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Goal modelling for strategic dependency analysis in destination management

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Abstract:

***Purpose**: The paper suggests goal modelling as a method for the strategic analysis in tourism destinations. Destination management is quite complex and challenging and requires deep understanding of the intentions, the roles and the strategies of the various stakeholders.*
***Methods**: This paper identifies the challenges and major issues of destination management, evaluates the capacity of goal modelling to address them and demonstrates the use of goal modelling for stakeholder and strategic analysis.*
***Results**: The paper provides a holistic, multi-level modelling approach that begins with stakeholder analysis, continues with the analysis of strategic dependencies between stakeholders and ends with the analysis of the strategic alignment of the Destination Management Systems. Goal modelling is used for the analysis of the roles and functions of stakeholders, the analysis of the interdependencies between stakeholders in terms of goals, tasks and resources, the selection between alternative business configurations, and the business model and strategic analysis.*
***Implications**: Three important issues of destination management are addressed: stakeholder analysis, strategic dependency analysis, and strategic alignment of information systems. The formalism of goal modelling can provide rigor and visualization in the analysis of the complex relationships in destination management.*

Keywords: *Destination management, destination management systems, goal model, strategic dependencies, stakeholder analysis, strategic alignment.*

JEL Classification: *L1, L8, M1*

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1 INTRODUCTION

Tourism is a cross-road business domain of several sectors and activities that are organized at the level of destination (Fyall and Garrod, 2020). Destinations are characterized by the geographical proximity of the tourist service providers and their collaboration and sharing of resources in order to deliver valuable tourist experiences (Fyall et al., 2012; Bornhorst et al., 2010). Destination success requires the collaboration of tourist service providers, who pursue the accomplishment of both individual and common goals (Laesser and Beritelli, 2013). Competition takes place firstly at the level of destination, aiming at persuading tourists to visit the destination, while the competition between the tourist service providers takes place at a next stage.

Destination management refers to the structures and procedures required for the integration of the various resources of the tourist service providers for the configuration of destination-level tourist services and the coordination of the activities of stakeholders and service providers for the development of a common or at least a coherent image and experience for tourists (Fyall and Garrod, 2020; Pearce and Schänzel, 2013; Haugland et al., 2011). Destination management is extremely challenging, not only because of the great number of tourist service providers and other

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stakeholders, the diversity of tourist services and activities and the fragmented nature of service provision, but additionally because tourist service providers must collaborate and coordinate their actions for the achievement of both common (i.e. attract tourists in the destination) and individual goals (i.e. be chosen over competitors in the destination). Successful destination management requires effective information systems that are aligned with the strategic priorities of the destination, support the requirements of destination management and respect the roles and the goals of the stakeholders. Destination Management Systems (DMSs) integrate and provide information about resources and services, support the collaboration and coordination of actions among the destination partners, promote the destination to potential tourists and enable tourists purchase tourist services (Estevao, 2014; Sigala, 2013).

These challenges of destination management that derive from the irregular mix of collaboration, coordination and competition implies that a variety of dependencies exists in the strategies, the operations and the resources of the tourist service providers. This situation makes destination management a complex and challenging issue that is governed by a variety of forces and requires the deep understanding of the motivations, the intentions and the behaviors the various stakeholders (Fyall and Garrod, 2020).

This paper seeks to address these challenges of destination management for the analysis of the forces that govern collaboration, coordination and competition at destinations by focusing on the analysis of the interdependencies between stakeholders. In particular, the paper seeks to examine the role of stakeholders in destination management in relationship to other stakeholders, the collaborative and competitive behaviour of stakeholders for the achievement of common and individual goals and the interdependencies among stakeholders in their goals and in the coordination of their activities. The paper also seeks to support the strategic alignment of the key decisions of destination management with the development of DMSs and other 'smart' information systems that support destination management and coordinate and promote the operations of the stakeholders.

For this we employ goal modelling, a requirement engineering approach that uses goals as the key concept for the elicitation, analysis and modelling of the intentional behavior of stakeholders (Yu, 1997). Goal modelling helps analyze the complex relationships between stakeholders and reveals the various interdependencies, the potential conflicts in their intentions and behavior and the requirements for collaboration for the accomplishment of common or individual goals (Yu, 2001). This way, goal modelling illustrates the collaboration and the contributions that can be necessary for the fulfilment of the goals and supports the exploration of solutions and the experimentation with alternatives. Goal modelling can be used beyond software engineering, for business modelling and strategic analysis in multi-stakeholder business environments and for the strategic alignment of information systems (Goncalves et al., 2018). In the recent years the interest for goal modelling has been increased significantly (Horkoff et al., 2019; Gonçalves et al., 2018), because the ultimate criterion for system success is their capacity to meet the goals and address the concerns of the users and other stakeholders.

The paper demonstrates the use of goal modelling for stakeholder and strategic analysis in destinations and for the analysis of the strategic alignment of DMSs and other information systems. Stakeholder and strategic analysis has business orientation, refers to the business requirements for the improvement and the successful implementation of destination management and supports the better understanding of the intentions, the roles, the strategies, the behavior and the interdependencies among the stakeholders in tourist destinations. In particular, the paper demonstrates the use of goal modelling for the strategic dependency analysis of stakeholders, the analysis of their roles and functions, business model analysis, the analysis of alternative business configurations, and collaboration analysis. The analysis and design of DMSs has a system orientation and supports the better understanding of the requirements and the operations of DMSs as multistakeholder and collaborative systems and the strategic alignment of destination management and DMSs.

2 DESTINATION MANAGEMENT: CHALLENGES AND KEY ISSUES

Destination management is usually performed by Destination Management Organizations (DMOs) that have strategic, marketing and coordinating responsibilities (Bornhorst et al., 2010). Their tasks include the development of the strategic development plan for the destination that designates and arranges the tourism activities and attractions in the destination, the development of the communication and promotion plan that builds the common image of the destination, and the development of sales systems that support selling tourist services in an integrated and coherent way (Estevao et al., 2020; Almeyda-Ibanez and George, 2017; Laesser and Beritelli, 2013). DMOs have a decisive role in the development of collaboration among the tourist service providers, the coordination of their activities and the management of stakeholder relationships (Estevao et al., 2014).

Destinations require effective information systems in order to fulfil their objectives. DMSs are the main type of information systems that support destinations management (Bedard et al., 2008). A DMS is an inter-organisational information platform that supports the operation of DMOs and addresses the needs of both tourists and tourist service providers (Sigala, 2013). In particular, a DMS supports a DMO to perform the day-to-day operations more efficiently and effectively by integrating all information about resources, products and services of the destination in one place and concentrating customer inquiries and demand for the destination (Le et al., 2021). In addition, they foster coordination of actions and collaboration amongst the numerous destination partners and stakeholders (Sigala, 2013; Estevao et al., 2022). In the era of smart tourism and with tourists becoming more knowledgeable and demanding, DMSs have become fundamental for the improvement of the competitiveness of the destinations (Fyall and Garrod, 2020; Femenia-Serra and Ivars-Baidal, 2021) and for maximizing the value for all stakeholders (Buhalis, 2019), especially the small and medium tourism providers who do not have the

resources and the capacity to develop their own systems (Estevao et al., 2020).

