Local productive arrangements and their effects on tourism

Arranjos produtivos locais e seus efeitos sobre o turismo

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ABSTRACT
This article presents a set of performance indicators to guide the actors to increase their mutual cohesion and facilitate the pursuit of common goals. These indicators were defined based on the authors’ expertise in analyzing tourism networks and the results obtained from research in Ouro Preto City, Brazil. In this way, it was possible to perceive the degree of significance of the actors involved in terms of the choice criteria used by visitors to configure their path within the tourist region surveyed and thus strengthen existing relationships.
Keywords: business networks, strategic alliances, tourism, and local productive arrangements.

RESUMO
Este artigo apresenta um conjunto de indicadores de desempenho para orientar os atores a aumentar sua coesão mútua e facilitar a busca de objetivos comuns. Esses indicadores foram definidos com base na experiência dos autores na análise de redes de turismo e nos resultados obtidos em uma pesquisa na cidade de Ouro Preto, Brasil. Dessa forma, foi possível perceber o grau de significância dos atores envolvidos em termos dos critérios de escolha utilizados pelos visitantes para configurar seu caminho dentro da região turística pesquisada e, assim, fortalecer as relações existentes.

Palavras-chave: redes de negócios, alianças estratégicas, turismo e arranjos produtivos locais.

1 INTRODUCTION
In the tourism sector, where the face-to-face interaction with the visitor is intense, the services segment is where the natural barriers are faced. These barriers can be higher or lower depending on the size of the players involved, the degree of interdependence between them and their power to positively influence events along the perimeter of the Local Productive Arrangement (LPA) within their reach.

Significant changes and transformations can be seen both nationally and internationally, which makes this sector one of the most challenging when it comes to determining which markets to serve, defining competitive priorities and strategically aligning the search for the competitive conditions needed to overcome competitors and the difficulties typical of its competitive context.

Successfully managed relationships in a Local Productive Arrangement (LPA) commonly occur due to successful cooperation and trust, enabling better conditions for coordinating activities. On the other hand, poorly managed relationships can be both the cause and effect of opportunistic behaviour within the LPA, leading to losses for everyone involved. A tourism LPA comprises various services, which could make it difficult to find uniformity or competitive alignment in the behaviour of its members. However, this study will likely provide a proposal for performance indicators enabling the actors who
make up these LPAs to achieve the right profile and thus maintain cohesion and interest in pursuing the same competitive objectives for the destination.

The first stage of this paper presents the conceptual bases that underpin the approach used here in the discussion of the results and even in the research itself. It also presents the results of a study carried out in the tourist region of Ouro Preto, involving the behaviour of tourists and the consequent impact on forming the sector's competitive bases. Ultimately, it is possible to see the degree of significance of the actors involved in terms of the choice criteria used by visitors to shape their journey within the tourist region analyzed and thus strengthen the existing LPAs.

In preparing this article, it was decided to review three concepts to help understand the proposed theme: (a) Tourism, because it is a question of analyzing visitor behaviour. (b) Local Productive Arrangements (LPAs), here referred to as Business Networks because they are configured in the Tourism Sector. (c) Performance Indicators, because companies need to develop an appropriate profile for the sake of an objective, even if only temporary.

2 THEORETICAL APPROACH
2.1 TOURISM

It is necessary to understand the inextricable meaning of tourism to conceptualize tourist services. This article presents the concepts of tourism based on demand and supply since the existence of the network of Small and Medium-sized Enterprises (SMEs) is due to the movement of visitors. The demand-based concept focuses on "Tourism comprises the activities of persons travelling to and staying in places outside their usual place of residence for not more than one consecutive year for leisure, business, and other purposes." (UNWTO, 2021). This concept includes the movement of people between various places/destinations, the stay in these places/destinations, the journey to these places/destinations, the quality of the activities carried out in these places/destinations, the need to change the usual environment; the temporariness of the trips; the motivation for the trip which cannot be linked to permanent work and the minimum distance (the WTO recommends 160 kilometres).
The supply-based definition proposed by Leiper (1979, p.400) is that "tourism activity consists of all those businesses, organizations and facilities that set out to serve the specific needs and desires of tourists" and combine in some way to provide the travel experience (Cooper et al., 2001, p. 40) at a given price (Middleton & Clarke, 2002). This sector comprises transport establishments, accommodation, food, shopping, entertainment, activity venues and other available hospitality services (Goeldner et al., 2002, p. 23)".

