A SYSTEMIC APPROACH ON HUMAN CAPITAL MANAGEMENT IN TOURISM SMEs CONSIDERING SOCIO-ECOLOGICAL SYSTEMS

Juan E. Núñez-Ríos[1], Ricardo Tejeida-Padilla[2], Isaías Badillo-Piña[3], Oswaldo Morales-Matamoros[4], Jacqueline Y. Sánchez-García[5], Brenda Jarquín-García[6]

[123456] Instituto Politécnico Nacional, México.
[12345] Grupo de Investigación en Sistémica y Turismo.
nurje@me.com[1], rtejeidap@ipn.mx[2], ibadillop@ipn.mx[3],
omoralesm@ipn.mx[4], jacyves@icloud.com[5], jarquin_garcia@yahoo.com.mx[6]

ABSTRACT

The context in which Small and Medium Enterprises (SMEs) of lodging carry out their operations is turbulent. This Human Activity Systems (HAS) develop certain practices that threaten aspects such as internal equilibrium, resilience, their relation with natural environment and hence its permanence in the sector. The purpose of this paper is to present the basis for an autopoietic management system of human resources within mexican tourist SMEs in order to generate self-organization and adaptation considering social and natural dimensions. The methodological approach is carried out using the Soft Systems Methodology (SSM) looking to reduce problematic situations generated for whom manage the systems as well as those related to the human resource management. With respect to the findings, a conceptual model was designed consisting of subsystems that consider heterogenity in tourist SMEs and human resource management problems, in that sense is intended to regulate its complexity and maintain an equilibrium with the environment. It is considered that actors with managerial functions may benefit from a holistic approach that looks for the transcendence of the whole system in its current context.

Keywords: Systems Science, Soft Systems Methodology, Tourism, SMEs, Human Capital Management.

INTRODUCTION

Tourist activity takes place in a complex environment and despite the volatility in the international economic context or socio-political and environmental conflicts, tourism has demonstrated structural solidity. The foregoing allows to infer about the importance that such activity has on the economic development of various countries. On the previous idea, and according to the World Tourism Organization (2012), this activity exceeds the currencies reception obtained on a global scale by the chemical, nutritive, telecommunications and computer industry concept. On the previous idea, the WTTC (2014) indicates that tourism activities and lodging orientes contribute approximately with $2.1 billion in the Latin America region and around 260 million jobs. The above allows to say that the tourism actives and generates benefits in the economy of the regions in which it is performed.

At this point, it is highlighted to small and medium-sized enterprises (SMEs) as important components of a tourist destination given that they represent an alternative in terms of products and services such as lodging, transportation or recreational activities (Buhalis, 1996). Returning to the lodging service is stressed that in Mexico the 50% of lodging businesses are SMEs (SECTUR, 2013) same that provide jobs to a considerable amount of people.

It is considered relevant to emphasise the link between the human activity system (HAS) called lodging SMEs with the socio-ecological system since that relationship is something that these organisations seek to strengthen through the integration of environmental components both in the way of managing the organisation as well as in their work plans with in order to show environmental liability to their customers. However, and according to Starik and Markus (2000), to incorporate aspects of environmental nature, into the organisational Modelo of lodging SMEs, represents an opportunity area especially in its practical dimension.

In this brief context, the problem that arises is that model to manage lodging SMEs, as a system, follows a reductionist logic and does not consider the human dimension. This demand to use a systemic perspective in order to consider the relations among the lodging SMEs and the socio-ecological system. In this regard Mitchell (2009), emphasises the importance of adopting a transdisciplinary posture to understand the behaviour of both simple agents as patterns in a system and their emergencies. In that sense, the complexity faced by HAS can be addressed through the Systems Science and raise responses to the challenge of lodging SMEs to interact responsibly with the socio-ecological system which nests Human Capital Management (HCM) as the basis.