According to these, the major challenges of destination management can be classified in five broad categories: a) the effective management of stakeholder relationships, b) the effective collaboration and cooperation between stakeholders, c) the integration of information and resources for the development of integrated tourist offers, d) the strategic development of destinations and the management of the strategic relationships between the partners and stakeholders, e) the strategic alignment of DMSs.

2.1 Stakeholder analysis and management

Destinations are characterized by the multiplicity of the stakeholders, who have an interest in the affairs of the destination, the region or the local community, affect the provision of tourist services or are affected by the tourist activities that take place in the destination. Next to the principal tourist service providers, such as accommodation, transportation, attraction and entertainment providers, destinations concentrate a great number of other stakeholders, with particular interests and objectives. For instance, the residents in local communities (Laesser and Beritelli, 2013), who are affected dramatically especially in situations of over-tourism (Fyall and Garrod, 2020), the employees in tourist establishments, local commercial stores and trade associations, activist groups, regional and national government bodies and policy makers, educational and research institutions, etc. (Sigala, 2013). In fact, the importance of the role of these non-business stakeholders for destination success is increasing in the last years (Mandic and Kennell, 2021).

Tourism, as a fragmented sector with major interdependencies, favors the conceptualization of the destination as a network of stakeholders with multiple and complex relationships (Heidari et al., 2018) and the study of destinations as business networks and business ecosystems has gained great interest in the literature. Destinations operate like business networks of tourism providers and stakeholders who are linked together, collaborate in order to attain both individual and common objectives and interact in a coordinated way, with the actions of each member affecting the others (Manente and Minghetti, 2006). Destinations as business ecosystems build on the concept of ecosystems as environments that host a variety of species that share resources, face a mutual fate, need to collaborate and support each other in order to achieve common goals, but also compete with each other for the acquisition of the sparse resources and the accomplishment of individual goals (Fragidis et al., 2007).

2.2 Collaboration and cooperation between stakeholders

Collaboration is necessary in order to support tourists to develop valuable experiences through the integration of various tourist services from different providers. The concept of collaborative destination management is widely advocated in the literature as an effective way for designing and implementing tourism development strategies that cater for the different interests of the stakeholders (Sigala, 2013; Wang and Xiang, 2007). There are various types of collaborative destination management models, e.g. Wang and Xiang (2007) suggest a framework of different forms that includes affiliation, cooperation, coordination, collaboration and strategic networks.

2.3 Integration of information and resources

Integration of information and resources for the development of integrated tourist offers. Tourist services should be delivered in an integrated way in order to meet tourists' expectations and develop valuable experiences (Laesser and Beritelli, 2013; Bornhorst et al., 2009). Destination management coordinates and integrates the efforts of the various tourist service providers to address the needs of particular customer segments in order to develop complementary offerings and integrated solutions that create valuable experiences (Ndou and Petti, 2007; Erschbamer, 2020). In particular, DMSs concentrate all the information about the resources, the activities, the opportunities and the offers in the destination and allow customers to search for information, plan their visit by integrating different resources and activities and purchase tourist services (Estevao et al., 2014; Sigala, 2012).

2.4 Strategic development of destinations

Destination management aims at the development of the destination as a whole, by taking into account the needs of all the stakeholders and fostering collaboration and coordination among them (Fyall and Garrod, 2020). The diversity and the fragmented nature of tourist services, the particular competitive structure in destinations, and the need for sharing resources and collaborating with others have induced the study of coopetition in tourism destinations. Tourist providers must collaborate with each other in order to offer integrated solutions to tourists and enhance their value and experiences, while at the same time they compete with each other in the destination in order to attract the interest and receive the preference of tourists (Chim-Miki and Batista-Canino, 2017; Wang and Xiang, 2007). Collaboration and coopetition is a matter of business mindset, with firms developing more collaborative or more competitive attitudes according to their strategic disposition and understanding of the role of other firms in their business (Czakon and Czernek-Marszałek, 2021). Hence, DMOs have the responsibility to develop the right mindset that favors collaboration, rather than competition, for the success of the destination in total. Grauslund, and Hammershoy (2021) describe the characteristics of passive, reactive, and proactive patterns of coopetition in destinations.

2.5 Strategic alignment of the destination management systems

DMSs must be well-aligned with the strategies of the destination in order to be able to address the major challenges of destination management. The most important functions of DMSs refer to their capacity to foster participation in destination management procedures, support strategic development at destination level and support collaboration and the coordination of actions for the implementation of the strategic action plans (Bédard and Louillet, 2008). DMSs serve as an information system for increasing customer awareness and motivation, a distribution channel for the execution of reservations and purchases, a customer relationship system for the development of loyalty and long-lasting relationships with the customer, a strategic

management system for the strategic development of the destination, and an inter-organizational information system for the coordination and collaboration of tourism providers (Sigala, 2013; Wang, 2008). The development of DMSs faces the collaborative and organisational challenges of the development of inter-organisational systems and requires the adoption of multi-stakeholder approaches (Sigala, 2013).

3 GOAL MODELLING

Goal modelling is an early-phase requirements engineering method that studies the role of the system with regard to its environment and focuses on the needs and the concerns of the stakeholders (van Lamsweerde, 2000). It uses goals as the major concept for the elicitation, analysis and modelling of the intentional behavior of actors, i.e. stakeholders, and supports the better understanding of the motivations, the intentions, the business rationale and the strategic dependencies among stakeholders. Goals are the high-level objectives of the actors, or states of affairs that the actors wish to achieve. Actors are 'social' and 'strategic' (Yu, 1997), in the sense they are seeking opportunities to achieve their goals, but their operation relies on the effective interaction and collaboration with other actors. By depending on others, actors may be able to achieve goals that are difficult or impossible to achieve by their own, or on the contrary they may fall short in their intentions because other actors deny or fail to deliver their contribution.

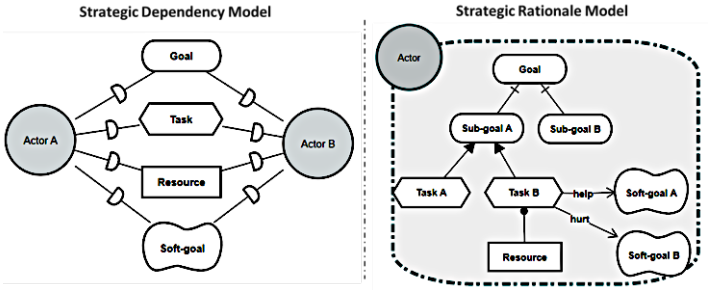
3.1 The i* goal modelling method

There are several goal-modelling approaches. The paper employs the i* (i-star) method (Yu, 1997) because it is a well-established and widely-practiced approach (Horkoff et al., 2019) that has been used for strategic dependencies analysis beyond software engineering. The i* can be used for the identification of the motivation ('why') of what is happening and also for the description of the business rationale ('how') for the satisfaction of the actors' motivation.