Authors such as Leiper (1990) define the tourism sector as the "set of companies and organizations involved in the delivery of the tourism product" or 'service product' (Cooper et al, 2007, p. 556), which McIntosh, Goldner and Ritchie (2008, p. 26) have called the amalgam that consists of "the sum of the phenomena and relationships that arise from the interaction of tourists, business suppliers, governments and host communities in the process of attracting and accommodating these tourists and other visitors".

These "individuals or groups who travel" and "tourists and other visitors" have different behaviours and must be classified. The UNWTO (2021) defines a tourist as a person who travels away from their residence for more than 24 hours but less than one year and whose primary purpose of the trip is other than the exercise of an activity remunerated from within the place visited. However, military personnel, diplomats, immigrants and resident students are not tourists. On the other hand, tourists are travellers who spend less than 24 hours in a destination.

The tourism sector is itself interconnected and interdependent. However, the crisis, competition, organization support and technology are highlighted by Wang and Fesenmaie (2007) as some of the preconditions for forming a tourism network. These preconditions, together with changes in visitor behaviour and lifestyles, have been frequent, such as short stays in the destination, which Novelli et al. (2006) highlight as the key factor slowing down the economic growth of cities and suggest increasing attractions and facilities as a strategy for expanding opportunities and reducing seasonality in the sector.
2.2 NETWORKS AND THEIR ANALOGUE APPROACHES

Generally speaking, networks can be understood as an organizational form that is neither market nor hierarchical (Powell, 1990). Networks are alternatives to market forms and vertical integration because they contain horizontal and vertical structures of exchange, interdependence of resources and reciprocal lines of communication. Their characteristics lie in the speed of communication, decision-making, product or technology development, as well as taking into account the credibility of the players involved, the negotiation of items that are difficult to measure, specific skills, the spirit of innovation, experience, the zero-defect philosophy, mutual benefits, trust, reciprocal actions and the formal structure. Thus, networks are at the heart of organizational theory, and it is understood that an interfirm network is a way of regulating the interdependence of complementary systems such as production, research, engineering and coordination, which is different from aggregating them in a single firm. In this way, the competencies and attributions of a network of companies are linked to the coordination processes that a coalition of companies can employ (Amato Neto, 2000). Porter (1998), in turn, defines business networks as a method of organizing economic activities through coordination and inter-firm cooperation.

Business networks have been intensively studied and discussed by various authors. These networks have emerged in various forms and approaches, including Porter (1999) with the theory of Clusters (groups, groupings or agglomerations); Cassiolato and Szapiro (2002) with Agglomerations and Local Productive and Innovative Systems, Local Production Systems, Arrangements and Local Productive Systems; Casarotto and Pires (2001) with Cooperation Networks, Networks of Small and Medium-sized Enterprises, Business Consortia, among others.

Corrêa (1999) and Casarotto Filho and Pires (1999) agree that the birth and survival of networks depends on discussing and equating these three aspects: the culture of trust, the culture of competence and the culture of information technology. The culture of trust is linked to cooperation between companies, involving cultural aspects and the interests of people and companies. The culture of competence refers to issues linked to the core competencies of each partner. The culture of information technology means that
speeding up the flow of information is vitally essential for implementing and developing flexible networks.

2.3 TRUST FOR NETWORKS

In any relationship, trust between the partners involved is a determining factor for success. Trust is the informal understanding that binds and forms the basis for establishing and further developing a successful relationship (Adobor, 2003).

In this way, trust is an expectation that alleviates the fear that the exchange partner will act opportunistically and cannot be imposed (Fusco, 2004). Its development could involve a long-term process in the sense that the 'generator' of the network would gradually develop personal relationships and a reputation for fairness. This fact explains why many networks have a solid geographical or cultural component because it is easier to develop close relationships with someone with a record of personal integrity.

In the view of Humphrey and Schmitz (2002), relationships based on trust between economic agents have been considered part of companies' competitive advantage. The issue of trust arises because economic transactions involve risks. In perfect competition, risks are eliminated by the assumptions of perfect information and unbiased rationality. Perfect information assumes that agents are informed truthfully and freely about all aspects of transactions. People are assumed to pursue their self-interest for impartial rationality, but only when they have the right to do so.