Tourism lodging SMEs as living system

The General Living Systems Theory can be applied to any type and size of system regardless of their behaviour. This theory focus its study on seven levels of living systems: cell, organ, organism, group, organisation, society and supranational system. It should be noted that its application to problems in reality considers the recursion principle since in each level components of the lower level are observed as well as properties and components of the higher level (Miller, 1995).

According to Skitner (2006), Miller emphasises that living systems are physical phenomena whose most notable characteristics are the processing of energy and information as well as possess a control or executive system aimed to achieve the homeostatic equilibrium in all levels. Therefore, the conceptualisation of systems that contribute to the transformation or improvement of problematic states should posses self-organised structure or depend on other living systems to remain, in that sense, the critical structures for the existence of a system are those that process: matter-energy-information, matter-energy and information only.

It is possible to relate the organisations with the mentioned theory and conceive them as a living system, because although their space and borders are abstract maintain cohesion through information, targets or goals in common. However, Troncale (2006) highlights that

the indefinite existence of living systems has not been demonstrated, so to keep in time, must develop the ability to auto-maintain and auto-repair looking for the improvement and learning in order to evolve. These skills should be given from the following aspects:

- Process information, energy and matter.
- Combine materials looking for the synthesis of the parts.
- Rearrange and connect cluttered parts.
- Storing energy for when the structure demands.
- Remove damaged parts without impairing the operation of the overall system.

Synthesising, and resuming Swanson (2006) and Van Gich (2011) the postulate of Miller can describe to lodging SMEs as well as to its components as a living system and poses the HCM within the dimension of the socio-ecological systems and use information available in the environment to generate mutualist symbiosis that allows the logical order of their operations through the construction of a global vision of their processes in place of fractions of these.

Socio-ecological environment and Human Capital Management in Tourist SMEs

Usually at macro level, the complexity concept is used to provide explanations on why the understanding, prognosis, management and control of certain systems is a difficult task. Also, this concept, provides guidelines for study the way in which the elements of a system interact and how they show properties such as learning, self-organisation and adaptation. However, in a macro level, the complexity concept provides both the bases and tools that allows to help socio-technical systems through the design of feasible solutions (Maguire *et al*. 2006), in order to improve steadily, as well as different courses of action to address the problems in the interaction with the socio-ecological system (Ulrich y Probtst, 1984; Ashmos y Huber, 1987; Kiel y Elliott, 1996; Levy, 1994; Merry, 1995).

With regard to the previous concept, it is said that the economic and ecological systems are set up by numerous agents and include, according to Holland (1998), aspects such as customers who demand goods and/or services, workers, businesses, industries and influence of international, economic factors, which may be interdependent levels which generates recursive aggregations that can not be reduced to interactions of lower levels. In that sense, from a systemic perspective it is possible to incorporate into a conceptual and contextual framework the unpredictable and the emergence of patterns in economic and ecological systems (Anderson *et al*. 1999, Ormerod, 1998).

Regarding to the relationship of the lodging SMEs with the socio-ecological system, this is considered as the metasystem in which these organisations interact with economic, technological, social and political elements. Therefore, not paying attention to the interrelations between these elements can lead to the collapse of both companies referred to as well as negative impacts to the metasystem in which they operate.

Tourist SMEs and socio-ecological system interact in different space-time scales. However, it is possible to relate them in a broad sense. For example, tourist SMEs depend on a flow of natural resources, climatic factors, agricultural production and food as well as the flow of travellers and provision of energy. Then, the interaction of the components of both systems generate emergent properties that cannot be controlled and predicted from reductionist views. Therefore, according to Stacey (1996) and Hardin (1968), intervene in the tourist SMEs demand to understand a large number of agents in order to generate solutions with holistic character.