The i* method analyzes first the strategic relationships among actors with the Strategic Dependency (SD) models (Yu, 1997), which represent actors with goals and dependencies on other actors, i.e. what actors require from other actors in order to achieve their goals. There are four types of dependency relationships: a) an actor can depend on other actors for the achievement of goals (goal dependency), b) the execution of tasks (task dependency), c) the acquisition of resources (resource dependency), and d) the achievement of some quality standards (quality dependency). The method proceeds with the development of Strategic Rationale (SR) models, which reason for the identified strategic dependencies by analyzing the relationship between goals, tasks, resources and softgoals and explore ways for achieving goals. There are three types of relationships: a) decomposition, b) means-end, and c) contribution relationships. A decomposition relationship links hierarchically goals and tasks, revealing their structure into higher-level and lower-level goals or tasks. A means-end relationship refers to the means (tasks or resources) that contribute to the achievement of an end (goal or task). It can be an Inclusive ('And') or Exclusive ('Or') relationship, indicating the different possible ways to obtain an end. A contribution relationship shows the positive or negative contribution of the execution of tasks on softgoals.

The SD model and the SR model are depicted in Figure 1. The SD model represents that Actor A depends on Actor B for the achievement of a goal, the execution of a task, the acquisition of a resource and the achievement of a soft-goal. The SR model represents that the Actor has a (major) Goal that is fulfilled by the accomplishment of Sub-goal A and Sub-goal B (inclusive decomposition relationship). Sub-goal A can be implemented in two alternative ways (exclusive mean-end relationship), by executing either Task A or Task B. The execution of task B requires some Resource and contributes positively ('helps') to the achievement of Soft-goal A, while contributes negatively ('hurts) to the achievement of Soft-goal B ('make' and 'break' are other types of contributions that signify extremely positive and negative impact, respectively).

Figure 1: SD and SR models in i goal*



3.2 Applications of the i* goal modelling for stakeholder and strategic alignment analysis

The i* goal modelling method helps analyzing the complex relationships between stakeholders, reveals the interdependencies between them and the potential conflicts in their intentions and behavior, supports the exploration of potential solutions and elaborates the collaboration and contributions that can be necessary for the fulfilment of the individual and common goals (Yu, 2001). All these situations are effective in destination management; therefore, this paper advocates the i* as a method for the analysis of the strategic development requirements and the collaboration challenges of destination management.

In the recent years, the interest for goal-oriented modelling approaches has increased significantly because the ultimate criterion for system success is the capacity to meet the goals and address the concerns of the users and other stakeholders (Horkoff et al., 2019). Goal modelling can be used beyond software engineering, for business modelling and strategic analysis in multi-stakeholder business environments and for the strategic alignment of information systems. Business analysts have shown increased interest for the analysis of requirements with goal-oriented modelling in several fields (Gonçalves et al., 2018). Next, we review certain applications of the i* goal modelling method for addressing the issues that are related to the requirements and challenges of destination management that have been identified in the previous section.

a) Stakeholder management. Goal modelling has been applied for stakeholder analysis, especially for addressing the challenges of designing and operating multi-stakeholder distributed systems. Clotet et al. (2007) applied goal

modelling to the analysis of DMSs as a typical example of multi-stakeholder distributed systems for resolving conflicts and improving the operation of the organization; their approach is mostly technology-driven and focuses on the needs of system engineering, while in this paper we suggest a management-driven approach.

b) Collaboration and cooperation between stakeholders for the development of integrated offers. Value creation requires the collaboration with different stakeholders and goal modelling can serve to the understanding of the interest and the intentions of the stakeholders, the description of their requirements for collaboration and the resolution of the conflicts that may emerge. Adali et al. (2021, 2020) analysed goal dependencies between actors for the co-creation of service value. They modelled value co-creation with the i* SD Model in order to represent the stakeholders, elicit their goals, analyse goal dependencies and map their capabilities, and the i* SR Model in order to decompose each actor's value proposition and co-contribution activity into dependencies with other actors. Henkel et al. (2011) used goal models as the bridge that connects business value concepts with the design of e-services, that require flexible collaboration with customers and providers. Suhaib (2019) employed goal modelling for the identification and resolution of conflicts among stakeholders in the execution of tasks.

c) Strategic analysis. The strategic analysis of business environments is a major field for the application of goal modelling. Carvallo and Franch (2012) analysed common competitive patterns in business situations that derive from Porter's 5 Forces Model. Giannoulis et al. (2011) analysed interdependencies that derive from Kaplan and Norton's concepts of strategy maps and balanced scorecard. Samavi, Yu and Topaloglou (2009) proposed a business strategy modelling framework for explaining the rationale of strategic decisions in multi-stakeholder business environments. In a similar way, Pant and Yu (2018) studied the refinement of strategies into lower-level strategies and tactics and suggested a method for the development and selection of strategic alternatives. They also studied coopetition in strategic relationships in order to understand the impact of coopetition relationships on the design of information systems (Pant and Yu, 2019).

d) Strategic alignment of information systems. Goal modelling has been used widely for the investigation of the strategic alignment between business strategy and information technology. Singh and Woo (2009) studied the stakeholders' ability to relate their tasks to the strategic goals of the firm. Babar and Wong (2011) analysed the impact of stakeholders on the development of information systems and employed goal modelling to resolve any conflicts in the goals and requirements of the organisation and the stakeholders. Giannoulis et al. (2013) analysed the relationship between business strategy and consumer preferences.

4 GOAL MODELLING FOR STRATEGIC ANALYSIS IN DESTINATION MANAGEMENT

Goal modelling can be used for the analysis of the strategic and the operational relationships between stakeholders in destination management. It can be useful for the better understanding of the motivations, the intentions, the business rationales and the strategic dependencies between stakeholders that will improve the management of destinations and will support their strategic development. It can also support the strategic alignment of DMSs and other 'smart tourism' systems, and their analysis and design as multi-stakeholder systems that are required to reinforce strategic collaboration and coordination of actions. This section demonstrates the application of goal modelling in destination management both for analysis of the stakeholders and their strategic and operational dependencies (in section 4.1) and for analysis of information systems (in section 4.2).

4.1 Goal modelling for stakeholder and strategic analysis

Goal modelling can be used initially for the identification of the stakeholders with a critical role and a clear strategic value for destination management, the determination of their goals and classification of strategic dependencies. In particular, we demonstrate next the application of goal modelling for the analysis of strategic dependencies between stakeholders in destination management, for role and business model analysis, for alternatives analysis for improved decision making, and for strategic analysis with respect to the development of collaborative and co-opetitive relationships.

