INNOVATION IN SERVICES: A VIABLE SYSTEM MODEL DESIGN FOR TOURIST MSMES INTEGRATION IN MÉXICO

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ABSTRACT

In the context of micro, small and medium-sized tourism enterprises (MSMEs), flexibility and heterogeneity can be characteristics that add value to them. However, the lack of integration to treat, both its operation as the environment, makes it difficult to understand the various problems to which they are exposed. The previous, stresses the need for these human activity systems to coexist in a changing environment, an organisation that seeks to its operation and maintenance. In this regard, this work takes up the concept of complementarity from the perspective of Systems Science. In this sense, complementarity refers to the beneficial adaptation of the heterogeneous capabilities of tourism companies and to contribute to the innovation of their services to achieve the basic objective of a living system, that is to say, to survive and evolve with its environment. The Soft Systems Methodology and the Viable System Model were used, obtaining, as a result, a construct that proposes to order and amplify the internal variety, allowing to counteract the external variety.

Keywords: Tourist MSMEs, Services Innovation, SSM, VSM, Complementarity.

BRIEF CONTEXT OF THE TOURIST MICRO, SMALL AND MEDIUM COMPANY IN MEXICO

The economic instability that Mexico went through in the decade of 1970 accentuated the limitations of micro, small and medium-sized enterprises in aspects such as equipment, organisation, training, and information (SE, 2002). Situation that pushed them to focus only on the survival, neglecting their learning process. The actions subsequently implemented as funds and programmes aimed at supporting and strengthening these companies have proved to be ineffective since they do not have a system that evaluates their effects, scopes, and availability to promote innovation within the companies.

The tourism sector has certain advantages such as flexibility in barriers to enter the market, availability of cultural elements and momentum of the communities in which we carry out this activity, aspects which have placed it as a priority sector for the Mexican economy (Sánchez, 2016). This has led to the increase in the entrepreneurship of new organisations. However, this process is truncated by the lack of clarity in the business approach and the way it should be managed, leading to a high mortality rate of tourist companies, especially in the first two years of its operation.
Concerning this idea, it is established that an MSMEs may adapt to the environment and the commercial field if since its foundation is to identify and understand the factors that develop their strengths (Cancino, Coronado & Farias, 2012). In this regard, agencies such as ECLAC and OECD emphasize that these companies are agents of change and opportunity areas to be studied and to generate interventions aimed at contributing to their stability (CEPAL, 2013; OCDE, 2013).

The preceding requires to characterize and to define the tourist MSMEs, which is often difficult due to its complex configuration, which derives from the relation of internal and external organisational factors (Rivanda, 2004). To this, it is possible to add the subjectivity that brings the human component, characteristic in the services sector. In this context, the conglomerate of MSMEs attractions includes different elements of the offer: lodging, food services, transportation, recreation activities; shopping and travel distribution system (Sancho, 1998; Rogerson, 2005).

Taking up the idea of characterizing the mentioned organisations, in the context of this paper those identified by Schätz (2006), are considered:

- Unlike the manufacturing sector, it provides an intangible, heterogeneous service whose ownership and experience are non-transferable and the product not enduring. The processes of production, sale, and consumption can occur simultaneously.
- The owner, who is the head of the family in most cases, serves as an administrator and is generally multifunctional, with basic knowledge in many areas, which, when performing multiple tasks, takes time out of its responsibility as a manager.
- Decisions are often made on a short-term basis.
- These companies are driven, by demand, to improve productivity, reduce costs and even reduce the phases of their life cycle.
- These do not have extensive or structured processes. They are regularly flexible and can quickly adapt to the way they do their work.
- Employees perform tasks other than those required by their position.
- They face difficulties in hiring and retaining professionals.
- These companies focus on survival, in medium terms, neglecting long-term earnings.
- Are inefficient, about the allocation and use of its resources.
- They require simple, easy-to-deploy solutions that provide tangible benefits.