Scowsill (2015) and Fáilte Ireland consultancy (2005) emphasise that the absence of an approach to manage and develop human capital in a context in which the socio-ecological dimensions are relevant would lead to less growth, less investment and innovation and loss of competitiveness for the Mexican tourist companies. Meanwhile, Baum (2007); Harkinson *et al*. (2011) and Rok (2012) consider that the human capital management, in lodging SMEs, face aspects that make it difficult to treat relationships and impact their operations may have on the social-ecological system. On that same line of ideas, Page and Connell (2009), Zhang *et al*. (2009) emphasise that lodging SMEs lack of effective practices to manage human capital that allow them to respond to disturbances in the environment, what complicates the scenario to managers that seek to offer services with quality and, at the same time, commit the personnel to lead them to organisational equilibrium.

Models for managing human resources in the organisational context

From the systemic perspective, the treatment of the relationship human capital in tourist SMEs-socio-ecological system, can be treated through hard and soft models. The hard perspective can be considered utilitarian as perceive employees and the environment as available resources to fulfill organisational objectives prioritising control and low operations costs. This way of managing human capital, bypassing the ecological dimension, is frequent in the tourist industry despite the fact the quality on services depends substantively from the relation between the human dimension and the environment. In contrast, soft approaches to HCM problems tend to be geocentric (Page and Connell, 2009) as they seek to generate symbiosis between HAS and the socio-ecological dimension in which tourism is nested.

At this point, a brief comparison of some models for HCM within the organisations is presented, in order to give way to the proposal:

Chart 1. Human Capital Management Comparison

		Focused on internal relations	Strategies development to improve the internal yield	Capitalizes personnel skills	integrates global strategies	Use of information derived from the relation personnel-environment-internal factors	Responsibility in the interaction with the system socio-ecological	Considers Impact of the environment: internal/ external	Human resources management aimed to the employee	Seeks the viable equilibrium of the organization	seeks autopoiesis and evolution of the Organization in its current context	Available for SMEs
Author	**Model**											
Boxall (1996)	Management and human resources based on the organization	✓	✓	✓	X	X	X	X	X	X	X	X
Anthony *et al* (1993)	Management of human resources	X	✓	X	✓	X	X	X	✓	X	X	✓
Beer *et al* (1984)	Harvard human resources management	✓	✓	X	✓	✓	✓	✓	✓	X	X	X
Jackson y Schuler (2003)	Contextual framework and dynamic for the strategic management of human resources	✓	✓	X	✓	X	X	✓	X	X	X	X
Rok y Mulej (2014)	Human capital management based on corporate and social responsibility	✓	✓	✓	✓	✓	✓	✓	✓	X	X	✓

The above chart highlights that most of the models focuses on the relations that can arise between multiple resources of tourist SMEs to generate strategies that impact the performance inside the enterprise. However, one of the major deficiencies is not to look after the link with the socio-ecological system, therefore models are not capable to provide timely information before threats or opportunities presented by the environment and improve the overall strategy in the organisation and thus redirect functional strategies. Therefore, treating HCM problems and the social-ecological systems demand interventions with a holistic vision that logically integrate movimiento elements that interact in the services provision of the companies above while procurer coexistence with the environment.

Considering the last idea, according to Page y Connell (2009), the most important aspects that HRM should consider are listed:

- Educate and train to provide skills to employees to carry out their tasks.
- To provide optimal wages and work conditions in tourism companies looking to generate stability in the work.
- To consider the globalisation framework and the ecological environment.
- To maintain the hired staff independently of the tourist period fluctuation.
- To consider the regulatory framework and measurement by actors of the environment.
- To generate competitiveness.

Systems thinking for Managing Human Capital Considering the Socio-Ecological Systems

Armstrong (2006) and Cooper *et al*. (2008) emphasise the importance on human dimension management, therefore constitutes an area of opportunity to generate interventions in tourist enterprises in order to impact positively on their reality and relation with their context.

According to Rosenblueth (2005), from the classic science perspective, natural phenomena are addressed from two positions: a) observation; in which the study is developed without external affectations and the facts are recorded, b) experimentation; in which facts are developed with the active incursion of the observer under planned and controlled conditions. From the systemic perspective, studies with holistic nature are performed with some purposes such as understanding the structure of the system, the logical structuring of the components or identifying relevant interrelations in order to influence some of its dimensions. However, human cognition is limited at the time to deal with complex phenomena and its different dimensions, so human leans to simplification and analysis devising limited solutions.