4.1.1 Stakeholder strategic dependency analysis

The analysis of the strategic dependencies between stakeholders in destination management is extremely important because of the fragmented nature of tourism service provision, the great number of the stakeholders, the multiplicity of their particular interests and the diversity of the relationships that may affect the interests and the activities of other stakeholders. SD Models are appropriate for the stakeholder analysis in destination management, as they represent the stakeholders and the dependencies that exist between them.

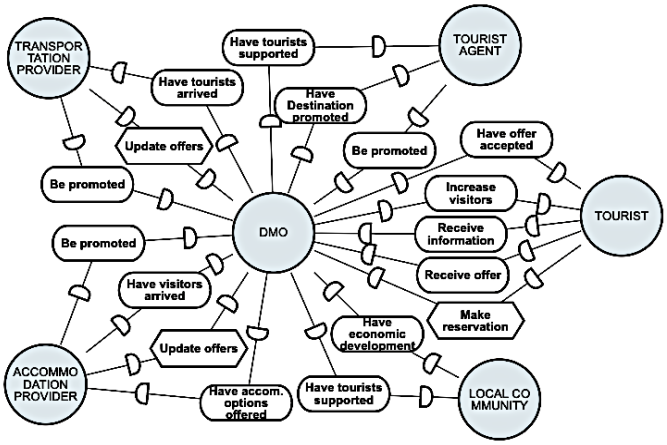
Table 1: Stakeholder strategic dependency analysis

STAKEHOLDERS		DEPENDENCY TYPE	DEPENDENCY DIRECTION	DEPENDENCY DESCRIPTION
DMO	TOURIST	Goal	→	Increase visitors
		Goal	→	Have offer (value proposition) accepted
		Goal	←	Receive information about destination
		Goal	←	Receive offer
		Task	←	Make reservation
DMO	TRANSPORTATION PROVIDERS	Goal	→	Have tourists arrived
		Goal	→	Have updated & valid information
		Goal	←	Have routes promoted to tourists
		Task	←	Update information and offers in the DMS
DMO	ACCOMMODATION PROVIDERS	Goal	→	Have accommodation options offered
		Goal	←	Have visitors in the destination
		Goal	←	Be promoted in the DMS
		Task	←	Update DMS information and offers
DMO	TOURIST AGENTS	Goal	→	Have tourist supported
		Goal	→	Have destination promoted
		Goal	←	Be promoted in the DMS
		Goal	←	Be informed of events and offers
		Task	←	Update DMS information and offers
DMO	LOCAL COMMUNITY	Goal	→	Welcome and support tourists
		Goal	←	Achieve economic development
		Goal	←	Promote heritage

Table 1 provides information for the strategic dependency analysis with respect to some major stakeholders in destination management: DMOs, Tourists, Accommodation Providers, Transportation Providers, Attractions Providers, Tourist Agents and the Local Community. It describes the type of the dependency (i.e. goal, task, resource, or soft-goal), the direction of the dependency (who depends on whom) and the description of the dependency. The analysis is focused on the strategic dependencies between the DMO and the other major stakeholders (for reasons of simplicity and limited space; according to the particular needs in each case, the model can be expanded with the inclusion of additional stakeholders). Goal dependencies dominate normally in the initial phase of analysis, because it is the most basic type of strategic dependency; other types of dependency between stakeholders appear usually later (e.g. in SR Models), as detailed knowledge is introduced.

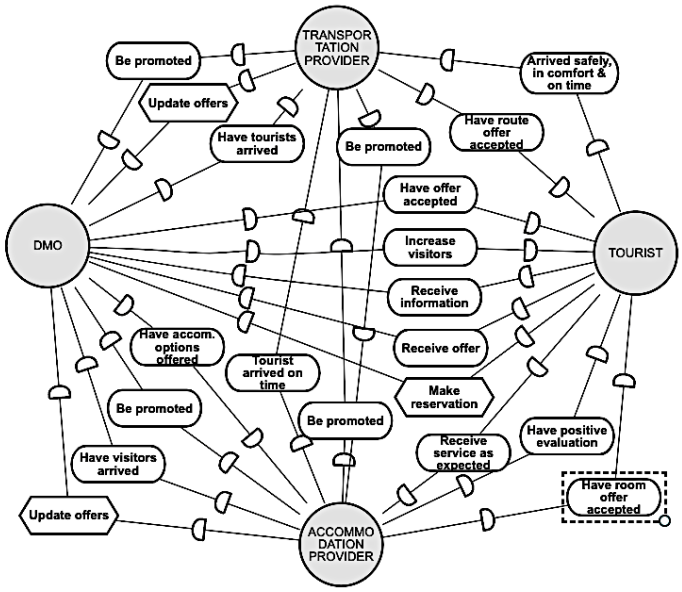
Based on the information of table 1, Figure 2 represents the SD Model for the DMO, that provides the perspective of the DMO in stakeholder analysis. The model describes in a visual way the stakeholders that are related to and affect or are affected by the operation of the DMO and the goal/ softgoal, task and resource dependencies between the DMO and these stakeholders. The model demonstrates in a clear and direct way the multiple goals of the DMO and the stakeholders, reveals the interdependencies in the achievement of these goals and highlights the central and orchestrating role of the DMO in destination management. It reveals also multi-level dependencies, such as in the case of increasing the number of visitors in the destination: the DMO depends on Tourists to increase the number of visitors in the destination (their willingness to visit the destination) and on Transportation Providers to have tourists arrived in (transferred to) the destination, while the Accommodation Providers depend on the DMO to have tourists arrived in the destination. A similar example of a multi-level dependency exists in Figure 2 with regard to the goal of Tourists to receive information about the destination, as the DMO requires that Transportation Providers and Accommodation Providers update regularly their offers, so that the information for the tourist is collected orderly.

Figure 2: the SD Model for the DMO



Goal modelling can zoom in and out to support stakeholder analysis from different points of view and with different objectives. Figure 3 provides a SD Model that represents the interdependencies amongst DMO, Tourist, Transportation Provider and Accommodation Provider. In addition to the information depicted in Figure 2, this model includes the direct relationships between Tourists, Transportation Providers and Accommodation Providers. For instance, Tourists seek to arrive safely, in comfort and on time and receive service as promised and expected, while the Transportation Providers and the Accommodation Providers depend on Tourists to have their offers accepted (in order to make sales). The Accommodation Providers and the Transportation Providers have direct dependencies with each other on certain issues; for instance, Accommodations Providers depend on Transportation Providers to have Tourists arrived on time, while Transportation Providers depend on Accommodation Providers to have their services promoted to Tourists.

Figure 3: The Multi-Stakeholder SD Model



The development of SD models, both when they represent the view of a single stakeholder or when they provide a market-wide and multi-stakeholder view, can reveal the complexity of destination management. They can help identify relationships that provide mutual benefits and form the basis for collaboration or bring conflicts and can cancel the collaboration between stakeholders. In addition, the identification and understanding of multi-level dependencies that derive from indirect relationships between stakeholders is critical because such dependencies reveal pre-requisites or conflicts in the accomplishment of goals that may be hidden or not explicit. In sum, SD Models can serve as the basis for the development of coherent strategies in destinations, the building of collaborative relationships between stakeholders and the establishment of effective coordination mechanisms in the development and execution of strategic development plans.