The previous idea allows inferring that the MSMEs are not homogeneous, although they have the same objective, they are born for different reasons. Apparently, its components and structures are similar, but in the operative plane show a varied number of combinations between their organisational factors, affecting their life cycle and in some cases placing them into the "brink of chaos" (Waldrop, 1993). About the life cycle, it can be said that it focuses on the concept of growth and it is not feasible for a tourist MSME to address their efforts towards improving their productivity, structure and management. Therefore, it is considered to use the concepts of development and evolution.
Growth and development converge in evolution, where any change, somewhere in a system, inevitably evokes correlated changes elsewhere, until reaching a new kind of dynamic (François, 2004), “evolution is not an accident, but it is necessarily always produced under some previous parametric conditions that are fulfilled” (Laszlo, 1996). In this sense, development is recognized as a global, dynamic and continuous process that implies differentiation, maturity, skill acquisition, as well as the skills that an organisation achieves in each stage to emerge in another. In this regard, the life of tourist MSMEs must be formulated through evolution to endow them with capacities such as preservation, adaptation, transcendence (emergence-transformation) and dissolution (Wilber, 2011), to procure all the relevant areas in each level according to their interaction and maintenance with its environment. As has been seen, it is necessary to develop its parts, not only to increase the number of workers and annual sales amount to be included in a higher rank classification. On this idea Tejeida et al. (2016), establishes that in the evolutionary process there are "intermediate forms stable" that allow bifurcations (evolutionary jumps) and in turn facilitators of these processes.

Based on the preceding, the understanding of the tourist MSMEs establishes a way that allows to join the flexibility and heterogeneity usefully and to form a mechanism of variety to confront the environment, oriented to its transcendence and equilibrium. Therefore, this work seeks to present an integrative model based on systemic methodologies to reduce the impacts of the environment by increasing the internal variety, the compression, and consolidation of knowledge regarding tourist MSMEs.

**Methodological approach**

The growing awareness of the notion that the social context may also be addressed through a qualitative perspective and differ from the natural has sustained new ways of understanding the problematic situations that society currently faces. The Systemic Method is a tool that provides validity to different ways of solving a problem and is based on the precept that no method can individually address the growing complexity, uncertainty, and changes in the environment (Lazlo & Krippner, 1998). Consequently, systemic methodologies present a creative approach to try to understand the phenomenon of reality (Badillo, 2011).

The selection of mechanisms to intervene, visualize the learning process as its primary objective, which is propitiated by a flexible process. The Soft Systems Methodology (SSM) allows integrating subjectivity present in human organisations, such as tourist MSMEs, presenting relevant information regarding their behaviour through a rich vision. This vision amplifies the capabilities and exceeds the limits of different paradigms, enriching the approximations or simplifications of the components and characteristics involved in the problematic situation perceived (Fields, 2016), to represent the conceptual model that seeks a transformation coherent with reality. This step was made through the Analytic Hierarchy Process (AHP), distinguished as an objective process that focuses on testing the consistency of the proposed model with reality.
Soft Systems Methodology

The SSM is an articulated process for addressing problematic and disordered situations of all kind (Checkland, 1993). It is an intervention-oriented action that is designed with information from the actors involved. The basic structure of SSM seeks to address real-world situations whose understanding (entities and relationships) is carried out from a systemic way of thinking to build a conceptual model.

The stages developed are briefly described below:

Stages 1 and 2. Problem situation not structured, and situation problem expressed: The purpose was to explore and identify the elements that have implications for establishing the systemic complementarity of the problem situation of the tourist MSMEs. Which were integrated into three levels:

The first level concerns the elements that integrate a tourist MSMEs. These elements are mainly organised in two dimensions: management and operation. The first one is responsible for establishing the purpose of the organisation, the use of knowledge and information, as well as to involve an organizational culture; elements determined by the merger owner-manager. In the operational dimension, the inputs, resources, collaborators, service or product are located.