The multidimensionality of the relation of HCM and the socio-ecological system constitutes a restriction to the analysis in classical science, given the difficulty to understand such dimensions. Before such a task, the Systems Science provides theories, methodologies and models that allow contextualise and characterise the system and, decision of the researcher, to select what dimension or dimensions to study and to intervene.

In concordance with Meadows (2008), actors in the system with managerial functions are facing fluctuating and complex situations, for that reason it is not recommended to reduce or direct actions to solve problems but to manage the complexity. Therefore, HCM should seek the improvement of operations in tourist SMEs through the implementation of systemic models that represent the main features of the dimensions of the system under study (Pidd, 2004), so the idea is to use a conceptual model for the HCM as a vehicle for experimentation and study of reality.

Kerlinger (2008) establishes that in order to understand complexity in any human activity system there must be look after their elements, intentions, purposes as well as the positions and approaches of those who participate in it; for example, in the HCM context on tourist SMEs the use of an integrative perspective is required. In this regard, the Systems Science represents an alternative to the reductionist approach in the treatment of HCM since the mechanistic view tends to focus on production, services standardisation, development of processes and products by bypassing the context in which the activities of the whole system are carried out (Michel, 2012).

The mentioned environment comprises elements such as competition or growth in the demand for services, requirement of natural resources and technological innovation which positions the organisations in a complex environment, so that the HCM must integrate a holistic vision in order to seek adaptation before turbulence of the environment.

From the foregoing, it is considered that the HCM in tourist SMEs must include the following dimensions: social, environment, ecological, economic, technical, organisational, operational and management.

The dimensions mentioned above should be integrated through the systemic approach in order to support the management of HAS in complex situations and generate adaptive ability through the HCM. For that purpose, as well as to address the problems of HCM in tourist SMEs, the Soft Systems methodology (SSM) will be used (**Fig. 1**) since this methodology considers, as essential, the willingness with which actions are taken, the purposes within HAS as well as the emerging properties that lead to a particular vision of reality. In addition, the SSM allows to model reality by interpreting systems and simply by the definition of tasks that perform (Skyttner, 2006).

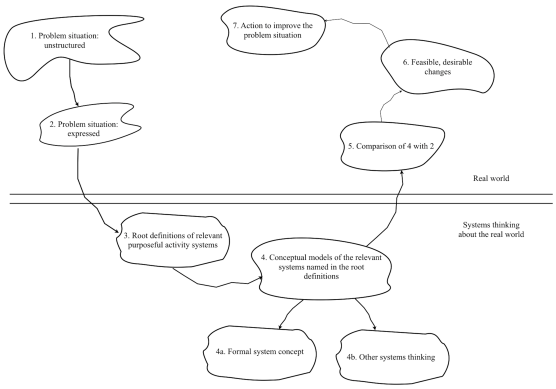


Figure 1. Soft Sytems Methodology
Source: Checkland & Scholes (1999)

The *holon* concept, in the SSM, is an abstract element that refers to a whole with emergent properties, structure or structures to exchange information and control that may affect in the permanence and adaptation to the environment. The utility that the concept has is that allows to generate an iterative process of inquiry in HAS that can result in a particular vision of the world or the studied reality. Therefore, in this paper stage 1-3 of the SSM are developed to build a HCM panorama in tourist SMEs and seek to study the relevant components of the problematic situation in order to propose improvement actions.

Stage 1. Problem situation: unstructured: it was asked about the situation considered problem, without attempting to implement a particular vision with regard the same. Here the elements and levels of HCM that can interact with the objective of generating a auto-organisative state in tourist SMEs are shown.

