relationship between the image of the local area and the flow of tourists, the better the experience with the local area, the higher the image of the local area is. An improvement in the image of the local area will cause – *ceteris paribus* – a higher number of tourists. Figure 6 shows this dynamic hypothesis.

Since a tourism destination is a product, it can be purchased only by getting there. Especially for potential foreign tourists, travel-oriented social networks, websites with users' reviews play a prominent role in word-of-mouth processes. Local area organizations can only intervene on the factors determining the experience of the visitors at the destination i.e. the room availability in the desired holiday period, the price of the accommodation, the quality of the natural environment, the transportation services and the infrastructure, the cultural attractions, and the advertising.

Figure 4.6 The development of the image of a tourist destination as based on tourists experiences
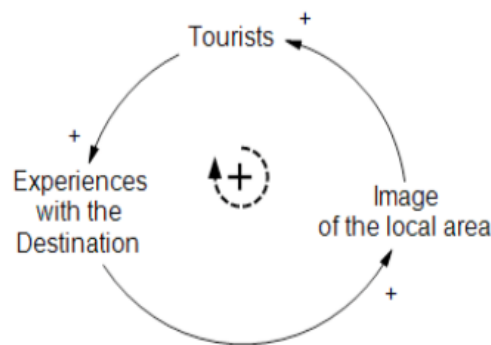
These aspects are products, services or initiatives suitable to close the gap between the desired strategic positioning of the destination and the current state. They are also outputs of the local area and should be collectively converged toward the outcome.

The "Taormina-Etna district" operates inside the broader ares of Messina and Catania. The research observed the dynamics of tourists and related variables from 2000 until 2014, to understand the impact of the district policies (presented in figure 4.5) on the overall results.

From 2000 to 2014 the flow of arrivals and their presence (figure 4.7) remained quite stable, while the average residence time (presence divided by arrivals)

shows a slight decrease, meaning that people spend less time for a holiday in the area.

Figure 4.7 Tourist arrivals, presences and average holiday length (Osservatorio Turistico, Dipartimento Turismo, sport e spettacolo Regione Sicilia)
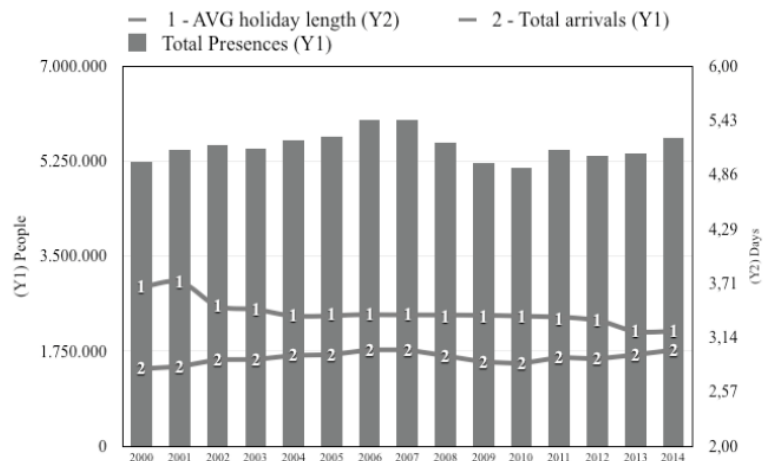
Over the same period, the number of hospitality structures have increased significantly (figure 4.8.1) especially the so-called non-hotel (B&Bs, farms for holiday, camping, summer vacation houses), but bed capacity data shows a different pattern. Hotels represent the larger part of the total bed capacity while the non-hotel sector a smaller part.

Figure 4.8.2 shows the hospitality capacity in terms of bed places, while figure 4.8.3 the average number of bed per structure. Comparing figure 4.8.1 and figure 4.8.2, it emerges that the hotels' average capacity (dashed line in figure 4.8.3) remains constant over the years, while the average capacity of the non-hotel (solid line in figure 4.8.3) has decayed.

Figure 4.8 Total hospitality structures, non-hotel, and hotel structures (8.1). Hotels and non-hotels bed capacity (8.2). The average number of bed per structure (8.3). The average holiday length per tourist origin and type of structure.
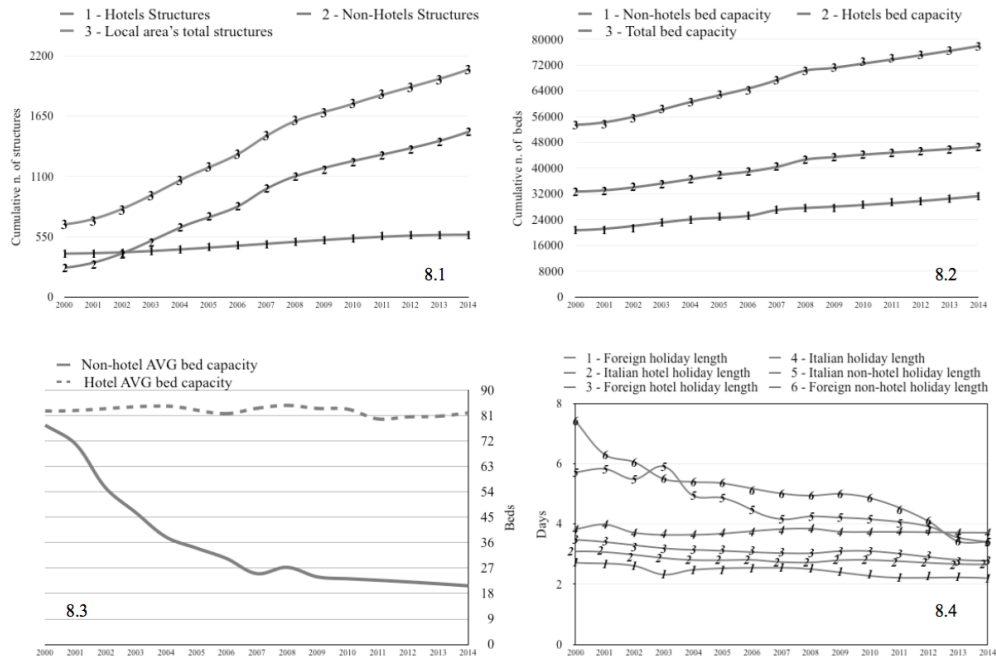
This decay means that a big number of very small structures have been created. Thus, the growth of non-hotel sector (line 2 in figure 4.8.1) is primarily in modest structures. The reduction of the average bed capacity in the non-hotel sector had some effects on the holiday length. Due to the increasing number of hospitality structures, hotels have to compete with a plethora of non-conventional accommodation suppliers, which compete aggressively especially after the widespread of internet booking services. They offer farm or winery stays, with many additional services but most often at half the price of hotels since they have a very different costs burden. This phenomenon has caused that: i) hotels start lowering prices to cope with competition, while non-hotel structures start raising prices to get enough returns for the services they offer (only a limited number of room, swimming pool, beauty spa). Consequently, hotel prices (from above) and non-hotel price (from below) are going to converge in the next future. This

competition may compromise the sustainability of both big and small structures, which are necessary for a destination. The reduction of the average holiday length (figure 4.8.4) might be due to a competition between hotel and non-hotel structures. Based on the dynamics shown in figure 4.8.4, it emerges that the local area is losing his appeal as "long-stay" holiday destination. All-average residence times are decreasing, the non-hotels one particularly.

Tourism development cannot be evaluated only through the dynamics of accommodation services. An important indicator of the tourism movement, and by consequence of local attractiveness, are the dynamics of museums visitors. The museum guests (line 3 in figure 4.9) and the ticket-per-tourist (line 1 in figure 4.9) as the figure portrays are quite stable. In addition, as the number of visitors are constant, the revenues have increased significantly due to raises in tickets price. It is important to notice that the weight of "the ancient theatre of Taormina" is around 0.6 in terms of visitors and around 0.8 regarding revenues. It means that the Taormina theatre can be considered the only heritage building visited in the area.

Figure 4.9 Museum tickets sold, museum revenues, and ticket-per-tourist (Osservatorio Turistico, Dipartimento Turismo, sport e spettacolo Regione Sicilia)
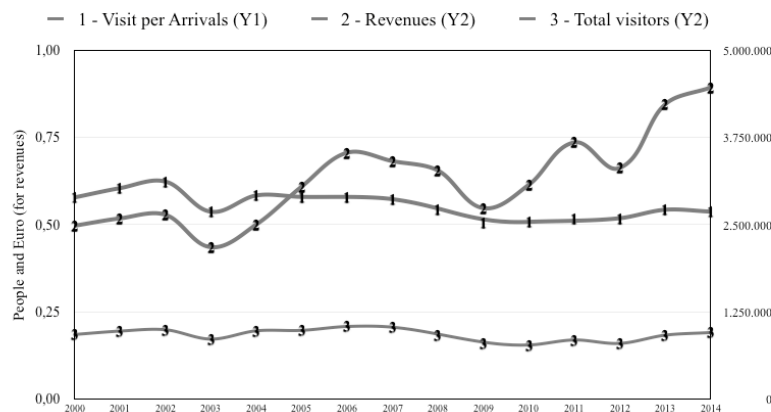
After having commented the results of the local area, it is possible to draw some preliminary conclusions. The flow of tourists has been quite constant, the local museums are not visited except the "ancient theatre of Taormina," the strong

competition among accommodation structures may compromise the sustainability of the sectors. Based on the above evidence one may argue that for the local area, tourism performance has not been improved by the policies and the investments realized from 2000 to 2014 by the "Taormina-Etna district."

5.2 *Modeling local area image through an outcome-based dynamic performance management view*

As Forrester (1992: 56) emphasized the information for understating the causal relationships responsible for the observed dynamics can be attained from different sources: from decision-makers' "mental database" to numerical databases. Likewise, as Yin (2013: 116) put it, "no single source has a complete advantage", therefore many sources should be used.

Table 4.1 reports the sources of evidence collected (the size of the sample in square brackets): interviews with local decision-makers and semi-structured interviews with local entrepreneurs have been performed; district documents, statistical databases have been read; comments and feedbacks on tourism- and travel-oriented websites have been coded. The table also shows the purpose of the several inquiries and the weak points that arose.

Table 4.1 The sources of evidence: target of the inquiry, purpose, and weaknesses of the sources

Sources of evidence	Target	Purpose	Weaknesses
Conference	District results presentation [1 conference]	Knowledge of district purpose, area's boundaries and partner	General context, no debate, only positive data commented
Open Interview	CEO of the district [1 interview]	Knowledge of local area's strategies, policies and stakeholders.	Reflexivity of the discourse Bias due to the poorly articulated questions
Documentation	District publications [2 issues]	Understating ITPs, strategies, detailed actions, and initiatives	Only quantitative input and output measure.

Sources of evidence	Target	Purpose	Weaknesses
Semi-structured Interviews	Local Entrepreneurs [20 interviews]	Understanding the business strategies, local production, and the destination issues.	Political and/or context biases Inaccuracy due to the time
Archival Records **(tripadvisor[dot]it)**	Tourists [100 records coded]	Understanding the evaluation of the destination. The weaknesses and the strengthless	Long-time span and different settings. Not for the purpose. Incomplete records
Statistical Database	Numerical data	Obtain the official data about the main variable	Generality Not self-explaining

The causal relationships that constitute the model (figure 4.10) have emerged by the analysis of interviews, conference reports, and archival records. The model synthesizes four synthetic factors influencing the image of the local area.

Figure 4.10 The sources of the local area image (simplified version of the system dynamics model)
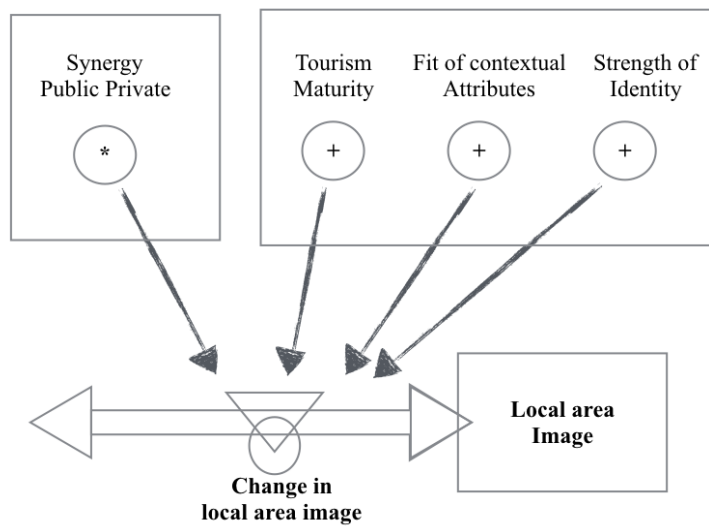
Defining the four constructs:

    i)   Level of tourism development denotes the position of the destination in a specific phase of the evolution cycle. It reflects the growth rate of

tourism in the area by considering arrivals, presence, and the average length of the holiday. Such a measure influences the strategies of local organizations as the destination goes through its cycle. The more tourists in the area, the higher the willingness of people to invest in the local area will be. Those investments may change the local area image.

ii)   Fit of contextual attributes depends on the local promotion, cultural and environmental policies. It synthesizes the use of the land, natural attractions, cultural attractions, artificial facilities, and easiness to visit the attractions around the places in which the tourists resides. It captures how the tourists live in and experience with the local area.

iii)   Strength of identity stands for the promotion of typical local products, local heritage and local traditions towards the tourists. It also includes the degree of integration between the producers, if they use local raw materials in producing their products or if they share innovation project. Strength of identity tries to illustrate the extent by which the place talks about its history and values through museums, products, and food.

iv)   Synergy between public and private sector means that public and private organizations run projects aimed at improving their own respective results, such as networking activity among hotels, restaurants and museums; websites and info-points to share information about the destination; a unique label to certifies the local production.

The factors from 1 to 3 are additive, while the synergy between public and private works as multiplier of the first three elements.

Table 4.2 links the 1st-level performance drivers with 2nd-level, connecting their measures. The research adopted a deductive-inductive approach to identify the performance drivers. The theoretical approach discussed in the first part of the work, served as lens through which carry out the semi-structured interviews and

to analyze the other sources of information exposed in table 4.1 since "inductive modelling […] sought for the solution to a specific problem" (Größler, 2008: 468).

Table 4.2 Performance Drivers (bold), definition (italic), and measure (abbreviation in parenthesis)

1st-level Performance Drivers	2nd-level Performance Drivers	*Measures*
Tourism Maturity (TM)	**Tourist fractional growth rate** (TGR)	*%*
	Bed fractional growth rate (BGR)	*%*
	Weighted average holiday length (WAHL)	*days*
Fit of contextual attributes (CA)	**Average structure's size** (AVG-ST-SIZE)	*bed/structure*
	Urban Density (UD) urbanised land/total land	*Dimensionless*
	Attraction density (AD) total attraction/local area surface	*Attractions/m²*
Strength of identity (I)	**Local-oriented attraction ratio** (LAR) *n.of local-oriented attraction/total attraction*	*Dimensionless*
	Typical labelled product ratio (TYP) *n. of firms producing labelled products/total firms*	*Dimensionless*
	Integration of supply chain (ISC) *n. of restaurants using local products/total restaurants*	*Dimensionless*
Synergy Between Public and Private sector (SYN)	**Integration of innovation** i.e. internationalisation, R&D, Know How (INN) *n. of firms sharing a project/ total firms*	*Dimensionless*
	Density and scope of Touristic circuit (DSTC) *n. of affiliated activities*category of activities*(surface of covered municipality/total land surface)*	*Dimensionless*
	Strategic dialogue in the local area (STDLG) *n. of agreement achieved/total agreement*	*Dimensionless*

After having defined the performance drivers, the next section of the paper will discuss how DPM may support decision-makers in managing the image of a local area and to improve the local area's performance sustainably.

6. Sketching the dynamic performance management chart

The outcome-based DPM perspective of the image of a local area emphasizes three-layers: from end results back to strategic resources, through performance drivers.

The outcome-based analysis of the "Taormina-Etna district" aimed to frame the sources of the local area image through performance drivers that may trigger performance improvement.

The model is composed of two fundamental equations, where the image is modelled as adaptive expectation through the exponential smoothing of its source. In this way, the model – as the simplest information stock does – adjusts the belief to the actual value of the input variable[35] gradually. The *Change in the image of the local area* (1) updates the perceived value of the *Local area image* (2), according to a certain perception time.

(1) *Change in local area image* $= \dfrac{(((TM+CA+I)*SYN)-Local\ area\ image)}{Time\ to\ change\ image}$

(2) *Local area image* $= \int_{o}^{t} Change\ in\ local\ area\ image*dt + Local\ area\ image_{t0}$

As equation[36] (1) shows, the four 1st-level performance drivers affect the *change in local area image*. The four first level performance drivers are the multiplication of the relative normalized 2nd-level performance drivers. Indeed,

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[35] The input value is the sum of three 1st-level performance drivers, multiplied by the synergy between public and private sector.
[36] Abbreviations can be found in table 4.2

they compare a current state of the system with a given benchmark (i.e. a target value, a competitor value or a desired level).

The following equations present the 1st-level performance drivers as composed by the 2nd-level performance drivers. Equations from (3) to (6) represent the 1st-level performance drivers as part of a system dynamics model[37].

(3) *Tourism Maturity (TM)* $= \left(\dfrac{TGR}{\text{Target } TGR}\right) * \left(\dfrac{BGR}{\text{Sicilian } BGR}\right) * \left(\dfrac{WAHL}{\text{Target } WAHL}\right)$

(4) *Fit of contextual Attributes (CA)* $= \left(\dfrac{AVGSZ}{DesiredAVGSZ}\right) * \left(\dfrac{\text{Sicilian } UD}{UD}\right) * \left(\dfrac{AD}{\text{Target } AD}\right)$

(5) *Strenght of local identity (I)* $= \left(\dfrac{LAR}{\text{Target } LAR}\right) * \left(\dfrac{TYP}{\text{Desired } TYP}\right) * \left(\dfrac{ISC}{\text{Desired } ISC}\right)$

(6) *Synergy between public and private (SYN)* $= \left(\dfrac{INN}{\text{Desired } INN}\right) * \left(\dfrac{DSTC}{\text{Desired } DSTC}\right) * \left(\dfrac{STDLG}{\text{Target } STDLG}\right)$

Once the performance drivers are pointed out, the linked strategic resources are made explicit. Thus, the leverage points upon which the decision-makers can intervene to affect the outcome – through the performance drivers – are clearly revealed. In this way, each decision-maker may identify those strategic resources he manages and understand which output he should improve.

As figure 4.11 shows, the change in the local area image will increase the perceived local area image, which in turn, – all other things being equal – will cause an increase in tourism arrivals; an increasing number of tourists means more value for the local area to support the policies.

The end result is affected by four 1st-level performance drivers, which comprise twelve 2nd-level performance drivers that in turn depend on the strategic resources. As the DPM chart (figure 4.11) clearly shows, it is not possible to affect performance drivers directly since they compare a current state of performance with a given benchmark. It is, rather, possible to design policies to

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[37] In a System Dynamics model, those drivers are normalized through a benchmark value. This value works for a non-dimensional input to the table lookup function that converts this input into a min-max scalable output.

affect the upstream strategic resources in order to influence the drivers, and finally to improve the outcome.

The driver "fit of contextual attributes" synthesizes the suitability of contextual attributes with tourism activities. To increase such drivers, it is necessary to increase the strategic resources "attraction" (i.e. by renovation of heritage building, by opening museums). On the other side an increase in the number of building (i.e. houses for holidays, apartment building for citizens) also increases urban density and it will reduce the "fit of contextual attributes." Policy makers may strengthen local identity by increasing the strategic resource "attractions" that relates to local history and cultures, likewise the number of firms producing typical products. The performance driver "Level of Tourism development" captures the lifecycle of the destination by considering the growth rate of tourists, the weighted average of the holiday length, and the bed growth rate. This measures gives suggestions about the need of new/better clear destination positioning.

The most effective way to improve image is through synergy between the public and private sectors. It compounds the policy-makers' results in the other three driving factors. If the number of attractions is increased but that is not linked with accommodation services and transportation facilities or not listed on tourism websites, the image can only be slightly improved. In the same fashion, the firms producing typical products should supply local restaurants, jointly run projects (i.e. R&D, internationalization, export consortia), and together with public institutions outline strategic plans for the local area. Increasing the synergy between both private and public sector will spread out the positive effect throughout the system.

Figure C4-11 The dynamic performance management chart
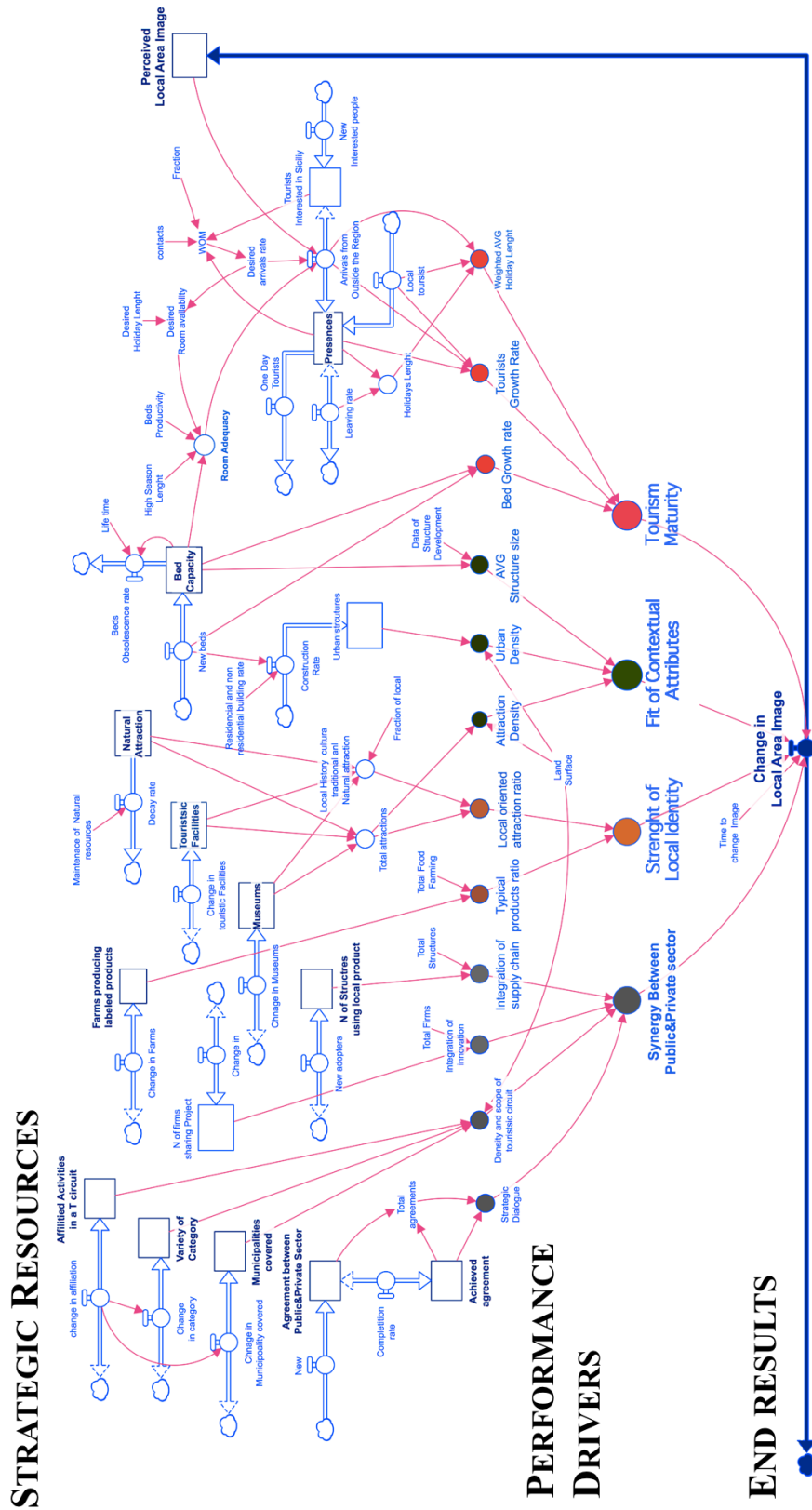
By following the discussion of the model, it is possible to give some policy suggestions to decision-makers. They may want to consider a more balanced approach to image management, which could include all or most of those performance drivers described in the present research. They should manage the size of the hospitality structure, avoiding either super small structures that raise the per-night prices and super big hotels that increase soil erosion and concentrate tourists in one place. Local history and tradition should be more connected with natural attractions (beaches and mountains) and leisure, and typical products should be standard ingredients in local restaurants. Policy-makers should network the small municipalities and the private sectors in a more comprehensive tourist package, increasing the scope of the journey across the local area. Before moving to the findings, it is important to make clear the limitations of the model. According to Sterman "the most important assumptions of a model are not in the equations, but what's not in them; not in the documentation, but unstated; not in the variables on the computer screen, but in the blank spaces around them" (Sterman, 2002b: 513). The model here discussed is necessarily limited regarding the number of feedback loops described, because a large number of factors should be included and taken into account to map all the relevant feedbacks. Weaknesses involves some of the linkages between each organization and the entire system. For that reason, the DPM analysis presented here considers only the main feedback loop involving the performance drivers affecting the end-result under investigation.