In reality, the authors suggest that the actors face risk when there is an exchange of information because they have limited capacity to gather, store and process it, and this process in itself is a cost. There are limits to analyzing the extent to which probabilities can be pre-established and incorporated into the contract, just as much as relationships can be monitored. Given the impossibility of controlling and monitoring risks effectively, many exchanges that would be beneficial to both parties fail to materialize, leading to independent transactions that end up being limited and ineffective. Broad trust develops when companies create more complex interactions and interdependence (Humphrey & Schmitz, 2002).

Interdependence is not new; recent literature on supply chains, clusters and networks suggests a degree of interconnectedness that can only work when the
relationships between companies are underpinned by more than restricted trust. The need for broad trust is most evident where unforeseen eventualities can be resolved through cooperation, which is crucial to its success.

The partners usually establish alliances with numerous objectives, including sharing risks in complex or high-tech projects. In addition, increased trust between alliance partners encourages an economic return for both. It can develop mutual trust, reducing the adverse effects of limited rationality, specific investments and opportunism that can appear while also reducing transaction costs (Child & Faulkner, 1998; Williamson, 1991).

3 METHODOLOGY

Complementing the composition of the analytical context presented, the typology that will be adopted as pillars to assess the alignment of the network of tourism actors in Ouro Preto was used: The Strength of the Network, the Strength of Partnerships, and the Strength of Services, which will be based on the evaluation of visitors. Thus, in terms of relevant variables, it will be possible to obtain the necessary indicators for composing this alignment, as described below:

a) Strength of the network - Symmetry of the network as a whole - degree of centrality or % share of the network actors in the business; the number of clients processed in the network per actor.

b) Strength of partnerships - Symmetry of relationships - considering the economic power (number of employees) of the players involved in a relationship.

c) Strength of services (visitors’ assessment) - Reliability of the source of information; Quality; Price; Accessibility; Prior knowledge.

Obtaining this information required three stages of data collection. The first used a questionnaire and the second and third in-depth interviews. The universe considered in this research was 94,606 visitors during 2004, obtained based on the number of signatures in the entry book of the Inconfidência Museum, as it is the most reliable record in Ouro Preto (NUPETUR, 2005). In this way, a sample of 400 questionnaires was defined, and, to ensure the representativeness and reliability of the universe surveyed, a maximum relative error of five percentage points was adopted - with a 95% confidence level - which
allows statistical inferences to be made for the universe of tourists in the city. The method of questionnaire application by the researcher allowed the researcher to interact with the tourists' responses, gathering information from outside the questionnaire that could be useful later.

The sampling model used was probabilistic by traffic or accidental, where each element of the tourist population (research universe) had the same probability of being interviewed and included in the sample, allowing representative inferences to be made for the universe (Yin, 2001). The researcher can interfere with the probability of selection by arbitrarily determining the location of the interview.

Data was collected by administering questionnaires in one week each month during March, April, May and June 2009 (Flecha et al., 2009). Although the sample determined by the universe was 400, it was decided to administer 600 questionnaires due to the high number of expected losses. These losses were taken into account due to the difficulty obtaining data in Ouro Preto City.

The questionnaire comprised 24 open and closed questions, dichotomous and non-dichotomous, based on questions directly related to the flow of tourists among these actors. The first three questions acted as a filter to segment visitors from residents/students/ workers. Questions 10 to 19 were subdivided into five stages, each looking at which tourist facilities they used, who referred them to them and the classification of these facilities in terms of quality, price and access, which provide information on the weight and power of these interactions. In the questions involving evaluation, a Likert scale was used.

3.1 EVALUATION OF RELATIONSHIPS

The main objective of the interviews was to obtain elements that would allow us to know and understand the relevant mechanisms and procedures, considering the subject of competitive alignment between the players in a tourism sector network. To this end, topics were included to help understand their implications in each specific dimension mentioned above, according to the typical dynamics of the processes taking place within the boundaries of the tourist destination analyzed. In the competitive environment or context, visitors identified the tourism sub-sectors in Ouro Preto City. Accommodation
(hotels, inns, hostels, guest houses, hostels); Food (restaurants, bars, bakeries, snack bars, supermarkets); Shopping (handicrafts, jewellery); Attractions (museums, churches, parks); Tourist Information Services (guides, tourist information centres).