4.1.2 Role and business model analysis

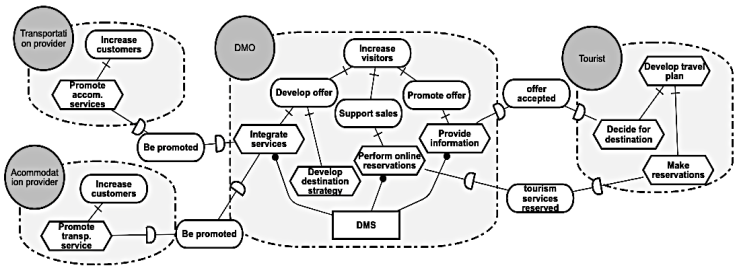
After the development of SD Models, potentially from different angles and with different objectives, we can proceed with the development of SR Models that zoom in the

relationships and the operations of the stakeholders, include both intentional and behavioral characteristics and provide opportunities for an in-depth analysis of stakeholder management. SR Models not only show the major goals of the stakeholders, but reveal also their analysis into sub-goals and tasks that bring about the achievement of these goals, as well as the key resources that are required for the execution of the tasks. Hence, they expose the role of stakeholders in destination management and how it affects the goals and operations of the other stakeholders.

In Figure 4 we provide the SR Model for the DMO with respect to some major stakeholders, such as Tourists, Transportation Providers and Accommodation Providers. The major goal of a DMO is to increase the number of visitors in the destination. This goal can be analyzed in (hence, it is achieved by) three sub-goals: to develop offers for tourists, to promote offers, and to support sales. To achieve these sub-goals, the DMO is required to take particular actions. In order to develop attractive offers, the DMO must develop the destination strategy, that will provide the guidelines for the rest decisions and activities, and also integrate services from the various tourism service providers into tourist packages. The task to integrate services uses the DMS as a resource and requires the contribution from tourist service providers (the Accommodation Provider and the Attractions Provider), who offer their services to be integrated by the DMO, because they want to be promoted by the DMO (notice their internal goal is to increase sales, which can be achieved by promoting their services, amongst else – full analysis of their roles is left out for reasons of limited space).

The sub-goal to promote the offers can be implemented with various activities. In Figure 4 we single out the task of providing information about the available offers through the DMS. Providing information for the destination offers supports the goal of the DMO to have the offers accepted by Tourists, that depends on the decision of Tourists for their destination, taken when they develop their next travel plans. The third sub-goal refers to supporting sales, which is achieved with the execution of online reservations, again with the support of the DMS; online reservations enable Tourists to have the selected offers/ services reserved, which is the goal they want to accomplish when they make reservations in the course of implementing a travel plan.

Figure 4: SR Model for DMOs



The SR model supports the better understanding of the roles, the intentions and the operations of stakeholders and reveals the collaborative and strategic relationships between the stakeholders in destination management. This way, is can provide answers to the most basic questions for the description of a business model: what is a stakeholder doing, why is he doing it (goals and softgoals), how is he doing it (tasks and resources) and for whom/ with whom is he doing it (relationships with other stakeholders who act as customers, suppliers or partners). As a tool that supports business model analysis, the SR Model clarifies the strategic goals, the course of actions and the resources that are required. Stakeholders can use this information in order to recognize competitive advantages or weaknesses in their business models, experiment with different configurations with tasks and resources and think about business model improvement and innovation.

4.1.3 Analysis of alternative options

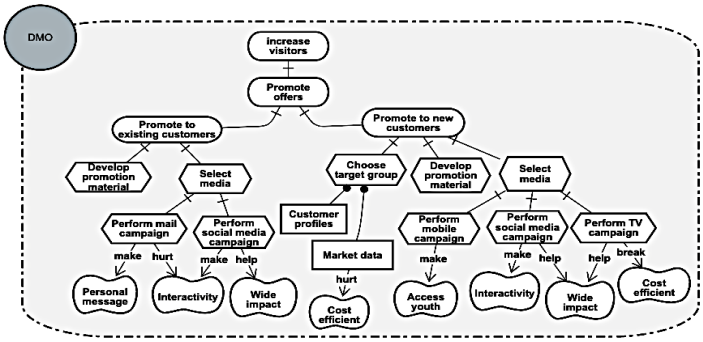
Goal models can be used for the analysis of alternatives in the accomplishment of goals and the execution of tasks and therefore support decisions of strategic management and operations management. For example, Horkoff and Yu (2016) argued recently that i* can address the analysis of 'what if' questions and 'is this possible – how/ why not' questions.

Figure 5 represents an example for the analysis of alternatives regarding the promotion strategy of the destination, as a means to increase the arrival of visitors. The goal to promote offers can be analyzed into promoting offers to existing customers or promoting offers to new customers. It is clear that both these options serve different objectives (e.g. increasing loyalty, or expanding the customer base) and require different implementation plans. The decomposition of the primary goal into sub-goals reveals the alternative ways that are available for the accomplishment of the primary goal. The DMO can decide to pursue only one of these sub-goals, or to pursue both of them (this conjoint option is depicted in Figure 5), according to its strategy and the available resources.

The option to promote to existing customers is implemented by the tasks of developing promotion material and selecting media, with the latter being implemented by different courses of actions, such as by performing a mail campaign and a social media campaign. A mail campaign can bring the big benefit ('make') because of being able to deliver a highly personalized message, but it is restrained ('hurt') by the lack of interactivity with the customer. A social media campaign on the other hand has the big benefit ('make') of developing interactivity with the customer and the moderate benefit ('help') of attaining possibly a higher impact through sharing to personal networks.

The alternative to develop a promotion campaign for new customers on the other hand is implemented by the tasks of selecting target group, selecting media and developing promotional material. The task of selecting target group requires as resources the customer profiles and market data, the acquisition of which is not a cost-efficient option ('hurt'). The task of selecting media is implemented by performing a social media campaign, a mobile campaign or a television campaign. Each of these options has different characteristics and brings different outcomes: a mobile campaign can achieve access to youth, a social media campaign can bring wider impact and increased interactivity with the target group, and a television campaign has a wider impact, but is not cost-efficient.