7. Conclusions

After having gone through an outcome-based inter-institutional DPM perspective, it is possible to cover the issues raised in this work. The study presented in this paper emphasizes the need for a DPM to support local area's decision-makers in framing the sources of the image of a local area. The DPM chart, as results of a case study, identifies four main driving factors: the level of

tourism development, the fit of contextual attributes, the strength of identity, and the synergy between public and private sector. These performance drivers enable decision-makers to adopt short-term performance measures and give insights and policy recommendation on how to connect institutional outputs with inter-institutional outcomes.

This work provides a basis for discussion and development of the research. By analyzing the dynamics of tourism-related variables, the paper reviewed the results of the local area from 2000 to 2014. Both tourism arrivals and presence have not increased while the holiday length have decreased on average. Particularly, the stay of non-hotel guests has decayed from six to less than three days on average. Also, the competition within the hospitality sector may compromise the sustainability of both hotel and non-hotel structures.

The study noticed that the practice of "Taormina-Etna district's" performance measurement is mainly composed of input indicators.

The DPM chart connects institutional outputs with the inter-institutional outcome. However, the model discussed in this work needs to be further developed into a simulation model. Such an advancement may help policy-makers in understanding the dynamics of accumulation and depletion processes of strategic resources and in assessing the sustainability of alternative policies. Through simulation over time, it may show how the performance drivers interact, influence each other, and behave over time.

CHAPTER 5

EXPLAINING THE EFFECTS OF THE IMAGE ON TOURISM THROUGH A SYSTEM DYNAMICS MODEL

1. Introduction

This chapter moves forward the study presented in chapter 4; it explains the effects of the image on tourism presence. To this end, the dynamic performance management chart previously discussed is advanced into a System Dynamics model capable of simulating. The benefit is to enrich the outcome-oriented view of performance, with a deep understanding of the development of such system over time.

The model is unfolded sector by sector, and in turn, the relationship between variables are illustrated through stock and flow diagrams. The model is presented in mathematical equations, while non-linearities which involve lookup functions are described through graphical representations. The chapter firstly presents the structure, then compares policies, and finally, illustrates the model validation process. Limitations of the model and closing remarks conclude the chapter.

2. The purpose of the model

The model aims to explain the dynamics of tourism presence in the "Taormina-Etna" touristic district from 2001 to 2014. The variable *tourism presence* is the effect variable, while the *image of the local area* is the cause variable. The cause variable has been operationalized according to the analysis detailed in chapter 4 5th section.

The purpose of the model is here illustrated by adopting the **PHAPI** technique which is used in System Dynamics to explain a study. **P'HA** is the scientific method used to understand the roots of problems, **P** stands for identifying the

problem through a reference mode. **H** is the hypothesis about the system structure that may be responsible for the problematic behavior, and it infers from the theoretical perspective adopted. **A** is the analysis of the model response to structure tests. Finally, **P** is policy design or operations research, and **I** is implementation.

Problem. Tourism arrivals and presence(respectively line 2 and bar in figure 5.1) in the "Taormina-Etna District" (TED) have been quite stable over the last 14 years (from 2001 to 2014), despite 160 millions of euro have been invested to support tourism in the area.

Hypothesis. Tourism mainly depends on the image of the place which is a function of few aspects: the destination lifecycle, the fit of contextual attributes, the local identity, and the synergy between public and private organizations in coordinating strategies. During the last 14 years, the public and private investments have increased the local area capacity (bed places), have developed promotional campaigns, and subsidized business ventures. However, critical success factors that would have increased tourism have not been tackled.

Figure 5.1 Reference modes and dynamic hypothesis
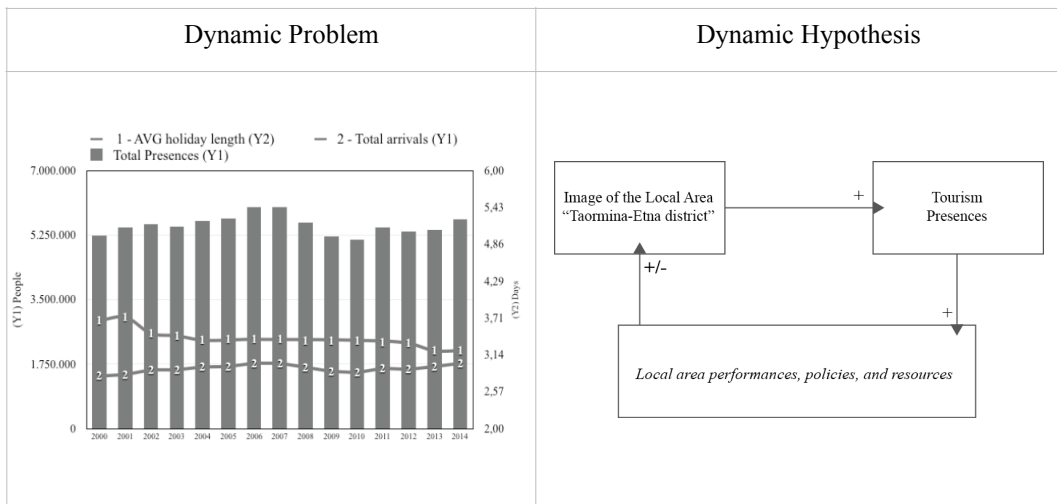
Analysis. Tourist arrivals is a flow while the variable presence is a stock which captures the average people in the place. The actual image of the local area is a perception which depends on the accumulation process of several resources

(natural environment, cultural attractions, entertainment activities, infrastructure). While the advertised image is a function of the promotional spending (i.e. tourism fairs, TV spots, newspaper ads, and on-line banners).

Policy. The model describes the effect of the image on tourism presence. The base run explains that investing in promotion campaigns and capacity building is not sustainable in the long-run. When a place has no match between the message of its promotion campaigns and the experience tourists have with the real contexts, the advertisement spending take over as the system's performance.

Alternative policies to sustain promotion campaign, rather may set financial resources out to:

i) address contextual issues (recovering natural environment and abandoned urban areas, increasing infrastructure to reduce tourism concentration);

ii) support local entrepreneurs in innovating and marketing their products;

iii) strength local identity by supplying typical food in local restaurant.

The model structure was used to compare current policy focused on promotion spending, with the policy sub i)[38]. Then, a *worse-before-better* scenario emerged, and this indicates that the suggested policy may produce in the long-term a sustainable outcome improvement.

Implementation. The model was designed to frame the relationship between output and outcome. To implement the policy, additional hypothesis and analysis which also involves disconfirmatory interview are required. Implementation issues may be part of further research.

Figure 5.2 portrays the full structure of the model. The picture shows side by side both the stock-and-flow and an aggregated version of the causal loop diagram. Each sector of the model is then described in a separate section.

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[38] The policies sub ii) and iii) are not simulated.

Figure 5.2 Overview of the model structure (a) and aggregated causal loop diagram (b)

(a)

(b)

The model contains six sectors:

- i) the tourists' sector;
- ii) the hospitality sector;
- iii) the local attractions and services sector;
- iv) the business sector;
- v) the Taormina Etna District (TED) sector;
- vi) the image of the local area (IMG) sector;

3. The tourists sector

Figure 5.3 portrays the tourists' sector, which is modeled through a chain, where people begin to be interested in visiting the destination, and then they decide to visit the place or move toward other destinations[39].

Figure 5.3 The tourists' sector chain
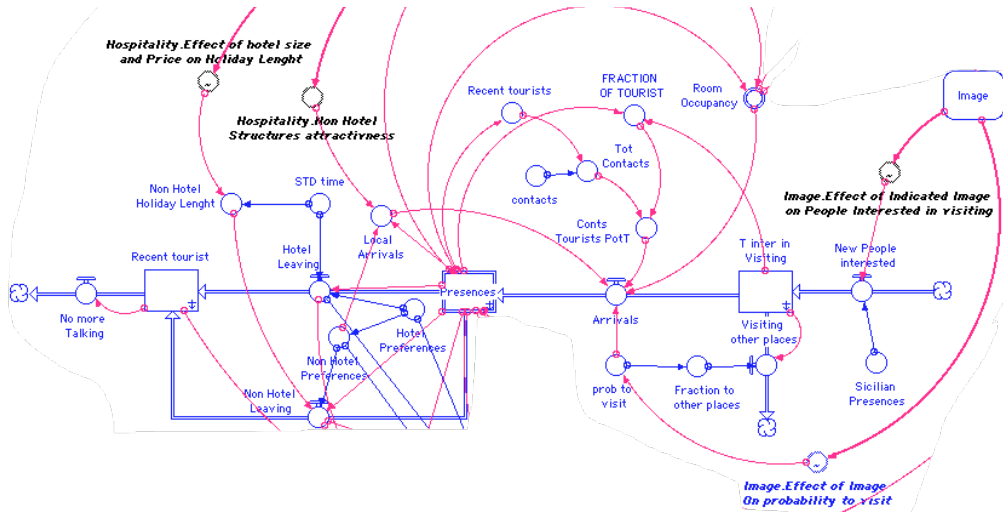
Tourists arrivals flow into the stock of presence. Then, tourists leave according to the average holiday length that reflects their accommodation preferences (hotels and non-hotels). These two delays depend on the room prices per night,

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[39] This shift in preferences is explained later on, together with the two effects impact on it.

which in turn is a function of the relative weight of the non-hotel capacity over the hotel capacity[40].

The flow of n*ew people interested in visiting* is assumed to be equal to the total amount of tourists who arrive in Sicily per year. The indicated image affects this flow increasing or decreasing the new people interested in visiting Sicily[41].

Sicilian Arrivals	6000000	people/year	Parameter
New People interested	Sicilian__Arrivals*Image.Effect_of_Indicated_Image_ on_People_Interested_in_visiting	people/year	Flow
Tourism Interested in Visiting	T_inter_in__Visiting(t) = T_inter_in__Visiting(t - dt) + (New_People__interested - Arrivals - Visiting__other_places) * dt INIT T_inter_in__Visiting = 7000000	people	Stock

Once people are interested, they may visit the place or decide to go somewhere else. Thus the flows *visiting other places* and *arrivals* are based on a certain probability to visit. The likelihood to visit – at the beginning of the simulation[42] – is equal to the weight of tourists arrivals in the place divided by the total amount of arrivals in Sicily, but during the simulation is affected by the image of the destination.

Visiting other places	T_inter_in__Visiting*Fraction_to__other_places	people/year	Flow
Fraction to other places	(1-prob_to__visit)	per year	Converter
prob to visit	0.30*Image.Effect_of_Image_On_probability_to_visit	per year	Converter
Arrivals	(Conts_Tourists_PotT*prob_to__visit) + Local__Arrivals / MAX(1,Room__Occupancy)	people/year	Flow
Presences	Presences(t) = Presences(t - dt) + (Arrivals - Hotel__Leaving - Non_Hotel__Leaving) * dt INIT Presences = INIT_Total_presences	people	Stock

The variable *Arrivals* sums up the word-of-mouth effect, between recent tourists and potential visitors. *Local arrivals* (proximity guests) rather depend on the non-hotel sector attractiveness. In the equation of the *Arrivals,* the denominator limits the flow according to the capacity saturation.

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[40] For a detailed account of this relationship see chapter 4 section 5 and section 3 of this chapter.
[41] The effect is described in section 7 this chapter.
[42] Additional details of parameters and stock initial value are reported in section 13.

The *Arrivals* increases the stock *Presence* which in turn is depleted by two flows *Hotel leaving* and *Non-Hotel Leaving*. Both outflows decrease the *Presence* on the base of a *holiday length* (STD time).

Hotel leaving	(Presences*Hotel__Preferences)/STD_time	people/year	Flow
Non-Hotel leaving	(Presences*Non_Hotel__Preferences)/ Non_Hotel_Holiday_Lenght	people/year	Flow
Recent tourist	Recent_tourist(t) = Recent_tourist(t - dt) + (Hotel__Leaving + Non_Hotel__Leaving - No_more__Talking) * dt INIT Recent_tourist = Presences	people	Stock
Non-hotel holiday length	STD_time*Hospitality.Effect_of_hotel_size_and_Price _on_Holiday_Lenght	year	Converter
STD time	3	year	Converter

Tourists leaving the place increase the stock of *Recent Tourists*. These represent the people who have been in the local area and talk with friends, family, colleagues or make comments on the internet, about the experience they had at the destination. The stock of *Recent Tourists* is decreased by the outflow *No more talking* with a first order material delay of 1 year. It means that after they are not that much active in talking as before, after one year.

4. The "hospitality" sector

Figure 5.3 shows the causal structure of the hospitality capacity (bed places). The purpose of this structure is to represent the decision rules which have governed the development process of the hospitality capacity and to produce consistent dynamics.

The model arrays two classes of accommodation structures: hotels and non-hotels[43]. The construction rate flows from right to the left, and the flow is measured in "bed/year," whereas "bed" for the stocks is a measure of the capacity.

The *desired capacity* is the input of the structure. The variable expresses the goal for the entire hospitality system. The *Capacity Gap* measures the

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[43] Arrays provide a simple yet powerful mechanism for managing the visual complexity. By "encapsulating" parallel model structures, arrays can help in presenting the essence of a situation in a simple diagram. Beneath the scenes, of course, arrays retain the richness of the disaggregated structure.

discrepancies between the *desired capacity* and the actual capacity which is cumulated in the *Hospitality structures.*

Figure 5.4 The hospitality capacity structure
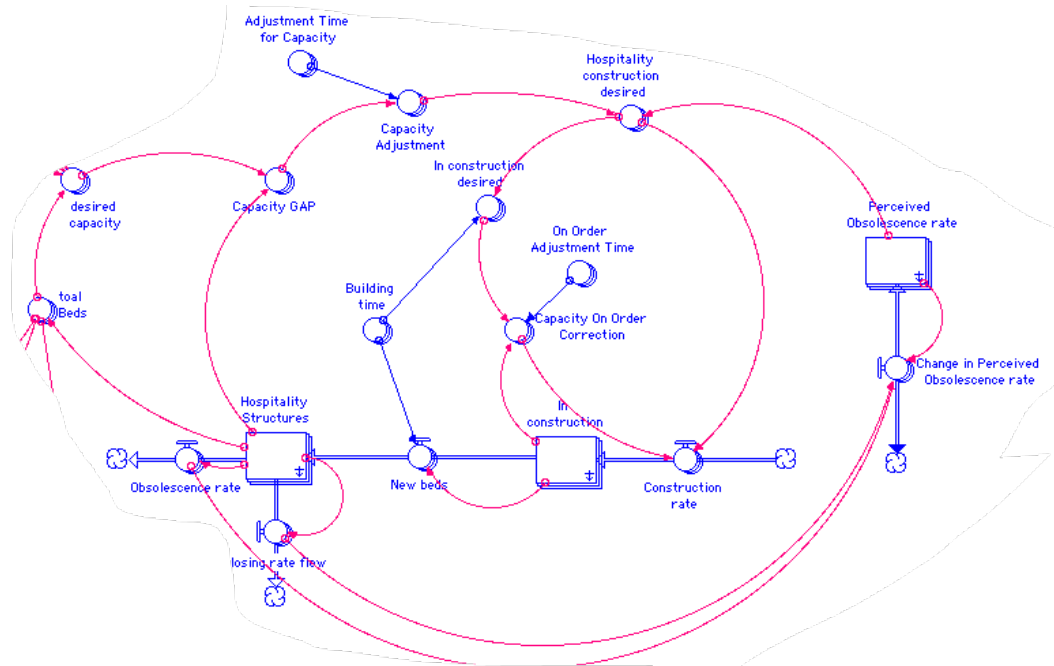
The *Perceived obsolescence rate* increases the *Capacity Gap* by an amount of beds/year which require renovation, the *Hospitality construction desired* synthesizes the supply line control.

Capacity Gap	desired__capacity-Hospitality__Structures	bed	converter
Hospitality construction desired	Capacity__Adjustment[Hotel]+ Perceived__Obsolescence_rate[Hotel]	bed/year	converter
	Capacity__Adjustment[Non_Hotel] +Perceived__Obsolescence_rate[Non_Hotel]		
Perceived obsolescence rate	Perceived__Obsolescence_rate[Non_Hotel](t) = Perceived__Obsolescence_rate[Non_Hotel](t - dt) + (Change_in_Perceived__Obsolescence_rate[Bed]) * dt	bed/year	stock
change in perceived obsolescence rate	((closing_rate_flow[Hotel] +Obsolescence_rate[Hotel])- Perceived__Obsolescence_rate[Hotel])/15	bed/year-year	flow
	((closing_rate_flow[Non_Hotel] +Obsolescence_rate[Non_Hotel])- Perceived__Obsolescence_rate[Non_Hotel])/5	bed/year-year	flow

The *construction rate* is determined to take into account the *In construction desired* and the *In construction* stock. In fact, *construction rate* puts the number of bed in construction equal to the *Hospitality construction desired,* increased by the difference between the *In construction desired* and the *In construction* stock (the work in progress). In this way, the *construction rate* does not overshoot.

In construction desired	Hospitality__construction__desired[Hotel]*Building__time[Hotel]	bed	converter
	Hospitality__construction__desired[Non_Hotel]*Building__time[Non_Hotel]	bed	converter
Capacity on Order correction	(In_construction__desired[Hotel]-In__construction[Hotel])/On_Order__Adjustment_Time[Hotel]	bed/yr	converter
	(In_construction__desired[Non_Hotel]-In__construction[Non_Hotel])/On_Order__Adjustment_Time[Non_Hotel]	bed/yr	converter
Construction rate	MAX(Capacity_On_Order__Correction[Hotel]+Hospitality__construction__desired[Hotel],0)	bed/yr	flow
	MAX(Capacity_On_Order__Correction[Non_Hotel]+Hospitality__construction__desired[Non_Hotel],0)	bed/yr	flow
In construction	In__construction[Hotel](t) = In__construction[Hotel](t - dt) + (Construction__rate[Bed] - New_beds[Bed]) * dt INIT In__construction[Hotel] = Init_Hotel_beds*0.3	bed	Stock
	In__construction[Non_Hotel](t) = In__construction[Non_Hotel](t - dt) + (Construction__rate[Bed] - New_beds[Bed]) * dt INIT In__construction[Non_Hotel] = Init_non_hotel_bed*0.3	bed	Stock

The flow of *new beds* depletes the i*n construction* stock and increases the *Hospitality structure* which in turn is decreased by the closing rate (failure or quitting) and by the *obsolescence rate.*

New Beds	In__construction[Hotel]/Building__time[Hotel]	bed/yr	flow
	In__construction[Non_Hotel]/Building__time[Non_Hotel]	bed/yr	flow
Hospitality Structure	Hospitality__Structures[Hotel](t) = Hospitality__Structures[Hotel](t - dt) + (New_beds[Bed] - Obsolescence_rate[Bed] - closing_rate_flow[Bed]) * dt INIT Hospitality__Structures[Hotel] = Init_Hotel_beds	bed	Stock
	Hospitality__Structures[Non_Hotel](t) = Hospitality__Structures[Non_Hotel](t - dt) + (New_beds[Bed] - Obsolescence_rate[Bed] - closing_rate_flow[Bed]) * dt INIT Hospitality__Structures[Non_Hotel] = Init_non_hotel_bed	bed	Stock
Closing rate	Hospitality__Structures[Hotel]*0.03	bed/yr	flow
	Hospitality__Structures[Non_Hotel]*0.1	bed/yr	flow

Obsolescence rate	Hospitality__Structures[Hotel]/30	bed/yr	flow
	Hospitality__Structures[Non_Hotel]/15	bed/yr	flow

Figure 5.5 The desired capacity
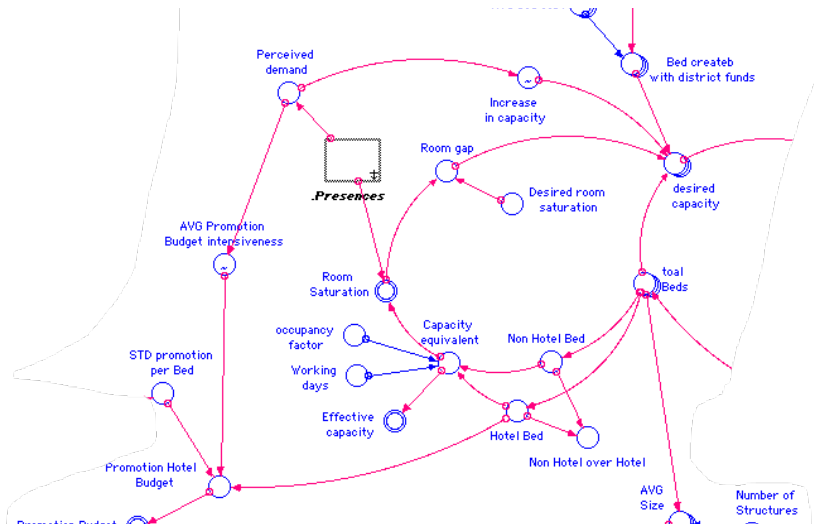
The *desired capacity* sums up three main sources: the funds invested in hospitality by the TED, the current policy of local entrepreneurs about the *desired room saturation*, and the trend of the *perceived demand*. An increase in one of these sources determines a bigger desired capacity.

desired capacity	((total__Beds[Hotel]+total__Beds[Hotel]*Room_gap) +Bed_createb__with_district_funds[Hotel])*Increase__in_capacity	bed	converter
	((total__Beds[Non_Hotel] +total__Beds[Non_Hotel]*Room_gap) +Bed_createb__with_district_funds[Non_Hotel])*Increase__in_capacity	bed	converter
Total Beds	Hospitality__Structures[Hotel]	bed	converter
	Hospitality__Structures[Non_Hotel]	bed	converter
Desired room Saturation	0.7	unitless	converter
Room Gap	IF(Desired_room__saturation-Room__Saturation>0) THEN(0) ELSE((Desired_room__saturation-Room__Saturation)*-1)	unitless	converter

Increase in capacity		multiplier	converter
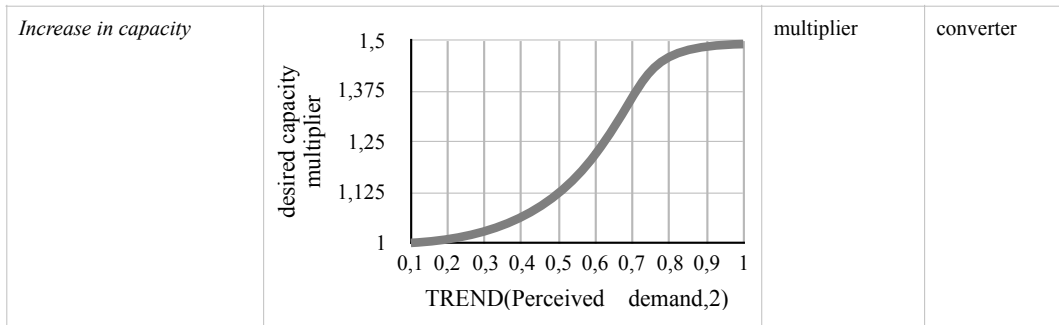
The hospitality sector also determines the *Room Saturation* by comparing the installed capacity to the *presence.* The *total beds*, the number of people per bed (*occupancy factor*), and the bed productivity (*Working days*) calculate the installed capacity (*capacity equivalent*).