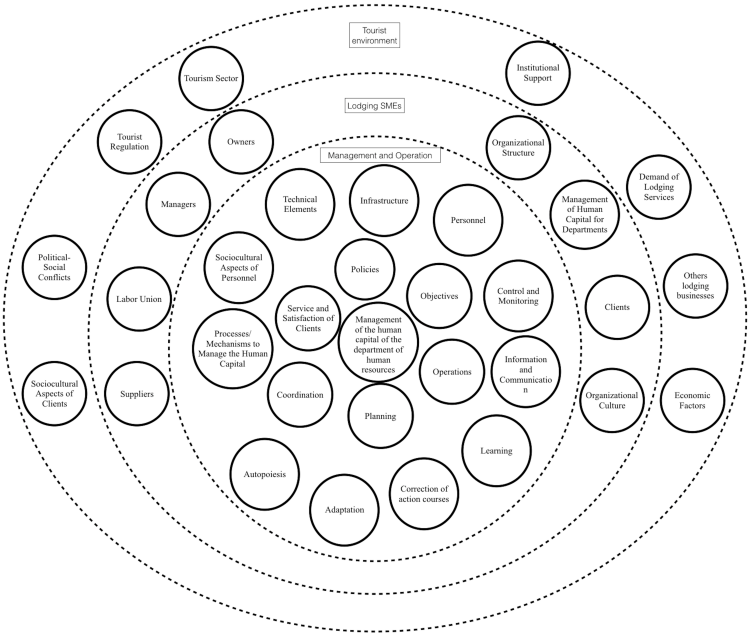


Figure 2. Problem situation: unstructured

Figure 2 shows three recursion levels related to the conceptual model to be designed in orden to assist the HCM in tourist SMEs and it is described below:

Level 1: integrates the relevant components that must interact with the elements identified at upper levels looking for evaluation purposes or priorities of HCM and thus reorder processes and mechanisms that allow to generate learning that will be useful to correct courses of action, adaptation and self-organising of the overall system without neglecting the relation of the human component and the socio-ecological system.

Level 2: elements that influence the HCM course are grouped here, among those who are the owners, managers, the union and the suppliers. These elements are taken into account because it is considered that cause disorder in the operations, the information flow among positions and departments also prevents the generation of a defined purpose for the overall system. This level also includes units with which HCM must generate synergy and mutualist symbiosis trying to ensure the existence of the whole system without fail to consider the impacts to the socio-ecological system, considering the relationships and impacts with the ecological environment, ensuring the customers needs and enrich the HCM in each department. In that sense, it is necessary to regenerate the structure and organisational relations to generate synergy with the level one.

Level 3: represents the socio-ecological, constitutes the metasystem that nest to the system under study. Here converge elements such as regulatory framework or normative for tourist SMEs as well as related components with the competition that emanate from the supply of services of other companies and the demand for services by users, as well as the possible restrictions of the economic and conflict political-social factors.

Stage 2. Problem situation: expressed. Chart 2 shows the elements to integrate a model that provides information about the HAS and the interrelation between present structure of the organisation and processes. With this was sought to identify pathologies in the system to connect them with the problematic situation and be able to generate a reflection to determine the origin of the relevant systems.

Chart 2. Elements of the system

Icon	Element	Icon	Element
	Human Capital Management from Human Resource Department		Information and communication
	Service and client satisfaction		Learning
	Policies		Correction of courses of action
	Goals		Adaptation
	Operations		Autopoieis
	Planning		Suppliers
	Coordination		Union
	Processes/mechanisms to manage human capital		Managers
	Socio-cultural aspects of employees		Lodging SMEs owner(s)

	Technical elements		Organisational structure
	Infrastructure		Human Capital Management by department
	Operational staff		Guests
	Control and monitoring		Organisational culture
	Socio-cultural aspects of clients		Cameras and support institutions
	Political and social conflicts		Demand on lodging service
	Tourism regulation		Other lodging SMEs
	Socio-Ecological environment in which tourist SMEs operate.		Economic factors

