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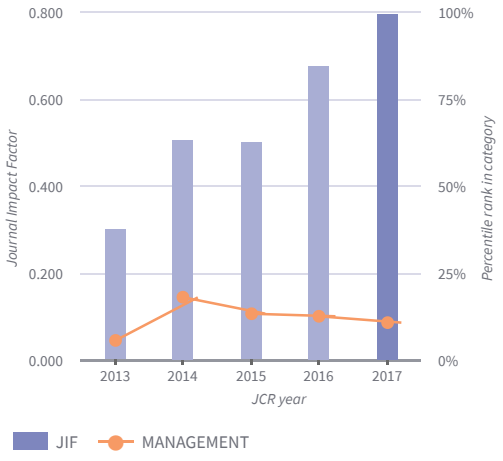

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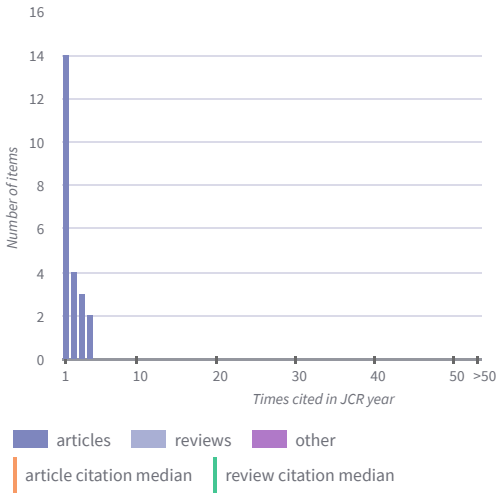

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ORIGINAL PAPER

Integrating VSM and Network Analysis for Tourism Strategies – Case: Mexico and the Chinese Outbound Market

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Abstract
With China leading since 2012 global outbound travel, this paper introduces a Systemic Model for Chinese Outbound Market exemplifying with Mexico's Case study, the seventh most visited country worldwide. Seeking to contribute increasing the applications of VSM, deepening its understanding and relevance stating proper functions integration to face Chinese Outbound Market leadership occurred in global tourism environment. First section of the manuscript introduces research objectives and gaps as well as document sources review discussion; second section details research design; third section covers proposed model and it's functions' operationalization, as well as network science analysis of information collected during an academical research stay on 2016 from Mexico National Polytechnic Institute to China Sun Yat Sen University Zhuhai Campus Tourism Faculty, and the Centrality measures found to confirm model pertinence.

Keywords Tourism · Chinese outbound market · Mexican tourist supply · Viable system model · Network science

Introduction

The situation that interests us occurs in current tourism environment with China leading since 2012 global outbound travel (UNWTO 2013). Our research is oriented towards future

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environment for tourism destinations as counterpart to improve their performance regarding Chinese Outbound Travel Market.

Attempted to answer the research question: What kind of tourism strategies can be recommended for destinations regarding Chinese Outbound Market based on the integration of VSM and Network Analysis?

Hence, the contribution of our theoretical model is that it has systemically structured Chinese Outbound Market at Tourist Destinations complexity promoting functions integration to improve hosts performance.

According to the above, manuscript research gap is circumscribed by a transdisciplinar systemic approach to attend the next research objectives:

(1) Conduct primary and secondary document sources review to describe situation.

Objective suitability to research gap is for outlining the situation including related expressions in a holistic perspective.

(2) Introduce model proposal oriented to improve destinations performance regarding Chinese Outbound Tourism.

Objective suitability to research gap is for drawing model on formal systems thinking that helps to structure complex organizational situation.

(3) Include experts' ideas in the study and provide quantitative elements that uphold relatedness of their ideas to model assumptions.

Objective suitability to research gap is for analyzing collected information in terms of an alike integral transdisciplinary tool.

First section of the manuscript introduces research objectives and gaps, as well as document sources review discussion; Second section details research design; Third section covers proposed model integration, it's functions operationalization, congruence verification of the resultant script to collect information and Network Science Centrality measures found to confirm model pertinence.

Document Sources Review

Primary and secondary document sources review was conducted as detailed below:

A) We selected UNWTO evidences of Chinese Market leadership on global Outbound Travel, after rising to the top of the ranking in 2012 and following ten years of double-digit growth in international tourism spending. Specifically, with an expenditure grew by 12% in 2016 to reach US $261 billion, and number of outbound travelers rose by 6% to reach 135 million in 2016 (UNWTO 2013, 2015, 2016, 2017). Moreover, socio-economic forecasts augur this market dynamic growth set to continue given the changing demographic profile with the young, affluent middle class emerging from 175 million people on 2008 to around 500 million by 2025; the rapid urbanization of the population by 2030 with over 60% of China's people living in major urban centers; a growing ability and desire to spend money on tourism, as well as willingness to use credit cards to do so;

the increased online travel and increased airline capacity from China to popular short and long haul destinations; and the increasing liberalization of China's travel and tourism industry (UNWTO 2008). All that taking place in current tourism environment where there is also substantial potential for further growth given international tourist arrivals worldwide are expected to increase by an average 3.3% a year over the period 2010 to 2030. At the projected rate of growth, international tourist arrivals worldwide are expected to reach 1.4 billion by 2020, and 1.8 billion by 2030 according to UNWTO's long-term forecast report (UNWTO 2017).

B) We chose papers that specify Chinese Outbound Travel Market Conditions, such as: Shopping orientations (Correia et al. 2017); Brand attachment (Zhuowei et al. 2017); Tourist motivation factors (Li et al. 2013; Petersen 2009); Attitudes, constraints and use of information sources (Sparks and Pan 2009; Lai et al. 2013; Pearl et al. 2017); Seasonal lifestyle (Salazar and Zhang 2013; Li et al. 2011); Tourist flow characteristics (Xie and Li 2009); Perceptions about destinations (Yun and Joppe 2011); Destination choices (Keating and Kriz 2008) and Preferences (Zeng and Go 2013). Works about issues expressed regarding Chinese Outbound Travel Market: Considerations on charging visa fee for Chinese tourists to Australia (Pham et al. 2017); Estimating size of market from a demand side approach (Li et al. 2010); as well as Arrival patterns and estimations (Lim and Wang 2008; Untong et al. 2015). And finally, research relating to Chinese Outbound Travel Market conflicts, like: Crowding-out effects on destinations and other nationalities tourists (Chou et al. 2014) or the Problem of zero-commission in Chinese outbound tours (Zhang et al. 2009). Those articles were published between 2008 and 2017 and confirm growing interest in this market research.