4 RESULTS AND DISCUSSION

**Visitor Profile:** The total of 553 respondents was segmented into 244 tourists (41%) and 309 excursionists (51%). Females predominate (tourists 59% and excursionists 60%), with an age range of 25 to 34 years (tourists 33% and excursionists 30%), single (tourists 55% and excursionists 58%), with a higher education level (tourists 45% and excursionists 38%), and with a family income between R$ 1,500.00 to R$ 3,500.00 (tourists 36% and excursionists 37%).

**Actor Profile:** In a universe of 269 actors, 66 were excluded (due to non-existence, inability to locate, inconsistency with the research, incorrect names, unidentified student dormitories, no revenue, and attractions). From this universe of 203 actors, 141 companies that reported the number of employees stated having up to 9 employees (77%), six companies had 10 to 19 employees (4%), and 28 companies had 20 to 99 employees (16%). Six companies had 100 to 499 employees (3%), while 22 either did not know or did not wish to respond.

Tour guides, travel agencies, and tourist information centres are actors deserving of specific analysis due to their demonstrated importance in this research. The results indicate that 143 actors do not pay commission to tour guides, 43 pay commission as a percentage of the value of services (accommodation, meals, or purchases), and 17 did not respond or were not applicable (tour guides, tourist information centres, attractions, among others). This payment can occur in cash or through barter services (barter). The sectors that stand out in commission payments to tour guides are accommodation (20), meals (15), and purchases (8), and of these, 4 had revenue in the range of up to R$ 120,000.00, 23 actors had revenue in the range of R$ 121,000.00 to R$ 1,200,000.00, 3 actors had revenue in the range of R$ 1,300,000.00 to R$ 10,500,000.00, and 13 actors did not wish to or did not know how to respond. If it is considered that seven companies in the accommodation sector had revenue in the range of R$ 121,000.00 to R$ 1,200,000.00 and 18 have the same revenue range and do not pay commission to tour
guides, it can be assumed that, in this case, the payment to the guide does not impact the revenue of these actors. Out of these 203 actors, 20 were selected who reported having more than 20 employees for in-depth field research, and the following sectors were identified: accommodation (7 actors), meals (9 actors), attractions (3 actors), and purchases (1 actor).

**Network Profile:** The field research identified the existence of 203 actors linked to the tourism sector, of which 63 companies belong to the accommodation sector (H) (hotels, inns, hostels, lodges, dormitories); 81 from the food sector (A) (restaurants, bars, bakeries, cafes, supermarkets); 23 attractions (At) (museums, churches, parks), three tourist information services (TIS) (tour guides, tourist information centres, travel agencies), and 33 companies from the shopping sector (C) (handicrafts, jewellers, soapstone market).

According to the structure of the questionnaire applied to visitors, two distinct networks were identified: the flow network and the referral network, which were analyzed for tourists and same-day visitors, also named excursionists. The flow network - The tourist's flow enables connections and interactions between the actors/nodes of the city. Suppose any tourist or excursionist visited specific points A, B, C, and D. In that case, interactions between these nodes could be formed, creating a network with the connections: A-B, A-C, A-D, B-C, B-D, D-C. These connections and interactions are possible as one observes the dynamics the tourist/excursionist provides when visiting such attractions. Among the 203 actors/nodes in the entire network, 139 nodes form the flow network of tourists, and 82 nodes form the flow network of excursionists. In the flow network of tourists, 2,270 connections were identified, and in the flow network of excursionists, 1,082 connections were identified.

In Figure 1, representing the flow network of tourists, it can be noted that numerous nodes around the network are not connected in the flow network of tourists, meaning that these nodes were not visited and, consequently, were not mentioned despite being part of the tourist offer and listed in the library. In the centre of the figure, purple, the most connected point in this network, the Museum of Inconfidência (86).
Table 1. Figure caption 1, 2, 3 e 4:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circle</td>
<td>Accommodation (hotels, inns, hostels, lodges, dormitories)</td>
</tr>
<tr>
<td>Square</td>
<td>Food (restaurants, bars, snack bars, bakeries, supermarkets)</td>
</tr>
<tr>
<td>Triangle</td>
<td>Shopping (jewellers, craft shops)</td>
</tr>
<tr>
<td>Diamond</td>
<td>Attractions (museums, churches, convention and event centres, mines, waterfalls, parks, forest garden)</td>
</tr>
<tr>
<td>Triangles</td>
<td>Information services</td>
</tr>
</tbody>
</table>

Primary source, 2009.