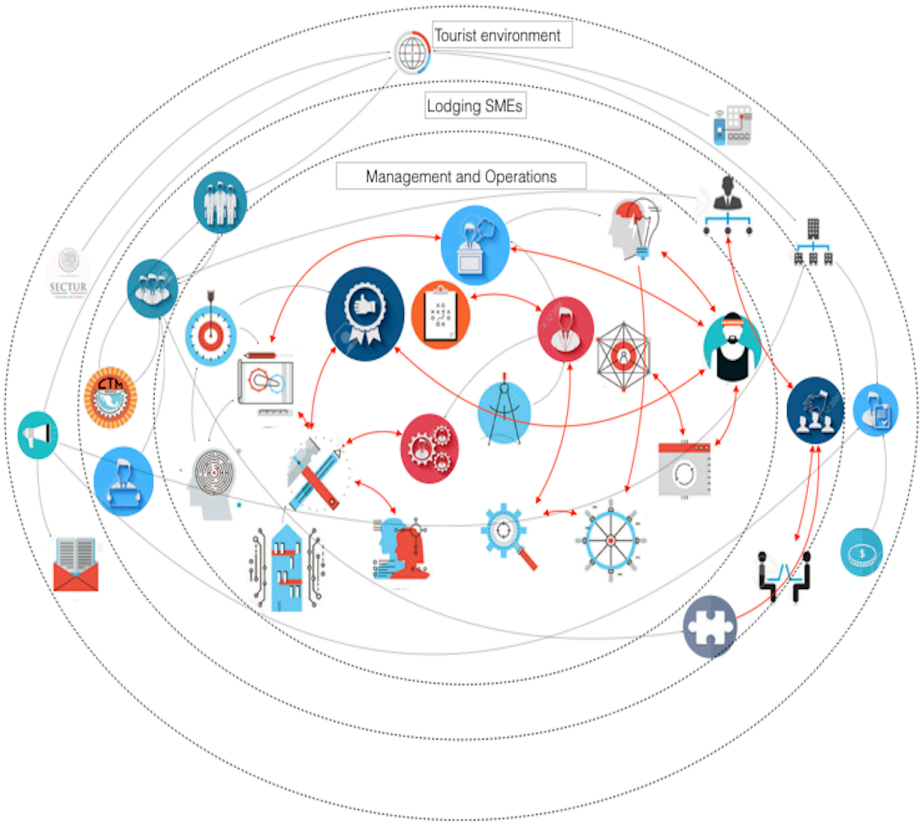


Figure 3. Rich picture of the system and its environment

Derived from the graphical expression of the components of the system in focus and the elements of the environment to which it relates, the conflictual relations are highlighted (**Fig. 3**) and its explanation is provided in chart 3.