The second level, in this, is located the immediate environment of the tourist MSMEs and relates the actors who have direct interference in the dynamics of the organizations and with the purpose of the destination. Some considered institutions are for sectoral purposes, suppliers, tourists, government agencies. The third level brings together elements whose decisions or actions can interfere with a tourist MSME life cycle, and in a territorial delimitation national and international actors were considered; as the WTO (World Tourism Organisation) which sets out recommendations to governments and employers, regarding trends and international standards in the tourism sector.

The definition of these levels, as well as the type of relations between these (stable or conflicting), is considered vital because it is the basis for the development of the conceptual model. As for conflicting relations, it is possible to mention that ignorance, confusion in codification and decoding processes, leads to the progressive loss of interactions between the subsystems or members of the systems. This translates into incompatibility of purpose among the different recursion levels and poor use of the infrastructure.

Stage 3. Root definition of the relevant systems. Based on previous stages, the objective and limitations of the conceptual model were defined, which in turn was verified by developing the CATWOE mnemonic (clients, actors, transformation, weltanschauung, owners and environment) as a logical guide that allows categorizing entities and processes that can affect the purpose of the system. Therefore, the proposed root definition was: A model that through the systemic complementarity between tourist MSMEs, that is, through emerging properties eliminate the deficiencies to achieve its preservation, adaptation, and transcendence in a status of autonomy and, this new order, leads them to growth and development in a viable equilibrium with the tourist destination.
Viable System Model Design for Tourist MSMEs

The logical representation of the definition root and relevant systems involves identifying and organizing the set of necessary activities and oriented to the transformation of the system. The graphic representation of the model shows a dynamic structure and is established from four systems, whose synergies seek the adaptation of the whole tourist MSMEs. The synthesis of the descriptions in this stage is presented in the following conceptual model (figure 1).

![Figure 1. Conceptual model](image)

The comparison of the systemic thinking with reality (part of stage 4) implies selecting the facet of the transformation process presented in the root definition and its relevant systems (Chart 1). On this idea, the operational definition establishes a set of instructions on how to measure systems conceptually defined, i.e., it is a symbol that is assigned values (Kerlinger & Lee, 2002). The concept, defined of a universe requires preserving the same meaning to get information from reality.
**Viable System Model Design for Tourist MSMEs**

**Chart 1. Operational definition of Relevant Systems**

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<thead>
<tr>
<th>Relevant System</th>
<th>Operational definition</th>
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<tr>
<td>Operation System (HAS)</td>
<td>System responsible for making the necessary processes coherent with the purpose of the whole system.</td>
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<tr>
<td>Morphogenesis System (MGS)</td>
<td>System that regulates the internal and external communication of the whole system. Besides, it organises the interrelations differentiating components and environment.</td>
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<tr>
<td>Organisational linkage System (OLS)</td>
<td>Responsible for the stability of the whole system, it reduces the consequences of a conflict by its information; if it does not eliminate it completely.</td>
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<tr>
<td>Management System (MS)</td>
<td>System responsible for generating knowledge and provide rules to ensure the performance of the whole system according to the purpose.</td>
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The analytic hierarchy process (AHP) allowed treating a multidimensional problem (multicriterion) as a problem in a one-dimensional scale (priority scale) in which the global outputs are represented (Saaty & Vargas, 2012).

The flexible approach that the AHP tool has allowed it to be used for different purposes. For example, it has been used in the managerial field to identify the resources and organisational capacities in the business association (Jiang, 2014), collaborative management networks (Parung & Bititci, 2006), development of new products (Battistoni et al., 2013), measurement of the dependency between activities of input and output (Saaty & Vargas, 2012), alignment of a supply chain (Ramanathan, 2013), critical factors that impact in the success of MSMEs (Karpak and Topcu, 2010).

Based on the previous, this tool is considered pertinent to validate the relevant systems proposed using the SSM. Related to this idea, the analysis using AHP allowed to obtain consistency values over 90% for each relevant system, i.e., the elements of the model are consistent and do not contradict the reality perceived by the actors that are part of the problematic situation. It is also possible to say that the systems that shape the construct foster the systemic complementarity between the tourist MSMEs as well as its conduction towards their complexification.

