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Configurational Analysis of Inbound and Outbound Innovation Impact on Competitive Advantage in the SMEs of the Portuguese Hospitality Sector

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Abstract: This study analyzes the effects of inbound and outbound open innovation, along with organizational strategy and corporate risk management, on competitive advantage and disadvantage in the Portuguese hospitality sector's cost, service, and product. We use a quantitative approach based on fuzzy set qualitative comparative analysis (fsQCA) of survey data from 251 executive directors of hotels from Portuguese small and medium-sized enterprises (SMEs). The results allow visualization of the interactions of inbound and outbound open innovation with corporate risk management and organizational strategy in order to generate competitive advantage. The results demonstrate that corporate risk management is a keystone for a competitive cost advantage, whereas inbound open innovation plays a fundamental role in obtaining competitive advantages for products and services. Other factors, such as outbound open innovation or those linked with organizational strategy, have less impact, and/or the sign of their influence depends on the configuration of the remaining variables.

1. Introduction

A competitive advantage is the core of strategic management [1,2]. Although difficult to quantify, it is at the heart of firms' strategic policies [2]. Since the second decade of the 21st century, the influence of open innovation (OI) on competitive advantage has become one of the main topics in management innovation [3,4]. Traditionally, innovation has been undertaken by investing in the internal development of technologies and subsequently commercializing them using new products and services [5]. Unfortunately, internalization incurs great costs that are inaccessible to small and medium-sized enterprises (SMEs). Consequently, for SMEs, OI is a reliable substitute [6] for traditional internal innovation policies. Currently, the entrepreneurship environment presents a notable complexity and mutability that has undermined the effectiveness of traditional innovation and generated the need to use external knowledge [5]. Moreover, presently, the availability and treatability of large amounts of data decisively impacts firms' decision-making policies and the chain of profit generation for stakeholders, such as customers [7] or users [3].

Innovation is one of the main factors explaining entrepreneurial success: it is a key variable for sustainable business development in search of competitive advantage [8–10] and the fundamental instrument for creating and maintaining competitive advantage, especially in periods with a great deal of turbulence [11]. Innovation embeds searching for alternative

value propositions, valuations, and value generation for the existing business, which is crucial for enterprises because it influences their situation in the competitive market and their chances of survival [12]. Moradi et al. [13] defined OI as a management procedure that is more malleable and compatible with innovation processes, including external skills and the acquisition of innovative ideas (inside and outside the firm). Following these authors, OI uses human knowledge to progress in the age of digital transformation; allowing organizations to adapt to the information era in such a way that social networks become the main instrument to build up that transformation, especially in SMEs [14]. Several factors stimulate the transition to the digital economy, the most prominent of which is overcoming administrative barriers and inconsistent legal frameworks [15]. Therefore, developing a strategy for the transition to a digital economy that embeds adaptation to an economy, with virtual services and content allowing access to new markets, provides economic growth and sustainable prosperity, and, consequently, competitive advantage [16].

This study analyzes the effects of OI, intrinsic organizational factors, and corporate risk management practices on competitive advantage in SMEs in the Portuguese hospitality sector. SMEs are the dominant firms in Portugal, representing 99.3% of all companies [17]. Portugal, conjointly with Italy, is the second-highest country in the European Union in terms of SME weight. Although the literature on OI is currently a hot topic, most empirical analyses have been conducted on large companies because they are more open to innovation processes than small firms [17,18]. Therefore, this study intends to expand the existing research to SMEs like [17–22]. Likewise, hospitality is one of the most important economic sectors in Portugal [23] because it plays a key role in the Portuguese payment balance, GPD, and employment creation [24]. Crucially, Portugal is one of the most important tourism destinations in Europe [25]. These considerations justify the relevance of an analysis of the impact of OI practices in the Portuguese hospitality sector.

Mainstream literature suggests that the actual influence of OI on firm performance depends on how the business model is developed [26]. Usually, there is a link between OI and the flexibility and dynamism of the strategy stated by managers, and the dynamism of the environment in which the firm operates [27]. In the SME setting, this framework was used by Musiello-Neto et al. [19] to assess enablers of competitive advantage in the Portuguese hospitality sector. The hospitality sector in Spain [21] and in China [22] has used that perspective to explain business model innovation, which is an antecedent of competitive advantage [28]. Similarly, [18] explains the sales of innovative products by implementing OI practices and considering organizational settings using a sample of SMEs in the European Union.

This paper also uses that theoretical basis but incorporates in the analysis the degree of corporate risk management, which has been found to be a driver of long-term competitive advantages in several studies [20,29,30].

Our results complement and/or extend those in [17–22]. Therefore, while [21] identifies the most common open practices in Portuguese SMEs and the motivations for their adoption, we assess the conjoint impact of OI practices with other relevant factors linked to organizational factors. In [18], the influence of concrete OI measures on sales was evaluated, taking into account that only factors linked to organizations were objectively measurable (for example, age). However, we allow a subjective evaluation of these factors using well-known measurement scales for OI [31,32] and internal and external organizational factors [33].

Despite using a conceptual framework analogous to [19,20], we expand their scope in two ways. First, in [19,20], the variables OI, organizational position, and competitive advantage were aggregated. In contrast, this study splits them into different sub-factors. For competitive advantage, we distinguish that it can be obtained in cost, service, and product [34]; and organizational position is split into the dynamism of the environment, internal flexibility, and innovativeness in strategic positions [33]. However, whereas [19,20] uses partial least squares-structural equation modelling (PLS-SEM) as an analytical tool, this study uses the fuzzy set qualitative comparative analysis (fsQCA) developed by Ragin [35].

In [21,22], the effects of organizational structure and OI practices on organizational performance were analyzed, but their focus differs from that in our study. Whereas those studies measured the impact of OI in business model innovation, we do so in the three dimensions of competitive advantage. Moreover, whereas those studies only assess the causal paths of the assessed output variable, our analysis also embeds the causes of the non-existence of competition capability. Similarly, we introduce a firm's degree of strategic risk management policy in the analysis.

The use of fsQCA, the extension of qualitative comparative analysis, in our study is justified because, in a strategic management setting, the causality in assessed problems is usually multiple—i.e., a response may have more than one cause—and variables produce the outcome in conjoint interactions [36]. Therefore, by focusing explicitly on localizing causal complexity, the fsQCA method contributes to business and management research [37].