Chart 3. Relations in conflict

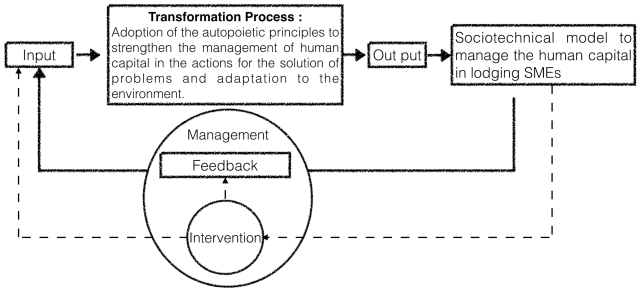
Element	Relation	Element
Human Capital Management of Human Resource Management Department	• Human capital planning is poor. • Strategies or programs are not formulated for managing human capital.	Planning
Human Capital Management of Human Resource Management Department	• Alignment between human capital management and the operational and strategic framework of SMEs is not identified.	Control and monitoring
Control and monitoring	• The department to manage human capital does not have a clear purpose, goals and strategies.	Courses of action correction
Courses of action correction	• The training is not continuous and nor have tools and indicators that provide information to determine its impact or in its defect make decisions.	Learning
Staff	• Training is conceived as a requirement that must be accomplished and in most cases is not aligned with the real training needs g of employees or working groups.	Learning
Staff	• There are no tools that allow to know the level of adaptation of new workers in the company.	Adaptation
Information and communication	• Information available to the staff is not accurate, it does not allow to make decisions or correct dysfunctions on time. • There are no processes or mechanisms identified that allow an efficient communication.	Staff
Staff	• The hiring arrangements are not clear for future employees and on numerous occasions other organisations models are used for the recruitment.	Clients services and satisfaction
Coordination	• The staff does not receive feedback to improve performance and provide quality services.	Information and communication
Operations	• The absence of descriptions and standardizations of job profiles permeates in a negative way in candidates selection as the income to the organisation is conditional, in most cases, to interviews or on occasions to carry out specific tasks.	Coordination
Processes/mechanisms to manage human capital	• The provisioning process of persons is not rigorous, rather is carried out through employees recommendations or by actors with management functions.	Operations
Technical elements	• Employees find relined its response capacity to the operations required by the system.	Operations
Adaptation	• There is no relation, human capital management does not contribute to adaptation and self-organisation of whole system.	Autopoiesis
Human capital management by deparments	• Activities relating to human capital management tend to be, in a sense, in a slightly formal way.	Organisational structure
Organisational culture	• Those who manage human capital, and in general lodging SMEs, recognise that organisational culture does not strengthen the commitment of employees because they observe crisis in terms of commitment and retention.	Human capital management by deparments
Human capital management by deparments	• The absence of purposes and strategies, the leadership style that is used to assist the working groups is confusing to have an impact on the median or low customer satisfaction.	Clients

DISCUSSION

Stage 3. Root definitions of relevant purposeful activity systems: modelling a complex activity for its use with the SSM, demand to specify clearly the activity with purpose to be modelled which leads to the root definition that at the same time consider the activity with purpose as a process of transformation. In that sense, as a basis for the construction of a conceptual model, the following definition is considered: *a human capital management system aimed to lodging SMEs to assist them in the resolution of problem situations, to evolve and adapt to changes in the external environment, through the adoption of autopietic principles in human activity systems.*

A root definition seeks to affirm, in the opinion of who built it, that the selection of certain relevant system can lead to a conceptual model containing the essence of the perception of the situation to be modelled and subsequently be contrasted with reality in order to generate improvements to the problems. Therefore, the CATOWE mnemonic (**Chart 4**) was developed in order to name the relevant systems.

Chart 4. CATOWE elements

Client:	1. Staff. 2. Actors with management functions. 3. Other lodging SMEs. 4. Guests.
Actor:	1. Staff with managerial functions. 2. Operational staff. 3. Owner(s). 4. Union. 5. Inputs and services suppliers.
Transformation:	
Owner:	1. Lodging SME owner. 2. Staff manager.
Weltanschauung:	1. The complexity increases with the number of interrelationships, therefore it is necessary to do more effective to the HAS to support to the entire system to adapt to its environment.
Environment:	1. Cameras and support institutions. 2. Other lodging SMEs. 3. Tourism secreatariat. 4. Providers of labour institutions.

Relevant systems:

1. Operational activity system: It comprises the HAS, HCM seeking technical efficiency through reset operations. Through a system review seeks to detect omissions as close to origin point giving faculty to the staff to correct them allowing human development.

2. Technical system: constituted by the infrastructure, processes, technology, organisational culture. It aims, through a storage and control of information system, share data in order to fade organisational limits since tasks, mostly, are interdependent and require coordination and data exchange.

3. Control and monitoring system: reviews the subsystems in the organisation, checks for significant changes in the whole system and the socio-ecological environment, it supervises and seeks to anticipate failures in operations, generate relevant information to make decisions looking for maximise the availability of information in order to generate necessary adaptations.

4. Management and planning system: it seeks to have an impact in generating viable equilibrium state as well as govern the rest of the systems and their elements. It must make compatible the attributes of the HAS with the environment and introduce diversity in the organisation shaping multifunctional teams.