Figure 5: SR Model for the Analysis of Alternatives



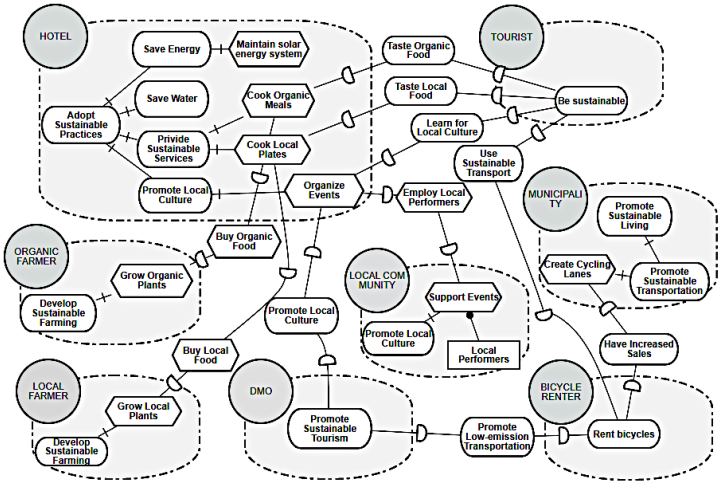
The SR Model can provide a roadmap for decision making that indicates the different options that are available, shows their implementation through different requirements and courses of actions and highlights the expected outcomes that derive from each alternative, taking into account also quality issues and qualitative data. In the previous example, a goal can be achieved by two alternative options, depicted as alternative routes. Each of these options requires the execution of particular tasks and sub-tasks and the use of resources, which can bring different outcomes and satisfy the goals in different ways. The DMO can explore the alternative options and weight their expected outcomes in order to decide for the promotion strategy. For example, the restriction of low-budget would exclude the alternatives that increase the cost of the promotion strategy. Hence, the promotion to new customers becomes less advantageous, because it requires market data that are expensive to be obtained.

4.1.4 Stakeholder collaboration analysis

The SR Model can be used for the analysis and representation of the way stakeholders decide to collaborate and choose partners. By widening the frame, goal modelling can be used for the analysis of collaboration opportunities and co-opetition conditions in destination management.

Figure 6 provides an example for the collaboration that is required among stakeholders for the development of sustainable tourism in a destination. In order to keep the model concise, we include only the necessary elements and relationships for the explication of the use of goal modelling in this example. First of all, notice that sustainability is a common goal for all the stakeholders, which is the reason they all collaborate somehow for the development of sustainable tourism. For instance, the DMO has the goal to promote sustainable tourism, which is analyzed in the sub-goals of promoting the local culture and low-emission transportation (other relevant sub-goals may exist. The DMO depends on other stakeholders (a Hotel and a Bicycle Render) for the achievement of these goals, who organize local cultural events and rent bicycles, respectively. The Tourist has the goal to be sustainable in his vacations, which means (for a particular tourist) to taste organic and local food, learn the local culture and use sustainable transportation (other tourists may have other preferences and goals). The satisfaction of these goals of the sustainable Tourist depends on the services provided by tourist service providers: organic and local food is provided by the Hotel - and probably this is the reason a sustainable Tourist selects a Hotel that adopts sustainable practices (the selection between alternative Hotels that adopt sustainable practices and offer sustainable service is discussed in the next model, depicted in Figure 7). In a similar way, the Tourist selects the Bicycle Render because cycling is a sustainable way of transportation. The Hotel adopts sustainable practices in various aspects of its operations (energy and water consumption, services, tourist entertainment, etc.) and depends on Organic Farmers and Local Farmers for the procurement of organic and local ingredients, as well as on the Local Community for the hiring of local performers that will support the local cultural events. The promotion of environmentally friendly transportation, and particularly in this model the increased revenues for the Bicycle Renter, depends on the initiatives of the Municipality to promote sustainable living and sustainable transportation, that is implemented in this model with the creation and maintenance of cycling lanes.

Figure 6: SR Model for the Analysis of Collaboration

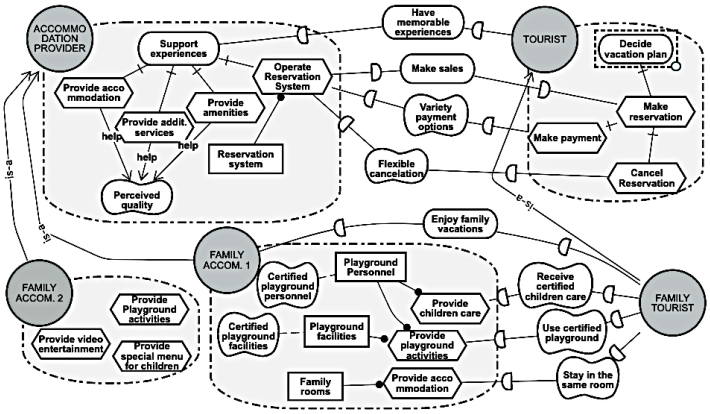


Goal modelling can be used also for representation of the selection among alternative options, that introduces co-opetition in destination management. Figure 7 provides an example for the selection of Accommodation Provider by Tourists. This can be seen as an example of getting into agreement with a stakeholder and choosing the best option among competing offers. In the upper part of the model we have the abstract entities of Tourist and Accommodation Provider with their abstract operations and relationships. It means that this part of the model provides an 'abstract', general pattern for the operations and the relationships between tourists and accommodation providers. According to this general pattern, Tourists have the goal to decide for a vacation plan, which is executed by making reservations, making payments and possibly asking for the cancellation of previous reservations. Tourists require that Accommodation Providers support several payment methods that can meet their particular needs and preferences, and also to provide flexible cancelation policies. The ultimate goal of Tourists is to have memorable tourism experiences, which depends (partially) on the Accommodation Providers. The Accommodation Providers, on the other side, have the goals to make sales and support Tourists develop memorable experiences. The key operations of Accommodation Providers refer to providing accommodation as a core

service, providing additional services (e.g. food), providing amenities (e.g. for relaxation, for physical exercise) and operating the reservation system that supports sales. The execution of these tasks is related to various quality criteria (represented in a general way in this abstract pattern).

In the lower part of the model we have particular entities of Tourists and Accommodation Providers and the model represents their specific goals, behaviors and relationships. The Family Tourist is a particular case of Tourist that seeks accommodation for family vacations. The Family Tourist has all the general characteristics of the abstract Tourist entity, but the dependency goal can be specified into "Enjoy family vacations" and three particular soft-goal dependencies are added to describe the key requirements for this particular Family Tourist ("Receive certified children care", "Use certified playground", and "Stay in the same room"). These particular requirements will serve as the major criteria for choosing the Accommodation Provider. For reasons of saving space, it is assumed this Family Tourist has no other particular characteristics, tasks and resources than the abstract Tourist. In a similar way, the Family Accommodation Provider 1 and 2 are two particular cases of Accommodation Providers that provide services for families. The Family Accommodation Provider 1 performs the tasks 'Provide children care' (with certified playground personnel as a quality characteristic), 'Provide playground activities' (in certified playground facilities) and 'Provide accommodation' in family rooms (derives from the resource 'Family rooms'). The Family Accommodation Provider 1 can meet all the requirements specified as soft-goals of the Family Tourist and can become the Accommodation Provider that will receive the reservation. The Family Accommodation Provider 2, on the other hand, has particular characteristics that do not fit with the requirements of the Family Tourist and therefore he is not chosen.