Figure 1 - Flow Network - Tourists (*)

(*) The size of the symbols (see meaning in Table 1) is related to the strength of the nodes. The thickness of the lines identifies the intensity of the connections. The numbers next to each symbol identify the nodes among the 203 points.

The disconnected points were identified: 12 attractions, 31 restaurants, 20 shopping centres and two tourist information services (TIS), which should not happen in a tourist town since the visitors demand information all the time. This fact of the disconnection of TISs could lead to the interpretation that these services have low competence.

In Figures 1 and 2, the flow of tourists and excursionists is organized as follows: the size of the nodes/actors is related to their strength, and the thickness of the line is
related to the weight of the link. The most critical nodes/actors, according to these criteria (the most visited), are in the centre, and the least visited nodes/actors are at the ends, with the disconnected nodes representing the network's unused potential. In Figure 2, which represents the excursionists' flow network, you can find numerous nodes around the network that are not connected, which means that although they are part of the tourist offer and are listed in the library, they have not been visited and, consequently, have not been mentioned. In the centre of the figure, in this case in orange, you can see that the most connected point in this network remains the Inconfidência Museum (86).
them. The short stay in the city would prevent the use of these nodes, i.e., 46.8% stay a maximum of 24 hours without an overnight stay, 18.9% for two days, 15.7% for three days and 4.3% for four days. This data refers to the survey carried out by NUPETUR (2007): Low competence of tourist information services (tourist guides, travel agencies and tourist information centres) in providing information to tourists; Unawareness of the existence of tourist information services due to a lack of adequate signposting.

The referral network: This was set up involving the same actors as the flow network, and it was possible to map it through the relationship between "who" referred "what" to visitors who travelled through the nodes of the network (see Figure 3). In the tourist referral network, 515 links were identified referring to individual choices and in the excursionists' network, 484 links were identified: a possible low competence of tourist information services (tourist guides, travel agencies and tourist information centres) in providing information to visitors who have a TIS (tourist information service) that is disconnected as is the case with node/actor 117; or the high rate of return to the city of both tourists and excursionists (51% visited more than once and 48.5% were visiting for the first time) (NUPETUR, 2007).

Figure 3 shows the weakness of the referral network, which is mainly concentrated in two nodes of the Tourist Information Services (TISs): tour guides (114) and travel agencies (122). On the other hand, tourist information centres (117) need to be connected. The most significant number of disconnected nodes is concentrated in the food sector (70 nodes), followed by 44 lodgings, 31 shopping centres and 21 attractions. It can be surmised that many of the city's actors/nodes have no formal relationship with a tour guide or travel agency; they do not have to pay commissions to tour guides/travel agencies; they are focused on other segments such as the local population; as tourists/tourists in Ouro Preto City have a high level of individual choice, this is reflected in the lack of interest on the part of the representatives of the nodes in joining any network or paying commission to tour guides; they are geographically distant from the city's central tourist hub; or the lack of contact with tourist suppliers (agencies/operators) in other centres such as Belo Horizonte, São Paulo and Rio de Janeiro.
Figure 3 - Indication Network - Tourists (*)

In this tourist referral network, there are a more varied number of actors with referrals from both tourist guides and travel agencies. There are nodes in the food sector (39), shopping (82) and accommodation (24 and 19).

In addition, regarding the tourist referral network, it can be assumed that many of the city's accommodation establishments must have no formal relationship with tour guides or travel agencies, such as student unions; they must not pay commissions to tour guides/travel agencies, such as student unions and attractions; there is little accommodation on offer in the city, leading the owners to believe that there is no need to take proactive action; as tourists/excursionists in Ouro Preto City have a high level of individual choice, this reflects the lack of interest on the part of the representatives of the nodes in linking up with any network or paying commission to the tourist guides; very short stays by excursionists in the city. There are reports of same-day visitors who only

(*) In the referral network, the size of the symbols is related to the power of the nodes. The thickness of the lines identifies the intensity of the links. The numbers next to each symbol identify the nodes between the 203 localized points.
stayed in the city to visit three attractions. They are geographically distant from the city's central tourist hub.