Likewise, fsQCA does not assume symmetrical relationships between variables, despite being effective in this case [37]. The combinations of factors that produce the presence and absence of an outcome in complex phenomena are usually non-symmetrical. For example, Woodside [38] indicated that the causes of an organization's success are always non-symmetrical to those that induce failure.

A review [36] shows entrepreneurship and innovation as two of the most prolific issues in the empirical fsQCA literature [21,22,39–45]. However, many other management issues have been assessed using this analytical methodology [46].

2. Theoretical Framework

2.1. The Influence of Open Innovation, Organizational Strategy, and Corporate Risk Management on Competitive Advantage

The business innovation model seeks new methods to create value and find ways to generate income and transfer value to customers, suppliers, and partners [13]. OI involves the management of knowledge flows and describes the phenomenon whereby an organization uses external ideas and technologies and allows new technologies to be exploited by others [47]. Implementing OI facilitates decision making, making it more decentralized and productive [48]. Moreover, organizations are rational actors engaged in finding solutions to problems ranging from new product development to strategic planning [49]. The ability of firms to innovate involves the development of new types of knowledge, which can come from both the internal environment (e.g., human talent, processes, etc.) and the external environment (e.g., the market, customers, suppliers, consultants, etc.). In this context, top managers and OI have a close relationship that generates value for the organization [50]. Findings [19,51–53] support the positive influence of OI on competitiveness, and reporting [54] does so in firms' financial performance. In the Spanish hospitality industry, [55] shows that both breadth and depth inbound open innovation (IOI) push green innovation, which is a source of competitive advantage (CA) [56], while in the Portuguese hospitality sector, it has already been shown [19,20].

Likewise, not all OI types contribute to CA in the same way. IOI allows the firm to not be totally dependent on its own internal R&D to be innovative [57]. As a result, the company can use several sources of external knowledge, such as suppliers, customers, and competitors [58]. However, to be effective, IOI needs from companies must be capable of identifying externally relevant information and using it efficiently [59].

Outbound open innovation (OOI) requires internally disseminated business knowledge to be spread outside [17]. This type of OI can be implemented in several ways, such as licensing intellectual property rights, creating spinoffs, and outsourcing innovation. Inside-out innovation performs better in environments with strong intellectual protection than in those with weaker protection [18], and in the case of technologies with high innovation potential [60]. Therefore, inside-out OI can generate new business development options by applying new technologies [22]. Inside-out OI can provide value if the firm has the capacity to innovate but does not have a strong commercial area, such as public

research agencies [60]. Moreover, businesses that want to dominate R&D activities across the industry can obtain advantages by using this type of innovation [61].

The success of OI depends on a firm's ability to create and capture value using both pecuniary and non-pecuniary mechanisms [47]. Firm value creation implies the organization's perspective in generating new resources, which are considered valuable; thus, achieving the desired objectives for the implementation of this management model, i.e., the creation and use of the OI model, is based on knowledge widely distributed internally and externally to the organization [62]. However, if the top manager imposes a radical condition on the change in the management model, the goal of OI can negatively affect a firm's performance [5]. In light of this challenge (management model change), firms should apply formal processes (e.g., partnerships, patents) and informal processes (e.g., relational capabilities) to manage knowledge flows by defining a specific type of innovation, i.e., inbound, outbound, and coupled innovation [5]. Likewise, some externalities from OOI can drag competitive advantage [5,63,64]. Examples include undesired relational and performance consequences derived from strategic alliances, or conflicts of interest resulting from the variety of employees involved in knowledge sharing [65].

If we suppose that a firm is capable of implementing OI measures efficiently, and this implies applying those measures more accurately to its business model, the following hypotheses are formulated:

Hypothesis 1a (H1a). *Inbound open innovation has a positive link with attaining competitive advantages.*

Hypothesis 1b (H1b). *Outbound open innovation has a positive link with attaining competitive advantages.*

The factors embedded in the organizational structure are an important tool to leverage management, be it middle or top management [66]; allow the development of human capital, which is a relevant tier of competitive advantage [67]; and facilitate communication and awareness of potential innovations, implementing new management models such as OI [48]. This appreciation also applies not only at the firm level but also in project management [68]. Flexible and innovative administrative structures are often linked to better entrepreneurial performance [9,69,70]. In this regard, we differentiate three organizational variables [33]: environmental dynamism (EDYN), flexibility and decentralization of internal structures (FIS), and innovative strategic posture (ISP). With regard to EDYN, several authors have proven that environmental dynamism fosters innovativeness and a constant search for competitive advantages [56,71].

To be competitive, the organizational structure must allow so-called market agility and operational agility [22]. The first capability, which is linked to ISP, allows fast responses and the acquisition of external change through constant sensing and product improvement to satisfy customer needs [72]. The second ability, which is essentially the flexibility of the internal structure, is linked to the capacity of enterprise internal processes to respond rapidly to market evolution [73]. Primarily, it aims to help firms rapidly respond to reconfiguring operations and facilitate appropriate business partner relationships as needed. Such agility can easily integrate internally to adjust the modification of a product or service scheme [72], thus providing a strong capability to support change, trial-and-error, and improvisation. The development of internal networks is necessary for the decentralization of management and success; the external knowledge acquired is of paramount importance [74].