Room Saturation	.Presence/Capacity__equivalent	unitless	converter
Capacity equivalent	((Non_Hotel_Bed+Hotel_Bed)/ occupancy__factor)*Working__days	people	converter

The figure below compares the simulation outputs of the hospitality sector with reference modes[44].

Figure 5.6 Dynamics of Hotel bed capacity [1], Non-hotel bed capacity [2], and total beds [3]
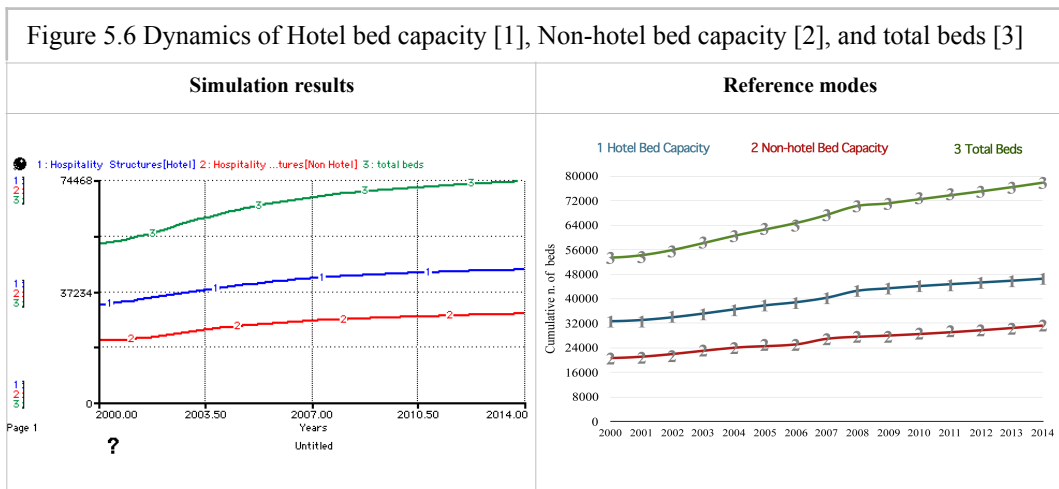
The *relative weight of the Non-Hotel structures to the Hotel structures* has an effect[45] on the *Holiday length* (discussed in the Tourists sectors). The assumption here is the following: the smaller the average size of the non-hotel structure, and

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[44] Real data are extensively commented in chapter 4 section 5, when the local area results are discussed.

[45] This effect is discussed in tourist sector.

the more the weight of non-hotel sector on the entire hospitality industry, the higher the "bed price per night" will be.

Non Hotel relative AVG size	AVG__Size[Non_Hotel] / HISTORY(Total_AVG_Size,0)	unitless	converter
Effect of Price on Holiday Length		unitless	converter

The *effect of Price on Holiday Length* affects both *Hotel leaving* flow and *Non-Hotel leaving* flow; the latter variables belong to the tourists' sector as explained before.

5. The local attractions and services sector

The local attractions and services sector encloses three main categories of attractions: i) cultural attraction such as regional museums, archaeological areas, and local museums; ii) attractions created by private investments (restaurants, café, music festival, discotheques, and local mini-tours); iii) natural attractions which include beaches, natural environment (natural reserves), and the urbanised land.

These three subsections are explained one at a time. The first are the cultural attractions, which contains three museum categories. A co-flow structure splits *local museums* (the one supported by municipality) in *local identity museums*[46] (the one who talks about the local tradition).

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[46] Local identity museum are those museums which focus on the local traditions, local history, and cultures of the place.

Figure 5.7 The regional and local museum
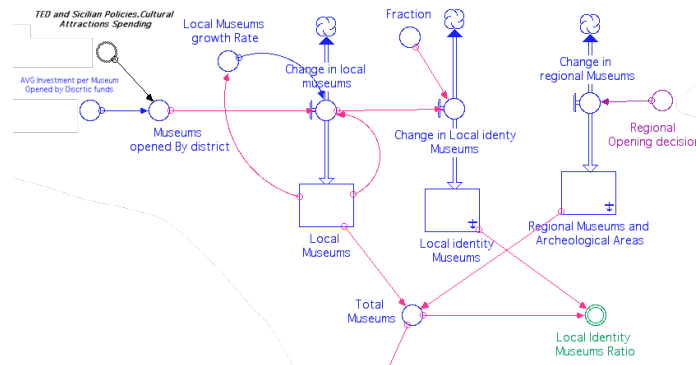
These museums are supported by *TED policies* and *Sicilian Policies on Cultural Attractions Spending*, while *Regional museums and Archeological areas* depend directly on the *Regional opening policy* since they are managed at the regional level. The variable *Total Museum* summarizes the three categories of cultural attractions.

Change in Local Museums	Museums__opened_By_district + Local__Museums*Local_Museums__growth_Rate	structure/year	flow
Local Museums	Local__Museums(t) = Local__Museums(t - dt) + (Change_in_local__museums) * dt INIT Local__Museums = INIT_Local_Museum*0.5	structure	Stock
Change in *local identity museums*	Change_in_local__museums * Fraction	structure/year	flow
Local identity Museums	Local_identity_Museums(t) = Local_identity_Museums(t - dt) + (Change_in_Local_identy_Museums) * dt INIT Local_identity_Museums = INIT_Local_Museum*0.5*0.3	structure	Stock
Change in regional Museums	Regional__Opening_decision	structure/year	flow
Regional Museums and_ Archeological Areas	Regional_Museums_and__Archeological_Areas(t) = Regional_Museums_and__Archeological_Areas(t - dt) + (Change_in__regional_Museums) * dt INIT Regional_Museums_and__Archeological_Areas = Regional__museum	structure	Stock
Regional Opening decision	PULSE(1,1,0)+pulse(2,4,0)+PULSE(1,6,0)+PULSE(1,11,0)	structure/year	converter
Total Museums	Local__Museums+Regional_Museums_and__Archeological_Areas	structure	converter

The *Attractions from private Investments* – to keep the structure as simple as possible – are modeled as an information stock which is updated by the *Change in*

attractions (see figure 5.8)*.* This flow represents the investment made by the local entrepreneurs in creating new attractions. To determine the *desired attractions,* the model assumes a certain amount of money spent by a single tourist (*AVG expenses per presence*), and then it multiplies this value by the total Presence to calculate the *Local Area's Income of Touristic services,* which in turn is divided by the *average investment per attraction.*

Figure 5.8 The attractions by private investments subsection
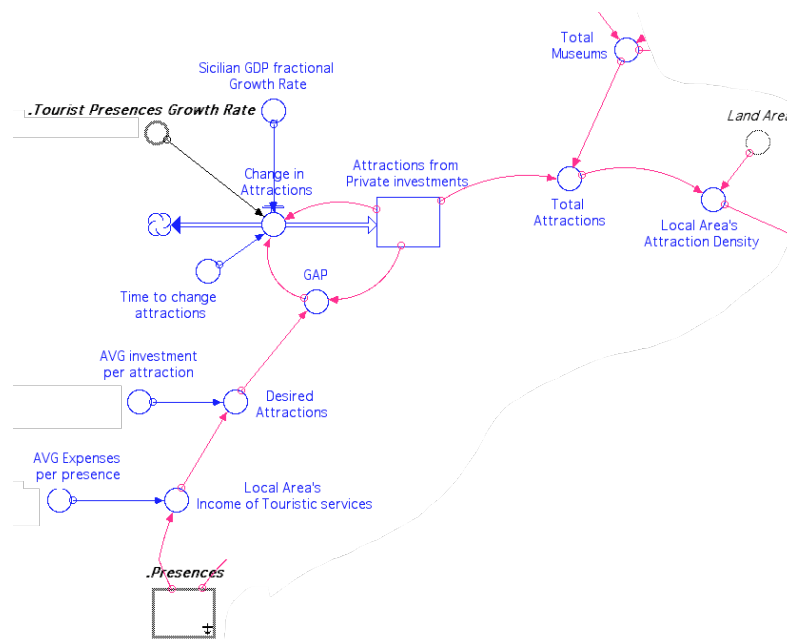
The local entrepreneurs make investments only if both the *Sicilian GDP fractional Growth Rate* and *Tourist Presence Growth Rate* are positive. Otherwise local economy follows the regional Gross Domestic Product.

Local Area's Income of Touristic services	.Presences*AVG_Expenses__per_presence	euro	converter
Desired Attractions	Local_Area's__Income_of_Touristic_services/ AVG_investment_per_attraction	structure	converter
Change in Attractions	IF(.Tourist_Presences_Growth_Rate) AND(Sicilian_GDP_fractional_Growth_Rate) < 0 THEN(Attractions_from_Private_investments*Sicilian_G DP_fractional_Growth_Rate) ELSE(GAP/Time_to_change__attractions)	structure/yr	flow

Attractions from Private investments	Attractions_from_Private_investments(t) = Attractions_from_Private_investments(t - dt) + (Change_in__Attractions) * dt INIT Attractions_from_Private_investments = Desired__Attractions	structure	Stock
Sicilian GDP fractional Growth Rate	Annual data from ISTAT	per year	converter
.Tourist_Presences_Growth_Rate	(Presences-HISTORY(Presences,time-1)) /HISTORY(Presences,time-1)	unitless	converter

The *Total attraction* adds up the *Attractions from Private investments* and the *cultural attractions.*

The last part of the sector is the natural environment, such as beaches and natural reserves. Figure 5.9 shows this structure.

Figure 5.9 The natural attractions
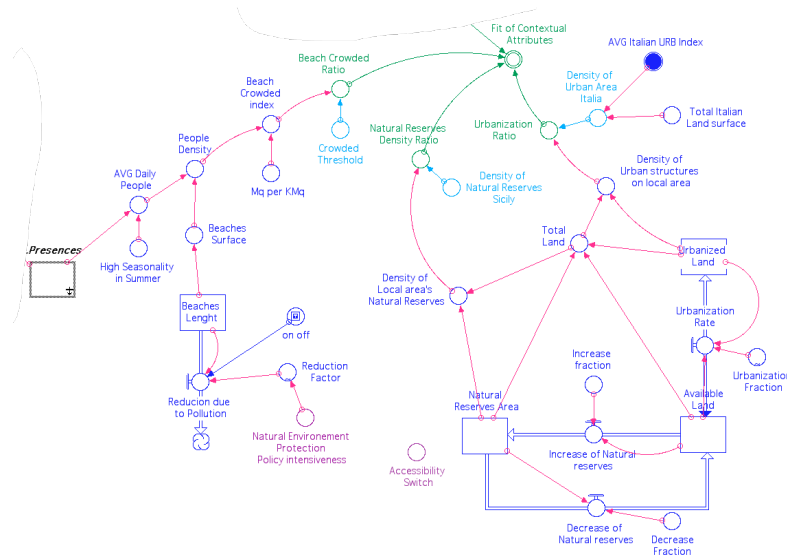
The first kind of natural attraction are the beaches. The model takes into account the *beaches length* as a fixed value. It is modeled as stock since it is a resource. By using the reverse formula of the square's area, the model determines the *beaches surface* from the *beaches length*. The surface is the denominator of the *people density* at the beach. This variable is then converted from km^2 to m^2 and compared with a given threshold. The higher is the ratio, the lower the fit of contextual attributes will be.

Beaches Surface	(Beaches__Lenght/4)*(Beaches__Lenght/4)	square kilo-meters	converter

Beach Crowded index	People__Density/Mq_per_KMq	person/ meters^2	converter
Beach Crowded Ratio	IF(Beach__Crowded__index<Crowded__Threshold) THEN(1) ELSE(0)	Unitless	converter
Crowded Threshold	0.25 {it means 4 m^2 per person in comfortably situation}	person/ meters^2	converter

The second category of natural resources is the land. The model accounts the stock of *Urbanized land* by cumulating the *Urbanization rate.* The stock firstly is weighted to the *total land*, and then it is compared with the *Density of urbanized Italian land* (as a benchmark), to determine the *Urbanization ratio* which is a measure of soil consumption.

Urbanized Land	Urbanized__Land(t) = Urbanized__Land(t - dt) + (Urbanization_Rate) * dt INIT Urbanized__Land = Available_Land*Urbanization__Fraction	square kilo- meters	Stock
Urbanization Rate	(((Available_Land+ Urbanized__Land)* Urbanization__Fraction)-Urbanized__Land)/2	square kilo- meters/yr	flow
Available Land	Available_Land(t) = Available_Land(t - dt) + (Decrease_of__Natural_reserves - Increase_of_Natural__reserves - Urbanization_Rate) * dt INIT Available_Land = 3247 {Messina} + 3552 {Catania} - Natural__Reserves_Area	square kilo- meters	Stock
Increase of Natural Reserves	Available_Land*ADJ_recovering	square kilo- meters/yr	flow
Natural Reserves Area	Natural__Reserves_Area(t) = Natural__Reserves_Area(t - dt) + (Increase_of_Natural__reserves - Decrease_of__Natural_reserves) * dt INIT Natural__Reserves_Area = KM2_of__Natural_Reserves	square kilo- meters	Stock
Decrease of Natural reserves	Decrease_of__Natural_reserves = Natural__Reserves_Area*Decrease_Fraction	square kilo- meters/yr	flow
Urbanization Fraction	Time series from ISTAT	Unitless	converter
Density of Urban structures on local area	Urbanized__Land/Total_Land	Unitless	converter
Urbanization Ratio	(Density_of__Urban_structures__on_local_area/ Density_of__Urban_Area_Italia)	Unitless	converter

On the other side, the *natural reserves area* is compared with the *density of natural reserves in Sicily* to determine *Natural reserves density ratio*. This latter ratio may be a proxy for the pristine state of the local area.

Density of Local area's Natural Reserves	Natural__Reserves_Area/Total_Land	Unitless	converter
Natural Reserves Density Ratio	Density_of__Local_area's__Natural_Reserves/ Density_of__Natural_Reserves_Sicily	Unitless	converter

This sector gauges one of the 1st level performance drivers contained int the model (see figure 5.10)

The *urbanization ratio* likens the urban density of the local area with the *Italian urban density* (benchmark). The *natural reserves density ratio* relates the *density of natural reserves* of the local area with those in Sicily (benchmark). The *Bech Crowded ratio* matches the available surface per person at the beach with a standard value identified by the expert. The *attraction ratio* compares the total attractions (museums + attractions from private investments) with the same kind of attraction of the "Cinque Terre" local area (a competitor's performance).

Figure 5.10 The 1st level performance driver "Fit of Contextual Attributes", the 2nd level drivers, and benchmarks
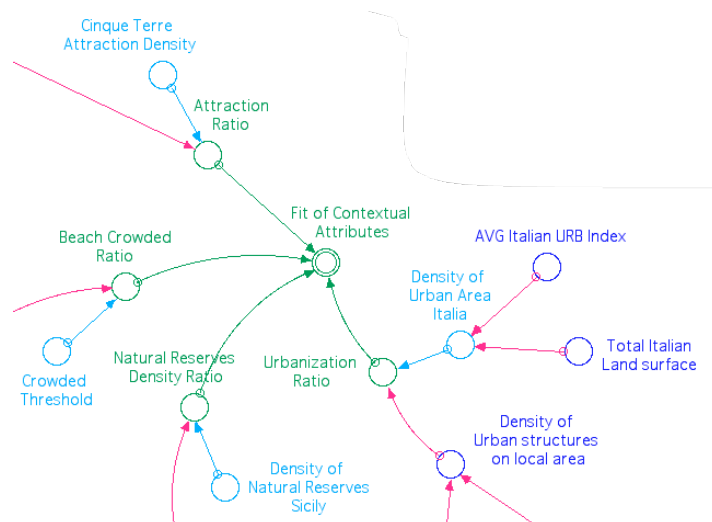
Fit of Contextual Attributes	(Attraction_Ratio*0.25+Beach_Crowded_Ratio*0.35+Natural_Reserves__Density_Ratio*0.25Urbanization__Ratio*0.15)	Unitless	flow

This driver measures the *Fit of Contextual Attributes* by doing a weighted average of the four factors impacting on it.

6. The business sector

Restaurants and local firms play a major role in creating an offer of tourism-related services. They are part of the accommodation services, but at the same time, they express the identity of the place through traditional recipes and typical food.

Local firms may also share innovation projects aimed at finding new markets or designing products. Such kind of inter-organizational policy may be a measure of the synergy between public and private sector organizations.

The business sector of the model comprises, essentially, restaurants (figure 5.11) and firms (figure 5.12). The *Restaurants* are captured by a simple stock structure which is similar to the one used for the attractions from the private investments. The opening and the closing of new restaurants (*Change in restaurants*) relate to the sector profitability which is measured by combining the *tourists growth* rate ant the average spending per presence, also taking into account the *Sicilian GDP.*

Figure 5.11 The restaurants' subsection
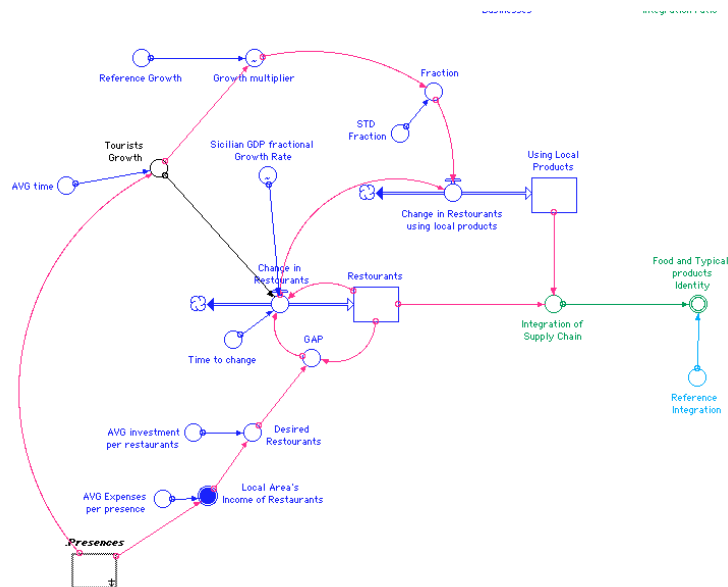
Through a co-flow structure, the model assumes a standard fraction of *Restaurants using local products,* which may linearly be increased by a *multiplier* if the *tourists growth rate* rises over a certain threshold.

The ratio between *Restaurants using local products* and the total *Restaurants* measure the *integration of supply chain.*This latter ratio is then compared with a *reference integration* to capture whether or not the local area is promoting its *identity through typical food and products*.

Change in Restaurants	IF(Tourists__Growth) AND(Sicilian_GDP_fractional_Growth_Rate) < 0 THEN(Restourants*Sicilian_GDP_fractional_Growth_Rate) ELSE(GAP/Time_to_change)	structure/yr	flow
Restaurants	Restourants(t) = Restourants(t - dt) + (Change_in__Restourants) * dt INIT Restourants = Desired__Restourants	structure	Stock
Change in Restaurants using local products	Change_in__Restourants*Fraction	structure/yr	flow
Using Local Products	Using_Local_Products(t) = Using_Local_Products(t - dt) + (Change_in_Restaurants_using_local_products) * dt INIT Using_Local_Products = Restourants*Fraction	structure	Stock
Integration of Supply Chain	Using_Local_Products/Restourants	Unitless	converter
Food and Typical products Identity	Integration_of__Supply_Chain/Reference__Integration	Unitless	converter
Growth Multiplier		Unitless	converter

Figure 5.12 shows the local firms sub-section, modeled in aggregated terms. The stock *subsided businesses* accounts those firms that have obtained financial resources from the European Union through funding projects.

Figure 5.12 The business ventures subsection
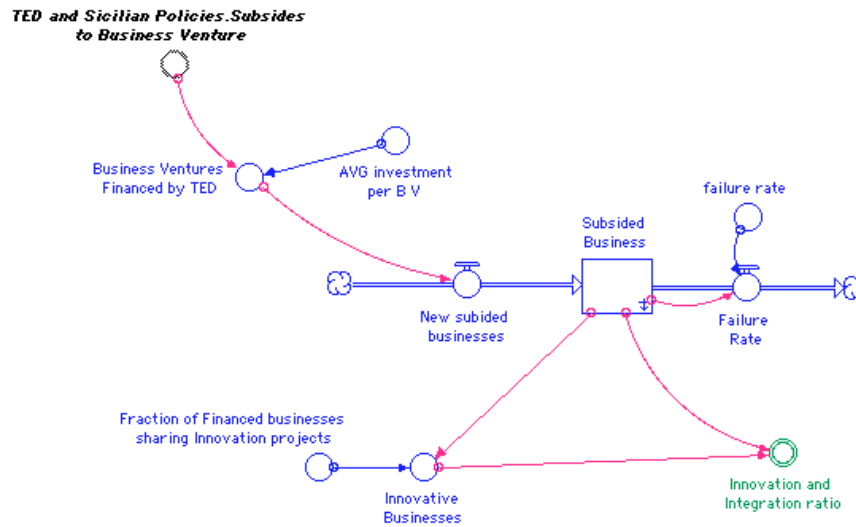
The stock *Subsided business* is incremented by *new subsided businesses* and decreased by a failure rate. The flow of *New subsided businesses* depends on the *resources allocated by TED to subsidize business venture* and an *average investment per Business ventures.*

Subsided Business	Subsided__Business(t) = Subsided__Business(t - dt) + (New_subided__businesses - Failure__Rate) * dt INIT Subsided__Business = 1	firms	Stock
New subsided businesses	Business_Ventures__Financed_by_TED	firms/yr	flow
Failure Rate	Subsided__Business*failure_rate	firms/yr	flow

Then, the *Innovation and Integration Ratio* relates the firms are sharing a project to the total amount of businesses. This ratio captures the tendency of business venture to receive money only for installing capacity without developing resources and capabilities to sell current production even to foreign customers.

Business Ventures Financed by TED	TED_and_Sicilian_Policies.Subsides_to_Business_Venture/AVG_investment_per_B_V	firms/yr	converter
Innovation and Integration ratio	Innovative__Businesses/Subsided__Business	unitless	converter

7. The "Taormina-Etna District" sector

The TED sector includes the stream of funding received by TED from the European Union. The resources are received because of funding projects. The sector includes the policy levers on which decision-makers have operated during the years: investment in capacity, promotion, infrastructures, cultural initiatives, and subsidies to business ventures. This sector provides the other sector financial resources.

Figure 5.13 The stream of financial resources

At the core of the sector, there is a third order material delay. Notwithstanding, there are four stocks in the chain (figure 5.13), the flow *District spending* (from the third stock to the fourth) is the one which matters for allocating the resources. It supports a variety of investments. The last stock in the chain cumulates the value of the investments. It just keeps track.

The resources start flowing from left to right. At the first stage, they are available as European funds. Secondly, they are in transit toward national and regional level (*arriving funds*), finally resources arrive at *District level*. The district funds are invested according to the projects which have been submitted for

funding. The average time of each stage is 3.5 years; therefore the total time is equal to 10.5 years.