We summarize from this review that knowledge about China leading global tourism addresses Chinese Outbound Travel Market relevance; recognizes some of this market implications like expenditure, growth, preferences, destination choices and perceptions; makes inquiries about this outbound market tourist motivation factors, their concerns, as well as some behavioral and psychological aspects. Without undermining the importance of referred contributions; we observe few has been done to promote future oriented integral solutions for tourism destinations to act in response of Chinese Outbound Travel Market leadership. And we also identify that key research contributions are focused on the particular, tending not to consider other aspects involved in such complex and highly social content research; furthermore, that there has not been reported previous recommendation that structures Chinese Outbound Market at Tourist Destinations complexity.

Knowing about previous examples in Chinese Outbound Market Systemic Research that confirm this alternative suitability for a more objective and integrated way to perceive situations on subjects as Innovation (Desheng 2012); Population predictions (Lu et al. 2009); Market efficiency (Chaoqun et al. 2012) and Management decisions (Hsiang-Ju et al. 2010) that derive from their interdependent parts and various reasons.

Likewise previous applications of Viable System Model to Companies (Hoverstadt et al. 2007; Espejo 1979; Al-Mutairi et al. 2005; Chan 2011); Political Systems (Beer 1981); Insurance Sector (De Raadt 1987); Financial Sector (Trueba et al. 2012); Innovation (Devine 2005; Amar et al. 2006); Intranets (Nyström 2006); Project Management (Britton and Parker 1993; Morales et al. 2012; Murad and Cavana 2012); Supply Chain (Chronéer and Mirijamdotter 2009; Badillo et al. 2011); Health Sector (Monreal 2004; Midgley 2006); Energy Sector (Shaw et al. 2004; Terra et al. 2016); Education Sector (Ramírez et al. 2009;

Rojas and Tuesta 2011); Social Organizations (Espinosa and Walker 2013); Technology (Puche et al. 2017); Service Science (Barile and Polese 2010); Sustainability (Schwaninger 2015); Hotels (Gmür et al. 2010) and Communications (Espejo 2004); all intended to recommend improvement solutions in their respective fields.

With recognition of what has been investigated and the integral kind of proposal that can be introduced for tourism destinations to improve performance given Chinese Outbound Travel Market leadership; making clarifications considering study complexity, interdependencies between multiple agents and aspects involved; our recommendation pertinence for current tourism concern is ratified.

Research Design

This article introduces a model on formal systems thinking that helps to structure complex organizational situation, reasoning that is oriented to solution and progression accentuating a topology of five main functions based on Stafford Beer (1979, 1980, 1981, 1985) proposal. To this extent, Beer's construct was chosen because it is pertinent on complex human activity concerns, with precedents like Toprak and Torlak (2017) and because it is oriented to deal with fast-changing environments, including them in the model structure with communication links from and to each one of its' delimited and integrated functions.

To contrast model, it was required to operationalize its functions, setting assumptions for each one; and then determine their scope and indicator; congruent to items of the script to integrate experts' opinions (Table 1). In that way, the link was made between the theoretical construct and experts' testimonials standing for comparison.

In addition, Network Science was applied as supporting analysis tool; to inquire about whether there are reiterated ideas among experts consulted that determine tourism strategies for destinations regarding Chinese Outbound Market, exemplifying with Mexico's case.

Network Science (Barabasi 2016) integrated to analyze experts' testimonials; was chosen given network structure phenomenon is applicable to any system, in this case, various experts and their opinions.

Furthermore, this analysis integration obeys the transdisciplinary nature of our systemic study, that specifically with Network Science rooted in graph theory mathematics field, provides insights to understand systemic organization issues, ratifying its pertinence. The manuscript maps out (Borgatti et al. 2002) the structure of experts' opinions identifying foremost ones, backing their coincidence with our model statements approach.

Results

Figure 1 depicts functions to attend Chinese Outbound Market at Tourist Destinations, exemplifying with Mexico's case. It is a systemic management model that includes five essential functions, each one distinguished by different color. Whole precises a topology that involves fewer conflicts to achieve better response to the emergencies implied in satisfying Chinese tourist consumption.

Table 1 Script congruence verification

Model function	Assumption	Scope and indicator	Item
1. Tourist Activity a) Mexican Tourist Supply Activity (Purpose and Operations)	Adapting tourist supply	Market activity scope: Variety, number of elements to suit offer.	Under what conditions would you say Chinese Tourist Market satisfaction is given?
b) Chinese Outbound Market Tourist Activity (Purpose and Restrictions)	Emergencies that Chinese Outbound Market implies	Synergy for restrictions, incidents in travel behavior	How would you describe the Chinese tourist that travels to Mexico or abroad?
		Supply activity scope: Synergy, inflection points in supply operation.	What can you say about values, meanings and emotions prevalent in the Chinese outbound travel market?
2. Coordination	Promote knowledge and research	Recurrence, alternatives to get the purpose	According to your experience, what actions should be anticipated for a more competent proceeding, regarding Chinese tourist market?
3. Monitoring	Anomalies detection	Recurrence, alternatives to get the purpose	Which responsibilities are necessary so that Mexican supply can attend efficiently to the Chinese Market?
			What is your opinion about tourist services suppliers' joint participation to attend Chinese Market?
			Are you aware of Mexico's marketing policies or strategies as a destination for Chinese outbound tourism?
4. Strategic Planning	Image development	Elements and actions Synergy	Which ones do you consider as decisive commitments that institutions and companies at destination must embrace to increase participation quota in the Chinese Outbound market?
			In your research domain, how a destination getting into Chinese Outbound Market must self-perceive and how must display that perception abroad?
5. Political Direction.	Performance to preserve identity and total direction	Variety, possible States	Which do you consider as critical points regarding Mexico's attendance to Chinese tourists?