Musiello-Neto et al. [19,20] detected a significant positive link between OI and firms' flexibility and dynamism in the Portuguese hospitality sector. Inclusive firms seek answers in business environments characterized by uncertainty and vulnerability. In this sense, these authors state that top managers must have a flexible and diversified capacity to overcome market instability, and thus promote market adaptation. Anuntarumporn and Sorhsaruht [75] also found that innovative capability and flexible and innovative man-

agement styles positively impacted competitive advantage. Organizations have various business languages seeking to meet specific business variables (goals, decisions, rules, processes, and organizational structure) to return on their investment [76]. Winning strategies allow the firm to gain a competitive advantage in the market, as a firm has a competitive advantage when it has an edge over rivals [27]. Therefore, we propose the following hypotheses embedded in organizational issues:

Hypothesis 2a (H2a). *Environmental dynamism has a positive link with attaining competitive advantages.*

Hypothesis 2b (H2b). *Decentralization and flexibility of internal structure has a positive link with attaining competitive advantages.*

Hypothesis 2c (H2c). *Innovative strategic posture has a positive link with attaining competitive advantages.*

Managers have traditionally ignored corporate risk management (CRM) as a strategic factor and have considered enterprise risk management an extension of their audit or compliance processes [77]. However, several scholars warn that CRM can create a long-term competitive advantage [30], especially to manage disruptive innovations [78,79]. Even though risk management does not increase competitiveness if it only embeds constraining costs when adverse events such as natural disasters occur, managing uncertainty by taking rewarded risks and being aware of an evolving disruptive environment that may affect the business market are actions that provide a competitive advantage [77,78]. Thus, we propose the following hypothesis:

Hypothesis 3a (H3a). *Corporate risk management has a positive link with attaining competitive advantages.*

2.2. Variables, Measurement Scales, and Configurational Testing of Hypotheses

In contrast to [18–20,22,23,53,75], we split the output variable linked to competitiveness (competitive advantage) into three dimensions: cost, service, and product [34]. These outputs were identified as COST_CA, SERV_CA, and PROD_CA. The input variables are defined according to the exposition in Section 2.1. In the case of OI, we differentiated two commonly accepted dimensions: outside-in OI and inside-out OI. Moreover, we differentiated three dimensions of organizational strategy: EDYN, FIS, and ISP [33]. In addition, we consider the degree to which companies implement strategic risk management.

Correlational methods, such as regression, are variable-oriented. Therefore, their use allows the measurement of the net influence of each input factor on the assessed output. The aim of statistical methods is to determine how hypotheses to test in research must be formulated. Therefore, they are usually displayed simply as: 'input variable X influences positively/negatively output variable Y'. The hypothesis is accepted if the sign fitted for the coefficient quantifies the relationship between X and Y and attains the conjectured sign and a predefined *p*-value (typically 5%). Therefore, the hypotheses developed in Section 2.1 in H1a, H1b, H2a, H2b, H2c, and H3, which refer to isolated impact factors on competitive advantage, can be directly tested using correlational methods.

By using fsQCA, we cannot quantify the influence of explanatory factors on the explained variable, but the method can show several ways in which input variables combine to produce an outcome. Likewise, fsQCA does not assume symmetrical relationships between variables, despite being effective in this case [37]. Therefore, fsQCA is suitable for studying phenomena where the impact of input variables is completely asymmetrical to the presence and absence of a given output. This is the case for variables that produce success and distress in firms. Often, the causes of firms' prosperity and bankruptcy are not symmetrical in such a way that recipes indicating the negation of the outcome (e.g., distress, which can be considered the negation of success) are not the mirror opposites

of recipes of its affirmation (success) [38]. Thus, the aims of fsQCA lead to formulating hypotheses to test differently than in statistics, and thus, the hypotheses in Section 2.1 must be tested according to the philosophy of fsQCA. To do this, we take into account the sign of the relations between the input and output variables hypothesized in Section 2.1, and subsequently, in a manner similar to [80], we formulate a hypothesis to test with fsQCA. It must be noted that a positive relationship between an input factor and the response variable may be due to its presence in stimulating the response, but also because its absence inhibits that response. Likewise, the effect of one explanatory factor must not be considered in isolation, but jointly with that of the other factors. Therefore, for every type of competitive advantage (COST_CA, SERV_CA, and PROD_CA), we tested the following set of hypotheses:

Hypothesis CA1 (HCA1). *The conjoint presence of some of the following factors—inbound open innovation, outbound open innovation, environment dynamism, flexibility of internal structure, innovativeness in strategic position, and corporative risk management—induces competitive advantage of ith type.*

Hypothesis CA2 (HCA2). *The conjoint absence of some of the following factors—inbound open innovation, outbound open innovation, environment dynamism, flexibility of internal structure, innovativeness in strategic position, and corporative risk management—induces competitive disadvantage of ith type.*

Hypothesis CA3 (HCA3). *Causes of competitive advantage and competitive disadvantage in cost are not the opposite of symmetrical.*

Figure 1 summarizes our strategy for assessing the influence of open measures, organizational factors, and strategic risk management on competitive advantages.
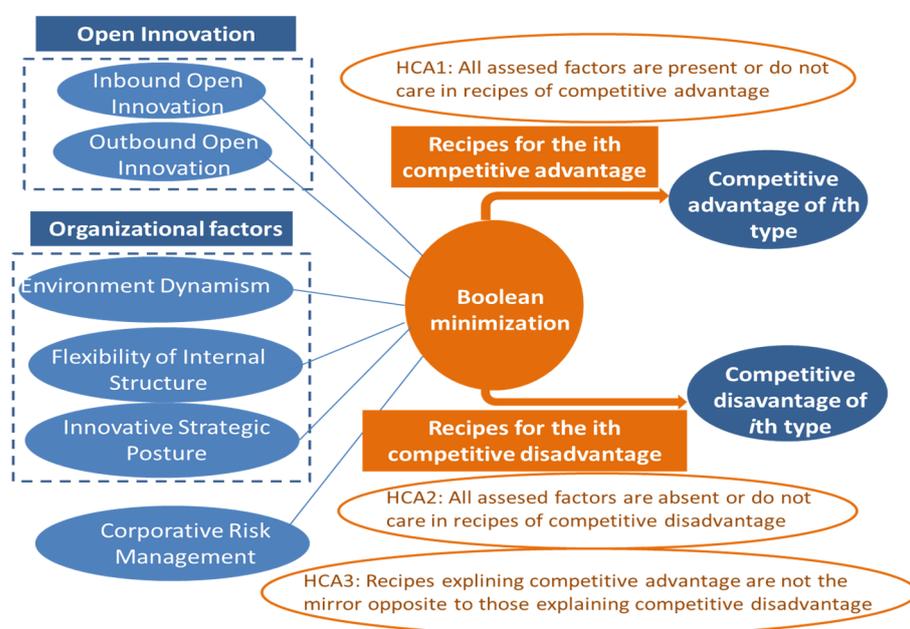

Figure 1. Configurational testing of hypotheses about drivers of competitive advantages and disadvantages.