Resources won by TED	PULSE(160000000,0,1000)	euro/yr	flow
Available founds	Available_founds(t) = Available_founds(t - dt) + (resources_won - Flow_12) * dt INIT Available_founds = 0	euro	Stock
Flow 12	Available_founds/time_to_spend	euro/yr	flow
Arriving Funds	Arriving__Funds(t) = Arriving__Funds(t - dt) + (Flow_12 - Flow_2_3) * dt INIT Arriving__Funds = 0	euro	Stock
Flow 23	Arriving__Funds/time_to_spend	euro/yr	flow
District funds	DIstict__funds(t) = DIstict__funds(t - dt) + (Flow_2_3 - District__Spending) * dt INIT DIstict__funds = 0	euro	Stock
District Spending	DIstict funds/time_to_spend	euro/yr	flow
Total Resources Spent	Total_Resources__Spent(t) = Total_Resources__Spent(t - dt) + (District__Spending) * dt INIT Total_Resources__Spent = 0	euro	Stock
Fraction of Resources spent	Total_Resources__Spent/(Available_founds+ Arriving__Funds+Distict__funds+ Total_Resources__Spent)	unitless	converter

The flow *District Spending* allocates resources to the various set of policies, each of them takes a different fraction. The table below reports these fractions.

Capacity Spending fraction	0.25	per year	converter
Spending in capacity building	(District__Spending*Capacity_Spending_fraction)	euro/yr	converter
Fraction to infrastructures	0.1	per year	converter
Cultural Promotion fraction	0.006	per year	converter
Cultural Promotion spending	District__Spending*Cultural_Promotion__Spending	euro/yr	converter
Promotion Spending Fraction	0.2	per year	converter
Promotion Spending	District__Spending*Promotion_Spending_Fraction	euro/yr	converter
Fraction to Business Ventures	1-Fraction_to__infrastructures- Cultural_Promotion__Spending- Promotion_Spending_Fraction- Capacity_Spending_fraction	per year	converter
Subsides to Business Ventures	District__Spending*Fraction_to_Business_Ventures	euro/yr	converter

The TED manages directly the funds allocated to *promotion activities;* the local budget is increased by the r*egional funds allocated to the promotion* of the local area. The spending is cumulated into the *Promotional budget* stock. The *promotional spending* is annual based. In order to determine the effort in

promoting, the model calculates the *Promotional Budget ratio.* This ratio compares *the local area per capita spending in promotion* to the *Italian average tourism spending per citizen.* In such way the two spending are consistent.

Total budget	(Regional__Budget*Fraction_to__taormina_Etna) +Promotion__Spending	euro/year	converter
Change in Promotion Spending	Total_Budget	euro/year	flow
Promotional Budget	Promotional__Budget(t) = Promotional__Budget(t - dt) + (Change_in__Promotion_Spending - Total_promotion__Spending) * dt INIT Promotional__Budget = Total_Budget*0.75	euro	Stock
Total promotion Spending	Promotional__Budget/1	euro/year	flow
Promotional Spending per capita	Total_promotion__Spending/Local_Area__Population	euro/ person-year	converter
AVG per capita Promotional spending ITALIA	1895102000/60000000 {DATA osservatorio nazionale turismo italiano}	euro/ person-year	converter
Promotional Budget ratio	SMTH1(Promotional_Spending__per_capita/ AVG_per_capita_Promotional_spending_ITALIA,1)	unitless	converter

The TED sector determines the driver *Strategic Dialogue ratio* which is one of the 1st level drivers of the model. In particular, this driver measures the achievement of strategic/operational goals of the entire local area. To this end, the current performance of the local area is continuously compared with the targets which have been defined by decision-makers. The picture below shows how this innovative structure of the model makes the calculation.

Figure 5.14 The strategic dialogue ratio
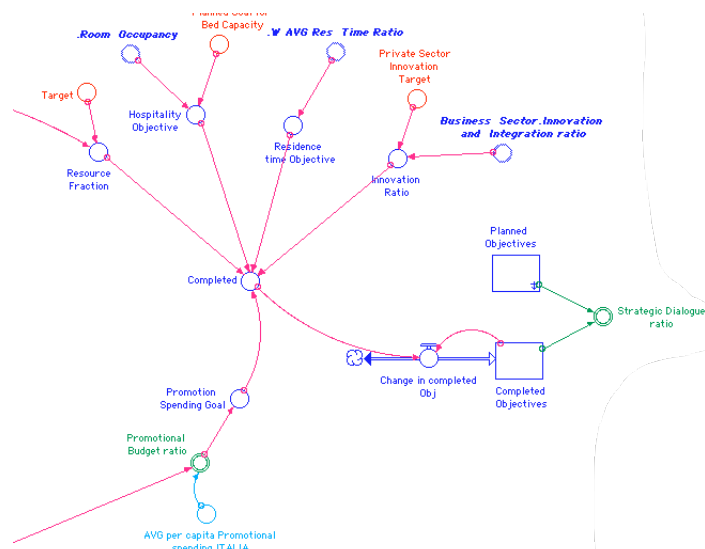
Figure 5.14 shows how the model determines the *strategic dialogue ratio*. The ratios compare the current state of performance for each objective with the relative pre-defined target. As it is possible to observe in the equation list, if the current state of performance is higher than the target, the flow *change in completed objective* adds one object accomplished into the stock of *completed objectives*. This stock is then compared with the total amount of pre-defined target. This comparison is the *strategic dialogue ratio.*

Resource Fraction	If(Fraction_of__Resources_spent/Target>1) THEN(1) ELSE(0)	Unitless	converter
Hospitality Objective	If(.Room__Occupancy/ Planned_Goal_for__Bed_Capacity>1) THEN(1) ELSE(0)	Unitless	converter
Residence time Objective	If(.W_AVG_Res__Time_Ratio>1) THEN(1) ELSE(0)	Unitless	converter
Innovation ratio	If(Business__Sector.Innovation_and__Integration_ratio/ Private_Sector_Innovation__Target>1) THEN(1) ELSE(0)	Unitless	converter
Completed	Hospitality_Objective+Resource_Fraction+Promotion__Spending_Goal+Residence__time_Objective+Innovation__Ratio	Unitless	converter
Change in completed Obj	(Completed-Completed__Objectives)/1	per year	flow
Completed Objectives	Completed__Objectives(t) = Completed__Objectives(t - dt) + (Change_in_completed_Obj) * dt INIT Completed__Objectives = Completed	Unitless	Stock
Planned Objectives	Planned__Objectives(t) = Planned__Objectives(t - dt) INIT Planned__Objectives = 5	Unitless	Stock
Strategic Dialogue ratio	IF(Completed__Objectives/Planned__Objectives>0.7) THEN(1.2) ELSE(0.75)	Unitless	converter

The *strategic dialogue ratio* is a 1st level performance driver which synthesizes the synergy between public and private sector[47] by including objectives which belong to both public and to private organizations.

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[47] In chapter 4 section 5 the first level performance driver "synergy between public and private sector" includes the 2nd level driver "strategic dialogue". In the system dynamics model the driver "synergy between public and private sector" has been better operationalised by using the "strategic dialogue" driver modeled through the structure discussed in this section.

8. The "image of the local area" sector

The "Image of the local area" sector (from now on IMG sector) is of the utmost importance for the purpose of the mode. It connects the organizational outputs indeed to the inter-institutional performance. The system's outcome is then perceived through the image of the place. This intangible variable, in turn, has an effect on the tourism presence. The effect could be either positive or negative.

The IMG sector distinguishes two different concepts of the image of the place:

i) the indicated image, directly influenced by marketing and advertising spending;

ii) the (actual) image grasps the authentic tourism experiences at the destination, and indeed it is a construct closer to reputation.

The *indicated image* smoothes the weighted average between the *hospitality promotion budget history ratio* and the *TED and Sicilian promotion policies budget ratio.* The first ratio compares the actual spending in promoting, made by the hospitality sector, with a reference value. The second ratio relates the actual promotional spending of Sicilian regional administration plus the TED spending with the average Italian spending for promotion tourism. To make this latter ratio comparable both the numerator and denominator are divided by their relative size of population; therefore both values are expressed per capita and can be compared.

The *Indicated Image Index* performs a first-order exponential smoothing of the weighted average, using an averaging time of 3 years. Assuming that marketing plans and initiatives involve a time horizon of at least three years to achieve the highest effectiveness.

Figure 5.15 The indicated image structure
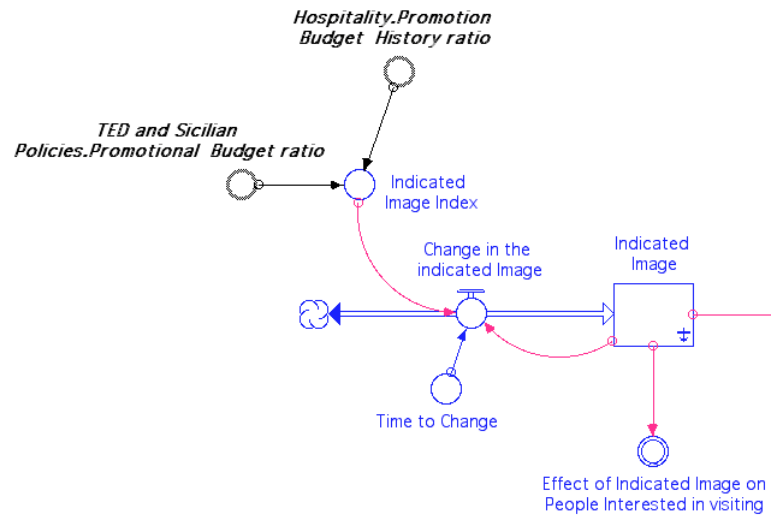
People then perceive the *Indicated Image Index* through a first order information delay. The *Indicated Image,* in turn, affect the people interested in visiting Sicily and the Taormina-Etna local area too (this effect increases the potential market).

Indicated Image Index	SMTH1(MIN(1(Hospitality.Promotion_Budget__History_ ratio*0.5+TED_and_Sicilian_Policies.Promotional__Bud get_ratio*0.5)),3)	unitless	converter
Change in the indicated Image	(Indicated__Image_Index-Indicated__Image)/ Time_to_Change	per time	flow
Indicated Image	Indicated__Image(t) = Indicated__Image(t - dt) + (Change_in_the__indicated_Image) * dt INIT Indicated__Image = Indicated__Image_Index	unitless	Stock
Effect of Indicated Image on People Interested in visiting		unitless	converter

The structure of the actual image is relatively complex therefore each part of the model is illustrated separately. First of all, the model determines the *image index* by connecting the several outputs of each model sector. As figure 5.16

displays, four 1st level performance drivers, and their relative weight (parameters)
are linked to the *image index*.

Figure 5.16 The sources of the image of the local area
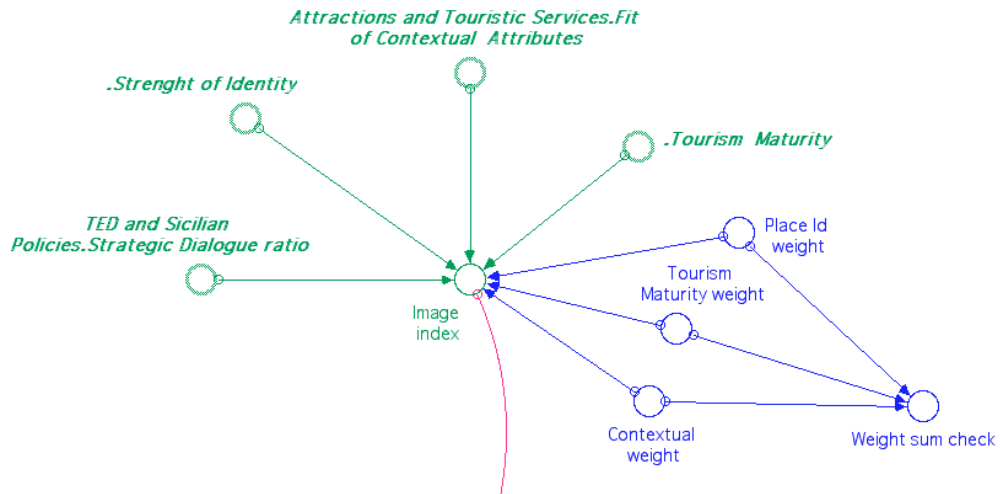
The *image index* calculates a weighted average of three out to four four 1st
level performance drivers (*Tourism Maturity*, *Fit of contextual attributes*, and
Strength of Identity), and then the average is multiplied by the *Strategic dialogue
ratio.*

Tourism Maturity	(W_AVG_Res__Time_Ratio)*T_Growth__Multiplier_Ratio/ MAX(Room__Saturation__ratio,1)	unitless	converter
Fit of contextual attributes	(Attraction_Ratio*0.25+Beach_Crowded_Ratio*0.40 +Natural_Reserves__Density_Ratio*0.25-Urbanization__Ratio*0.15)	unitless	converter
Strength of Identity	(Business__Sector.Food_and_Typical__products_Identity *0.5+Attractions_and_Touristic_Services.Local_Identity__Museums_Ratio*0.5)/Reference_strenght	unitless	converter
Strategic dialogue ratio	IF(Completed__Objectives/Planned__Objectives>0.7) THEN(1.2) ELSE(0.75)	unitless	converter
Image index	(.Tourism__Maturity*Tourism__Maturity_weight+ Attractions_and_Touristic_Services.Fit_of_Contextual__ Attributes*Contextual__weight+ .Strenght_of_Identity*Place_Id__weight) *TED_and_Sicilian_Policies.Strategic_Dialogue_ratio	unitless	converter

The variable *Image index* ranges from 0 to 1, and such scale is used as a proxy
to determine the fraction of positive experience vs. the fraction of the negative

experience. These two fractions represent the likelihood of a tourist to have a good or a bad experience at the destination.

Figure 5.17 The accumulation of positive and negative experiences at the destination
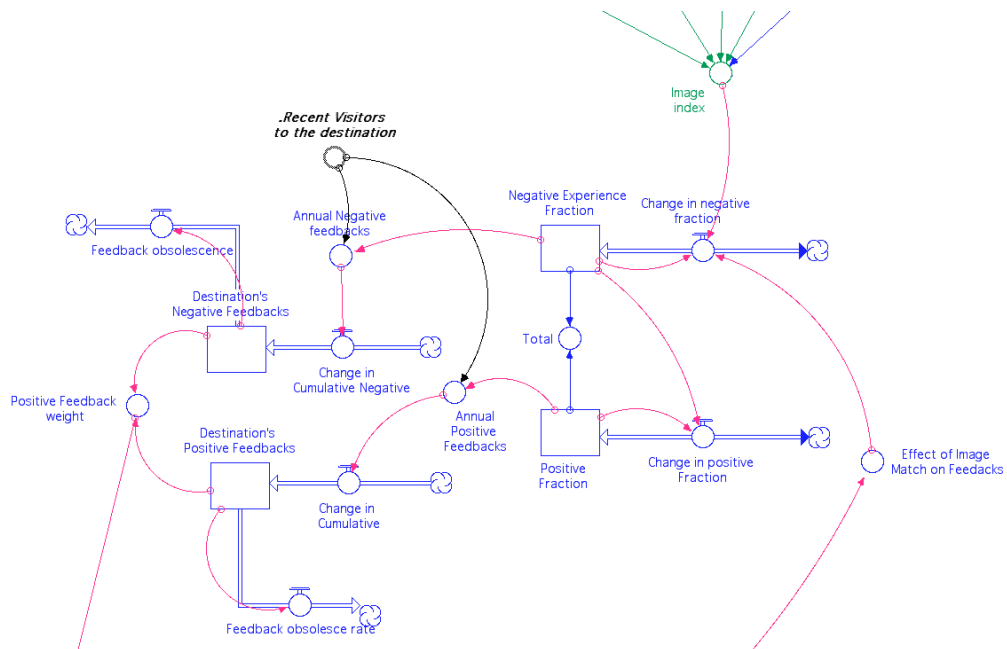
The model takes this probability which is converted and then cumulated in the number of recent tourists that have had a positive or a negative experience in visiting the destination.

These *recent tourists* may leave feedbacks and comments either on websites and social networks (trip-advisor, airb&b, Facebook, and so on), as well as they may tell to relatives, friends, and colleagues how their recent holidays have been.

Change in negative fraction	((1-Image__index)+((1-Image__index)* Effect_of_Image_Match_on_Feedacks)- Negative_Experience__Fraction)/1	per year	flow
Negative Experience Fraction	Negative_Experience__Fraction(t) = Negative_Experience__Fraction(t - dt) + (Change_in_negative__fraction) * dt INIT Negative_Experience__Fraction = 1-Positive_Fraction	unitless	Stock
Change in positive fraction	(1-Negative_Experience__Fraction-Positive_Fraction)/1	per year	flow
Positive Fraction	Positive_Fraction(t) = Positive_Fraction(t - dt) + (Change_in_positive__Fraction) * dt INIT Positive_Fraction = Image__index	unitless	Stock
Annual negative feedback	Negative_Experience__Fraction*.Recent_Visitors_to_the_d estination	person/year	converter
Annual positive feedback	Positive_Fraction*.Recent_Visitors_to_the_destination	person/year	converter

Change in Cumulative Negative	Annual_Negative_feedbacks	person/year	flow
Destination's Negative Feedbacks	Destination's_Negative_Feedbacks(t) = Destination's_Negative_Feedbacks(t - dt) + (Change_in__Cumulative_Positive - Feedback_obsolescence) * dt INIT Destination's_Negative_Feedbacks = 50	people	Stock
Feedback obsolescence	Destination's_Negative_Feedbacks/4	person/year	flow
Change in Cumulative Positive	Annual_Positive__Feedbacks	person/year	flow
Destination's Positive Feedbacks	Destination's__Positive_Feedbacks(t) = Destination's__Positive_Feedbacks(t - dt) + (Change_in__Cumulative - Feedback_obsolesce_rate) * dt INIT Destination's__Positive_Feedbacks = 56	people	Stock
Feedback obsolescence rate	Destination's__Positive_Feedbacks/4	person/year	flow
Positive Feedback weight	Destination's__Positive_Feedbacks+ (Destination's_Negative_Feedbacks+Destination's__Positive_Feedbacks)	unitless	converter

The ratio between the person who had a positive experience and the total person who had an experience provides the input to the *Actual image perception* structure. This section of the IMG sector (see figure 5.18) connects and compares the two different concepts of the image of the local area, and finally, it determines the *effect of the image of the local area on the probability to visit* the place.
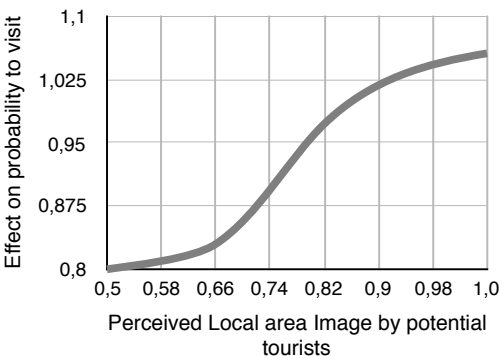
Figure 5.18 The structure of the perceived local area image by potential tourists
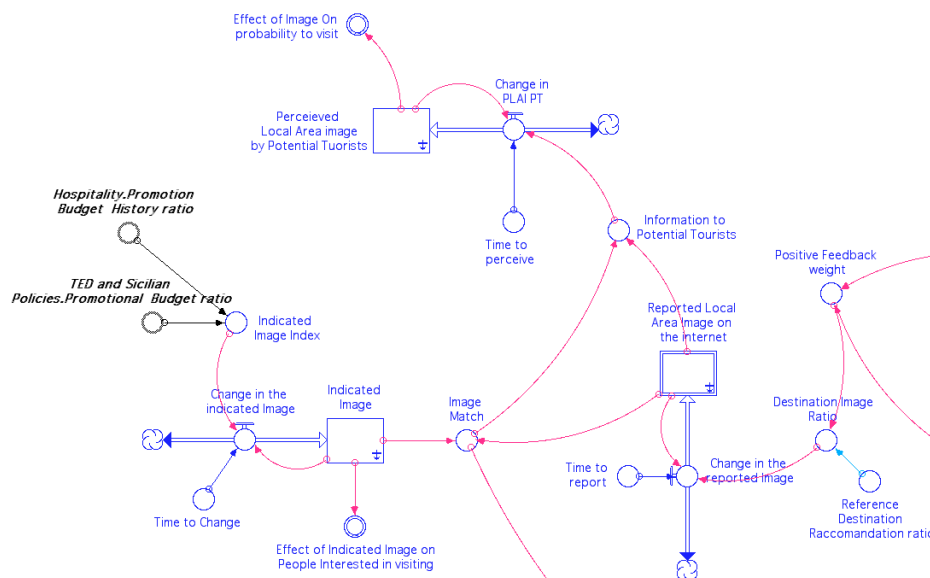
The *destination image ratio* relates the weight of the person who had a positive experience over the total person who had an experience, to the expected value by people who are interested in visiting the place.This ratio expresses whether the local area is beyond the expected positive rating threshold. Then, the *Reported local area image on the web* summarizes such value.

Potential tourists may count on two sources of information: one is the indicated image (come from advertisement and promotion), and another one is the actual image (expresses the experience of recent tourists). In this situation, people compare the two information and look for a match between them. If there is a match, the *perceived local area image by potential tourists* is equal to the experience-based image, otherwise the *perceived local area image by potential tourists* is diminished by the amount of the mismatch.

Destination image ratio	SMTH1(Positive_Feedback__weight/ Reference__Destination__Raccomandation_ratio,2)	unitless	converter
Change in the reported Image	(Destination_Image_Ratio- Reported_Local__Area_Image_on__the_internet)/ Time_to__report	per year	flow
Reported Local Area Image on the internet	Reported_Local__Area_Image_on__the_internet(t) = Reported_Local__Area_Image_on__the_internet(t - dt) + (Change_in_the__reported_Image) * dt INIT Reported_Local__Area_Image_on__the_internet = Perceived_Local_area_Image_by_Recent_Tourists	unitless	Stock
Image Match	Smth1(Reported_Local__Area_Image_on__the_internet- Indicated__Image,3)	unitless	converter
Information to Potential Tourists	Reported_Local__Area_Image_on__the_internet*(1+Image__Match)	unitless	converter
Change in perceived local area image by potential tourists	(Information_to__Potential_Tourists- Perceieved__Local_Area_image_by_Potential_Tuorists)/ Time_to___perceive	per year	flow
Perceieved Local Area image by Potential_Tuorists	Perceieved__Local_Area_image_by_Potential_Tuorists(t) = Perceieved__Local_Area_image_by_Potential_Tuorists(t - dt) + (Change_in__PLAI_PT) * dt INIT Perceieved__Local_Area_image_by_Potential_Tuorists = Information_to__Potential_Tourists	unitless	Stock

Effect of Image on the probability to visit		unitless	converter
Probability to visit	0.26*Image.Effect_of_Image_On_probability_to_visit	per year	converter

The perceived image has an effect *on the probability to visit,* which in turn determines the fraction of *tourist interested in visiting*. This variable converts *potential tourists* in tourism *arrivals* and *presence.*

Figure 5.19 The effect of Image on the tourists' chain
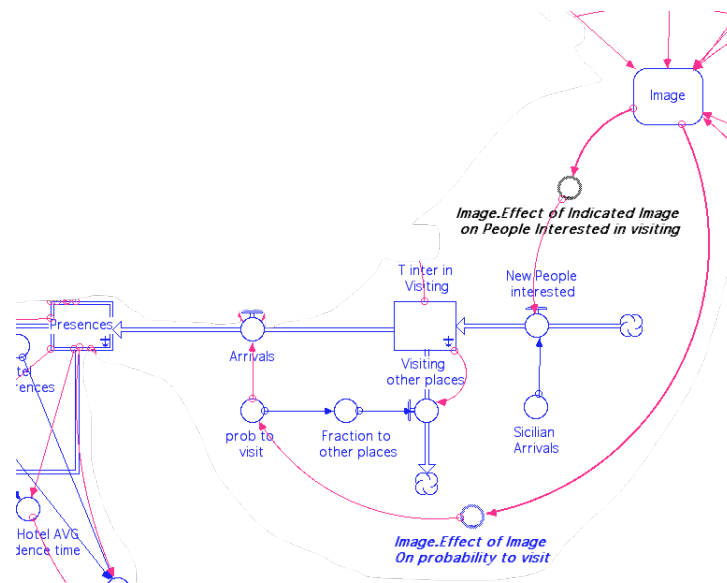
As figure 5.19 portrays, the image impacts on tourists' main chain: the advertisement through *indicated image* affects the *new people interested in visiting;* while the *actual image* impacts on the *probability to visit.* The effect of the *actual image* on probability to visit can be positive meaning that more tourist flowing in, or negative, less tourist incoming.