Personal elaboration

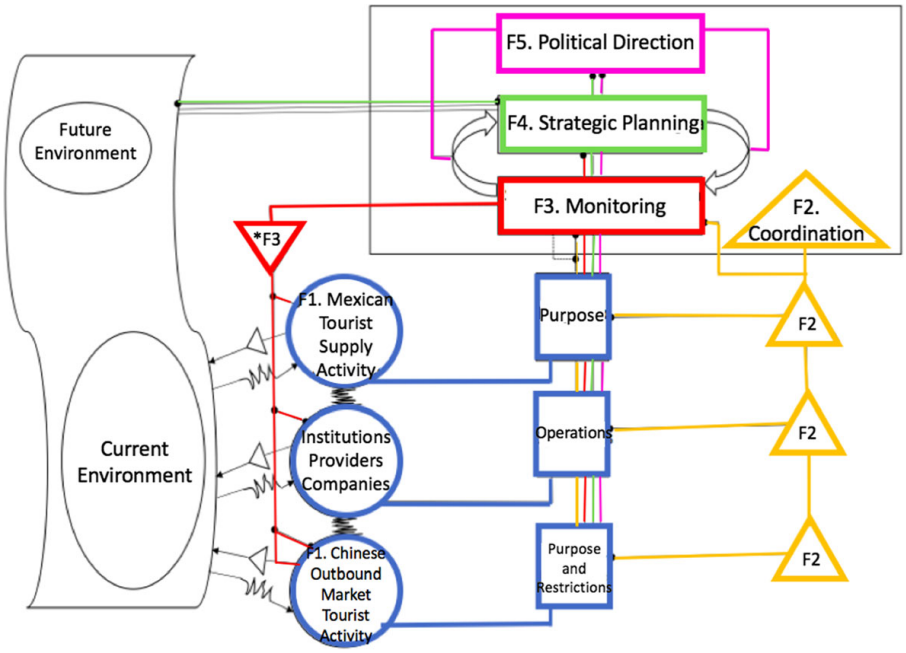

Fig. 1 Conceptual model. Personal adaptation of viable system model (Beer 1979, 1980, 1981, 1985)

Model Components Integration

Figure 1 explanation is following left to right, bottom up. Starting with situation originated on Current environment where Chinese Market leads global Outbound Travel.

As mentioned, Fig. 1 circumscribes Function 1 to Current Environment, a complex Chinese context of a Communist State Political System, under one-party rule responsible for setting policy and controlling all administrative, legal and executive appointments; Administrative divisions into 23 provinces, Five autonomous regions and Four municipalities, Special Economic Zones with flexible economic policies and some incentives for foreign investments; with China being member of the World Trade Organization since 2001, its economy was moved from a centrally planned economy to a more market-oriented system. Chinese Government's role in Travel and Tourism is delimited by the Chinese National Tourism Administration (CNTA) responsible for the tourism industry, playing central role in regulating and overseeing China's travel and tourism; the State Council regulates directly CNTA, develops, promotes and regulates China's inbound, domestic and outbound tourism industries; the Public Security Bureau (PSB) is in charge of monitoring and issuing passports to mainland Chinese nationals and the last organism involved is the Civil Aviation Administration of China (CAAC) (UNWTO 2008). A particularity of China Tourism dynamic is the Approved Destination Status (ADS), a scheme based on bilateral agreements, granted to countries that fulfil certain conditions to enable them to receive leisure tour groups from China (UNWTO 2008).

Backing on function 1 operational nature given in mentioned context, a specific emergent situation is when hotels frontdesk staff attend guests under quality standards following sequence steps.

> **Function 2** on yellow color is Coordination, corresponds the interface function between 1 and 3 and must generate information to harmonize operations.

Its relevance is accentuated given its impact on generating collective behavior; its assertiveness will depend on the selectivity of foundations on which channels and information bodies originate, which is consistent to the attendance of conflicts that can be anticipated knowing market needs as well as those related to motivation attributes.

In other words, behavior outputs based on prior knowledge, that represent strategies or interaction resources between functions 1 and 3. Continuing with operational example on Function 1, those sequence steps to follow belong this function. Other coordination function examples are: General regulations on Visa expedition, and Visa fees; or Joint Ventures with foreign Companies.

> **Function 3** Monitoring in red color, is the present time configuration, that orients structures and regulations. Supported by ***F3 Audit**, channel that provides impartial information regarding Function 1 Performance, through operations verification; in case of having conflicts or weaknesses; the model indicates a returning Function 1 to adjust operations that had not fulfilled standards or sequences established by Function 2. Function 3 examples are: Binational cooperation agreements as the mentioned Approved Destination Status; Simplifying and clarifying rules governing Travel Agencies authorizing the foreign ones to operate Chinese Outbound Tourism groups (DOF 2011); Memorandums and Quality distinctives for example Mexican one called "Near China".
>
> **Function 4** Strategic Planning in green color, stands for environment perception, balancing between Function 3 Current configuration and Pretended future environment; originating strategic responses in the long range, like: New software inclusion, Linkage to booking websites, among others; all likewise, verifiable on Function 3.
>
> **Function 5** Political Direction in pink color, represents a behavior that ensures the transformation. It operates as feedback, providing clarity about: Identity, Values, and Objectives. For instance, Hilton Hotels Huanying Program for Chinese tourists (Hilton 2011).

Between each Function from 1 to 5, throughout whole model color lines symbolize Algedonic Channels, that are direct communication between Functions. Besides, Amplifiers and Attenuators are represented with electric symbols between Function 1 and Current Environment; standing for Requisite Variety Law (Ashby 1956) theoretical principle to conciliate imbalances on the problematic situation.

Model Functions Operationalization

For contrast, theoretical model is useful to provide items for a script (Table 1), that in this research integrates experts' opinions in the study (Table 2). That was done following a congruence verification process called Operationalization, that in this case consisted in setting assumptions for each model function and determine their systemic scope and indicator to later formulate items. Leading to the possibility of a comparison exercise by bringing together conceptual model and experts' testimonials.

Information synthesis with the implied congruence verification, gathered experts' opinions on six different assumptions; for later identify reiterated notions that became the basis to contrast model assumptions.