3. Materials and Methods

3.1. Materials and Measurement Scales

This empirical study uses a sample from the Portuguese hotel industry. A structured questionnaire was used as the primary data source and was administered between 28 October

2018 and 27 April 2019. The firms were identified using the database of the Portuguese Hotel, Restaurant, and Related Trades Association (AHRESP).

A hyperlink containing the survey was sent to the professional email of the hotel executive directors who responded anonymously; that is, we could not know who responded and if so, what their answers were. Individuals were informed about the survey content and responded in a consenting manner. A total of 251 completed and validated questionnaires were returned (response rate: 24.85%). Table 1 presents the sociodemographic characteristics of the sample.

Table 1. Sociodemographic composition of the samples.

Item	%
Gender:	
Female	37.5
Male	62.5
Age (years old):	
18–25	19.3
26–35	26.9
36–45	42.6
>45	11.2
Academic qualifications:	
Primary/secondary qualification	55.6
Bachelor degree	28.9
Master/PhD degree	15.5
Professional experience (years):	
≤5	56
6–10	30.8
>10	13.2

The two dimensions of OI, inbound and outbound, were assessed based on the items in [31,32], respectively. CRM was measured using the items recommended by Covin and Slevin [81]. The three dimensions of organizational strategy—environmental dynamism, organizational structure, and strategic posture—were assessed using the items in [33]. The three dimensions of competitive advantage—cost, service, and product—were analyzed using the scale in [34]. All items are presented on a seven-point Likert-type scale. The questionnaire is displayed in the Appendix A.

3.2. Analytical Methodology

The implementation of fsQCA is conducted sequentially.

Step 1. We measured the reliability of scales [37]. To test convergent validity, we used Cronbach's alpha (α), composite reliability (CR), average variance extracted (AVE), and exploratory factor analysis. We also assessed the discriminant validity of constructs using Fornell–Larcker's rule [82].

Step 2. We built membership functions for all variables. Because constructs embed several items, these values must be aggregated to implement fsQCA [37]. As in [80], we do this using the standardized value of the first factor loading. Subsequently, to adjust membership punctuations, we used the methodology in [35] by stating thresholds at the 10%, 50%, and 90% percentiles of factor loadings.

Step 3. We performed a necessity analysis of the input factors for the presence and absence of competitive advantages [35]. In this regard, the presence or absence of a given input factor is considered as a 'necessary condition' to generate the presence or absence of the output variable if the consistency (cons) >0.9. Otherwise, the factor must be combined with other factors to obtain a sufficient condition.

Step 4. We adjust logical implicates that fit the outcomes by running the Boolean minimization algorithm by McCluskey [83]. If we symbolize the negation of a variable as

"~", we independently evaluate for the output linked to the *i*th competitive advantage, CA(i), using two Boolean functions:

$$CA(i) = f(IOI, OOI, EDYN, FIS, ISP, CRM) \tag{1}$$

$$CA(i) = f(IOI, OOI, EDYN, FIS, ISP, and CRM) \tag{2}$$

Whereas (1) explains the presence of a competitive advantage, (2) explains the competitive disadvantage. Likewise, fsQCA distinguishes three types of solutions, consisting of a set of essential prime implicates, also known as "recipes" [35]:

- Qualitative comparative analysis-complex solution (CQA-CS) that is fitted with no more assumptions than data.
- Qualitative comparative analysis: parsimonious solution (QCA-PS). This is adjusted by using any hypothesis on the unobserved configuration of variables that discovers the "easiest" solution, regardless of hypotheses that might suppose "difficult counterfactuals" [35].
- Qualitative comparative analysis: intermediate solution (QCA-IS). This solution was developed from the theoretically well-founded hypotheses of unobserved configurations. These hypotheses are grounded in the framework in Section 2 and state whether an explanatory factor influences output exclusively when it is present or non-present, or if that repercussion may arise in both circumstances. In our phenomena, all input variables must be allegedly present to generate a CA, and are absent in the case of a competitive disadvantage.

Step 5. We measure the explanatory power of a given recipe, which requires measuring its consistency (cons) and coverage (cov). There is broad consensus to consider an essential prime implicate as a sufficient condition if cons >0.75 [36]. Coverage measures the proportion of the outcomes explained by a recipe (similar to R^2).

Step 6. We interpret the fsQCA solutions as accepting or rejecting the hypotheses presented in Section 2. The QCA-CS uses strictly empirical data; hence, theoretically, this solution must be uniquely used to obtain explanations from these data. However, the recipes contained in the solution are often challenging to interpret. In this study, following [37], we combined both QCA-IS and QCA-PS to state core conditions (those in both QCA-PS and QCA-IS) and peripheral conditions (those that are only present in QCA-IS).

4. Results

4.1. Descriptive Analysis and Scale Validation

Table 2 displays the mean and standard deviation of the items and measures of convergent validity attained by the scale. It can be verified that conditions of convergent validity are always met because, whereas α, CR > 0.7, and AVE > 0.5, factor analysis extracts a significant proportion of the variances in the first factor since loadings are >0.7. Table 3 shows the correlations between constructs and allows assessment of the discriminant validity of factors using Fornell–Larcker's criterion. Generally, the squared root of AVEs is above the Pearson correlation (corr) between variables. However, it must be noted that the exception is the relation between FIS and ISP, whose corr = 0.92 is above the square root of their AVEs.

Table 2. Variables and measures of the internal consistency of scales.

Input Variables	Mean	Std. Dv.	Loading	α	CR	AVE
IOI1	5.12	1.60	0.79	0.94	0.95	0.76
IOI2	4.67	1.67	0.91			
IOI3	4.84	1.65	0.90			
IOI4	5.03	1.53	0.86			