Figure 5.20 Tourism Presences reference mode vs. simulation output
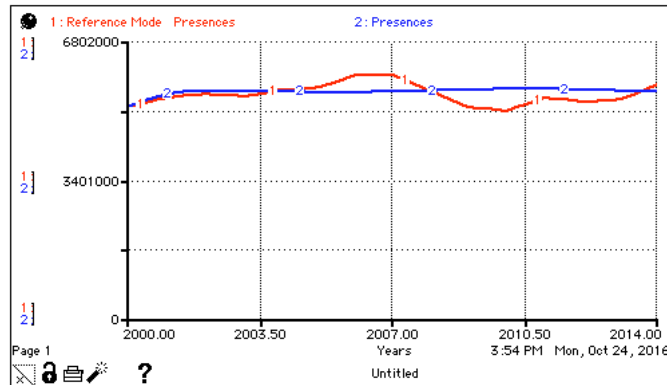
Figure 5.20 compares the simulated variable presence to the reference mode for the same one. The model output seems to fit the historical behavior significantly.

9. Simulations: explanations and policies

Simulation results provide an explanation of the local area performance. From the graphs, it emerges why current policies have not improved tourism presence.

According to the analysis discussed in chapter 4 promotion campaigns and capacity building are not sustainable in the long-run. In order to improve the image, local policy-makers would have tackled some structural aspects which are connected with the tourism experience. In order words, qualify product attributes. By analyzing the behavior of tourism growth rate, and the dynamic of the average holiday length it seems to suggest that the local area, during the last 14 years is passing through the maturity stage of a destination lifecycle.

The *tourism presence growth rate* shows a decreasing behavior over time as also real data confirm. This means that the market acquisition of the destination is at best decelerating, reducing (when goes negative) or still constant (the variable is close to zero).

Figure 5.21 Tourism Presences growth rate and the average holiday length as measures of tourism maturity
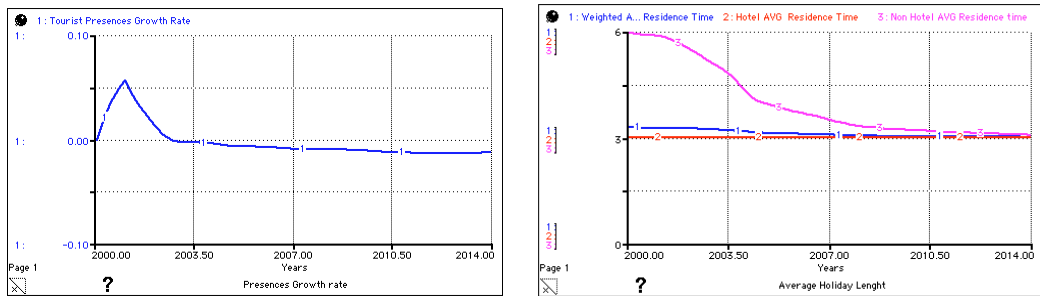
Furthermore, the length of the holiday may express the attitude of tourist toward the destination: long holiday time means that travelers are comfortable with the place, while short time implies the opposite. As the figure shows, both the average holiday length for non-hotel and hotel sector is decreasing. If one analyzes these results through the products lifecycle matrix[48], it appears that the destination reached its saturation point. At this stage, a destination requires new strategies oriented to renovate or to improve some product characteristics.

Extending the simulation time span and running the model with the current policy, the model also explains that promotion campaigns and capacity building are not sustainable in the long-run. This is because the mismatch between the indicated image and the actual image rises and negatively affects the tourism' performance. The simulation presented in figure 5.22 shows how this policy will produce a slightly decrease in tourism presence, a continuous decay in room saturation (line 1 of the right graph), and a worse perceived image.

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[48] For a fuller discussion of the product lifecycle matrix see: Henderson, B. 2012. The Experience Curve Reviewed, Own the Future: 211-214: John Wiley & Sons, Inc.

Figure 5.22 Long-term behavior (2000 – 2014 – 2040) of tourism presence (comparative), room saturation, indicated image and perceived image with current policy

1- Tourism Presence "current policy"
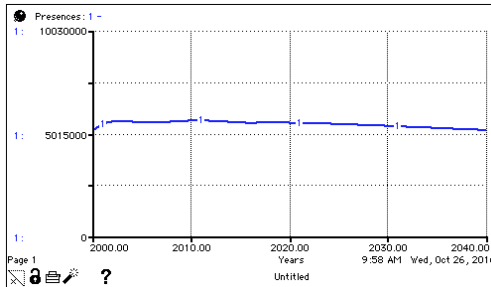
1- Room saturation
2- Indicated image
3- Perceived Image
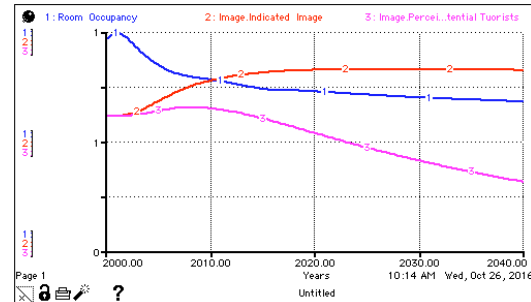
The mismatch between what promotion campaigns promises, against to what tourists feel when visiting the place, locks system's performance to be tied down to advertisements. The indicated image and the perceived image are both end results. The first is an output while the second is an outcome. The perceived image synthetically measures the effect of the four 1st level performance drivers on the tourism experience. The behaviors of the performance drivers (plotted in figure 5.23) explain why the image of the local area did not improve over the last 14 years.

The drivers reveal the underlying causes of the results. The policy-makers did not address the factors which determine a positive or negative tourism experience. The contextual attributes decreased due to urbanization of countryside and coastal zone, at the same time, the district did not realize any project aimed at improving the natural environment. The level of synergy has been low. The graph does not show dynamics since it changes step-by-step due to its equation.

The tourism maturity peaks at the beginning when the spending starts, but when the effect of the promotion campaigns disappear it comes back even because the hospitality sector continues to increase capacity. The strength of identity have increased, albeit a little, over the last 14 years. This means that the regional administration and the local authorities have invested in the opening of museums as well as in other activities aimed at enhancing the local traditions.

Figure 5.23 The dynamics of the 1st level performance drivers (2000 – 2014)

Fit of contextual attributes
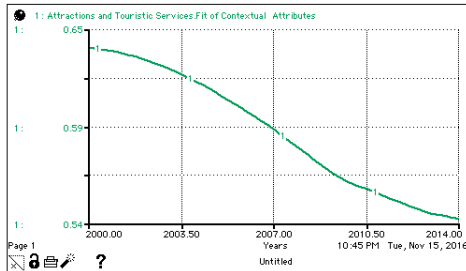
Strategic dialogue
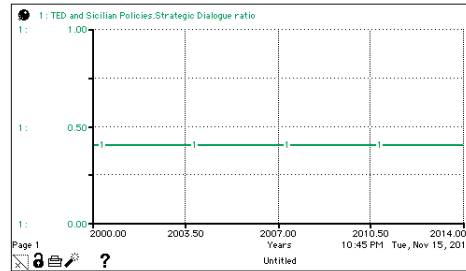
Tourism maturity
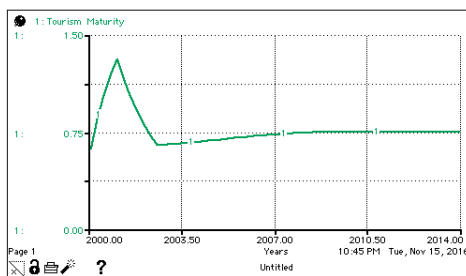
Strength of identity
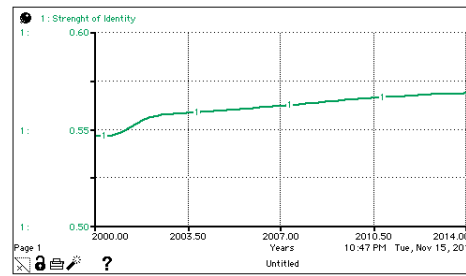
The four 1st level performance drivers explain why financed projects do not improve the performance of the local area.

The model can also be used to simulate alternative policies. A first policy which doubles the advertisement expenses has been run. This policy comes from the interview with the CEO of the TED. During the meeting he said "[to improve tourism in the area] the problem of promotion is that: to be effective you need a constant and even increasing flow of resources. We would like to promote the area in such a way, but we don't have enough resources."

This second policy termed "Aggressive Promotion policy" assumes to double advertisement investments for three years from 2015 to 2018. The length of the simulation was expanded to assess the long-term sustainability as done for the current policy.

Figure 5.24 Long-term behavior (2000 – 2014– 2040) for tourism presence (comparative), room saturation, indicated image, and perceived image of "Aggressive Promotion policy"

1- Tourism Presence "current policy"   1- Room saturation
2- Tourism Presence "Agg. Prom. policy"   2- Indicated image
                                            3- Perceived Image
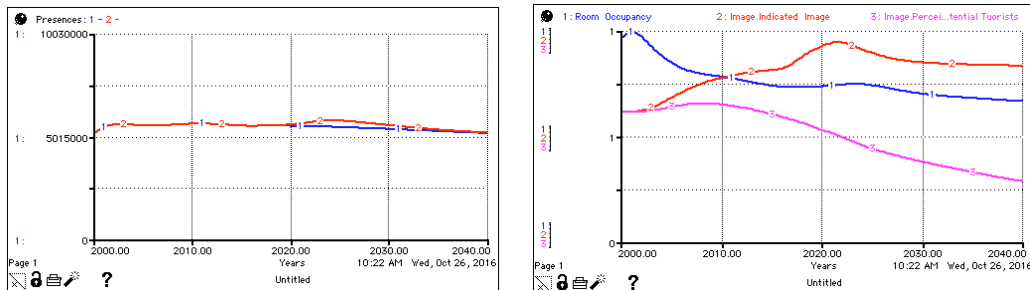
As figure 5.24 shows the additional advertisements improve presence and room saturation for a while, but when the additional investments are turned off (in 2018) both the presence and the indicated image slow down, and appears to be worse if compared to the current policy. In this situation, policy-makers are induced to push the market through advertisement, more and more. As long as they perceive the advertisement expenses as the solution rather than part of the problem.

An explanation of these behaviors can be found in a fundamental characteristic of dynamic and complex systems: time delays and non-linearities affect system's changes. A nonlinear system may respond to a policy change in the desired way only for a short period, but after a while, it returns to its pre-policy-change state. This occurs when the system's structure works to counteract the policy change designed to improve it. Policy resistance can frequently make performance better before making it worse, or worse before making it better. Ignoring systems long-run effects can lead to policies that produce unintended consequences.

An alternative policy may focus on "renovating the product" by addressing contextual issues (recovering natural environment and dismissed urban areas, and increasing infrastructure to reduce tourism concentration). A policy like this may improve travelers experiences, which is reflected upon the actual image, and in turn, increase the presence.

This policy termed here "Recovering Land" was simulated over the same time horizon. The policy assumes that promotional investment (from the regional budget) are set to zero from the beginning of 2105, whereas the 10% of the total land (700 Km^2 out of 7100 Km^2) will be recovered in the next six years.

This strategy targets disused buildings, polluted natural areas, and heritage buildings to be restored. In operational terms, this policy aims to make productive use of disused buildings, maintains natural parks, recover archeological sites and or heritage, construct seafronts, and hiking paths.

Figure 5.25 shows on the left-hand side a comparative graph of the three policies for the tourism presence. On the right-hand side, the figure portrays the dynamics of room saturation, indicated image, and perceived image.

Figure 5.25 Long-term behavior (2000 – 2014– 2040) for tourism presences (comparative), room saturation, indicated image, and perceived image of "Recovering Land" policy

1- Tourism Presence "current policy"   1- Room saturation (blue line)
2- Tourism Presence "Agg. Prom. policy"   2- Indicated image (red line)
3- Tourism Presence "Recovering Land policy" 3- Perceived Image (pink line)
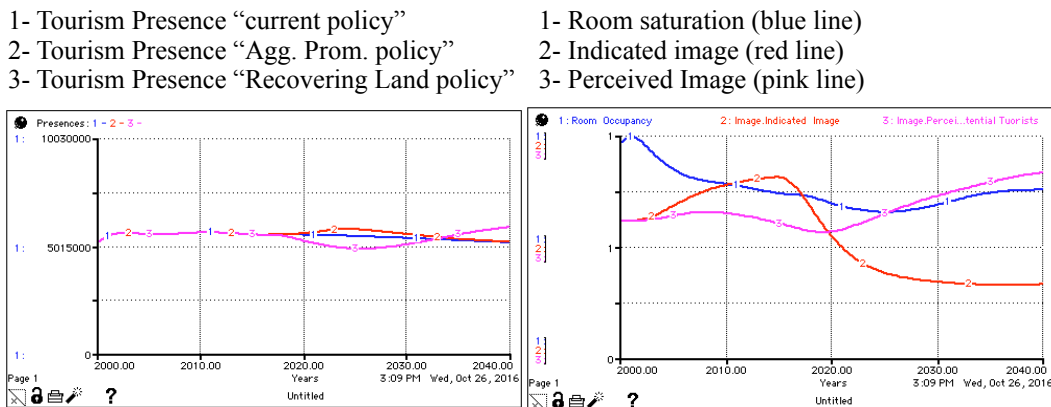
By observing both sides, it seems that in the long-run the "Recovering land policy" seems to improve the tourism performance. The presence is increasing, as a consequence the room saturation is raising too, indicating that the hospitality sector is getting returns out of it. Third, the actual image improved and remains at a higher quota if compared to both "current policy" and "aggressive promotion policy".

By connecting organizational outputs with inter-institutional outcome-oriented policies, it is possible to achieve such performance improvement. Local

institutions should outline recovering projects for their municipalities in coordination with other players, at the same time the hospitality sector should continue to promote the place, while private entrepreneurs and non-profit organizations may set up new attractions which are connected with the public projects.

All of these suggestions are implementation issues which are not addressed by this model since it focuses at the strategic level, and its primary purpose is to explain the relationship between the image of a local area and the tourisms presence. The "Recovering land policy," though it is designed as *wishful thinking*, reveals how the long term success it based on today's decisions, even when these seems odd if compared with –apparently – successful other strategies. This a significant outcome of the model, because quite often decision-makers at the political level are prone to adopt policies that are likely to achieve some results as soon as possible.

10. Model validation

The validity of the model pertains the purpose of the model. The aim of model validation is to increase the confidence with the model, and its ability to explain reality. As Sterman (2002a: 525) argues: "a model is a simplification, an abstraction, a selection, because our models are inevitably incomplete, incorrect – wrong." A model can only be a lens through which explain a problem, understand its causes and find a feasible way to manage it.

The validation process (figure 5.26) follows two major steps: structure validity and behavior validity (Barlas, 1996; Sterman, 1984).

Figure 5.26 The model validation process
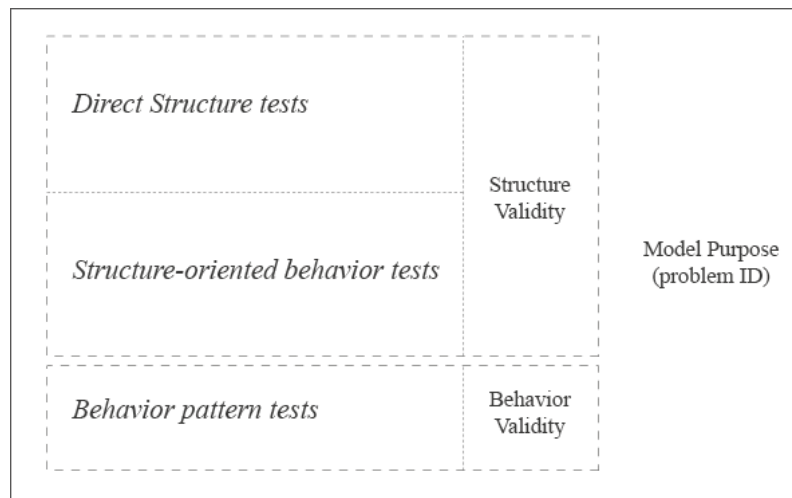
Following tables (table 5.1, table 5.2, table 5.3, and table 5.4) illustrate the main phases of model validation process. Tables also detail the different stages each phase contains and illustrate the purposes of the tests and report the results. The first phase of structural validity involves *direct structure tests* and *structure oriented behavior tests*.

Table 5.1 Direct structure tests		
Stage	Purpose of the test	Report
Structure confirmation test	The structure-confirmation test is a test where the structure of the model is compared to both empirical and theoretical knowledge.	A simplified version of the model was presented at a conference, and then it was submitted for publication in a peer-reviewed journal. The structure was adapted according to the feedbacks received. The model contains several basic structures commonly used in System Dynamic modeling.
Parameter confirmation	Evaluating the constant parameters against knowledge of the real system, both conceptually and numerically.	Parameters were obtained by doing interviews, by consulting documents and statistical database. However, all the parameters included in the model have a meaning in the real context. Parameters and initial stocks value are detailed in section 13 together with the source and the level of confidence with the source.

Dimensional consistency	Assess the accuracy of model equation	All the model equation were double-checked if unreal units of measure were produced and if there are inconsistencies between units.
Direct extreme condition test.	Evaluates the validity of model equations under extreme conditions, by assessing the plausibility of the resulting values against the knowledge/anticipation of what would happen under a similar condition in real life.	Material resources can not become negative because in reality is not possible. No physical resources go negative. Financial resources, though in reality may become negative, MIN and MAX functions inside flows equation avoid it. All the perceptions and intangible resources range from 0 to 1.

The model structure has been confirmed through literature review, conference presentation, and peer-review process for publication. These resulted in structures adaptations and substantial improvement of performance drivers operationalisation. The model fits the dimensional consistency and the direct extreme condition tests, though more accuracy regarding the estimation of potential tourist expectations, some delays length, and benchmarking value is required.

Table5.2 Structure–oriented behaviour tests		
Stage	**Purpose of the test**	**Report**
		Line 1 – Normal (desired room saturation 0.7) Line 2 – Low (desired room saturation 0.01) Line 3 – High (desired room saturation 1.5)
Indirect extreme-conditions test and sensitivity analysis	Indirect extreme-conditions tests involve multiple simulations in which extreme values are assigned to parameters and the resulting behaviour is compared to observed/anticipated behaviour of the real system under the same extreme condition.	
		Line 1 – Normal (promotional budget) Line 2 – Low (promotional budget*0.5) Line 3 – High (promotional budget*2)
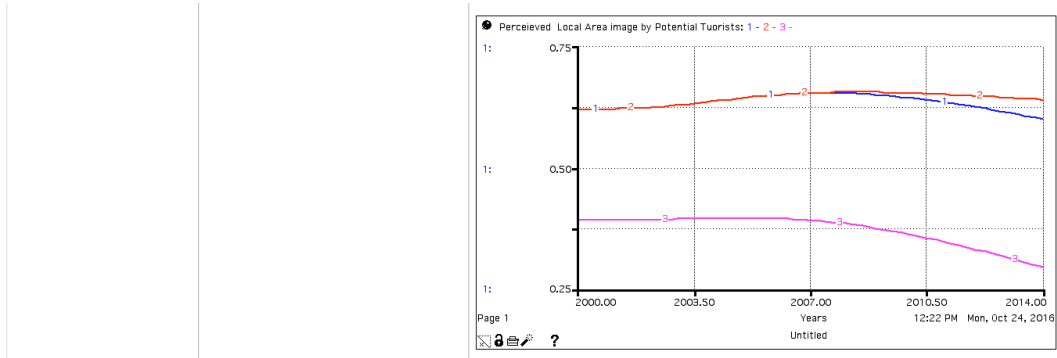
The behavior of the model seems to confirm that the structure is relatively robust, in fact, it produces the same pattern even when changes in some model's parameters are done. However, the tourism chain structure revealed high sensitiveness to little change in some parameters. For instance, a small change in the probability to visit determines big differences in tourism presence, a partial explanation of this response can be found in the nature of the structure.
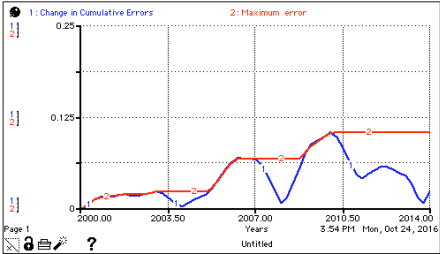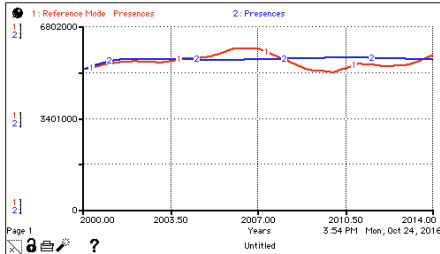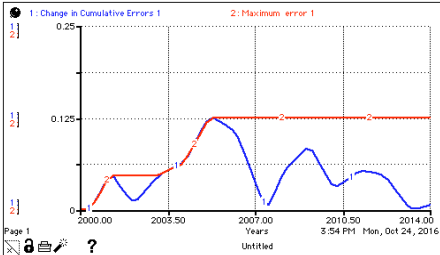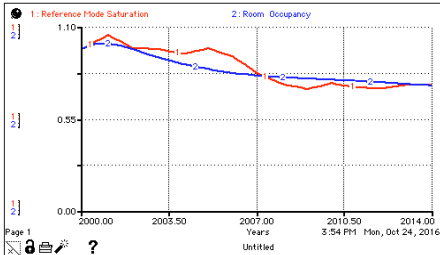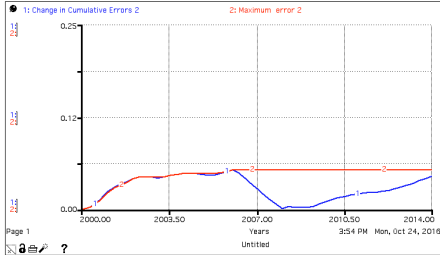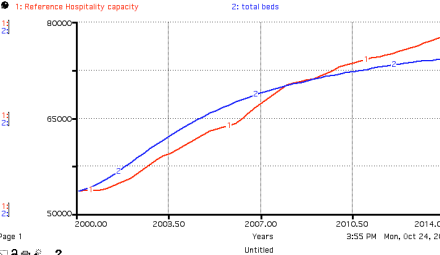
The second phase of the validation process covers the second class of tests designed to measure the ability of the model to reproduce the major behavior patterns exhibited by the real system. These tests emphasize the pattern prediction (periods, frequencies, trends, phase lags, amplitudes, ...), rather than specific point (event) prediction. This is consistent with the long-term policy orientation of the System Dynamics model and with its ability to create dynamic behavior patterns endogenously (Barlas, 1996). Unfortunately, a limited set of time series data can be used for the behavioral tests. However, some useful comparison can be done. As Sterman pointed out (1984: 53) "System Dynamics models typically do not employ the aggregate historical data in developing the structure or estimating the parameters, the behaviour of the model over the entire range of available data may be analysed as an ex post forecast, and summary statistics designed to measure forecast error are thus the appropriate measures of the fit."