Stage 4: Conceptual model: the construction of the conceptual model (**Fig. 4**) pretends to reach what is established in stage 3. Although a conceptual model is an abstraction, it is designed as a set of holons whose attempt to assist in the situation perceived as problem. It should be added that the expression of the model is given with a minimum number of activities necessary to carry out a transformation process.

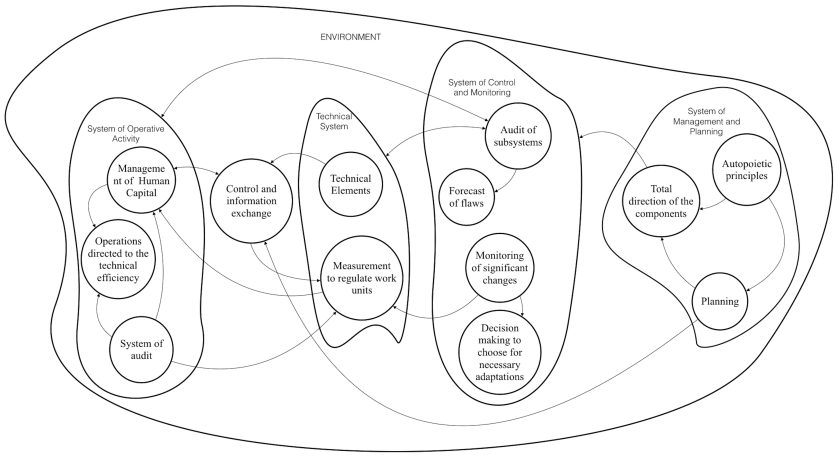


Figure 4. Conceptual model

CONCLUSIONS

The review of theories and concepts allows to say that the approaches to HCM problems in Mexican SMEs is through concepts and reductionist models. It is considered important to emphasise that the lack of models designed specifically for the type of mentioned organisations leads them to import or adjust management models that were developed for large companies which leads to inappropriate proposals for improvements and inefficient to treat their problems.

When comparing models to manage the human capital in tourist SMEs it was found that such models ignore important aspects as:

relations with the environment, problems contextualisation, understanding interrelations, to ensure viable equilibrium or the transcendence of the whole system in its current context. In this regard, it is considered that the design of a model for managing human capital in tourism SMEs must consider management functions, the organisation, social and technical elements, economical and environmental aspects.

The development of the SSM allowed to establish the relevant actors within the problem situation and place them at a certain level of recursion what made possible to identify conflictual relations in the system in focus within those stand out the training of employees, the relationship with the environment, the ordering of priorities and operations as well as viable equilibrium and autopoiesis. Derived from this, the root definition should resume aspects as problem solving, the adaptation of the total system, the response ability in HAS and the evolution to give origin to relevant systems. Considering the characteristics of both the definition root and development of the CATOWE mnemonic, it was determined that relevant systems would cover four aspects: operational activity, the technical system relations, control - monitoring as well as the functions of management and planning.

Although relevant systems are non-existent abstractions, its expression establishes them as a set of holons that, arranged with certain logic, they seek to influence on the transformation of the situation perceived as problem. The conceptual model presented in this paper establishes that the management of human capital in tourist SMEs must have a review system that allows direct its operations towards the technical efficiency. The technical system, through a control and exchange of information holon, set measurements to regulate work units. Also, through the conceptual model, it was determined that human capital management must integrate the subsystems review in order to predict failures as well as monitor significant changes to generate necessary adaptations without ignoring the management of the whole system, planning or the relationship with the environment.

Closing, the proposed model aims to change the mechanistic understanding of the human capital management that persists in the cited organisations for a conception in which the human being is the centre and has the capacity to develop globally through recognition of the interrelationships of the transpersonal dimensions, organisational and environmental. Thus, development must be managed properly and enable the symbiotic influence on the individual as well as the activity system in which the human being is immersed.

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