Table 2. *Cont.*

Input Variables	Mean	Std. Dv.	Loading	α	CR	AVE
IOI5	4.68	1.65	0.92			
IOI6	4.65	1.67	0.85			
OOI1	2.53	1.62	0.83	0.94	0.95	0.81
OOI2	2.84	1.50	0.90			
OOI3	2.74	1.48	0.93			
OOI4	2.71	1.52	0.93			
OOI5	3.53	1.62	0.90			
EDYN1	4.86	1.19	0.92	0.95	0.96	0.82
EDYN2	4.86	1.17	0.91			
EDYN3	5.03	1.13	0.85			
EDYN4	4.89	1.17	0.93			
EDYN5	4.89	1.17	0.91			
FIS1	4.98	1.10	0.86	0.96	0.98	0.82
FIS2	4.92	1.15	0.92			
FIS3	4.85	1.14	0.90			
FIS4	5.00	1.12	0.90			
FIS5	4.84	1.20	0.92			
FIS6	4.87	1.20	0.92			
FIS7	4.89	1.15	0.91			
ISP1	4.90	1.12	0.90	0.90	0.95	0.64
ISP2	5.04	0.91	0.69			
ISP3	5.05	1.07	0.73			
ISP4	4.93	1.13	0.89			
ISP5	5.10	1.21	0.77			
ISP6	4.95	1.09	0.90			
1	4.98	1.11	0.94	0.89	0.93	0.82
CRM2	4.98	1.09	0.90			
CRM3	4.84	1.22	0.88			
Output variables	**Mean**	**Std. Dv**	**Loading**	**α**	**CR**	**AVE**
COST_CA1	4.94	1.17	0.96	0.97	0.98	0.94
COST_CA2	4.95	1.17	0.97			
COST_CA3	4.94	1.18	0.98			
SERV_CA1	4.95	1.16	0.73	0.91	0.94	0.79
SERV_CA2	4.90	1.22	0.93			
SERV_CA3	4.76	1.21	0.94			
SERV_CA4	4.82	1.21	0.95			
PROD_CA1	4.88	1.17	0.79	0.88	0.93	0.81
PROD_CA2	5.08	1.18	0.94			
PROD_CA3	4.99	1.16	0.95			

Table 3. Correlations between variables and the Fornell–Larker discriminant validity analysis matrix.

Variable	IOI	OOI	EDYN	FIS	ISP	CRM	COST_CA	SERV_CA	PROD_CA
IOI	0.87								
OOI	0.78 ***	0.90							
EDYN	0.46 ***	0.50 ***	0.91						
FIS	0.47 ***	0.47 ***	0.85 ***	0.90					
ISP	0.45 ***	0.47 ***	0.87 ***	0.92 ***	0.80				
CRM	0.48 ***	0.52 ***	0.58 ***	0.58 ***	0.56 ***	0.91			
COST_CA	0.27 ***	0.28 ***	0.30 ***	0.30 ***	0.35 ***	0.34 ***	0.97		
SERV_CA	0.29 ***	0.25 ***	0.31 ***	0.31 ***	0.32 ***	0.26 ***	0.73 ***	0.89	
PROD_CA	0.30 ***	0.24 ***	0.28 ***	0.28 ***	0.31 ***	0.29 ***	0.59 ***	0.77 ***	0.90

Note: with "***" we denote statistical significance with $p < 0.001$.

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4.2. Results from Necessity Analysis

Tables 4–6 show the results of the necessity analysis. The presence of all income variables reaches greater consistency than their negation to explain competitive advantages, and the negation of these factors attains greater consistency than their presence to explain competitive disadvantage. Therefore, these results are in accordance with the correlation measures. Necessity analysis also reveals that there is no variable whose presence/absence can produce a competitive advantage in cost, service, or product. This finding reinforces the need for further configurational studies.

Table 4. Necessity analysis of competitive advantage in cost.

	COST_CA		~COST_CA	
Variable	Consistency	Coverage	Consistency	Coverage
IOI	0.655	0.657	0.491	0.535
~IOI	0.533	0.489	0.626	0.624
OOI	0.620	0.713	0.485	0.606
~OOI	0.529	0.408	0.628	0.525
EDYN	0.678	0.657	0.486	0.511
~EDYN	0.527	0.502	0.640	0.662
FIS	0.662	0.682	0.489	0.547
~FIS	0.531	0.473	0.643	0.622
ISP	0.677	0.678	0.496	0.539
~ISP	0.538	0.495	0.650	0.649
CRM	0.690	0.651	0.466	0.477
~CRM	0.507	0.496	0.643	0.683

Table 5. Necessity analysis of competitive advantage in service.

	SERV_CA		~SERV_CA	
Variable	Consistency	Coverage	Consistency	Coverage
IOI	0.628	0.678	0.542	0.548
~IOI	0.511	0.505	0.674	0.623
OOI	0.587	0.728	0.545	0.632
~OOI	0.526	0.436	0.672	0.522
EDYN	0.648	0.676	0.561	0.548
~EDYN	0.529	0.543	0.684	0.657
FIS	0.639	0.710	0.557	0.579
~FIS	0.531	0.509	0.697	0.626
ISP	0.648	0.699	0.566	0.571
~ISP	0.537	0.532	0.696	0.645
CRM	0.636	0.645	0.560	0.532
~CRM	0.525	0.553	0.663	0.654

Table 6. Necessity analysis of competitive advantage in product.

	PROD_CA		~PROD_CA	
Variable	Consistency	Coverage	Consistency	Coverage
IOI	0.701	0.682	0.505	0.569
~IOI	0.582	0.518	0.642	0.662
OOI	0.661	0.738	0.506	0.654
~OOI	0.600	0.448	0.649	0.562
EDYN	0.704	0.662	0.533	0.580
~EDYN	0.608	0.561	0.634	0.678
FIS	0.705	0.705	0.531	0.615

Table 6. *Cont.*

Variable	PROD_CA		~PROD_CA	
	Consistency	Coverage	Consistency	Coverage
~FIS	0.616	0.532	0.658	0.659
ISP	0.723	0.702	0.533	0.599
~ISP	0.612	0.546	0.665	0.688
CRM	0.724	0.662	0.500	0.529
~CRM	0.543	0.244	0.644	0.708

4.3. Intermediate Solutions of fsQCA

Tables 7–9 display the QCA-IS solutions for the presence and absence of competitive advantage in terms of cost, service, and product.

Table 7. Intermediate solutions of fsQCA for the presence and the absence of competitive advantage in cost.

Solution	COST_CA				~COST_CA	
	1	2	3	4	1	2
IOI	●			●		×
OOI	·	●			⊗	⊗
EDYN		●			⊗	⊗
FIS				·	⊗	⊗
ISP		●	·	·	×	
CRM	●	●	●	●	⊗	⊗
cons	0.75	0.75	0.73	0.77	0.72	0.73
cov	0.50	0.50	0.56	0.47	0.36	0.35
	cons	0.72			cons	0.72
	cov	0.60			cov	0.39

Note: Circle "●" stands for the presence of a variable in the recipe. "×" for the absence and blank for "does not care". Large solid circle or circled "×" stand for a core condition and small solid circle or non-circled "×" for a peripheral condition.