By following such recommendation the behavior test was conducted using the root mean square percentage error (RMSPE) which is defined as follows (table 5.3). The RMSPE calculates the mean percentage error between the data (*At)* and simulation outputs (*St*) for any given point in time, by taking the difference

between *St* and *At* and dividing by the *At*. This calculation sums the absolute value of every simulated point in time (*St*) and divided by the number of historical observation points (*At)*. With a dimensionless fraction of error, it is easier to understand the fit of the simulation output with the historical data. Moreover, the System Dynamics structure keeps track of the maximum deviation from the historical data.

Table 5.3 The root main square percentage error in mathematical notation and System Dynamic terms	
Mathematical Notation	$$\sqrt{\frac{1}{n}\sum_{t=1}^{n}\left[\frac{(St-At)}{At}\right]^2}$$
System Dynamics structure	
Change in Cumulative Errors	ABS((Simulated-Actual Value)/Actual value)
Cumulative Errors	Cumulative__Errors(t) = Cumulative__Errors(t - dt) + (Change_in_Cumulative_Errors) * dt INIT Cumulative__Errors = 0
Max Adding	MAX(Change_in_Cumulative_Errors,Maximum__error)
Flow 1	(Max_Adding-Maximum__error)/DT
Maximum Error	Maximum__error(t) = Maximum__error(t - dt) + (Flow_1) * dt INIT Maximum__error = ABS((Presences-Reference_Mode___Presences)/30) UNITS: per year (1/yr)

The behavior test was performed for three main variables: the presence, the room saturation, and the bed capacity. The table below reports on the left-hand side the RMSPE for each variable, while on the right-hand side a comparison between the simulation output and the reference mode.

Table 5.4 The Behavior test

Variable	1- Mean percentage error (RMSPE) 2- Maximum error	1 - Reference Mode (red) 2 - Simulation result (blue)
Presence		
Room Saturation		
Bed Capacity		

A high value means that the model deviates from historical data (Sterman, 2000) while zero is the lowest possible value: as table 5.4 shows the MAX error value for the three variables is 0.11 but on average no higher than 0.05.

The results of both behavior and structure tests help in building confidence with the model, given the ability of the model to reproduce and explains the dynamic problem. The model validity must be seen by the relativist perspective of System Dynamics methodology (Barlas & Carpenter, 1990). This point of view does not claim for an objective instance of reality; it rather aims to understand the resistive properties of a system, and to design possible policy interventions that may alleviate current problem or to generate desired behaviour modes (Forrester, 1961). The System Dynamic modelling-validation can also be framed according to "The folding Star framework" (Lane, 1995b: 114). The model here discussed

falls into the "Policy Insight or Recommendations" because it enables the researcher to infer "qualitative statements about modes of behavior," to suggest "appropriate performance indicators" and to "indicate effective leverage points" (Lane, 2012: 591).

11. Limitations

Limitations affect modeling. To carry out quantitative modeling of complex systems shortcomings must be accepted. In this case, major limitations[49] arose in the modeling process. Even though many sources of information may help the researcher in eliciting the causal structure, in suggesting appropriate parameters estimation, initial value, and non-linear relationships, there may be a lack of confidence for some of them. These are the classic problem of modeling, especially when a systemic perspective is adopted at a high level of aggregation. Find longitudinal data for the model variables is a time-consuming task, and most of the time an impossible one, due to database fragmentation or inconsistency between data sources. Therefore the simulation outputs can be compared with real data only for a limited number of variable.

Soft variables even if well operationalized rely upon the robustness of qualitative research strategies, as well as the process of describing decision rules through mathematical equations, and the process of drawing/estimating non-linear functions.

The research needs to feedback its findings to the local area decision-makers and requires further disconfirmatory analysis which may improve the structure and the behavior it produces.

Lastly, the model does not address implementation issues which of course may have an impact on the findings of the research.

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[49] Limitations of the qualitative analysis are presented in chapter 4.

12. Conclusions

The work developed in this chapter advances into a System Dynamics model the dynamic performance management chart presented in chapter 4.

Dynamic performance management was a first step toward developing a full simulation model of the "Taormina-Etna District". Through dynamic performance management outcome and outputs are linked to performance drivers, and through them, strategic resources are made explicit.

The model worked for a clear purpose: it has framed the sources of the image of a local area and has explained the effect of the image on tourism presence. To this end, both organizational and inter-institutional performance have been systemically connected and enhanced by simulating over time the system. Simulations have increased the understanding of the performance determinants and have helped in assessing the sustainability of the results.

Two policies – in addition to the current policy – have been simulated in this piece of work, and they give insights into feasible strategies. Promotion campaigns produce the illusion of development; they improve performance boosting the image in the short-run, but in the long-run, they will worsen the results concerning image and tourism presence.

A sustainable policy relies on a simple suggestion. Increasing the quality of the organizational outputs (i.e. the number of building recovered, the km^2 of natural preserves maintained, the possibility to get to the beach through seafront, the number of disused buildings turned into productive), allows the local area to build up resources rather than let these outputs just to flow out. Such resources if systemically managed affect system's outcomes, which, in turn, cumulate into shared resources. These shared resources when consistently managed with the organizational one may have an impact on both inter-institutional and organizational performance.

13. Parameters and stocks initialization value

The table below shows the parameters and the stock initialization value; the sources used to gather the data and the level of confidence with the value.

Table 5.5 Parameters and stocks initialization value, sources and level of confidence			
Sector	Parameter STOCK	Value Initial Value	Source [level of confidence]
Tourists	T INTERESTED IN VISITING	7000000	*Osservatorio Turistico regione sicilia* [**high**]
	PRESENCS	INIT_Total_presences	*Osservatorio Turistico regione sicilia* [**high**]
	INIT_Total_presences	5234608	*Osservatorio Touristico regione sicilia* [**high**]
	Contacts between tourists and potential tourists	3	Own estimation based on internet reports [**low**]
	Hotel preference fraction	0.83	Elaboration from data *Osservatorio Touristico regione sicilia* [**high**]
	Reference Tourism growth rate	0.5	Interview with CEO
	Reference residence time	4	Average between the best performance and actual performance [**medium**]
	Reference strength of identity	0.7	Estimation based on the interview to local entrepreneurs [**medium**]
Hospitality	Desired Saturation room	0.7	Estimation based on the interview to local entrepreneurs [**medium**]
	Working days	100	Average between hotels and non hotel of high density tourisms place and low density. Interview to local entrepreneurs. [**medium**]
	Average bed cost	10000 [hotel] 6000 [non hotel]	Own estimation based on internet sources [**medium**]
	building time	3 [hotel] 2 [non hotel]	based on the interview to local entrepreneurs [**medium**]
	HOSPITALITY STRUCTURE	INIT hotel beds INIT Non-hotel beds	*Osservatorio Touristico regione sicilia* [**high**]
	INIT hotel beds INIT Non-hotel beds	32728 20732	*Osservatorio Touristico regione sicilia* [**high**]

	IN CONSTRUCTION	INIT hotel beds*0.3 INIT Non-hotel beds*0.3	Estimation based on the interview to local entrepreneurs [**high**]
Local Attraction and Services	LOCAL MUSEUM	INIT_Local_Museum*0.5	Half of the museum existed before the year 2000. *Osservatorio Touristico regione sicilia* [**high**]
	INIT_Local_Museum	152	*Osservatorio Touristico regione sicilia* [**high**]
	LOCAL IDENTITY MUSEUM	INIT_Local_Museum*0.5*0.3	Own elaboration by reading local museum websites. *Osservatorio Touristico regione sicilia* [**medium**]
	REGIONAL MUSEUM	10	*Osservatorio Touristico regione sicilia* [**high**]
	AVG Expenses per presence	80	Own estimation based on internet search [**low**]
	AVG investment per attraction	100000	Own estimation based on internet search [**low**]
	Sicilian GDP fractional Growth Rate	Time series data	ISTAT [**high**]
	Land area	6799	ISTAT [**high**]
	Cinque terre attraction density	66/38.6	TripAdvisor for attractions ISTAT for surface [**medium**]
	Kms of Beaches	360	www.ontit.it/ [**high**]
	BEACHES LENGTH	Kms of Beaches	www.ontit.it/ [**high**]
	URBANIZED LAND	Available_Land* Urbanization__Fraction	ISTAT [**high**]
	Urbanization__Fraction	Time series data	ISTAT [**high**]
	Natural Reserves Area	KM2_of__Natural_Reserves	Assessorato regionale agricoltura e foreste [**high**]
	Density of Natural Reserves Sicily	(93892.98*0.01)/25711	Assessorato regionale agricoltura e foreste [**high**]
	AVG Italian URB Index	0.09	ISTAT [**high**]
	Total Italian Land surface	301338	ISTAT [**high**]

Business sector	AVG investment per restaurants	80000	Own estimation based on internet search [**low**]
	RESTAURANTS	Desired_Restaurants	Common stock inititalization
	R. USING LOCAL PRODUCTS	Restaurants*Fraction	Common stock inititalization
	Std fraction	0.35	Own estimation based on internet search [**low**]
	SUBSIDED BUSINESS	0	At the beginning of the simulation TED did not exist.
	AVG investment per subsided business	750000	Own elaboration by reading *district document and publications* [**medium**]
	Fraction of Financed businesses sharing Innovation projects	0.10	Own estimation based on internet search [**low**]
TED Sector	AVAILABE FUNDs	0	At the beginning there were no funds.[**high**]
	ARRIVING FUNDs	0	At the beginning there were no funds.[**high**]
	DISTRICT FUNDs	0	At the beginning there were no funds.[**high**]
	Time to spend	3.5*4	Own elaboration by reading *district document and publications and interviews with local entrepreneurs.* [**medium**]
	Promotion Spending Fraction	0.01	Own elaboration by reading *district documents* [**medium**]
	Cultural Promotion Spending	0.06	Own elaboration by reading *district documents* [**medium**]
	Fraction to infrastructures	0.1	Own elaboration by reading *district documents* [**medium**]
	Capacity Spending fraction	0.25	Own elaboration by reading *district documents* [**medium**]
	Fraction to Business Ventures	1-Fraction_to__infrastructures-Cultural_Promotion__Spending-Promotion_Spending_Fraction-Capacity_Spending_fraction	Own elaboration by reading *district documents* [**medium**]

	Regional Promotion Budget	135000000	Own elaboration by reading *district documents and internet search* www.ontit.it/ [**medium**]
	Fraction to Taormina ETNA	0.38	Own elaboration [**low**]
Image sector	Place Identity weight	0.3	Own elaboration [**low**]
	Tourism__Maturity_ weight	0.3	Own elaboration [**low**]
	Contextual weight	0.4	Own elaboration [**low**]
	Time to change indicated image	1	Own elaboration [**low**]
	Time to perceive Local area image	3	Own elaboration [**low**]

Chapter 6

Challenges in Designing a System Dynamics-based Interactive Learning Environment. An action research approach focused on the Governance of Castelbuono area

1.Introduction

This chapter dives into the challenges in designing a System Dynamics-based interactive learning environment. Chapter 7 discusses how governing interdependence between public and private organizations is a central theme in designing tourism development policies.

Networks strategies are an effective way to counteract financial crisis, cutbacks, and budget shrinking. These strategies allow local area's organizations to go beyond the classic response to coordination issues which rely on market or hierarchies. Governance of networks can limit transaction costs and trade-offs in time and space. Coordination through governance can be a good solution to deal with the complexity concerning tourism performance. However, do local area decision-makers understand that coordination is required to improve performance and to support sustainable development policies?

This chapter gives additional details of the study presented in chapter 5[50] and illustrates relevant aspects when it comes to design a System Dynamics Based ILE. The chapter, after an overview, to recall the research background[51] and aims, introduces the setting and the action research process adopted to conduct the study, then it enlarges the perspective on how to overcome limits to learning in

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[50] The paper *Tourism Governance at Stake: supporting decision makers in a small town through an Interactive Learning Environment* aims to show how small town policy-makers, may improve their learning and therefore performance through a System Dynamics-based (SD) interactive learning environment (ILE).

[51] The ILE was tailored to the small town of Castelbuono, a well-know tourism destination in Sicily, which presents appropriate structural characteristics to fit the research purpose.

computer-based learning environments. Section 4 illustrates the architecture of the System Dynamics-based ILE. Limitations of the study conclude the chapter.

1. Castelbuono: a small tourism destination

Castelbuono is a 10.000 inhabitants village in the province of Palermo, Sicily (southern Italy). It is particularly famous for the castle which its name derives, and around which the city grew up since the beginning of 14th century. From the early 1990s, tourism becomes one of the utmost economic sectors of the town, many of cultural events and attraction arose. The number of restaurants and a typical food production grew up accordingly. Nowadays, the accommodation capacity is mainly made up by bed & breakfast and home holidays.

The picture below shows on the left-hand side the behavior of tourism variables and on the right-hand side the number of tickets sold by the local museum.

Figure 6.1 The dynamics (2007 – 2014) of tourism arrivals, average holiday length, and the ticket sold by the local museum
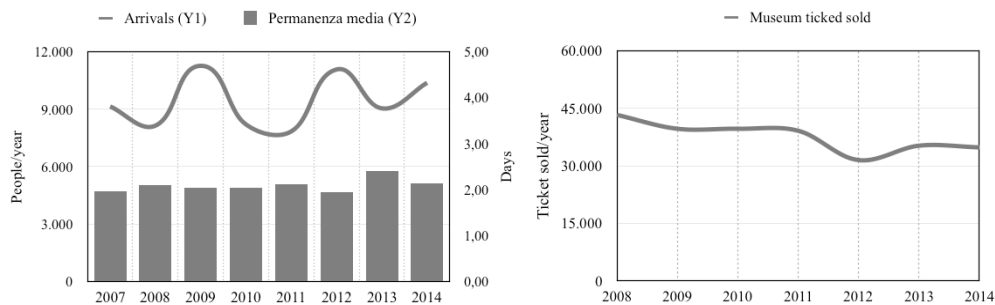
Tourism arrivals, as well as the ticket sold, have oscillated during the last seven years. These cycles are a sign of lack of coordination among local players. To attract tourism, public organizations, and private entrepreneurs should align their respective objectives and avoid to push too strong or too weak the tourism

demand. Time delays between decisions and results, as well as opportunistic behavior also matter in producing cycles.

Such destination is the classical model of a small area with a strong tourism potential concerning natural resources, cultural events, traditions, typical food and local products. Local area decision-makers are aware of the potential, and they strive for improvement. The municipality runs several projects which aim to market the destination better. Many cultural events have been carried out, the museum has planned exhibitions, while restaurants have improved the image and the quality of the dining. Besides their strategies, it seems that each decision-maker takes a silo thinking according to which he/she is responsible for the performance of his/her organization, while expecting resources from outside.

3. The action research process

The process begins with the presentation of the research purpose; then it follows with a plenary discussion with the decision-makers by which the research team tries to elicit information about the system structure, the decision-makers mental models, the assumption, ideas, and current strategies.

Figure 6.2 The iterative process of the action research as linear plan
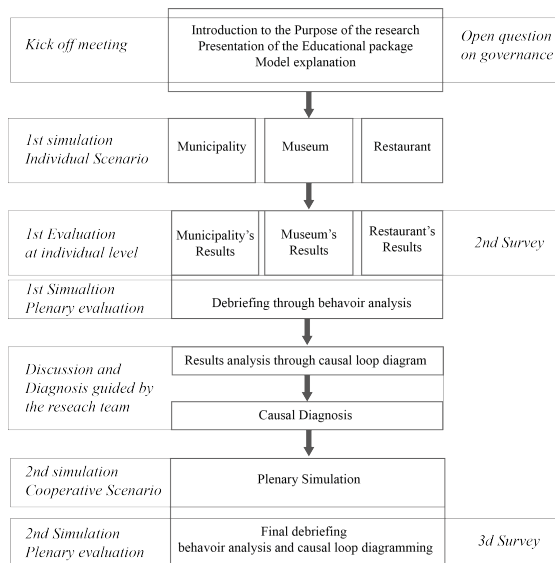
This first meeting helped in adapting and setting up the model according to the specific strategic context of each decision-maker. The second session involves players' participation in the action research.

As figure 6.2 shows, after the kick-off meeting, decision-makers were engaged in playing the model, discussing the results, and commenting the causal relationship. Moreover, their mental models, decisions, and understanding which is captured by the simulation results and through verbal comments, are then compared with the answers to provided to the surveys.

4. Limits to learning in computer-based learning environments

Simulations and simulation models *per se* do not ensure learning outcomes. The literature on action science remarked that a set of difficulties may arise when it comes to supporting individual and organizational learning (Argyris, 1990).

Difficulties in understanding organizational settings may become bigger when decision-makers (even in a team) are called to understand new values, to introduce changes, to disconfirm assumptions and to be reflective upon their policies.

Figure 6.3 The learning cycle and the managerial learning obstacles (Isaacs and Senge, 1994: 272)
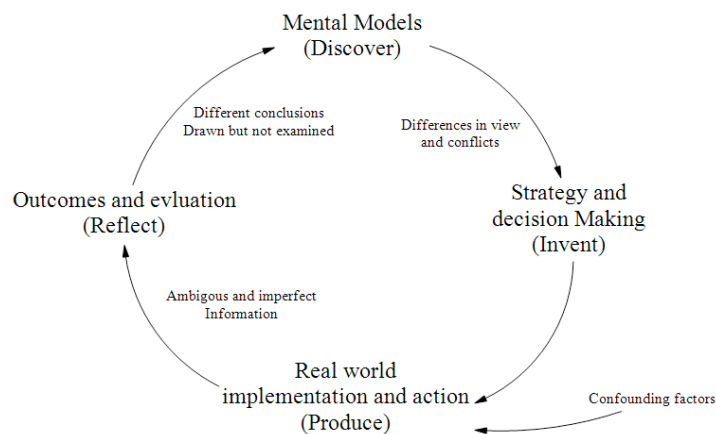
The learning cycle do not operate properly (Isaacs & Senge, 1992: 272) when

i) divergent mental models brings decision-makers to compete or negotiate upon assumption rather evaluate the feasibility of each;

ii) there are delays between strategic decisions and relatives impact on the real world;

iii) additional delays to perceive the results are due to the time it takes to collect and elaborate information; and – to close the loop of figure 6.3 -

iv) iv) alternative mental models may produce alternative results explanation.

Argyris and Schön (1978) defined "double-loop learning" as learning that seeks to encourage inquiry into and promote changes in an actor's or organization's underlying norms, policies, and objectives, rather than just the strategy used to accomplish a particular goal as the single-loop does.

Figure 6.4 Impacting on learning obstacle using virtual world (Isaacs and Senge, 1994: 274)
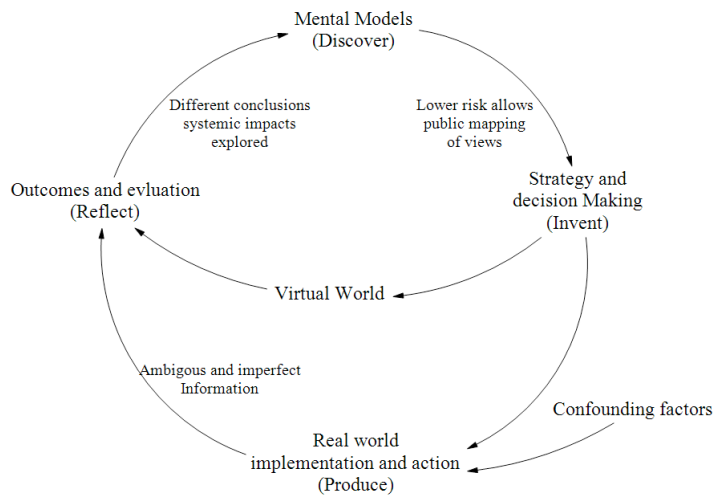
Computer-based learning environment may help decision-makers to understand that problematic behaviors arise from the system's structure. Moreover, they may trigger the learning by challenging current mental models and adopted policies to

improve results. In this way, decision-makers are prone to discover/invent new ways to address organizational problems.

Action science has a major limitation. Double-loop learning does not imply – directly – that invented strategies are then produced in the real context. If the path from formulation to implementation requires "changes in values and social virtues learned in early life" (Argyris & Schön, 1990: 20), individuals and organizations may show resistance to changes[52]. "[I]ndividuals frequently produce actions contrary to their inventions and are often unaware of the discrepancy" (Argyris & Schön, 1990: 19).

Such theoretical findings have implications for computer-based learning environments. As widely recognized, System Dynamics-based ILEs – by default – do not overcome such limitations (Bianchi, 2001: 537; Morecroft, 1988: 309). Double-loop learning aims to alter goals, value, and associated structures of decision-makers rather than just the strategy used to accomplish a particular goal. Computer-based learning environments, therefore, should highlight the gaps between intention and outcome, to make transparent that only changes in underlying assumptions and perceptions may adjust the discrepancies.

Limitations in computer-based learning environments may arise from the so-called "video-game" mentality. In this case, business game or management games if they are designed as a black box, then are perceived by the players as something to hit in order to produce a particular reaction (Bianchi, 2001: 537). In front of it, individuals experiment sets of actions by just attempting to "improve the score," therefore these tools fail to produce reflections on *how* to achieve the desired outcome (Kim, 1989; Senge, 1989) and inquires on *why* it is, or it is not achieved.

A well designed computer-based learning environment must take into account the process of action science: the purpose of the tool must be clear, and the effort of the research team should be focused on to develop participants' learning skills

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[52] Argyris & Schön compared the "theory-in-use," that reflects the mental models that inform current behavior, with the "espoused theories" which includes the reasons individuals uses to explain their behaviour. Argyris and Schön. 1990. Conceptions of Causality in Social Theory and Research, Normal Science and Action Science Compared. Unpublished manuscript, Harvard University [MS].

through iterative evaluation and reflection which are supported by a computer software.

Conceptualization of real problems through discussion of system archetypes may be a way to make explicit both "theory-in-use" and "espoused theory" (Isaacs & Senge, 1992: 281). The challenge is to transfer the action science methodology into a computer-based tool. What challenges mental models is the dialogue where the "ladder of inference" (Argyris, 1990: 87) and the "reflexive loop" (Isaacs, 1992) are improved through communication and reflection (Senge, 1990: 245). The reflexive loop – portrayed in figure 6.5 – reinforces the beliefs a person has about the world. The beliefs affect the data and the experience a person collects.

Figure 6.5 The "ladder of inference" and the "reflexive loop" (adapted from Senge, 1990:243)
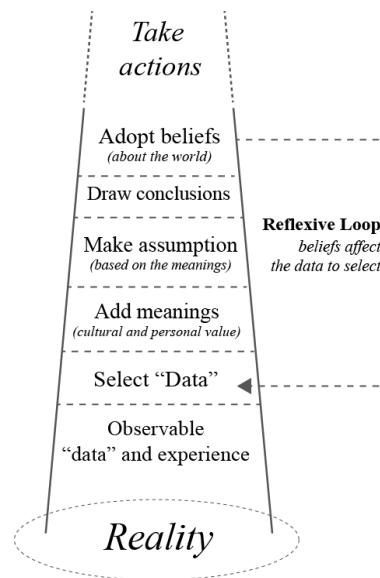
The latter, are then filtered through cultural value and from them one may infer the meaning of phenomena, and finally, draw conclusions which quite often support beliefs. In this way, the validity of the mental models is not questioned.

In computer-based learning environment instead of using dialogue, players may use the "two-column" method (Argyris & Schon, 1974) through which they

write their decisions and thoughts (non-communicated) on a piece of paper. Both information is stored and then compared.

Barriers to learning may come from the model itself where model assumption and relationship matter. In this regard, the modeler and/or facilitator should clearly communicate assumptions and causalities, in a way that a large number of people involved in the learning project may understand them.

Barriers and obstacles to learning are not proper of the computer-based learning environments. They reflect instead problems of the learning process itself. Proper designed System-Dynamics-based ILE may deal with such limitations and try to overcome them.