In this tourist referral network, it was observed that the most disconnected sector is the food sector, with 60 actors, followed by 48 actors/nodes from the accommodation sector, 33 actors from the shopping sector and 24 actors/nodes from the attractions.

The quantity and quality of disconnected nodes was striking. In a referral network with 203 actors/nodes, only 58 actors are connected and have generated 65 links. The ratio of actors per link is meagre. Of these connected actors, 16 are from the food sector, 13 are attractions, 19 are accommodation, seven are shopping, and 2 are information.

In the design of the indication network, what changes is that, as the indication is a directed network, the sizes of the nodes are different, indicating that the larger the node, the greater its strength.
Figure 4 shows the referral network for excursionists and once again highlights the importance of tour guides (114) and travel agencies (122), where at various times, the attractions (represented by the diamond figure) are referred to by both tour guides and travel agencies. It should also be noted that node 117 refers to TISs such as the Municipal Tourism Office and the Tourist Information Centre provided by the Federation of Industries of Minas Gerais State is disconnected.

The tourist referral network is also denser than the same-day visitor referral network (figure 4) and some assumptions can be made, such as the accommodation nodes are totally disconnected because the excursionists don't stay overnight and therefore had no need to choose this actor; the food sector nodes are disconnected probably because of the short time spent in the city or because they are located geographically distant from the city's tourist flow hub; the attractions may be disconnected due to the very short stay of excursionists in the city and the low competence of the tourist information service nodes in providing information to day trippers; both tour guide (114) and travel agencies (122) are strongly connected to the attractions; the attractions that stand out most in the excursionists' referral network, both due to referrals from tourist guides and travel agencies, were: 86 - Inconfidência Museum, 88 - São Francisco de Assis Church, 92 - Casa dos Contos Museum, 87 - Nossa Senhora do Carmo Church, 106 - Aleijadinho Museum and 109 - Tiradentes Square.

In this same-day visitors referral network, the most disconnected actors/nodes are from the food sector, with 73 actors, 31 actors from the shopping sector, 22 actors/nodes from the attractions and one information actor, which could mean Low competence of the TISs; Tourists/excursionists from external travel agencies who arrive in the city with hermetic packages.

As for the accommodation sector (64 actors), it was expected that it would remain disconnected from the network of excursionists since this type of visitor only stays for a while and, therefore, does not use this actor.

The quantity and quality of disconnected nodes are striking. In a referral network with 203 actors/nodes, only 36 actors are connected, generating 41 links. The ratio of actors per link is meagre.
4.1 SET OF INDICATORS FOR THE COMPETITIVE ALIGNMENT OF THE TOURISM STAKEHOLDER NETWORK COMPONENTS

Indicators relating to the Strength of the Network (ISN) - To identify the strength of the network, it was necessary to calculate the symmetry of the network as a whole and calculate the weight of the participation of the actors/nodes of the network in the business. It was done by identifying the number of clients processed in the network per actor/node, equal to the number of links for each actor/node. The participation weight of the actors $Q_v$ (where $v = t,e$) is defined as the number of visitors (tourists or excursionists) processed by the total number of visitors.

$$Q_v = \frac{\sum l_{ig}}{\sum turistas}$$  \hspace{1cm} (a)

If the weights of visitors per total visitor for each actor/node ($Q_v$) are very close to each other, it means that the nodes in the network process the same number of visitors, which indicates that this is a symmetrical network.

According to the results found, the Inconfidência Museum (86), with 473 links, is the node with the largest share in processing visitors, with a weight that exceeds 1 (1.94), followed by the Inconfidência Museum (109), with 318 links and the São Francisco de Assis Church (88), with 308 links. As we have seen elsewhere in this thesis, none of the actors/nodes that process the most significant number of tourists are in the food or accommodation groups.

For the case of excursionists, the same expression (a) was used and following the same procedure as before, the histogram was constructed with the frequency of $Q_{t,e}$ values. There is also a situation where most actors/nodes process few clients with solid asymmetry.