Table 8. Intermediate solutions of fsQCA for the presence and the absence of competitive advantage in service.

Solution	SERV_CA		~SERV_CA			
	1	2	1	2	3	4
IOI	●	●	⊗	⊗	⊗	⊗
OOI	⊗	●	⊗	⊗		×
EDYN	●	●			×	×
FIS	·	⊗	⊗	⊗	×	
ISP		●	×		⊗	⊗
CRM	·	●			⊗	⊗
cons	0.77	0.75	0.76	0.76	0.76	0.75
cov	0.22	0.30	0.40	0.36	0.40	0.39
	cons	0.76	cons	0.75		
	cov	0.35	cov	0.47		

Note: Circle "●" stands for the presence of a variable in the recipe. "×" for the absence and blank for "does not care". Large solid circle or circled "×" stand for a core condition and small solid circle or non-circled "×" for a peripheral condition.

Table 9. Intermediate solutions of fsQCA for the presence and the absence of competitive advantage in service.

Solution	PROD_CA			~PROD_CA		
	1	2	3	1	2	3
IOI	●	●	●	⊗	⊗	⊗
OOI	·			⊗	●	⊗
EDYN		·			×	×
FIS		·	·	⊗	×	●
ISP			·	●	×	⊗
CRM	●	●	●	×	⊗	⊗
cons	0.79	0.81	0.80	0.76	0.77	0.76
cov	0.52	0.48	0.49	0.24	0.28	0.22
	cons	0.79		cons	0.76	
	cov	0.53		cov	0.35	

Note: Circle "●" stands for the presence of a variable in the recipe. "×" for the absence and blank for "does not care". Large solid circle or circled "×" stand for a core condition and small solid circle or non-circled "×" for a peripheral condition.

In regard to COST_CA Table 7:

(a) We obtained four prime implications for the presence of this competitive advantage. In all three cases, the consistency was adequate (≥0.75). The principal explanatory input factors are CRM (participates in all recipes as a core condition) and IOI (is a core condition in two prime implicates). However, FIS is not a core condition in any recipe.

(b) To produce COST_CA, as hypothesized, all the factors are never negated in the recipes. Thus, HCA1 is accepted.

(c) We fitted two recipes to explain the absence of competitive advantage in cost (~COST_CA). In these recipes, whereas IOI and ISP are peripheral conditions in one recipe and never core conditions, the remaining input variables are the core conditions of the prime implicates.

(d) As expected, all explanatory factors are negated to produce ~COST_CA. However, none of these recipes reached a cons of ≥0.75. Therefore, HCA2 is weakly accepted.

(e) By examining the prime implications of the presence and absence of COST_CA, it is easy to check that there is no symmetry in how the variables interact to induce them. Although the presence of IOI (FIS) is one of the most (the least) important conditions to explain COST_CA, it becomes one of the least (most) relevant conditions to induce ~COST_CA. Therefore, HCA3 can be accepted.

Concerning SERV_CA, Table 8 displays the following patterns:

(a) We obtained two prime implications for the presence of this competitive advantage, whose cons ≥0.75. The principal explanatory variables are IOI and EDYN because both factors participate in all recipes as a core condition. In contrast, OOI and FIS are affirmed in one recipe but negated in another. The last result contradicts HCA1; thus, this hypothesis is rejected for the last two variables.

(b) We fitted four recipes to explain competitive disadvantage in service (~SERV_CA). The key variable to explain ~SERV_CA is also IOI (negated), but in contrast, the absence of EDYN becomes a peripheral condition in two recipes and does not influence the others. The rest of the explanatory factors, as expected, take part in prime implicates as core conditions by being negated in the two recipes. Similarly, all recipes reached cons ≥0.75. Therefore, HCA2 is strongly accepted.

(c) By examining the explanatory recipes of SERV_CA and ~SERV_CA, we can conclude that how variables interact to induce them is asymmetrical. Whereas OOI and the flexibility of internal structure have contradictory signs as core conditions to explain the presence of competitive advantage, these constructs are always negated in the recipes for ~SERV_CA in which they take part.

Table 9 displays the following patterns of how competitive advantage for a product is produced:

(a)   We obtained three prime implications for the presence and absence of this kind of competitive advantage with cons ≥0.75. The principal explanatory input factor is IOI, as it is a core condition in all prime implicates of PROD_CA (affirmed) and ~PROD_CA (negated). It is also a highly relevant RMS because its presence is a core condition in the three explanatory recipes of PROD_CA and is negated in two core (one peripheral) prime implicates inducing ~PROD_CA.

(b)   To produce a competitive advantage in the product, input factors OOI, EDYN, FIS, and ISP must also be present in at least one recipe, but always as peripheral conditions. Therefore, Hypothesis HCA1 was accepted.

(c)   OOI, FIS, and innovativeness in strategic posture are core conditions in at least two configurations of ~SERV_CA. However, their presence has contradictory signs throughout prime implicates; that is, there is no univocal sign between OOI, FIS, and ISP with the lack of competitive advantage in the product. Hence, H32 is rejected.

(d)   Note that the presence and lack of OOI, FIS, and ISP influence on the presence and absence of this type of competitive advantage is completely asymmetrical. Therefore, HCA3 was accepted.

5. Discussion

This study evaluates the explanatory capability of open innovation (OI), organizational structure flexibility and innovativeness, and strategic risk management on competitive advantage in a sample of SMEs from the Portuguese hospitality sector. We found that both inbound open innovation and outbound open innovation, those of organizational structure (environmental dynamism, flexibility of internal processes, and innovativeness of strategic posture), and corporate risk management have a significant positive correlation with the three sources of competitive advantage identified in [34]: cost, service, and product. Thus, our findings are in accordance with [19,20] and extend their results because we analyzed disaggregated variables.