Table 2 Experts profiles

Code	Country	Affiliation	Research domain
E1	China	SYSU Tourism Faculty	Tourist Behavior Destination marketing Chinese Backpackers Personal Development and Self-identity
E2	China	SYSU Tourism Faculty	Tourism Economics Tourism Destination Management Tourism Resilience
E3	China	SYSU Tourism Faculty	System Dynamics Tourism Planning Resource Management
E4	China	SYSU Tourism Faculty	Chinese Outbound Tourism
E5	China	SYSU Tourism Faculty	Tourism Psychology Philosophical Issues in Tourism Research
E6	Germany	Professor for International Tourism Management at West Coast University of Applied Sciences Germany and Director of COTRI Chinese Outbound Travel Research Institute	Chinese Outbound Tourism
E7	Mexico	Mexico Tourism Board Director in Beijing (CPTM initials in Spanish)	Chinese Outbound Tourism Market to Mexico

Personal elaboration

Such assumptions were:

1. Adapting tourist supply
2. Emergencies that Chinese Outbound Market implies
3. Promote knowledge and research
4. Anomalies detection
5. Image development
6. Performance to preserve identity and total direction

Collecting Experts Opinions

Meetings with experts (Table 2) were conducted to obtain information for model contrast. Encounters were 30–60 min long and conducted in English, excepting native Spanish speaker one. To ensure reliability of data collection, meetings were recorded and transcripted.

Given these encounters proceed from an academical research stay at Tourism Faculty of Sun Yat Sen University Zhuhai Campus most were performed in offices or conference rooms, except for COTRI Director meeting that took place at CIC Hotel from Nanjing Institute of Tourism and Hospitality as well as meeting with Mexico Tourism Board Director that was held at Mexican Embassy Office at Beijing.

Network Science Findings

A bipartite graph was constructed consisting of two disjoint sets of nodes. One set corresponds to all experts' ideas expressed, whereas the other set corresponds to the correlation between ideas, experts and items.

In the first network projection (Figs. 2 and 3) nodes represent different experts and ideas, they are connected to each other if they were reported to be expressed by a certain expert. In the second projection, ideas are connected if they are associated with the same item (Figs. 4 and 5).

In all network graphs (Figs. 2, 3, 4, and 5) dots nodes represent experts' ideas, square nodes stand for Experts and items. Figure 3 shows ideas prevalence among experts, identifying them with bigger size red dots nodes. Figure 4 catches items by expert connected if they share ideas. Finally, Fig. 5 node size indicates the ideas' prevalence shown in boldface, shared by multiple experts.

Figure 2 depicts a Random behavior between experts ideas, consistent with premise that most networks do not have regularity of a crystal lattice or predictable radial architecture of a spider web (Barabasi 2016) having the last would imply consensus, which despite not being impossible to find; it is also not usually common on high social content systems graphs; furthermore in this particular study indicates scarcity of proven generalities as it is expected on such a recent interest subject with barely few antecedents. This randomness is expressed, as well on blue data distribution shown in Fig. 6.

Interpretation of Fig. 3 is that outlining network by nodes degree; the small size differences among blue square nodes representing experts is not significant given that is derivative to the amount of expressed ideas. Otherwise, bigger size red circle nodes distinguished as red labelled ideas, and as can be corroborated on Table 4; stand for a degree measure, that accentuates number of links related to a node, indicating in this case reiterated notions among experts; such as: Lack of awareness of Mexican strategies; Pertinence on Mexican suppliers collaboration; Differentiating Chinese market from other consumers; Developing market segments; or Building image brand caring about elemental aspects as Cultural issues, already explored by Weidenfeld et al. (2016); Changes in market, Direct flights or Food.

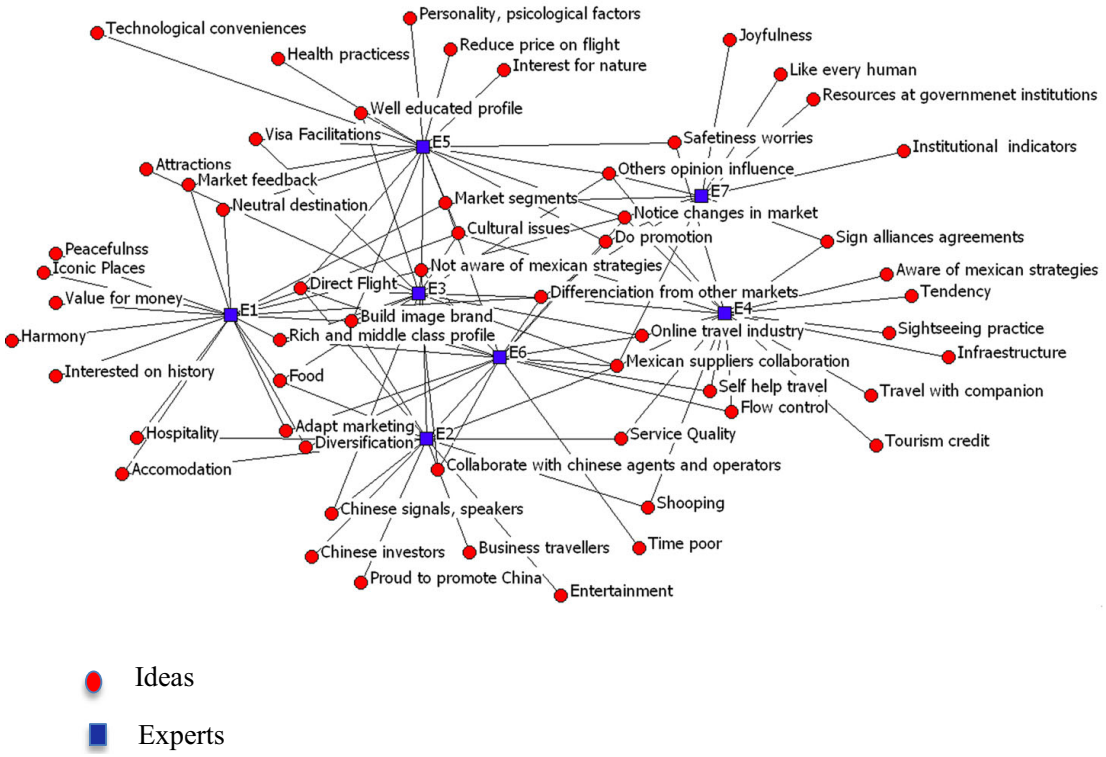

Fig. 2 Experts ideas Random Graph. Personal elaboration using Netdraw Ucinet (Borgatti et al. 2002)