4. Overview of the Interactive Learning Environment for Castelbuono local area

Chapter 7 will describes the educational package as the blend of an ILE with debriefing sessions. This package aims to support decision-makers' learning through the iterative process of reasoning, testing, evaluating policy results, and back again to reasoning. By following this iteration, participants were involved in playing the "Dynamic Tourism Governance ILE" and in being active in the debriefing sessions.

In this section the ILE architecture is unfolded, acceding to the layer portrayed in the following picture.

The simulation model was build with iThink 10.0.6 which provides a set of tool to construct the model and to design a friendly and easy-to-use front-end interface.

The three layers are:

    i)   the user interface layer;

    ii)   the causal structure map layer; and

    iii)   the equation layer.

Figure 6.6 A pictorial overview of the Interactive Learning Environment
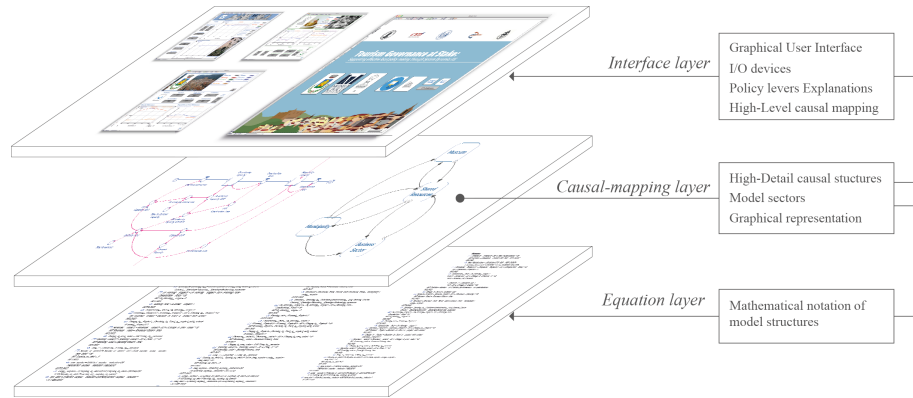
Each of the three is illustrated in some details. As figure 6.6 shows, the causal mapping layer is at the core of the simulation model. Through cause-effect relationships, the mathematical structure of the model emerges, and feedbacks are thus explicit.

The full model contains four modules which include sub-systems of the entire model. The module is useful tool to manage the complexity associated with the task of modeling a particular sub-system. iThink also allows the modeler to run simulations which execute only one (or more) module's equations. This functionality helps in testing assumptions of a particular model structure.

Figure 6.7 Representation of modules (left) and a piece of the model structure (right)
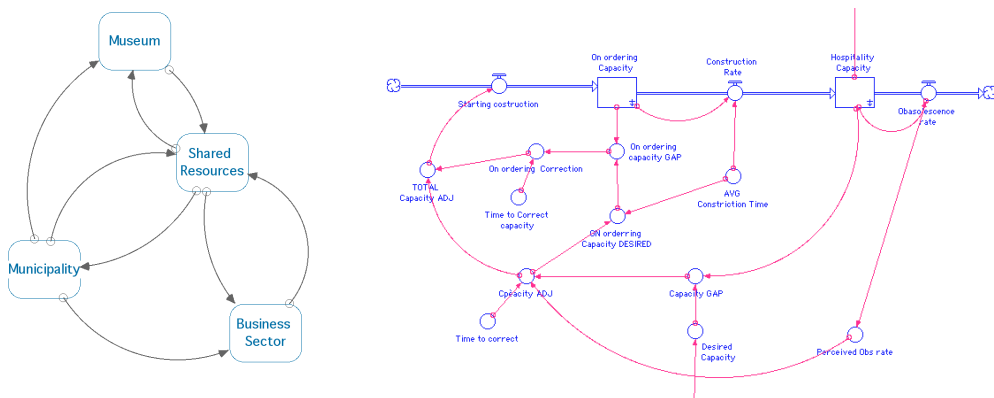
The whole model was built by assuming an external perspective, indeed a system performance was first identified, and explicated using the model purpose. Each real sector – to which each module refers to – was instead conceptualized and modeled by taking an internal perspective.

This point view makes it possible to identify the main variables which compose the system of each decisions-makers. Framing this complexity led the modeler to identify the policy levers through which each sector may contribute to the wider system performance. For instance: by modeling the Municipality sector, the number events produced per year, and the amount of resources invested per event may have an impact on the system performance. Therefore, the internal perspective reflects the point view of a specific decision-maker. This viewpoint can be further implemented into the interface of the ILE by tailoring the control panel to the specific decision-maker which controls that policy lever.

The graphical user interface is a type of user interface where users can interact with the model as the simulation progresses. The Interface layer makes it possible to transform a System Dynamics model into a compelling environment for learning. The interface layer shows a set of policy levers which reflect relevant real-world decisions are modeled in the causal model layer, through appropriate structures. The players take decisions by acting on "Input devices," instead of changing them through the command line inside the equation panel. Even though the interface hide the structure of the policy lever, its definition and explanation buttons or additional documentation gives a right clue about the meaning of that action.

Figure 6.8 Details of input devices on the interface layer
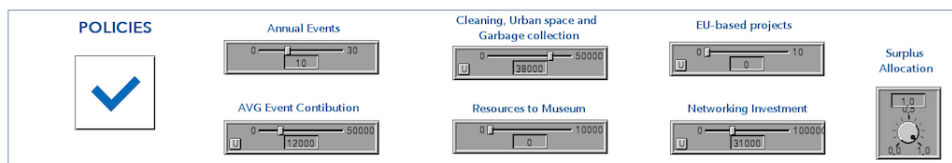
The interface layer follows a tree structure that allows players to navigate through the different "pages." The figure below clusters the pages of the interface into four main sections, a net of links connect each page to the others.

Figure 6.9 Interface structure of the interactive learning environment
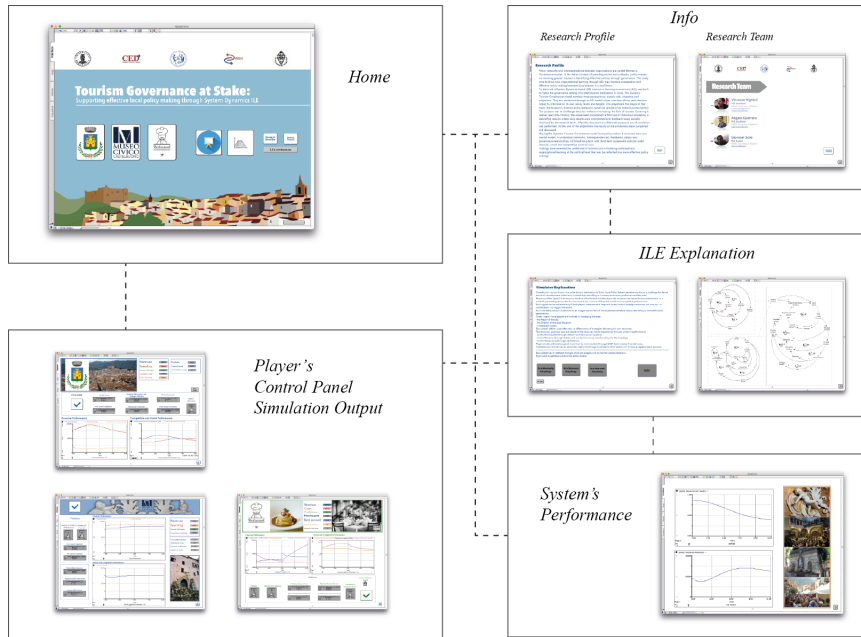
The use of graphical interface engaged decision-makers to interact with the model effectively, it also has helped the research team to communicate the purpose of the model easily.

The outputs of the simulation are essentially time graphs and numeric displays, which were used as the basis for the debriefing. The software continuously stored numerical information about players' decisions on a spreadsheet. Thoughts of the players were captured through two surveys which aimed to record the reflections of the decision-makers when they are in the learning process. Table 6.1 reports the two sets of questions.

Table 6.1 List of the questions used to capture decision-makers' reflections.

1st survey	1. In your opinion, what is governance? 2. During the simulation have you decided according to what? 3. Can you give an example of a decision that matches the above idea? 4. What strategies have you adopted, and why? 5. Have you changed your strategy during the simulation? If yes, based on what? If don't, why? 6. Looking at your results, how do you explain it? 7. What else could usefully be done?
2nd survey	1. After the second simulation have you achieved a better performance? 2. Can you explain why, and what kind of results? 3. How does your organization contribute to the overall system performance? 4. Can you envisage a well-balanced and effective policy? 5. Based on your experience has the simulator reproduced your reality domain? 6. Thinking back to your first idea of Governance, have you experienced a new/different concept of governance? Can you briefly explain? 7. What has been the feeling with the simulator and the research group, any suggestions?

5. Conclusions and limitations

The design of an action research through an educational package requires keeping in mind the kind of problem the "customer" owns, and the level of awareness of such problem. Sometimes decision-makers may need help to understand it because "they do not know what their problems are" (Schein, 1990: 59). Therefore, clearly state and communicate the purpose of the study, the process to follow, the benefit, and the kind of engagement the research requires is something that will improve the learning outcomes.

Set up in advance of the workshop a pair of meetings through which share ideas about the problem. This procedure is a good solution to come up with a more realistic model. The gap between the model assumption and the reality can also be covered through the engagement of a person who has a direct experience with.

Interface design and policy levers explanation is a central point in creating an interactive learning environment. It should be eye-catching, attracting but also

enough clear and sufficiently simple to be used by any user, and professionally explained to communicate that is not a game.

Limitations of the System Dynamics model concern the accuracy of the parameters' value. However, the purpose of the model is neither to produce forecasts nor to predict precise values. The model aims to embed the decision-makers into a process which is conductive for learning, and to support them in being reflective about their mental models, and to understand the importance of coordination to improve performance.

Other significant limitations are connected with the research strategy itself. Learning should not be conceived as a contingent or discrete activity (i.e., to be fulfilled through only ad hoc project), but instead as a continuous process.

An action research may be a powerful tool to increase the level of reflexivity of decision-makers, but the commitment of decision-makers to change both the "theory-in-use" and the "espoused theory" is neither implicit, nor automatic it rather requires that "planning means changing minds, not making plans" (De Geus, 1988a: 70).

CHAPTER 7

TOURISM GOVERNANCE AT STAKE: SUPPORTING DECISION MAKERS IN A SMALL TOWN THROUGH AN INTERACTIVE LEARNING ENVIRONMENT

Abstract

Governing interdependence between public and private organizations are central themes in designing tourism development policies. Due to spending review policies, cutbacks, and budget shrinking, the capability to manage networks of players is crucial. This study aims to show how a System Dynamic-based (SD) interactive learning environment (ILE) may support small town policy-makers, in understanding coordination as a relevant issue to design sustainable policies.

Such a learning tool was built to frame the governance setting, to identify sustainable growth strategies, to support the development of a small tourism destination in Sicily. To this end, three major decision-makers – playing a crucial role in such environment – have been identified: the Mayor of the town, the museum's director, and a restaurant owner (as a sample of the entire business sector).

The ILE supports decision-makers in outlining policies oriented to increase sustainably the flow of tourists over a 12-year time horizon. A two-phases workshop was designed to allow the three players to initially run the "Dynamic Tourism Governance" ILE individually, under a predefined non-cooperative scenario. After a few runs and a short debriefing session, a collaborative scenario was run. In this second phase, the three decision-makers might share ideas and strategies to foster the growth of flow of tourist in the small town.

The use of "Dynamic Tourism Governance" ILE enables policy-makers to i) review their own mental models, ii) understand the interdependence between different actors, perceive time delays between decision and results; iii) link short-term with long-term sustainable policies under the financial, social and competitive point of view.

1. Introduction

For some cities, regions and small towns, tourism represents a powerful engine to prosper and grow. Very often small towns run into trouble, even when they are rich in history, heritage and they show a strong entrepreneurial background. An explanation of this phenomenon can often be found in the lack of coordination between institutions. Governance plays a crucial role concerning both strategic planning and performance management for tourism destinations.

The recent Italian public sector reforms have tried to push the system toward a more cooperative and network oriented structure. For example consortia, touristic districts, and Public-Private partnerships, as well as the creation of local development agency.

The sustainable development of a small town is tightly connected with the capability of local both public and private actors to collaborate, to align strategies, and to share resources. Indeed, an individualistic behavior sooner or later will cause poor results for the local area.

Unexpected and/or unexplained outcomes are generated by the misperception of the specific complexity of the system, that is mainly referred to the narrow mental models of decision-makers (Forrester, 1971: 213; 1992: 48; Senge, 1990: 22; Sterman, 2000: 19). To cope with such limitations, eminent scholars had widely pointed out the need for a double-loop learning approach to decision making (Argyris, 1976; Argyris & Schön, 1978). Such learning process replaces a reductionist, partial, narrow, short-term view of the world, with a holistic, broad, long-term and dynamic view (Sterman, 1994: 297), if simulation models support it. In this sense, System Dynamics (SD) methodology may play a major role (Morecroft, 2015; Morecroft & Sterman, 2000; Wolstenholme, 1990).

The aim of the paper is to demonstrate how an SD-based Interactive Learning Environment (ILE), may support local policy-makers in dealing with coordination, within tourism governance issues. To this end, we designed an educational package offered to the relevant decision-makers of a small tourism

destination. The research focuses on the city of Castelbuono[53] because tourism performance and governance are perceived as a challenge for local policy-makers[54]. Moreover, the setting can be used as meaningful sample for small tourism destinations in Sicily.

The paper is structured as follows. The first section defines tourism governance. It also provides a brief literature review. The second section introduces a conceptual model to frame tourism governance in a small town. The third section claims that SD can be used as a learning tool. Afterward, the "Dynamic Tourism Governance" Educational package is illustrated. Finally, the last two sections describe the workshop and analyze the simulation outcomes. Findings and further development of the research conclude the study.

2. Governance for sustainable development

The term "Public Governance" indicates the trend of public administration to shift the institutional setting toward a horizontal decision-making process, which put emphasis on cooperation between public and private sectors and co-production in service providing with citizens (Bovaird & Löffler, 2009). The word "governance" comes from the ancient Greek verb *κυβερνάω* (kubernáo) that means "to steer"[55].

Public Governance represents the evolution of New Public Management (Borgonovi, 2002: 38-41; Farneti, 2004: XI; Meneguzzo, 1995: 23; Monteduro, 2012: 51; Osborne, 2006b: 377; Pessina, 2014: 11), but governance has a broad meaning in public management. As remarked by Hall (2008: 3), governance was defined recently by economists and scientists and disseminated by institutions like UN, IMF and World Bank. It can be defined as "the traditions and institutions by

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[53] Castelbuono is a 10,000 inhabitants town belongings to the Metropolitan City of Palermo, in Sicily.
[54] http://www.madoniepress.it/mp-castelbuono-in-crescita-le-presenze-turistiche-6402.asp; http://www.ilgiornaledellefondazioni.com/content/castelbuono-pa-come-rendere-civico-un-museo-civico
[55] Osborne and Gaebler argued "less government" (or less rowing) but "more governance" (or more steering). Osborne and Gaebler. 1993. Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector: Plume: 34.

which authority in a country is exercised" (Kaufmann, Kraay, & Mastruzzi, 2011: 4).

To Sheng (2009: 1) governance is the process of decision-making whose decisions are implemented (or not implemented). He explains that the good governance must own eight characteristics: participation, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law. Therefore a good governance cannot exist without considering the sociocultural dimension, the economic dimension and environmental and natural resource dimension. On the same idea also Bouckaert, Peters, & Verhoest (2010: 206), and Pollit & Bouckaert (2011: 11)

Public governance can be considered as an alternative to market and hierarchy, and it may be a way to manage relationships between public and private sectors. By public governance, the research means "the way in which stakeholders interact with each other in order to influence the outcomes of public policies" (Bovaird & Löffler, 2009: 6) and considers governance as a social phenomenon in which both public and private strategies are intertwined. Indeed, each actor aims to achieve individual goals, but those objectives are sometimes inconsistent or most often cannot be reached without strategic alignment and coordination among the other players.

As Rhodes (1997: 57) put it, "the state becomes a collection of inter-organizational networks made up of governmental and societal actors." As Borgonovi (2002: 41) stated, the exercise of the functions of public administration can be implemented on the basis of two ways: 1) government: the use of decision-making power from the formal institutional system; 2) governance: the use of formal/informal powers with the aim of create a consensus on specific decisions.

Public sector institutions provide services and rules generating institutional value. The latter enables private sector organization to acquire resources, through which they can realize products and services, and through them, organizational value, making the tax base sustainable (figure 7.1). Public and private institutions through good public governance may accumulate a set of shared resources (i.e.

image of the town, social capital, trust) which, in turn, may increase: i) the institutional value (i.e. through efficiency and effectiveness in public service providing), ii) the attractiveness of the area (i.e. attracting private investments). An enhanced attractiveness of the local area may produce an improvement of the organizational value.

Figure 7.1 A systemic framework embodying both the public and private sector and their capabilities to generate value through governance (Adapted from Bianchi, 2016: 60).
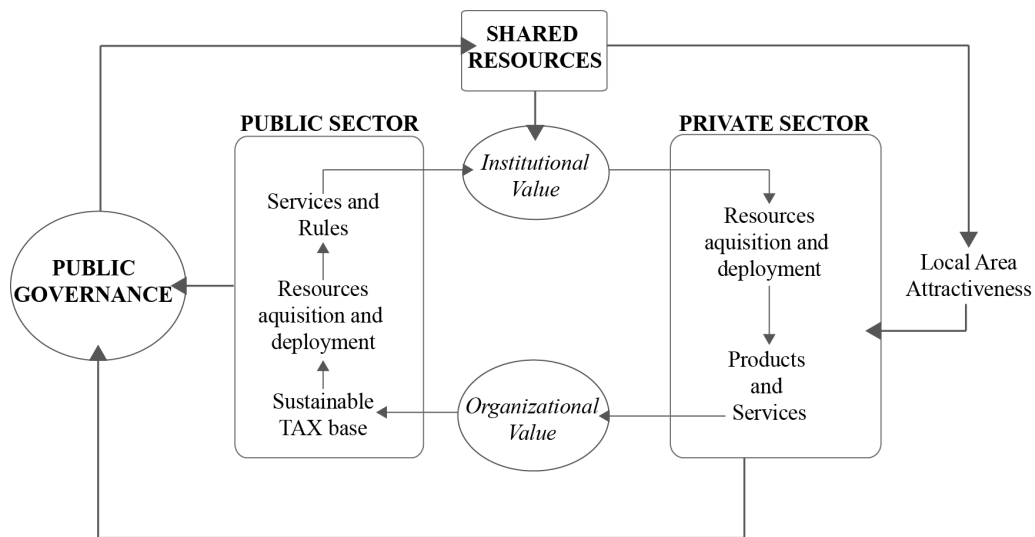
Public Governance also covers the tourism sector, where collaboration, contracting-out, and public-private partnerships are wide used instruments to provide services. Indeed, the effectiveness of managing tourism destination is strictly connected with the capacity of public and private players to outline a strategic planning where public goods (Samuelson, 1954) and specific services, are conceived as key success factors for the destination. To this end, the Word Trade Organization (1997: 61) suggested appointing a "steering committee" at the municipal level to sustainably manage local resources (Rigall-I-Torrent, 2008: 884-885). Local policy-makers should lead economic development through interactive and cooperative processes (Grasselli, 1989; Madanipour & Hull,

2001), which in turn would assist communities in a more equitable distribution of benefits and costs associated with tourism development.

However, cooperation alone will not foster the commitment to planned actions without the incentive of increased mutual benefits. It still needs to be "steered in order to ensure that planned outputs are generated" (Hall, 2008: 63). Public Governance may become crucial since it can produce better outcomes, higher stakeholders acceptance (Wight, Hall, & Lew, 1998: 63), and sustainable development. Public institutions and private organizations are elements of the same dynamic and complex environment, therefore the development of a destination lie behind their own capability to generate value, to make growth sustainable (Bianchi, 2010: 364).

3. A systemic approach to frame tourism governance

The recent emphasis on public management has shifted from inside the perspective of a single institution (micro level) or to systems of public companies (meso level), to the outcomes of an inter-institutional system (macro level) (Bianchi, 2012: 143).

To properly frame the governance setting of a destination (figure 7.2) the research takes three perspectives: i) supply side, ii) objective, and iii) subjective. As for the first, a destination may be seen as a (complex) product as such (Morgan, Pritchard, & Pride, 2012a: 388). It has its own attractions and image, as well as a certain service quality. These elements are the perceived mix of a set of end products/services provided to tourists (i.e. cultural events, exhibitions, fine dining, accommodation services, services to citizens). The objective view summarizes what is offered to visitors. The subjective perspective identifies the relevant institutions involved in the governance of the destination, by looking at who provides the before mentioned end products/services. The last perspective suggests that the relevant institutions of a small town are the municipality, which is responsible for the strategic planning for the city, the museum, which is in

charge of taking cares for artwork collections, and the hospitality sector (i.e. restaurants, hotels and bed&breakfast) that provides fine dining and accommodation services.

Figure 7.2 The conceptual governance model of a destination, and the different dimensions of performance

a) subjective perspective;
b) objective perspective;
c) supply side.
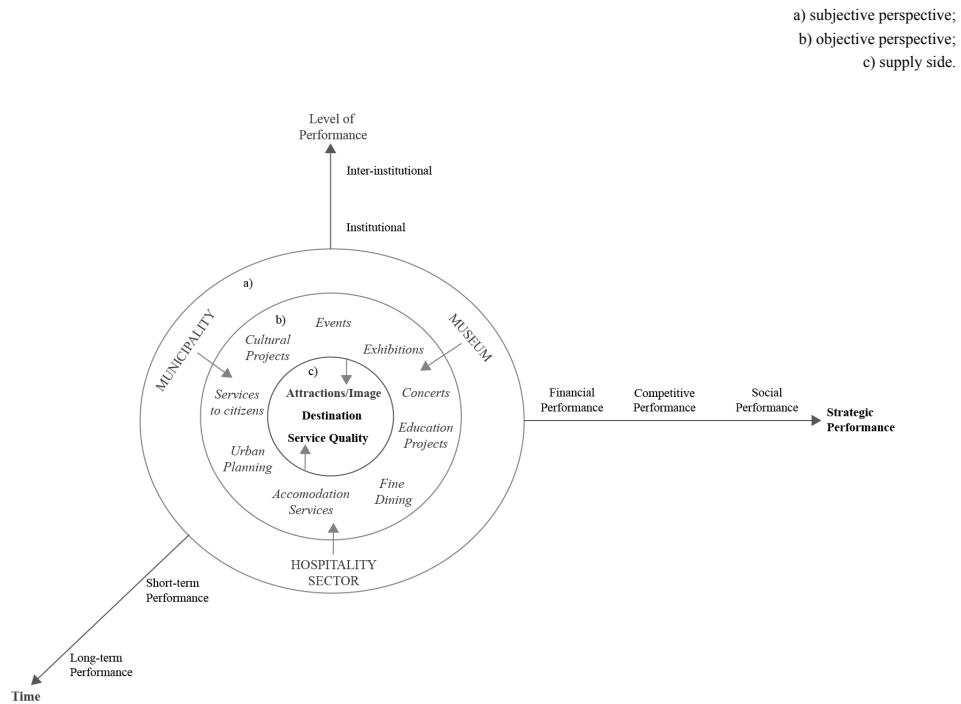
To make the growth sustainable, the performance of a destination should be well balanced under three dimensions (figure 7.2): i) the strategic performance;, ii) the level of performance (span), and iii) the time horizon.

First of all, results should be financially sustainable, relevant in comparison with other alternative destinations, and they should meet stakeholder expectations. Performance should also be measured and improved either at the institutional level and the inter-institutional level, and there should be a mutual enhancement. Finally, the outcomes of the destination should be sustainable in the long term.