Figure 7: SR Model for the Analysis of Selection of Partners and Co-opetition



4.2. Goal modelling for DMS analysis

Goal modelling has been developed as an early-phase requirement method for software engineering that emphasizes on the role of the system in its environment, the identification of system requirements and the design of system configurations. Hence, goal modelling can also support the analysis of requirements and the design of DMSs as complex multi-stakeholder and collaborative systems that seek the coordination of the stakeholder activities, as well as other information systems that take an increasingly important role in the age of 'smart tourism'. Information system analysis and design follows the stakeholder and strategic analysis by introducing the role of the information system (i.e. DMS) in the models and relocating the point of interest to the interactions and the impact of the information system to the stakeholders.

Figure 8 provides a SD Model for DMS analysis and design that is based on the model of Figure 2. The DMS is introduced in the model and the relationships with the DMO and the stakeholders are rearranged: now the DMO depends on the DMS in order to achieve the goals of promoting the destination and performing sales, while some of the dependencies between the DMO and the stakeholders from Figure 2 are now transferred and related to the DMS (e.g. the Tourist depends on the DMS in order to learn for the destination and make reservations). The remaining dependencies between the DMO and the stakeholders refer to business relationships that are not affected by the introduction of the DMS.

Figure 8: SD Model for DMS Analysis and Design

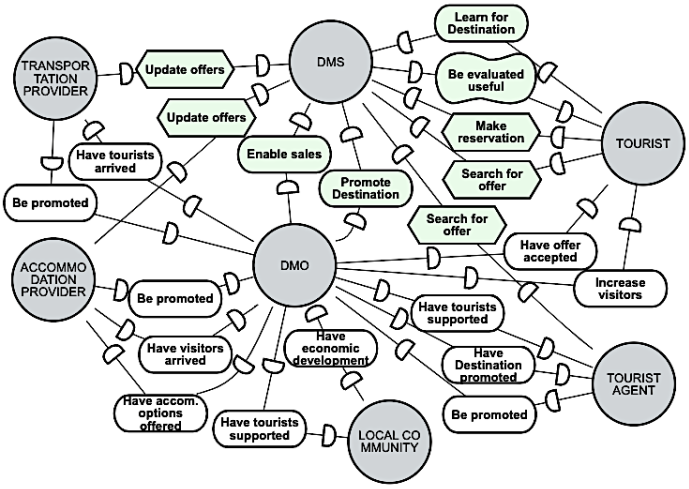
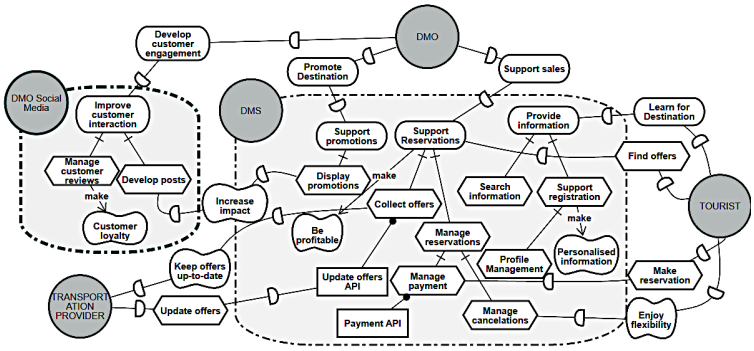


Figure 9 provides a SR Model for DMS analysis and design. This model portrays the objectives of the DMS (support promotions, support reservations and provide information), the key operations (display promotions, collect offers, manage reservations, support searches, etc.), the quality, non-functional requirements (personalize information, provide flexibility, etc.) and the key resources of the information system (the use of a variety of APIs for payments, collecting data from stakeholders, etc.). The SR Model emphasizes on the operations of the DMS and how they support they roles of the destination stakeholders. Additional SR Models can be developed that will provide different views on the role and the requirements of the DMS, such as for the data requirements (data management and exchanges), the technical requirements (relationships with other systems and sub-systems of the DMO and the stakeholders), technological requirements (software technologies and standards that are employed).

Figure 9: SD Model for DMS Analysis and Design



5 RESEARCH IMPLICATIONS AND DISCUSSION

The paper presents the use of goal modelling as a method for stakeholder and strategic analysis in destination management. Goal modelling addresses the early-phases of requirements engineering and emphasizes on the intentions of the stakeholders, hence it can be used for business analysis as well. In fact, the interest for goal modelling has been increased in the recent years and several research works take a business orientation and study the strategic analysis of multi-stakeholder business environments. The paper suggest goal modelling can be used in particular as an analytical tool for the investigation of the strategic and operational relationships in multi-stakeholder systems, as a visualization tool for the graphical representation of these relationships, and as a communication tool for the development of common understanding and for improved decision making. The formalism of goal modelling, as a requirement engineering method, can provide rigor in the analysis of the complex business relationships, especially as concerns the analysis of the roles, the goals and the dependencies of the stakeholders. The paper demonstrates the i* goal modelling method and argues for the benefits it can offer in business analysis. The i* method can help in the analysis of the complex relationships between stakeholders, reveal their interdependencies and the potential conflicts in their intentions and behavior, support the exploration of potential solutions and explicate the collaboration and contributions that can be necessary for the fulfilment of the individual and common goals. All these situations are effective in destination management. Thus, the paper suggests goal modelling can be an pertinent and useful method for stakeholder and strategic analysis in destination management and demonstrates its use in several cases.

The use of goal modelling enhances the research in destination management and development. Destination management and development are important topics in tourism research that face great challenges related to the development of an overall strategy for the destination and the coordination of the objectives and the activities of tourism service providers and stakeholders (Haugland et al., 2011). The new technologies and other socio-economic and cultural impacts make destination management and development an even harder to solve puzzle (Hartman et al., 2020) that requires new and advanced analytical methods and tools for the deep understanding of the intentions, the roles and the strategies of the various service providers and stakeholders and the coordination of their tasks and resources. The variety of the stakeholders, the fragmented nature of competition, the high degree of interdependencies and the interconnectedness of the tourist products and tourists' activities make it very hard to accomplish effective destination management at strategic and operations level.

Goal modeling can support destination management and development as it can provide answers to most of these requirements and challenges. Goal models explicate how stakeholders in destination management strive to achieve their own goals and support others in the achievement of common and individual goals. They support the analysis of strategic dependencies, when the goals of one stakeholder depend on the goals of others, and operational dependencies, when the operations of one stakeholder depend on the tasks or the resources of others.

Goal modelling can be used also to support some novel research approaches in tourism. As a visualization method, goal modelling can support the emerging notion of destination design (Volgger e al., 2019) as an approach that employs the principles of design thinking for gaining fresh understandings of challenges in tourism destinations and for offering innovative solutions. In particular, goal modelling can provide visual representations of the relationships between stakeholders. In a similar way, goal modelling can support strategic storytelling as a method for the communication of the challenges and the development of a common understanding between strategic stakeholders in destination development projects (Hartman et al., 2019). In this case, goal models can be used to represent visually and clarify the strategic and resource dependencies between stakeholders that exist in the various stories employed for destination management. Finally, goal modelling can be appropriate also for studies that employ the strategic mapping for destination development (Palatkova, 2015) by supporting the visualization of the relationships between the objectives and the required resources.