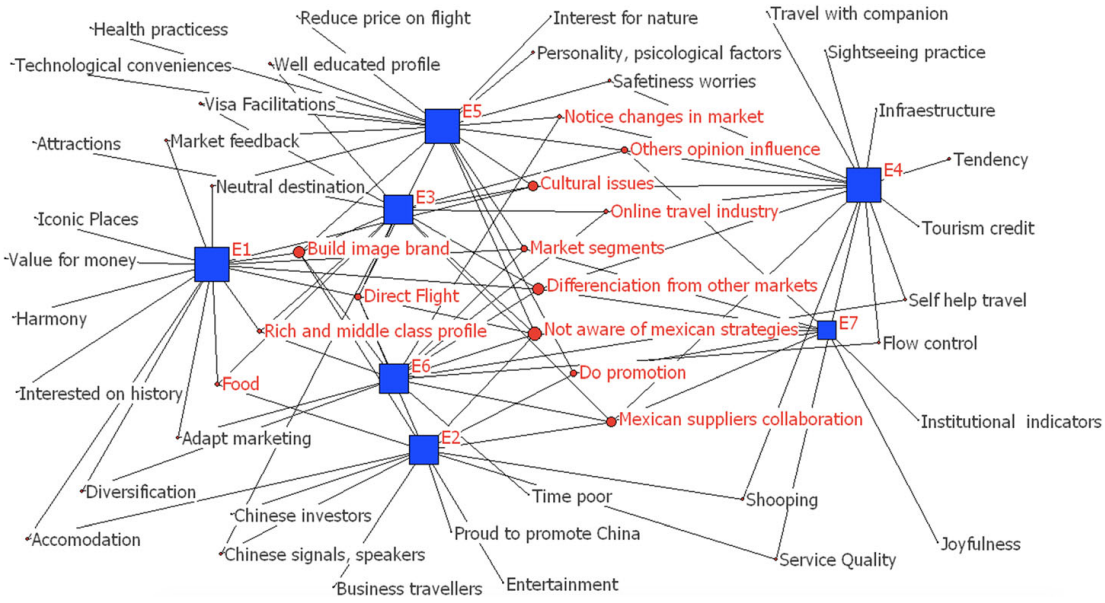

Fig. 3 Experts ideas Nodes Degree Graph. Personal elaboration using Netdraw Ucinet (Borgatti et al. 2002)

Figure 4 in the same way as Fig. 2, illustrates Randomness, including more blue square nodes that stand for items by expert, and leaving as in previous projections red circle dots for ideas. Again, regularity isn't displayed on the way the nodes are related; harmonizing with red data distribution in Fig. 6.

Figure 5 offers detail on items correspondence with certain ideas; ratifying and evidencing their higher degree as reported by a specific expert on a particular question. On the projection, there are also visible some isolated ideas that don't have a relevant impact on the core perception.

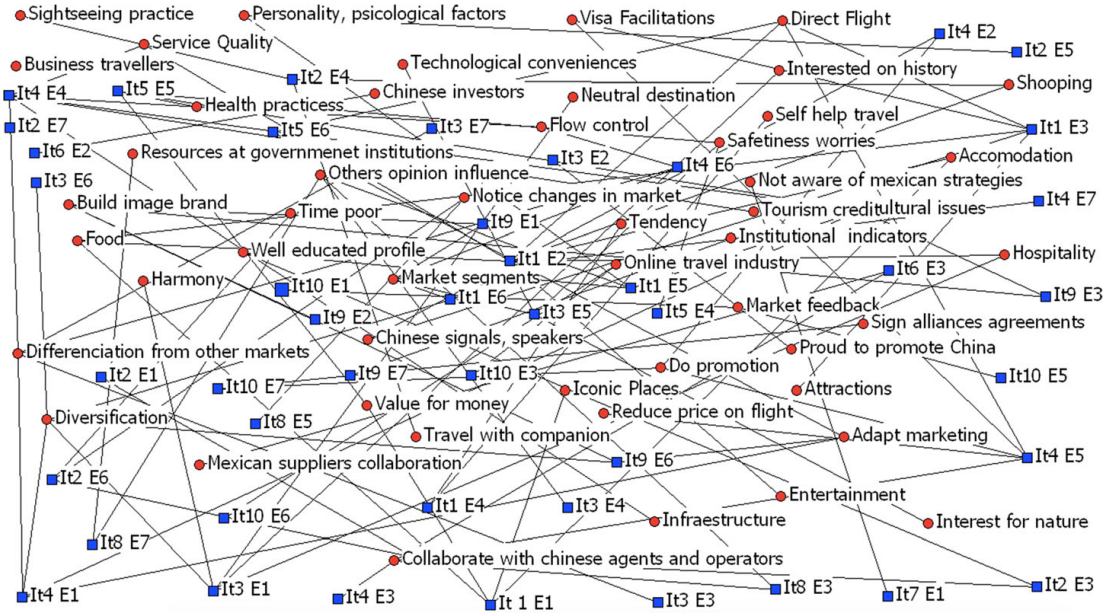

Fig. 4 Ideas, item, experts random graph. Personal elaboration using Netdraw Ucinet (Borgatti et al. 2002)