**RESULTS**

**Viable System Model for Mexican tourist MSMEs**

Considering that the conceptual model is consistent with reality, its operationalisation is proposed through the design of the Viable System Model (VSM), that establishes necessary and sufficient structural conditions to propitiate the viability of any human activity system, which allows not to dissolve or to disturb the individual structure of the involved MSMEs. It is emphasized that the structure can only be obtained, and maintained, from the knowledge that emanates from the exploitation of the business variety. Next, each system is described.
System 1 (S1) operation: It seeks the purpose of the organisation and exists to fulfil the expectations that the clients have about the organisation, obtaining a clear orientation in the management of each unit.

U1: Lodging.
U2: Recreation and entertainment.
U3: Food and beverages.
U4: Tourist transport.
U5: Other tourist services.

The structure of the S1 was formed in this way, in order to include the different tourist services and to unify them according to the variety that is perceived in each one of them. Likewise, it is intended that the company can, through the autonomy of the units of the operation system, correspond to its environment and the tourist service offered. The S1 generate synergies between actors to integrate organisational capabilities through the systemic value of staff seeking the dynamic balance between its components. The autonomous learning process of each operational unit establishes a significant variety to correspond to the environmental complexity.

Therefore, each unit deploys the recursive structure of the VSM, focusing on addressing the relations they possess with their specific environment, using their management and communication mechanisms with system 2. These structural elements are connected by information channels allowing continuous flow, assuring the first principles of Beer (1984) regarding organisation, which seek to spread the variety in the whole system.

It is necessary to add that the variation of the structure that provides cohesion of the operative units was established by the type of services that the tourist MSMEs offer but not by their entrepreneurial stratum, in the understanding that all coincide in one purpose and have competences and initiatives to relate at the same level and, similarly, recognize the constraints to be carried out. A factor that strengthens corporate collaboration is empathy among collaborators, seeking instrumental or operational reciprocity in assisting the performance of the units.

System 2 (S2) coordination: Facilitates the coordination of interdependencies between the elements of S1, therefore, the OLS the conceptual model of it. In order to maintain the cohesion and synergy of operative functions, it is necessary to translate the mission of each unit into operational objectives, and the improvements are reflected in the shared communications of the whole system.

Both in the organisational and operational level, the S2 has the specific function of preventing variations that weaken the company. In this sense, it assists in the good functioning of the operating units, designs stabilizers between the units and examines what is assumed by the members. The S2 performance protocols are as follows:

- System planning.
- Requisite variety.
Viable System Model Design for Tourist MSMEs

- Satisfaction and consumer protection.
- Culture.

System 3 (S3) operational control: It fulfills the task of control by translating the organisational objective into objectives for the operative units, to subsequently supervise and regulate its realization. In this way, the S3 is concerned with the relationship and contribution between the operational units in the materialization of the identity of the total system. Therefore, this system synthesizes the reason for being of the company. The S3 uses three instruments to carry out its task: regulation of the fulfilment of the objectives, audit S3* and corrective measures.

The first refers to the instruction of the objectives to be performed by each operating unit and receive management reports on its performance and compliance. For this, the complementary resources and capacities to achieve these objectives are negotiated with each primary activity. The communications are represented by arrows between the control and management of the activities of the S1. The second instrument is the audit, represented by the S3*. Audits are used to keep in touch with what is happening in the operational units, getting additional information about how the activities are being carried out. Besides, it has as a function to make visible aspects identified by the coordination that, if not treated, can affect the operation of S1.

Finally, it seeks to ensure synergies between the operational units, through the control of coordination efforts (S2). As a whole, they establish a bi-directional feedback process, ensuring the planning and strategies of the joint work of MSMEs and sufficient support for the fulfilment of the ongoing operations.

System 4 (S4) intelligence: Viability implies developing the ability to adapt and involves transformations to maintain identity stability. So, the operational units deal with their specific environments and the S4 with relevant aspects of the environment to give continuity to the viability of the enterprises through the systemic complementarity.