Indicators relating to the Strength of Partnerships (ISP) - To identify the indicators relating to the strength of partnerships (ISP), it was necessary to classify the degree of importance of an actor in a given relationship to identify the possible dependence that one actor has on another. The ranking of the importance of actors in the network can be measured by the number of links from one actor/node to another divided...
by the number of links. The $F_i$ strength for each node was calculated based on the flow matrix with all the connections between all the nodes.

The highest value of $\left( \frac{F_i}{\Sigma F_i} \right)$ is selected. The smaller this value is, it means that the node does not have a strong dependency on any of those connected to it. The closer this value is to 1 (100%), it strongly depends on one of its neighbours. If the table has only small values, it means that there is no strong dependency, which may indicate that there are no strong partnerships.

As shown above, Ouro Preto's tourism actor network comprises 203 actors/nodes, where 140 nodes were identified as forming the tourist flow network and 83 as forming the excursionist flow network. Two thousand two hundred seventy links were identified in the tourist flow network and 1,082 in the excursionist flow network.

These calculations generated a file using UCINET 2.0, where the tourist network showed 2,270 valid links. Of these, 1,922 connections are below 1%, and 348 have connections above 1%. Of these 348 links, 265 had a strength of up to 2%, 16 with 3%, 3 with 4%, and 8 with 5%, meaning most nodes have no strong dependency.

The hiker network had a total of 1,082 valid links. Of these, 828 links were below 1%, and 256 had links above 1%. Of these 256 links, 39 weighted 2 to 3 per cent, 1 with 4 per cent, 4 with 5 per cent and 1 with 10 per cent strength, meaning most nodes have no strong dependency.

**Service Strength Indicators (SSI)** - Based on the information obtained from the businesses surveyed, this article will consider as indicators the evaluation of visitors (tourists/excursionists) concerning quality, accessibility (location), price, reliability of the source of information (referrer), prior knowledge (time in business/credibility/reputation) and location/access. These indicators will form part of the Service Strength Indicators, an integral part of the proposal for the competitive alignment of the network of tourism players. We chose to analyze the data based on the "essential" and "very important" items since these were the factors pointed out by the actors in the pilot survey.

- **In the accommodation sector**, tourists indicated the reliability of the source of information (46.15%), quality (41.89%) and price (35.14%) as extremely important. The day trippers did not participate in this assessment as they had yet to use this service.
- **In the food sector**, tourists highlighted restaurants and snack bars as very important information and the indication (reliability of the source of information with 54.64% and 50.65%, respectively), and the location of the bar and snack bar as extremely important (40.23%, 41.56%). Tourists highlighted the reliability of the source of information (59.38% and 57.69%, respectively) and the quality of restaurants, bars and snack bars as very important (52.23%, 60.56%, 62.82%). Concerning bakeries, tourists highlighted indication as very important (reliability of the source of information with 56.76%) and location as extremely important (54.05%). For same-day visitors, the factors considered to be very important were indication (reliability of the source of information with 50 per cent), price (58.33 per cent) and location (62.16 per cent). As for supermarkets, the tourists indicated that indication (reliability of the source of information with 44%) and quality (56%) were significant. In contrast, the excursionists indicated (reliability of the source of information with 77.78%), quality (88.89%), price (66.67%), prior knowledge (44.44%), and location (66.67%) were fundamental.

- **In the shopping sector**, tourists highlighted the reliability of the source of information (50.85%), quality (48.31%), price (45.90%) and location (51.26%) as significant factors. The excursionists made a similar selection to the tourists and rated the reliability of the source of information (55.36%), quality (58.04%), price (54.87%) and location (45.13%) as very important. Tourists rated the reliability of the source of information as very important (46.81%), the quality as extremely important (55.32%), and the location as extremely important (48.94%). Tourists rated quality (58.14 per cent) and price (46.51 per cent) as extremely important and location (46.51 per cent) as very important.

The factors that were most taken into consideration and that have the most significant weight in the evaluation of tourists and excursionists were the reliability of the source of information in terms of quality, price and location. However, the location is a highlight for the day tripper who does not have time, and the reliability of who recommends it as a source of information is a highlight for the tourist. Prior knowledge was highly considered and evaluated, even because, in general, in tourism, most visitors do not return to the place visited.
Given the results found and described above, it can be inferred that the visitor network in Ouro Preto City is a strongly asymmetrical, diffuse network with low connectivity and a low cluster formation rate. It can be considered a network with a low dependency index, with an absence of medium-sized and large companies, leading us to believe these companies have a strong family business profile. The visitors who give life to this network pointed out four value indicators that should be taken into consideration by the actors who make up the Ouro Preto tourism network: the importance of reliability of information source processing in the city, price, quality aligned with visitor expectations, which impacts on visitor satisfaction and, the importance of making a more significant number of attractions and services accessible (accessibility/location), as summarised in table 2.