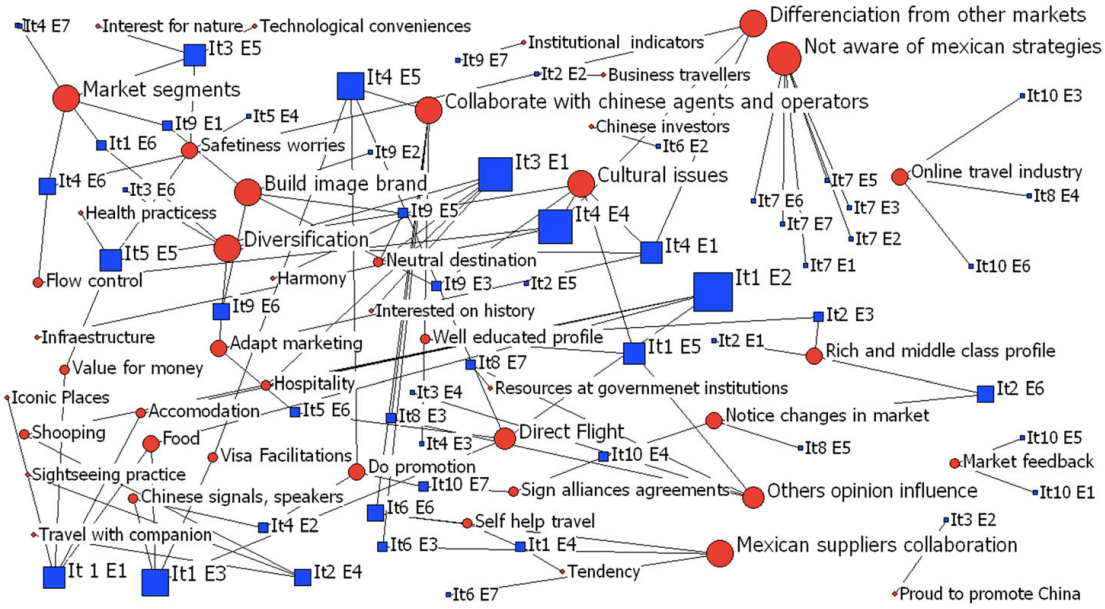

Fig. 5 Ideas, item, experts nodes degree graph. Personal elaboration using Netdraw Ucinet (Borgatti et al. 2002)

As exposed, the constructed network in all projections can be represented by Erdös and Rényi random network model (Barabasi 2016). Considering that a random network has N nodes connected by probability p generating L links. It is also a sparse network as many other real networks, where the number of links is much smaller than L_{max} which is the maximum possible links on the network, and it is obtained by Eq. (1).

$$L_{max} = \frac{N\,(N-1)}{2} \tag{1}$$

With a determined Density by (2).

$$D = \frac{L}{L_{max}} \leq 1 \tag{2}$$

In our first network projection called "Experts ideas" (Table 3) we have $L_{max} = 1{,}891$ from L = 112 existent relations conducive to a density D = 5.92%. In the second projection called "Ideas, item and experts" (Table 3) we have $L_{max} = 7{,}750$ and D = 1.44% density.

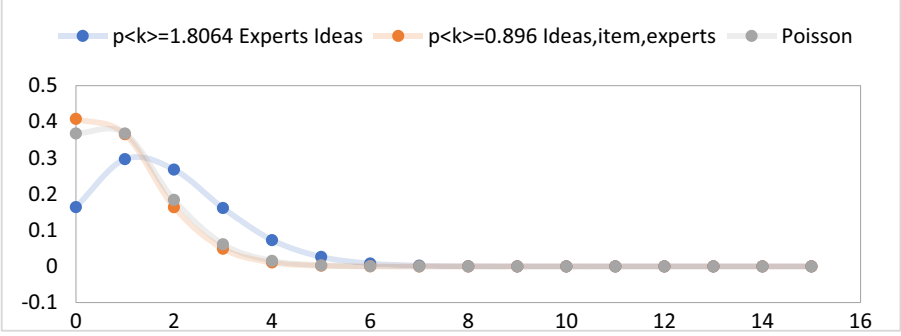

Fig. 6 Two network projections $p\langle k\rangle = 1.8064$ and $p\langle k\rangle = 0.896$ vs Poisson distribution

Therefore, network behavior described on parameters (Table 3) is well approximated by the Poisson distribution (3).

$$p_k = e^{-\langle k \rangle} \frac{\langle k \rangle^k}{k!} \tag{3}$$

Taking advantage of Poisson form to identify properties no matter the network size and depending on a single parameter, average degree is obtained from (4).

$$\langle k \rangle = \frac{2\langle L \rangle}{N} = p(N-1) \tag{4}$$

And it's Average Clustering Coefficient by

$$\langle C \rangle = \frac{\langle k \rangle}{N} \tag{5}$$

In other words, the probability that two randomly chosen nodes are connected; having unlikeliness or low $\langle C \rangle$ coincides with the characteristics of a random network.

Poisson distribution (Eq. 3) satisfactory represents data obtained for both network projections of this study (Fig. 6) verifying their suitability to random network model (Barabasi 2016).

Network science gave the chance to represent ideas prevalence regarding Chinese Outbound Market from a systemic approach. Obtained information (Table 3) stands for two undirected sparse graph projections, that exhibit low connectivity between experts' ideas which means there is not a general consensus, instead some important ideas with similar degree support recommended tourism strategies. Under such conditions, pertinence of the model proposed is reinforced for its implications setting the first basis, reversing a reasonable lack of consensus found in this newly born topic.

Previous information was additionally corroborated on Centrality Measures (Table 4) using Software Ucinet (Borgatti et al. 2002) that exhibit nodes proximity and their importance in connectivity on a specifical tendency towards ideas with degrees .429, .571 and .714 concerning about: Building image brand, Differentiation from other markets and Segmentation, Doing promotion and Suppliers collaboration; as well as .857 degree on idea number 48 evidencing Lack awareness of current Mexican strategies regarding Chinese Outbound Market; ratifying model pertinence.

Going along with a topological Subcritical Regime on the projection "Ideas, item, experts", without giant component arising, having small number of links, observing mainly tiny clusters or trees with comparable sizes, and given the condition $\langle k \rangle < 1$,we can designate at any moment the largest cluster to be the giant component (Table 5). The "Experts ideas" projection obeys a topological Supercritical Regime where $N = 62$ resulting logarithm 4.1271 shows how many nodes are really connected (Table 5).

Table 3 Network parameters

Projection	N	L	$\langle K \rangle$	L_{max}	D	$\langle C \rangle$
Experts ideas	62	112	1.8064	1891	5.92%	2.91%
Ideas, Item, expert	125	112	0.896	7750	1.44%	0.71%

Personal elaboration

Table 4 Centrality measures

2-MODE CENTRALITY

Input dataset: EXPERTS IDEAS (C:\users\Tanya\My Documents\UCINET data\EXPERTS IDEAS)
Output ROW measures: EXPERTS IDEAS-rowcent (C:\users\Tanya\My Documents\UCINET data\EXPERTS IDEAS-rowcent)
Output COLUMN measures: EXPERTS IDEAS-colcent (C:\users\Tanya\My Documents\UCINET data\EXPERTS IDEAS-colcent)