Fuzzy set qualitative comparative analysis (fsQCA) allows the ranking of the impact of the examined input variables on the three dimensions of competitive advantage. As far as competitive advantage in services and products is concerned, inbound open innovation plays a key role. This variable is within all of the explanatory configurations for both types of competitive advantage. Inbound open innovation is always present in prime implicates that explain advantage and is absent in recipes of disadvantages. This finding is consistent with those reports that point to open innovation as a cornerstone of competitive advantage [5] and the empirical findings in [19,20,51–54]. This finding suggests that open innovation is relevant for SMEs as a complementary knowledge source to innovation capability [18]. Likewise, it is in accordance with findings in [18,21], which report that typical outside-in open innovation practices such as customer sensing, improve company performance, and also with [22], which found a univocal influence of inbound open innovation on business model innovation.

By contrast, outbound open innovation does not positively impact competitive advantage. Outbound open innovation is present in a configuration for non-advantage in products and absent in an explanatory recipe of competitive advantage in services. It must be noted that there is a significant but sparse amount of literature on the dark side of open innovation [5,64]. Organizations that commit themselves to open innovation face potential risks, such as loss of knowledge [84], inflated coordination costs [85], and possible loss of control over created knowledge [86]. This finding suggests that not all open innovation practices provide value to firms. Likewise, the sign of the impact of inside-out open innovation is moderate due to issues such as the degree of technological turbulence, the transaction rate in technology markets, and the degree of patent protection [87]. Therefore, outbound open innovation creates value in the ICT sector, but not in others that are not as technologically intensive [18] as the hospitality sector. In the SME setting, our findings

are in accordance with [21,22], which also found configurations for the drivers of business model innovation where inside-out open innovation must be absent. In project management, outside-in and inside-out open innovation do not necessarily have the same sign in project performance, either at the technical or the market level. Therefore, outbound open innovation may be negatively linked to market value [68]. Likewise, this finding is also consistent with the fact that some coupled open innovation practices, such as participating in innovation clusters and networks, are often not enablers of value creation [18].

By using fuzzy set qualitative comparative analysis, we also found that organizational structure factors are relevant to explaining competitive advantage and disadvantage in products and services, which is in accordance with [21,22]. However, the relevance of these constructs is lower than that of inbound open innovation and cooperative risk management. Moreover, flexibility in internal structure and innovative strategic posture show a slightly contradictory influence on competitive advantage in services and products. More (less) flexible, decentralized, and innovative management styles are often linked with the presence (absence) of competitive advantage in products and services, which is consistent with the general belief that more innovative management styles are usually a source of competitive advantage [69] and better firm performance [9,19,20,74]. Our results are in accordance with those of [21,22], which also found that strategic innovative postures are often (but not always) linked with greater degrees of business model innovation.

The absence of flexibility in internal structure is a condition to reach an advantage in service, along with outside-in open innovation and environmental dynamism as core conditions, and its presence (conjointly with the absence of all the other explanatory factors) may cause a competitive disadvantage in the product. This finding is in accordance with Brozovic [70], who suggests an optimal level of strategic flexibility. Too much flexibility (over-flexibility) can damage the firm as acutely as rigidity and incur high costs. This is also in accordance with [22], which reports that operational adjustment agility in some configurations must be absent to attain business model innovation. Likewise, [88] stated that decentralization strategies assume a trade-off between the short-term costs of decentralized exploration and the long-term benefits of achieving higher performance. Moreover, we have observed that the presence of dynamism in the environment is always a driver to attain competitive advantage, and its absence as an enabler to avoid disadvantage, which is in accordance with [56,71].

It has been verified that corporate risk management, after outside-in open innovation, is the most relevant explanatory factor of product competitive advantage. Although corporate risk management is also significant in explaining competitive advantage and disadvantage in services, it plays a less relevant role. Strategic risk management is also present (absent) in recipes, where it is a condition of competitive advantage (disadvantage). Therefore, our findings are in line with those of [19,20,31,77,78], which noted the relevance of corporative risk management in obtaining a sustainable competitive advantage.

The key variable to explain competitive advantage in terms of cost is strategic risk management. It is a condition with presence (absence) in all of the prime implicates for advantages and disadvantages in terms of cost. The second most important variable in explaining competitive advantage in cost is outside-in open innovation. In contrast, the relevance of outside-in open innovation to explain competitive disadvantage in cost is residual; inside-out open innovation, environmental dynamism, and flexibility of internal structure are as impactful as risk management to produce an absence of competitive advantage in cost.

6. Implications of This Research

6.1. Theoretical Implications

This study contributes to the literature on fsQCA applications to management and entrepreneurship. We have shown that fsQCA is a powerful tool for displaying complex interactions between relevant factors in explaining competitive advantage and showing the asymmetrical causes of high and low competitiveness. In addition, based on the hospitality

sector, the structure in the relationships between research and development, external openness, and top management within the OI model enables structuring of the OI paradigm that allows management because the reference model has three different approaches. This is a way to achieve sustainable competitiveness as an advantage over other competitors, helping to strengthen the confidence of companies in this business model and allowing the testing of specific strategic guidelines in companies in this industry. Therefore, by seeking new frontiers for organizations, sharing internal knowledge with external knowledge through OI allows for more competent management of corporate risk, and the formulation and implementation of strategies aimed at a competitive advantage. Finally, acquiring external knowledge requires companies to invest in absorptive capacity and demonstrate a willingness to use this knowledge; external partnerships are essential to strengthen and develop new proposals for OI models, particularly in highly changeable environments.

6.2. Practical Implications

The practical contributions of this research will allow top managers to develop the capabilities of SMEs as, through OI, organizational strategy, and corporate risk management, they will enhance the reach of competitive advantage in the sector. In this context, hospitality sector SMEs must develop a normative model that promotes open flows of knowledge between industry, government, and academia through OI. Moreover, universities and research institutes are becoming increasingly proactive in making their intellectual property available by developing new products and services, which will enhance the competitive advantage of firms accessing them. Most of the findings in this study can be extended to any type of Portuguese SME because inbound open practices do not differ significantly between SMEs in different sectors [17].