The theoretical contribution of this paper derives from the introduction of goal modelling as an analytical method for destination management and development. The paper addressed three important topics of destination management and development: stakeholder analysis, strategic dependency analysis, and strategic alignment of information systems. Stakeholder analysis is extremely important in complex multi-stakeholder environments, such as destinations. Goal modelling goes to the point of stakeholder analysis and it analyzes the relationships between stakeholders and especially their strategic and operational dependencies and the impact they provoke. It zooms in the multiple relationships between stakeholders, features their characteristics and analyzes their conditions. The visualization of stakeholder analysis helps also making explicit the relationships, their conditions and their consequences. Current approaches in stakeholder management lack structured analytical and visualization methods for the investigation of stakeholder relationships, while the analysis remains usually at a high level and does not get in the details of the particular aspects of the relationships.

The analysis of the strategic dependencies is necessary for the development of a destination strategies and plans, the collaboration between the stakeholders, and the coordination

of their actions and resources. Goal modelling provides a pertinent method for the analysis of strategic dependencies as it employs as constructs the goals/ softgoals, the tasks and the resources of stakeholders and analyzes the strategic and operational dependencies in the achievement of goals. In general, goal modelling can support any theoretical framework and approach that employs the concepts of goals, tasks and resources. Several research works in destination management are based on or inspired by the resource-based view of the firm, that employs relevant key concepts (resources, capabilities and competencies) for the analysis of the competitive advantage of destinations.

The strategic alignment of information systems is pre-eminent for the successful destination development. It has become an even more important challenge today with the increasing use of information systems and the development of 'smart tourism'. Goal modelling can support the studies for the strategic alignment of information systems by accommodating in the same analytical framework the strategic characteristics of destinations and the strategic requirements of information systems.

The paper contributes also to the research of destination management with the development of a multi-level, goal modelling approach that integrates stakeholder, strategic and information system alignment analysis. Goal modelling is used initially for the identification of the stakeholders that have a strategic role in destination management, the determination of their goals and the classification of their dependencies. The strategic analysis follows, with the development of detailed models that zoom in the relationships and the operations of the stakeholders, include both intentional and behavioral characteristics and provide an in-depth view on the strategic dependencies. Goal models can be used, hence, for role and business model analysis, the analysis of alternatives that supports improved decision making, collaboration and co-opetition analysis. The strategic alignment can follow as a potential extension of the approach, especially when the destination development is based on the use of information technologies. Here the emphasis is put on the impact of information systems on the strategic relationships between stakeholders and the support they provide to the strategies for destination development.

The practical contribution of the paper is related to the use of modelling techniques in destination management and development. Modelling techniques enable the explicit expression and the visualization of the issues under investigation, facilitate the communication and the development of common understanding between the stakeholders and support the experimentation with, the evaluation and the selection of alternatives. In particular, goal models are graphical representation that visualize and hence make explicit and easier to grasp the complex relationships and the interdependencies between stakeholders. In addition, they enable all to speak the same language by using the same notation and the same modelling rules, that results in the better and common understanding of the relationships and the underlying conditions. Goal models can easily represent the alternative options that are available and thus make explicit their differences. The development of alternative ideas, views and approaches can be achieved easily with the development of alternative goal models.

6 CONCLUSIONS

The paper presented goal modelling as a method for the strategic analysis in destination management. It suggested a multi-level approach that begins with the stakeholder analysis, continues with the analysis of strategic dependencies between stakeholders and ends with the strategic alignment of information systems. The approach provides a logical culmination from general and broad issues (stakeholder management) to specific ones (strategic relationships and strategic alignment). Goal modelling is used for the description of the intentions of the stakeholders and the visualization of their interdependencies with regard to intentions, tasks and resources.

The application of goal modelling for stakeholder and strategic analysis is a fairly new issue in the literature. The paper enhances the research in destination management and development by addressing the major challenges of the field, i.e. the collaboration of tourism service providers and stakeholders for the configuration of tourist services as a result of the integration of diverse stakeholders' resources, and the coordination of stakeholder activities for the development of a coherent view of the destination in the eyes of tourists.

The research presented in this paper has certain limitations. The most important research limitation has to do with the lack of validation of the approach in real-world conditions, such as with a case study, or a survey with destination managers. The paper adopted a theoretical approach for the demonstration of the potential uses and the benefits of goal modelling in destination management. This is necessary in order to promote goal modelling as a new method in the literature of destination management. The paper provides several examples for the application of goal modelling in respect to various issues in destination management. Future work should focus on the development of comprehensive and real-world validation procedures.

Additional limitations have to do with the goal modelling method itself. The development and reading of goal models require the people involved (managers and consultants) have the necessary knowledge and likely some practical experience. Even though goal modelling is a quite simple method, the business people usually lack this knowledge. In addition, goal models tend to be numerous, depicting the different views and options of the situation under investigation, oversized because they can accommodate many details, and without certain rules for their scalability. Therefore, the successful goal modelling depends on the expertise and the experience of the modeler.

Some other supposed limitations of goal modeling are not relevant, in our opinion, to the strategic analysis in destination management. For instance, subjectivity is inherent in goal modeling and the existing goal modelling methods lack reasoning capabilities, especially for quantitative analysis. Hence, goals models are used mostly for the visual representation of the situation and do not support conditional logic for the comparison of alternatives and the selection of the best option. However, we believe such limitations do not affect adversely the strategic analysis for destination development, because the strategic decisions

are based mostly on the critical mind and the judgment of the managers.

Directions for future research can address these limitations, as well as other important issues. In the wider context, future research can seek to elaborate goal modelling as a business modelling method, especially for the strategic analysis. The development of a specific notation and ontology for business/ strategic modelling can serve this objective. Relevant to this is the development of goal model patterns that address the requirements of destination management and development. Such patterns could describe general situations in destination management and development that can provide the basis, as well as insights for the strategic analysis in destination management.

Regarding the suggested in this paper multi-level approach that integrates stakeholder, strategic and information system alignment analysis, a priority for future research is the further development of the structure and the modelling procedure. From a structural point of view, future research can investigate the relationship between these levels, how do they contribute to destination management and development, how does the analysis proceed from the one level to the other, and if additional levels and, thus modelling aspects, can be developed. From a procedural point of view, there are several practical issues that need to be studied with regard to the preparation of the modeling procedure (e.g., how can we involve the stakeholders and how can we collect all the necessary information for the development of goal models?), the development of goal models (e.g., how can we manage effectively the modelling procedure, given the great number of models that need to be developed? How can we scale up the models for the inclusion of a great number of stakeholders, how can we change the focus between stakeholders, and how can we zoon in and zoom out effectively and without losing or repeating information?), and the exploitation of the goal models for decision making in destination management (e.g., what particular issues of destination management can be resolved by goal modelling and in what way?).

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