2-Mode Centrality Measures for ROWS of EXPERTS IDEAS

		1 Degree	2 2-Local	3 Eigenvect	4 Closeness	5 Betweenne
1	Iconic Places	0.143	0.047	0.061	0.572	0.000
2	Food	0.429	0.125	0.175	0.697	0.017
3	Accomodation	0.286	0.086	0.109	0.642	0.009
4	Value for money	0.143	0.047	0.061	0.572	0.000
5	Direct Flight	0.571	0.164	0.239	0.752	0.032
6	Entertainment	0.143	0.039	0.048	0.556	0.000
7	Shooping	0.286	0.086	0.099	0.657	0.015
8	Hospitality	0.286	0.086	0.109	0.642	0.009
9	Service Quality	0.286	0.086	0.099	0.657	0.015
10	Attractions	0.143	0.039	0.066	0.556	0.000
11	Visa Facilitations	0.286	0.086	0.128	0.628	0.004
12	Chinese signals, speakers	0.286	0.078	0.114	0.615	0.004
13	Notice changes in market	0.429	0.132	0.175	0.723	0.025
14	Tendency	0.143	0.047	0.050	0.572	0.000
15	Self help travel	0.286	0.086	0.113	0.635	0.005
16	Personality, psicological factors	0.143	0.047	0.062	0.572	0.000
17	Well educated profile	0.286	0.086	0.128	0.628	0.004
18	Others opinion influence	0.571	0.161	0.215	0.772	0.047
19	Cultural issues	0.571	0.179	0.239	0.827	0.062
20	Diversification	0.286	0.086	0.124	0.628	0.004
21	Market segments	0.571	0.161	0.223	0.772	0.044
22	Joyfulness	0.143	0.029	0.038	0.535	0.000
23	Rich and middle class profile	0.429	0.125	0.190	0.673	0.010
24	Business travellers	0.143	0.039	0.048	0.556	0.000
25	Sightseeing practice	0.143	0.047	0.050	0.572	0.000
26	Travel with companion	0.143	0.047	0.050	0.572	0.000
27	Time poor	0.143	0.039	0.063	0.556	0.000
28	Like every human	0.143	0.029	0.038	0.535	0.000
29	Interested on history	0.143	0.047	0.061	0.572	0.000
30	Peacefulnss	0.143	0.047	0.061	0.572	0.000
31	Harmony	0.143	0.047	0.061	0.572	0.000
32	Neutral destination	0.286	0.094	0.123	0.657	0.008
33	Proud to promote China	0.143	0.039	0.048	0.556	0.000
34	Differenciation from other markets	0.714	0.200	0.278	0.839	0.079
35	Interest for nature	0.143	0.047	0.062	0.572	0.000
36	Safetiness worries	0.286	0.094	0.112	0.673	0.014
37	Technological conveniences	0.143	0.047	0.062	0.572	0.000
38	Adapt marketing	0.286	0.086	0.124	0.628	0.004
39	Do promotion	0.429	0.114	0.148	0.706	0.029
40	Collaborate with chinese agents and operators	0.286	0.078	0.129	0.602	0.002
41	Flow control	0.286	0.086	0.113	0.635	0.005
42	Infraestructure	0.143	0.047	0.050	0.572	0.000
43	Tourism credit	0.143	0.047	0.050	0.572	0.000
44	Reduce price on flight	0.143	0.047	0.062	0.572	0.000
45	Health practicess	0.143	0.047	0.062	0.572	0.000
46	Chinese investors	0.143	0.039	0.048	0.556	0.000
47	Mexican suppliers collaboration	0.714	0.192	0.265	0.804	0.069
48	Not aware of mexican strategies	0.857	0.239	0.337	0.891	0.098
49	Aware of mexican strategies	0.143	0.047	0.050	0.572	0.000
50	Online travel industry	0.429	0.125	0.179	0.680	0.014
51	Resources at governmenet institutions	0.143	0.029	0.038	0.535	0.000
52	Build image brand	0.714	0.210	0.300	0.816	0.057
53	Institutional indicators	0.143	0.029	0.038	0.535	0.000
54	Market feedback	0.286	0.094	0.123	0.657	0.008
55	Sign alliances agreements	0.286	0.075	0.088	0.622	0.009

2-Mode Centrality Measures for COLUMNS of EXPERTS IDEAS

		1 Degree	2 2-Local	3 Eigenvect	4 Closeness	5 Betweenne
1	E1	0.327	0.107	0.410	0.475	0.251
2	E2	0.273	0.074	0.325	0.456	0.205
3	E3	0.273	0.074	0.443	0.456	0.138
4	E4	0.327	0.107	0.338	0.475	0.272
5	E5	0.327	0.107	0.416	0.475	0.252
6	E6	0.273	0.074	0.424	0.456	0.145
7	E7	0.200	0.040	0.253	0.432	0.154

The 2-local measure is the sum of normalized degree of a node's alters.

Running time: 00:00:01
Output generated: 23 Mar 17 16:21:00
UCINET 6.627 Copyright (c) 1992-2016 Analytic Technologies

Personal elaboration using Ucinet (Borgatti et al. 2002)

Having found two regimes obeys the difference between both projections nodes number, consequently making less connected the projection with more nodes than the one in the supercritical regime.

To conclude, going back on the linkage between the conceptual model and information collection, Table 6 resumes highest centrality degrees on experts' opinions regarding assumptions underlying that the model is not fundamentally deficient. Detail of the complete collected information can be found at Table 4.

Discussion

This article detects prevalent general ideas instead consensus between experts and ratifies model pertinence.

Mapping experts' ideas (Figs. 2, 3, 4, and 5) offers a rapid visual reference; useful for tourism researchers and responds to the necessity of promoting future oriented integral strategies for tourism destinations to act in response of Chinese Outbound Travel Market leadership as observed in document sources review.

The aim to contrast model assumptions was reached after identifying with Network Science prevalent general ideas from experts oriented to coordination and environment perceptions. Based on that, it is possible to list factors that reinforce strategic planning in the long range with the implied relevance to generate collective behavior:

- Mexico as destination must display an image consistent to some Chinese interests like culture.
- Mexico must develop research to identify segments on Chinese Outbound Travel Market.
- Mexican tourism products promoted in China must be suitable for one or more Chinese Outbound Market segments.
- To have more effective strategies the guideline is to set them considering Chinese tourist demands.
- Mexico must adopt usage of social media to build and to strengthen its image as a destination.
- Mexico needs qualified personnel to treat Chinese tourists demands.
- Mexican offer must search tourist feedback through media tools.
- Mexican offer must turn into opportunities the differences on Chinese Market practices and interests.
- Mexican offer must be aligned with Chinese Outbound Travel Market fast changing dynamic.