Achieving a sustainable and full comprehensive performance is not an easy task for policy-makers because of two main issues: the dynamic complexity in which they operate and their narrow mental model.

A destination is characterized by a dynamic and complex environment where public organizations are loosely coupled (Bianchi, 2004; Borgonovi, 2002). There is a weak coordination in the interplay between public and private actors strategies that lead to high degree of uncertainty and discontinuity of development policies. There are significant time delays between policy adoption and related effect since the latter quite often depends on the availability of funds which delays the flow of investment behind formal decisions (at the local and regional level too).

Nonetheless, local governance structures need to deal with trade-offs in policy making and policy implementation. These may be caused by the lack of a systemic approach to political negotiation. Indeed, a common trap is the fragmented view of the system: each institution (and decision-maker too) operates in a silos because of "the capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problem whose solution is required for objectively rational behavior in the real world or even for a reasonable approximation to such objective rationality" (Simon, 1979: 198).

In order to cope with the specific complexity that characterizes tourism governance in a small town, it is necessary to broaden and enhance the standpoint. It is required to combine the systemic approach with a methodology that is able to deal with the dynamic complexity as well as to foster a learning-oriented perspective. SD as simulation methodology allows to map causal structure of complex problems, as well as to test policies, question hypothesis, and support learning.

4. Learning with System Dynamics

SD methodology is a method able to develop a relevant phase of learning (Sterman, 1994) because it allows building simulation models that cope with dynamic complexity. In fact, SD supports policy-makers in understanding accumulation and depletion processes of strategic resources and it helps them in designing sustainable policies.

It has been demonstrated that misperceiving dynamic complexity (Cronin et al., 2009; Senge, 1990: 56; Sterman, 2000: 21-22) is the main cause of poor performance (Moxnes, 2004; Sterman, 1994: 307) and crisis.

Figure 7.3 Double loop learning (left) and modeling as learning activities (right) (Sterman, 2000: 19-88)
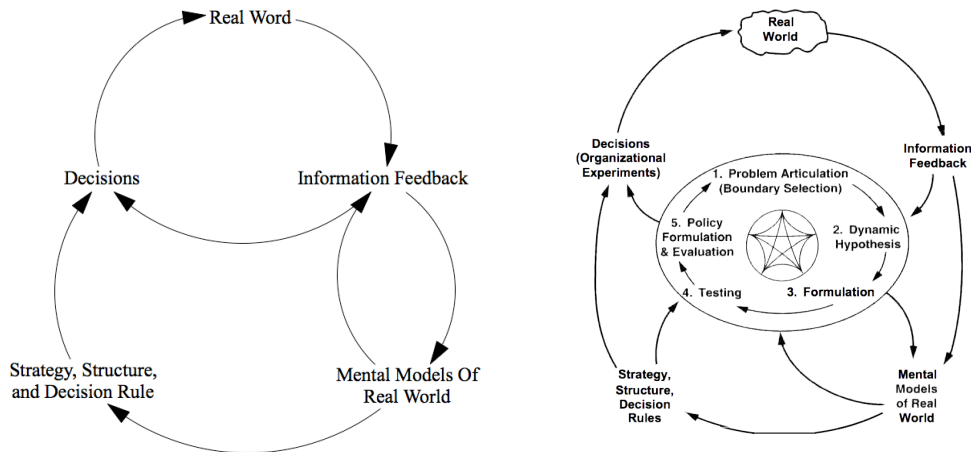
Planning may mean "changing minds" (De Geus, 1988b: 70; Lane, 1992: 64-65) if we use simulation tools able to reproduce problematic system's behavior.

Double loop learning (Argyris, Putnam, & Smith, 1985), illustrated in figure 7.3, implies that information feedback about the real world, not only change our decisions, but it affects our mental models. Therefore, mental models may change creating different decision rules and changing the strategy as well as the structure of organizations.

Understanding causal relationship underlying system's outcome is likely to foster double-loop learning (Davidsen, 1996; Sterman, 1994). SD may help to find real causes of problems, to build consensus on them, rather focus on symptoms (Vennix, 1996).

In order for SD to be an effective learning tool, it must be embedded into an environment that is conductive for learning.

5. The "Dynamic Tourism Governance" educational package

To support decision-makers in understanding coordination and governance as relevant for designing sustainable policies, the research team developed an educational package which has made use of an SD-based ILE within a two phases workshop. This section presents the educational package architecture, and the last two sections discuss the learning outcomes.

The educational package has been tailored to the small town of Castelbuono, a quite famous destination in Sicily. Castelbuono is well-known for its heritage, cultural events, entrepreneurial spirit as well as for fine dining. The study identified three relevant local actors that have a stake in tourism governance. They are the Mayor, the Director of the municipal museum, and a restaurant owner[56] (as a sample of the entire hospitality sector). The SD-based ILE is composed of three sectors: "Municipality," "Museum," and "Business". It has been developed with the purpose to address a specific governance task: increase tourism in the small town.

As figure 7.4 shows, the educational package merges the use of an ILE with debriefing sessions by which participants may define their own role in local governance, discuss simulation results, and develop causal hypothesis behind system's outcome. The SD-based ILE was built up using iThink software (iseesystem[dot]com), it comprises three subsystems each of them has its own control panel where decisions are taken.

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[56] We did not engage any hotel owners because hospitality in Castelbuono is mainly made up by b&b and home-holidays, therefore restaurants are more crucial for the image and the service quality.

Figure 7.4 The educational package architecture, as composed by the SD-based ILE and the debriefing sessions
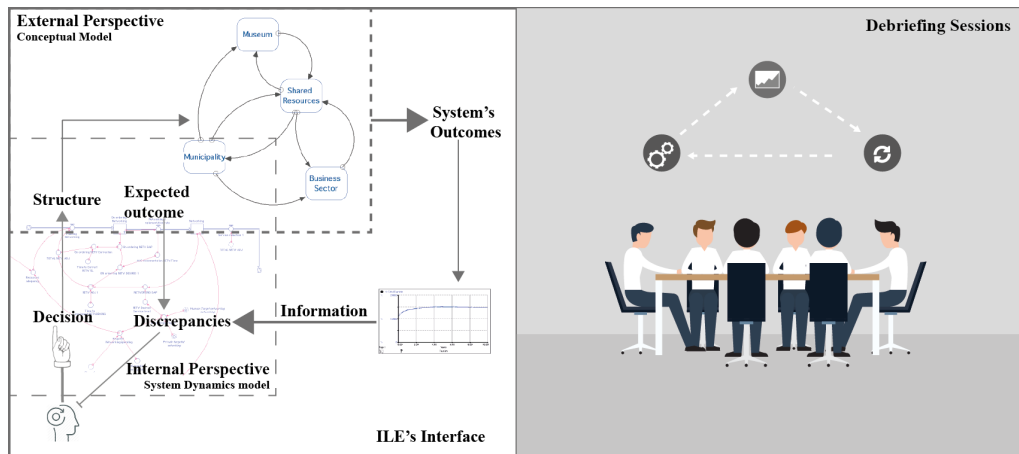
The ILE combines an internal with an external perspective and the focus of the model is on the wider system, where the policy implications for each institution can be understood only by observing the response of the system's behavior, as a consequence of changes in the structure (Bianchi, 2010: 375; 2016: 19; Größler, 2010: 385). Decision-makers used the interface level to compare their expectations with the information about system's outcomes. If there are discrepancies, they are to change their decision rule.

Playing the "Dynamic Tourism Governance" educational package, decision-makers may question their mental models and reshape them through learning.

6. Playing the "Dynamic Tourism Governance" educational package

The educational package has been used in a 2-day workshop (for 8 hours in total), offered to the Mayor of Castelbuono, the director of the local museum and a restaurant owner.

The 1st day an open session was devoted to present the basic principles of governance, to analyze the tourism performances of the destination and to discuss causal hypothesis.

During the 2nd day, after a short recall of the previous meeting, participants were engaged in using the ILE through the following steps: i) introduction, purpose of the model, and interface explanation; ii) 1st simulation (strategic objective statement, individual decision making) followed by a debriefing session (behavior analysis); iii) 2nd simulation (cooperative decision making), and final debriefing (conclusion, questions and discussion).

Table 7.1 reports for each decision-maker the policy levers available in the ILE interface, the unit of measure, and the explanation.

Table 7.1 Decision-makers, policy levers, unit of measure and explanations		
Player	**Policy Lever (unit of measure)**	**Explanation**
Municipality	Events (n. of events)	Number of cultural/touristic event hosted on average by the municipality
	AVG Event Contribution (euro/event *per* year)	The average supplying of funds per event per year
	Cleaning, Urban space planning and garbage collection (n. of people)	The level of services provided to keep the town clean, safe and well organized
	Resources to museum (euro/year)	The supply of fund to local museum
	EU-Based projects (n. of projects)	The number of projects through which apply for EU call for tenders
	Surplus allocation (%)	Fraction of cumulative surplus (if any) to current expenditure
Museum	Exhibition (n. of exhibitions)	The number of exhibition organized on average by the museum
	Per Exhibition Contribution (euro/exhibition *per* year)	The average resources spent per exhibition per year
	Concert (n. of concerts)	The number of concerts organized on average by the museum

	Per concerts Contribution (euro/concerts *per* year)	The average resources spent per concerts per year
	Networking expenses (euro/year)	Resources invested in brochures, flyers, and project with local partners
	Surplus allocation (%)	Fraction of cumulative surplus (if any) to current expenditure
	Project with school (n. of Projects)	The number of projects runs by the museum
Restaurants	Unit Price (euro/ customer)	The average price paid by customer
	Markup (dimensionless)	The ratio between the price of and its cost
	Working days per year (days/year)	The average number of working days in a year
	Networking expenses (euro/year)	Resources invested in brochures, flyers, and project with local partners
	Personal Income (euro/year)	Amount of resources taken per year (from bank account) as personal income by the owner
	Maintenance reduction fraction (%)	The percentage of obsolescence tolerated by the owner
	% of bank account to invest (%)	The fraction of new investment financed through restaurant funds(the rest fraction through the back loan).
	New investment switch	Decision to invest in expanding capacity

During the 1st phase, a non-cooperative scenario was set. Each policy-maker played the ILE individually, while the other two decision-makers followed self-serving pre-defined decisions. The simulation time horizon was set in twelve years, with four intervals of 3 years each. We decided to use such a time span to take into account the possibility to create attractions and to expand hospitality capacity.

During the 1st phase each decision-maker was informed of the non-cooperative scenario under which he/she run his current policies. In this 1st phase, they experienced unexpected poor results. Notwithstanding their strategic objectives encompasses overall system results, in the debriefing session, it clearly emerged

that each decision-maker was looking for the causes of poor results only within their own organizational boundaries[57].

The 2nd phase began with a brief discussion about the cooperative scenario mode where each the decision-maker had to set his policies simultaneously. Decision-makers started cooperative simulation by using prudential policies. After each time interval, results were improving, and thus decision-makers strengthened their policies gradually.

The final debriefing is the last phase of the workshop. It closes the double-loop learning as it opens the participant's minds to shift from a fragmented and static approach to a holistic and dynamic perspective. During the discussion participants were asked to comment their decisions and to give an explanation of the 2nd simulation's results. The cooperative simulation triggered the learning process among decision-makers. Key issues were discussed during the final debriefing. They included tourists reaction to events and exhibitions, customers behavior to markup and price changes, financial resources shortage as well as time delays in long-term investments. The following section concerns the structure and behavior analysis (Davidsen, 1991; Güneralp, 2004) of the simulation outcomes.

## 7. Outcomes discussion

The purpose of the educational package was to support policy-makers in understanding coordination as a relevant issue to increase the flow of tourists to the destination. This section discusses the results[58] of two simulation scenario.

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[57] Each participant wrote his comments in a individual workbook.
[58] Full simulation results can be found at https://goo.gl/TlSc8U

First of all, it is important to describe the main feedback loops[59] underlying simulation results. Figure 7.5 portrays the most significant feedback loops.

Figure 7.5 The causal loop diagram

A first positive loop relates to the improvement of the image of Castelbuono. An increase in the tourist presence generates more value for local area organizations. Therefore, the Municipality and the Museum produce more events and exhibitions, while the restaurant provides fine dining. These factors, in turn, improve the image of the town. An improved image determines – all other conditions being equal – an increase in the tourist presence (R1).

Tourist presence is sensitive to service quality, which can be enhanced by improving the quality of accommodation services (R2). The growth of tourist presence (R1, R2) encounters a limit on the saturation of the available capacity (B1). On the other side, events production decreases municipality budget, and thus

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[59] In the field of system dynamics, positive and negative feedback processes are often described via causal loop diagrams that are maps of cause and effect relationship between individual system variables that, when linked, form closed loops. The overall polarity of a feedback loop -- that is, whether the loop itself is positive or negative -- in a causal loop diagram, is indicated by a symbol in its center. A plus sign indicates a positive loop and define a self reinforcing process; a large minus sign indicates a negative loop and represents a goal-seeking behaviour (see Sterman. 2000. Business Dynamics: Systems Thinking and Modeling for a Complex World. Boston: Irwin/ McGraw-Hill.)

the services to the community. A lower level of services to community causes a reduction in service quality (B2). At the same time, higher the tourist presence, lower the service adequacy (B4), whenever the decision-makers do not increase the cleaning and urban planning service level. The quality of accommodation services, as well as the investments in capacity by the private sector, are strongly affected by the desired restaurant owner personal income. The personal income drains the restaurant resources (B3).

Capacity saturation can be reduced through private sector capacity investments (R3), that in turn increases the possibility to accommodate more tourists. On the other side, Municipality can increase the attractions – by making investments – in order to enhance the attractiveness of the town (R4).

Figure 7.6 links the simulation results to the loops dominance over time. The graphs display the effect variable (solid lines) and its two main determinants (dashed and dotted lines). The first three graphs refer to the above mentioned individual simulations, while the last graph relates to a cooperative scenario where decision-makers run a joined-up simulation.

By comparing the non-cooperative with the cooperative simulation, we can clearly observe a results improvement. In the cooperative scenario, decision-makers promptly counteracted signs of crises, strengthening long-term policies, collaborative decisions, and weakening individual and short-term benefits. During the final debriefing, a participant said "I found that small town complexity, should also be managed through further collaborative policies." As we expected, the learning process was reinforced by the final debriefing, indeed "learning about system behavior is not a spectator sport, one must participate and learn by doing" (Forrester, 1968: W1-2).

Figure 7.6 Simulation scenario, results and loop dominance

Non Cooperative Scenario

— Tourism Presences (Y1)   -- Service Quality (Y2)   · Town Image (Y2)   Municipality Simulation

Time interval (years)	Loops Dominance
1 - 4	R1, B3
4 - 8	B1, B2, B4
8 - 12	R2

— Tourism Presences (Y1)   -- Service Quality (Y2)   · Town Image (Y2)   Restaurant Simulation

Time interval (years)	Loops Dominance
1 - 3	B4, B3
3 - 6	R1, B4
6 - 12	B4, B2

— Tourism Presences (Y1)   -- Service Quality (Y2)   · Town Image (Y2)   Museum Simulation

Time interval (years)	Loops Dominance
1 - 4	B2, B3, R2, B4
4 - 8	R1, B2, R2
8 - 12	R1, B4

Cooperative Scenario

— Tourism Presences (Y1)   -- Service Quality (Y2)   · Town Image (Y2)   3 players simulation

Time interval (years)	Loops Dominance
1 - 3	R2, B3
3 - 7	R1
7 - 12	R4, R1, B1, B4

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8. Conclusions

By playing the "Dynamic Tourism Governance" educational package, decision-makers learned how to design sustainable growth policies in a complex and dynamic environment, perceiving time delays between decision and results. They also reshaped their own mental models discussing interdependence between different institutions. Lastly, they understood that governance is crucial to managing small town shared resources, and to foster coordination.

This paper has used an educational package to support policy-makers in understanding the relationship between structure and behavior of small town governance setting. It still needs to develop further, facilitate and integrate of such understanding into the broader decision-makers knowledge.

DISCUSSION AND CONCLUSIONS

The aim of this doctoral thesis is to show how dynamic performance management may enhance the governance of local areas and support policy-makers in outlining sustainable policies.

Traditional elements of bureaucracy have been progressively dismissed in favor of management tools and techniques from private organizations. Native concepts of the private sector such as users satisfaction, performance, effectiveness, efficiency, were also included within the scope of public sector organizations. This innovation characterizes the evolutionary pattern of management model of public sector organizations.

New public management reforms appeared to be limited to intra-organizational aspects, while the increasing complexity of societal challenges was demanding for a more responsive system. Public governance has changed the public sector by attempting to connect the internal with the external view of performance. Such a model have also shifted the perspective of results from input and process to the outputs and outcomes of public policies. Public administration scholars – from the early 2000s – increasingly focused on the inter-institutional nature of governance also stressing implementation issues.

This thesis identifies two strands in which research in public management may give a contribution: the first concerns the management of the outcomes of local areas, the second is about the introduction of principles, the implementation of processes and mechanisms, which enhance the governance of local areas. Both domains converge into the design of performance management systems for local areas which enable decision-makers to assess policies' sustainability.

In order to manage performance, the inter-institutional governance should frame the results of a local area as a multidimensional concept which includes competitive-economic, social, and environmental target. Performance management systems may support the organizations located in a local area if they

embody inter-institutional outcome indicators. In this way, both the organizations and the local area have the same concept of performance and hence performance management systems enhance the inter-institutional governance in managing shared resources sustainably.

The accumulation and depletion processes of shared resources involves the management of complexity, particularly when the long term implications of policies are to be assessed. Organizations may address these challenges by matching performance management systems with System Dynamics models.

Figure C.1 Assessing performance sustainability through dynamic performance management
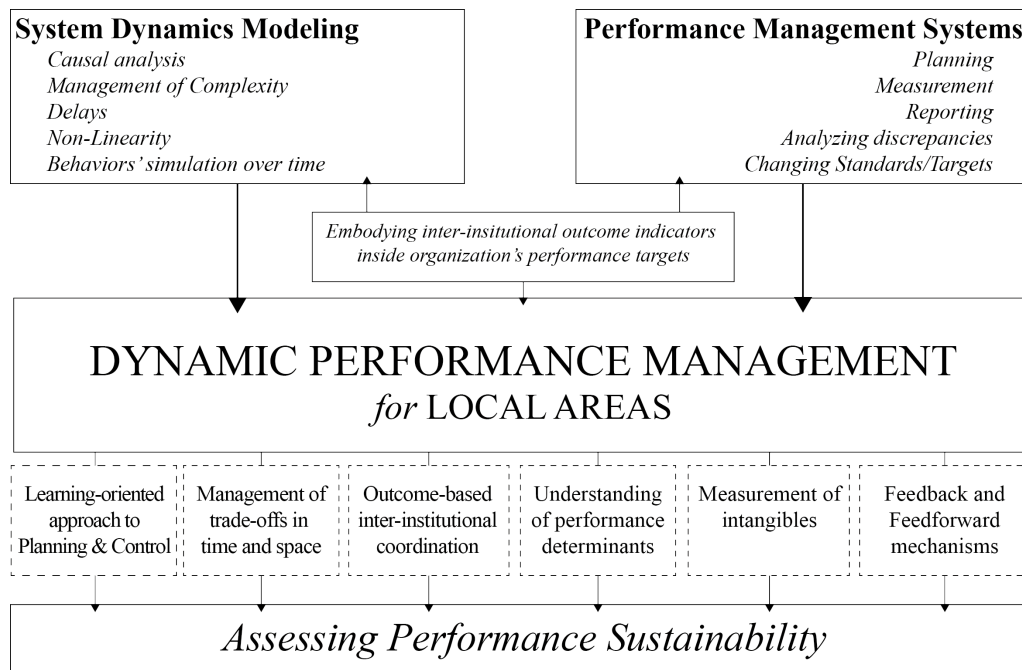
Figure C.1 synthetically profiles the benefits of adopting dynamic performance management for local areas. In such a way, dynamic performance management helps organizations in mapping (framing the system), planning, implementing decisions/operations, measuring/evaluating results, and undertake corrective actions. By adopting a dynamic performance management approach, decision-makers may frame performance, understand causal explanations of the structure underlying results, outline a strategic plan to achieve the desired objectives,

implement designed policies, and manage performance through feedback and feedforward mechanisms.

Dynamic performance management for local areas blends the benefits of using System Dynamics modeling with the methods of performance management systems. In defining the purpose of both side, it suggests embodying inter-institutional outcome indicator within the performance management targets of local area 's leading organizations. In this way, decision-makers may understand how institutional, and local area's results affect each other and it is possible to enhance the governance of a local area.

Two studies support these findings. A case study – discussed in chapter 4 – adopted an outcome-based dynamic performance management to frame the sources of the image of a local area. By analyzing the dynamics of tourism-related variables, the study critically discussed the result of the district. Moreover, it noticed that only few input indicator constitutes the practice of current performance measurement of the local area. The qualitative research turned out in the identification of four factors which describe the sources of the image of a local area. To this end, an outcome-based dynamic performance management chart was sketched. It supports policy design by fostering coordination and consistency in strategic planning at the inter-institutional level, and by focusing on the impact of drivers on the local area's outcome, organizational performance management in the implementation.

The analysis suggested that dynamic performance management may be a framework for assessing the sustainability of policies when it maps the accumulation and depletion processes of shared strategic resources, and provides insights on the connection between outputs and outcomes, though outcomes do not represent a direct result of outputs, but rather their effects.

The outcome-oriented view of performance was further enriched by an in-depth understanding of system's performance development over time. A System Dynamics model – discussed in chapter 5 – explained the effect of the image on tourism. Simulations show that investing in promotion campaigns and capacity

building is not a sustainable policy in the long-run. By following Forrester (1994: 245) recommendation: "understanding comes first, but the goal is improvement," the model was used to test two alternative policies. The model teaches that the match between the message promotion campaigns and the experience tourists have with the real contexts, matters in the long run. Indeed, a second simulation shows that the advertisement spending took over as the system's performance. This unintended effect is due to a structural characteristic of a system, which works to counteract the policy change designed to improve its behavior. A significant outcome of the model come from a third simulation, which has produced long-term sustainable results through a "Recovering land policy."

A System Dynamics-based interactive learning environment was used – within the action research presented in chapters 6 and 7 – to support the decision-makers of a small town to understand the relevance of governance and policy coordination to outline sustainable policies.

Chapter 6 covers challenges in designing a System Dynamics-based Interactive learning environment for the governance of Castelbuono area. The design of educational package requires keeping as clear as possible the learning outcome. This issue involves each stage of the action research process. The interactive learning environment is a means to embed the participants into a reflective process. However, such a process need to be reinforced. Decision-makers must understand the discrepancies between the "theory-in-use" and the "espoused theory". The learning process should support them in distinguishing what they decide from what they actually think.

Chapter 7 presents the action research. It has considered a two-step process. By looking at the results (both simulation and surveys) when supported to collaborate decision-makers counteracted signs of crises, and designed long-term policies. They also weakened individual and short-term benefits.

This doctoral thesis presented dynamic performance management a method to enhance the governance of local areas. By applying System Dynamics for performance management, local areas may address some of today's' challenges

e.g. tourism, urban planning, economic development, migrations, and disaster management. It can be adopted either for policy-making and as a method to support organizational learning.

Dynamic performance management for local areas frames performance by connecting institutional and inter-institutional performance; it points out feedback analysis involving results, performance determinants, and strategic resources. Dynamic performance management presents outputs of analysis either through behavior over time and qualitative modeling capable to gives meaningful insights into endogenous causes of behavior.

APPENDIX

The links below allow you to download the models described in this thesis. Both models are property of the author and they released under Creative Commons license v 4.0 with the following terms.

 Terms summary here

In order to run the model you need to install the player. The freeware release of Stella Player can be downloaded from the iseesystems website.

Please follows the links below.

 Download StellaPlayer

 Download the model

 Download the ILE

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