<table>
<thead>
<tr>
<th>ISR</th>
<th>ISP</th>
<th>ISS</th>
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<tbody>
<tr>
<td>A visitor network</td>
<td>Strongly asymmetrical network where large processors are the attractions.</td>
<td>Not an interdependent network, i.e. few nodes with a high dependency index.</td>
</tr>
</tbody>
</table>

Primary source, 2010.

5 CONCLUSION

This study presents an alternative way of evaluating company networks by segmenting the network of operations involving physical, commercialization and business development activities and relationships. The research carried out in the tourism sector in Ouro Preto at Minas Gerais state in Brazil sought to map the network formed by the individual actors who operate the services. In this way, it was possible to sketch out the network designs and assess the density of the links between suppliers and clients and their relative importance in their context.

This work aimed to present indicators for the competitive alignment of the tourism actors' network components. The indicators presented here proved influential in proposing this alignment since they demonstrated: a) The solidity of the network was not solid but rather a fragmented and strongly asymmetrical network. However, an asymmetrical network may be all right, and it is also not necessarily static but dynamic, i.e. it may be an asymmetrical network that becomes symmetrical. In an asymmetric
network, the actors spend much more energy obtaining information because it is "every man for himself", and many gain a competitive advantage from this effort. However, this advantage is short-lasting in a small town since the tourism actors are from interdependent sectors. It was also seen that a symmetrical network could make the actors more comfortable, so actions are suggested to obtain both advantages, always bringing new things to the network members through knowledge exchange systems.

b) About the strength of the partnerships, it was possible to identify, through the classification of the importance of the actors within the network as a whole, that the city has a fragile, fragmented network that is strongly dependent on attractions, indicating the existence of fragile hotel-restaurant and shopping-hotel clusters. It may be due to a lack of cooperation and, consequently, a lack of trust between the players, as demonstrated by the strength of the link, i.e. it is almost a "one-way street". In this case, some pro-trust actions could be developed, such as initiating small attempts to create partnerships and presenting the results so that the partners can see the advantages of cooperation through permanent monitoring actions. Formally proposing actions to the attractions management body that could benefit all the players, such as publicizing small circuits that could include restaurants, shops and hotels in addition to the attractions.

c) About the solidity of the services, it could be suggested that through the parameters proposed by the players and confirmed by visitors, Price, Quality, Reliability of the source of information and Accessibility/location, these indicators could guide actions that seek to meet visitors' expectations through the creation of a promotional price menu; developing their guide services together with other players; developing promotional activities in Tiradentes Square and the Inconfidência Museum; proposing practical tourist signposting to municipal managers.

Based on the results presented and within the limitations of any research, the networks identified show a complete lack of interaction between the actors, given the large number of disconnected actors, which can prevent the formation of networks but can also be an opportunity to present these results to the city's tourism actors and the consequences of not working together.

The exploratory nature of these analyses and the fact that the actors of a single destination were studied limit the generalisability of the results found here. However,
despite limited results, they show the methods' validity. The possibility of quantitatively assessing the characteristics of a destination's network of tourism stakeholders is beneficial for the organizations responsible for managing the tourism system.

It was also noted in this study that the interactions of the Ouro Preto tourism network are generated exclusively by tourists, without any indication of cooperation and interactions between the nodes - unidirectional and not bidirectional. Cooperation between the nodes could optimize the system, such as an interconnection between museums, as this would directly influence the referral network (museum sub-networks) and, therefore, the flow network, as demonstrated in the research results.

Another exciting point found through the indicators was the reinforcement of the Accessibility indicator (location) as one of the indicators to be considered by the actors in the city's tourism network. Reinforcing the need to distribute tourism activity in Ouro Preto city better.

The results of this study clearly show the need for changes in the players' behaviour in Ouro Preto's tourism network, which must be gradual given the local culture.
REFERENCES