The strategic planning must identify and filter out environmental events in a broader way, to help shape the future of the firm. Regarding its relation to the conceptual model, the S4 is associated with the SM concerning the future shaping of the structure, and on the other hand, it gives significance to the planning and variety of the SG, assuming that the contributions of this system are findings and suggestions of innovative practices provided by creative and proactive processes to present opportunities to the companies involved.

To visualize these transformations, it is necessary to work on aspects such as:

- Cohesion of the groups of each system and as a whole.
- Attitude to change from the learning of their experiences.
- Ability to adapt to changes.
- Management of the available resources to encourage change.
- To distinguish severity level of problems between groups (non-functional relations) monitor functional ties continuously to identify on time difficulties in the groups.
System 5 (S5) policy: It must achieve an equilibrium between the functioning of the company in the present and at the same time prepare for the future, taking as a basis the information generated by S3 and S4. In this respect, it is pertinent to say that the dimension named equifinality, is fulfilled with the S5 allowing to maximize the variety between the tourist MSMEs and to achieve organisational efficiency through several paths.

The fulfilment of the purpose of the S5 requires the relationship of three functions; the first covers the direction role by ensuring that the firm is to function as a system, preventing the S4 or S3 from exercising a domain that does not belong to them. The second is to create and maintain the identity of the company and third to maintain the understanding of the relations between the system in focus and the meta-system, Spaces of dialogue are established where the participation is extended to public entities of the tourist sector to obtain an understanding of the connection of their own identity with the superior system.

Based on the above, figure 2 shows the integration of the described systems:
Viable System Model Design for Tourist MSMEs

Figure 2. Viable System Model for Tourist MSMEs
Source: Based on Beer (1984)
CONCLUSIONS

The trend towards entropy, because of the competition among companies, limits the possibility of transcendence of micro, small and medium-sized tourist enterprises. The general proposal of this work lies in pooling methodologies and models with a systemic approach to propose to raise beneficial adaptation among heterogeneous agents (tourist MSMEs). On this idea, it is possible to say that when there are heterogeneous components in a system, its beneficial adaptation, propitiates and increases the capacities to survive, contrary to whether they remain as isolated systems. Since the study allows concluding that for the evolutionary development of the four relevant systems requires the component interaction among their dimensions, taking as a basis that the stability given among the actors fosters the evolution of the whole system; reciprocal adaptation can be maintained just if the other components have success.

Through the Soft Systems Methodology, order was provided to approach the system under study. Through the development of stages one and two, information was obtained to support the description of the actors, as well as the identification of their stable and critical relations. Stage three led to the synthesis and understanding of the problem through the expression of the rich vision. It should be added that, within the findings in this stage, some pathologies were identified, Structural, information that affects the coherence and affects the capacity of SMEs to react to changes in the environment, decreasing its communication with other companies facing the same challenges.

It is also established that the lack of interaction between tourism MSMEs leads to an incomplete understanding of the problems, even hinders the generation and transfer of information aimed at designing solutions for daily operations. Also, the soft systems methodology allowed to identify that the practice of authoritarian or coercive management models inhibits the learning processes in these systems of human activity.

The results obtained through the analytic hierarchy process support the systemic concepts that integrate the conceptual model through the relevant systems, presenting the possibility of an evolutionary process in the tourist MSMEs. The operationalisation of the relevant systems established the purposes and attributes that seek to reduce the pathologies in the problematic situation; inter-organisational transformation that does not correspond to a causal or systematic process, but what should be done and how to do it, given the particularities of the problem situations.

To conclude the systemic method provided support to identify the fundamental differences between the disciplinary contributions on tourism MSMEs and, consider alternative visions for the treatment of problems, trying to confront elements such as the instability and little permanence of these entities. The method applied, allowed an appropriate selection to give treatment to the problematic situation identified, promoting the management of subjectivity and objectivity through the Soft Systems Methodology and the Viable System Model.
Viable System Model Design for Tourist MSMEs

REFERENCES