Table 5 Network regimes

Projection	N	$\langle K \rangle$	$Ln(N)$	Condition	Regime
Ideas, Item, expert	125	0.896	4.8283	$\langle k \rangle < 1$ $0.896 < 1$	Subcritical
Experts ideas	62	1.8064	4.1271	$1 < \langle k \rangle < lnN$ $1 < 1.8064 < 4.1271$	Supercritical

Personal elaboration

Table 6 Model assumptions and experts opinions contrast

Model assumption	Experts opinions centrality measures	Contrast
Adapting tourist supply	Highest Centrality Degrees on experts' opinions regarding supply adaptation to better satisfy Chinese Outbound Tourism: .571 Direct Flight to destinations .429 Chinese Food occasionally offered at destinations	Experts testimony confirms that specific elements must be provided to attend the market, backing up tourist supply adaptation and emergencies implied by identifying some of the significant restrictions for Chinese Outbound Market.
Emergencies that Chinese Outbound Market implies	Highest Centrality Degrees on experts' opinions regarding Chinese Outbound Tourists description, their values and prevalent emotions: .429 Rich and middle-class profile .571 Others opinion influence . 571 Cultural issues	
Promote knowledge and research	Highest Centrality Degrees on experts' opinions about anticipated actions for a more competent proceeding regarding Chinese Tourist: .429 Notice changes in market .429 Do promotion .429 Be part of the online travel industry	It is ratified by experts' opinions coordination relevance of being familiar with the market and having offered alternatives on the purpose of objective promotion and suiting Chinese tourism consumption practices
Anomalies detection	Highest Centrality Degrees on experts' opinions regarding responsibilities from supply to attend efficiently the market: .714 Differentiation from other markets .571 Market segments .714 Suppliers collaboration Experts also expressed: .857 Lack awareness of Mexican strategies for the Chinese market	It is confirmed on absent conditions identification that model can be pertinent to counteract current lack awareness of tourist supply regarding Chinese market.
Image development	Highest Centrality Degrees on experts' opinions about destinations' institutions to increase participation in the Chinese market: .143 Resources allocation .714 Build image brand Likewise, experts recommend destinations must display abroad as: b. 286 Neutral destinations, without conflicts with China	Image development is validated by experts as necessary attribute to increase participation in market as well as resources allocation.
Performance to preserve identity and total direction	Highest Centrality Degrees on experts' opinions about critical points for destinations: .286 Flow control .286 Market feedback	Convergence on identifying concerns about destinations performance, specifying events to get information to correct or prevent failures.

Personal elaboration

Synthesis of prevalent ideas set findings pointing out to market-based strategies and product based ones balancing Mexican resources.

Thus, opinions about developing image and segmentation role to improve destinations performance justified Model coordination, and environment perceptions propositions reinforce strategic planning in the long range with relevance as collective behavior generators.

Accordingly, propositions arising from meetings information synthesis are listed below:

> Proposition 1. Strategy development for Chinese Outbound Travel must be adjusted to certain market segments that fit Mexican offer.
> Proposition 2. Doing Chinese market research is necessary to identify market segments and their demands.
> Proposition 3. Products offered to Chinese Market segments must be adapted to be suitable for their interests.
> Proposition 4. In considering to spread México's image, Chinese social media is an influent instrument.
> Proposition 5. Mexican offer should develop experience oriented products for Chinese Outbound Travel consumers.

Before concluding it is pertinent to address as limitations of the work, the small number experts we had access to; reaching more specialists will extend proposal accurateness opening new insights towards better understanding of tourism practices. Future research direction seeks to integrate a representative sample of Chinese Outbound Tourists to contrast assumptions from their consumer view and set feedback particularly to model functions 1 and 5.

Conclusions

As set, model introduced; is a way to understand and make improvements to observable relations that generate emergency patterns implied in satisfying Chinese Outbound Market Tourism consumption. Finding that, better performance integrates: Environment perception, Coordination, Monitoring, Strategic planning and Direction in the long range.

Including opinions of concerned agents or experts in problem situation revealed randomness in testimonies by following a Poisson distribution, meaning there isn't unanimity, instead diverse significant ideas with similar centrality measures supporting the model.

Proceeding regard Chinese Outbound Market aims to reinforce tourism destinations; and by their side, to improve performance, suppliers must integrate appropriate strategies and engage into holistic management configuration to optimize and better supply their touristic services and products.

Appropriate strategic planning would enable suppliers and destinations to know about Chinese Outbound Travel Market, to be prepared to their attendance and to develop new product offers. Providing resources, setting responsibilities and performing under more assertive strategies.

Additionally, throughout the research development, pertinence of contributing with transdisciplinary systemic approach to this complex touristic situation was ratified.

Finally, from our document sources review we can say that knowledge about China leading global outbound travel addresses Chinese Outbound Travel Market relevance; recognizes some of this market implications like expenditure, growth, preferences, destination choices and perceptions; makes inquiries about this outbound market tourist motivation factors, their concerns, as well as some behavioral and psychological aspects; and we also observed few has been

done to promote future oriented integral solutions for tourism destinations to act in response of Chinese Outbound Travel Market leadership. We also identified that key research contributions are focused on the particular, tending not to consider other aspects involved in such complex and highly social content research; furthermore, that there has not been reported previous recommendation that structures Chinese Outbound Market at tourist destinations complexity.

In consequence, the contribution of our theoretical model is that, it has systemically structured Chinese Outbound Market at Tourist Destinations complexity; promoting functions to improve hosts performance. By means of a holistic perspective, appropriate to face current tourism concerns in a more objective and integrated way that considers study complexity, interdependencies between multiple agents and aspects involved. Besides, network structural analysis applied to experts' testimonials in the study, upheld quantitatively prevalent ideas among experts and confirmed Model listed recommendations pertinence.

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Authors Contributions Tanya Arenas research focuses on Systems Science, Complex Socioeconomic Networks and Chinese Outbound Market.
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Xu Honggang research expertise are System Dynamics and Tourism Development.
Oswaldo Morales research focuses on Complex Systems Dynamics Economic financial systems and supply chains.
Mauricio Chávez research focuses on Systems Engineering.

Compliance with Ethical Standards

Conflict of Interest "The authors declare no conflict of interest". Experts opinions reported came from their research domain or experience, not representing any institutional opinion. "The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results".

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