Note that results from fsQCA are very useful for managerial decision making because they allow not only stable profiles of firms with a consistent competitive advantage, but also reliable profiles that clearly lack that type of competitive ability. In other words, configurational analysis provides benchmarks for strategic decision making. Thus, to state OI measures and strategic decisions, managers must clearly establish what kind of competitive advantage must be attained and subsequently enact measures to achieve a consistent profile for established objectives. To be a successful business, low-cost hospitality services, which should achieve competitive advantage in cost, must not attain the same profiles as luxury hotels, which need greater competitiveness in services and products. Likewise, as important as reaching competitive advantage, it avoids weak positions in other types of competitive capabilities. For example, a firm that has a good position in a service or product but has high production costs (i.e., has a competitive disadvantage in costs) may have greater chances of distress. Therefore, benchmarks linked to competitive disadvantages are also very informative for decision makers because they can guide the promotion of actions tending to distance company profiles from such benchmarks.

Ultimately, the results of this study will allow national, regional, and local governments to create policies, programs, and incentives to help firms adopt or extend the OI model, thus promoting the exchange of internal and external knowledge and strengthening the dynamics of the business ecosystem.

7. Conclusions

This study reveals that decision making encouraged by the relationship between organizational strategy and corporate risk management with competitive advantage opens new perspectives for top managers in the OI model, be it inbound or outbound. Moreover, we have shown that top managers often forget corporate risk management as a relevant strategic tool, which is crucial for achieving competitive advantages in terms of products and/or costs. This may encourage SMEs to stimulate outside-ins and corporate risk management to achieve goals and values.

This study has some limitations. First, the survey was aimed at firms with e-mail addresses in the AHRESP database. Although the number of responses received was

significant, a larger sample may provide a set of results that produce a more refined analysis. Moreover, it is a non-probabilistic, convenience-based sample. Second, although the intended survey respondents were executive hotel directors, it is unknown whether they completed the questionnaires themselves. Assessing different study constructs based on a person's opinions can be reduced. This may not reflect the genuine opinion of the firm precisely because decisions are made by teams whose members may have different perspectives. Likewise, this study's sample was cross-sectional as it was conducted before the pre-COVID-19 period. A longitudinal survey is needed to obtain a more comprehensive view of the relationships between the variables.

Appendix A. Questionnaire

Appendix A.1. Open Innovation

Appendix A.1.1. Inbound Open Innovation (IOI)

(seven-point scale: 1 = "strongly disagree" and 7 = "strongly agree").

IOI1. Constantly scan the external environment for inputs such as technology, information, ideas, and knowledge.

IOI2. Actively seek external sources (e.g., research groups, universities, suppliers, customers, competitors, etc.) of knowledge and technology when developing new products.

IOI3. Believe it is good to use external sources (e.g., research groups, universities, suppliers, customers, competitors) to complement our own R&D.

IOI4. Often brings in externally developed knowledge and technology for use in conjunction with our own R&D.

IOI5. Seek out technologies and patents from other firms, research groups, or universities.

IOI6. purchase external intellectual property for use in our own R&D.

Appendix A.1.2. Outbound Open Innovation (OOI)

(seven-point scale: 1 = "strongly disagree" and 7 = "strongly agree").

OOI1. Often, sell/give knowledge (patents, copyrights, and other outputs) to other firms to better benefit from innovation efforts.

OOI2. Often, they offer agreements to other firms to better benefit from our innovation efforts.

OOI3. Our firm strengthens every possible use of rights to better benefit our firm.

OOI4. Our firm finds spin-offs that benefit better from our innovation efforts.

OOI5. Our innovation projects are less dependent on the contributions of external partners than on ours.

Appendix A.2. Organizational Strategy Scales

Table A1. The Environmental Dynamism Scale (EDYN).

Please circle the number in each scale that best approximates the actual conditions in your business unit's principal industry.		
EDYN1. Our business unit must rarely change its marketing practices to keep up with the market and competitors	1-2-3-4-5-6-7	Our business unit must change its marketing practices extremely frequently (e.g., semiannually)
EDYN2. The rate at which products/services are getting obsolete in the industry is very slow (e.g., basic metal like semiconductors)	1-2-3-4-5-6-7	The rate of obsolescence is very high (as in some fashion goods and copper)
EDYN3. Actions of competitors are quite easy to predict (as in some basic industries)	1-2-3-4-5-6-7	The actions of competitors are unpredictable
EDYN4. Demand and consumer tastes are fairly easy to forecast (e.g., for milk companies)	1-2-3-4-5-6-7	Demand and tastes are almost unpredictable (e.g., high-fashion goods)
EDYN5. The production/service technology is not subject to very much change and is well established (e.g., in steel production)	1-2-3-4-5-6-7	The modes of production/service change often and in a major way (e.g., advanced electronic components)

Table A2. The Organization Structure Scale (FIS).

In general, the operating management philosophy in my firm favors …		
FIS1. Highly structured channels of communication and highly restricted access to important financial and operating information	1-2-3-4-5-6-7	Open channels of communication with important financial and operating information flowing quite freely throughout the organization
FIS2. A strong insistence on a uniform managerial style throughout the firm	1-2-3-4-5-6-7	Managers' operating styles ranging freely, from the very formal to the very informal
FIS3. A strong emphasis on giving the most to say in decision making to formal line managers	1-2-3-4-5-6-7	A strong tendency to let the expert in a given situation have the most say in decision making even if this means temporary bypassing of formal lines of authority
FIS4. A strong emphasis on holding fast to tried and true management principles despite any changes in business conditions	1-2-3-4-5-6-7	A strong emphasis on adapting freely to changing circumstances without too much concern for past practice
FIS5. A strong emphasis on always getting personnel to follow the formally laid down procedures	1-2-3-4-5-6-7	A strong emphasis on getting things done even if this means disregarding formal procedures
FIS6. Tight formal control of most operations by means of sophisticated control and information systems	1-2-3-4-5-6-7	Loose, informal control; heavy dependence on informal relationships and norm of cooperation for getting work done
FIS7. A strong emphasis on getting line and staff personnel to adhere closely to formal job descriptions	1-2-3-4-5-6-7	A strong tendency to let the requirements of the situation and the individual's personality define proper on-job behavior

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Table A3. The Strategic Posture Scale (IPS).

In general, the top managers of my firm favor...		
IPS1. A strong emphasis on the marketing of tried-and-true products or services	1-2-3-4-5-6-7	A strong emphasis on R&D, technological leadership and innovation
How many new lines of products or services has your firm marketed in the past five years (or since its establishment)?		
IPS2. No new lines of products or service	1-2-3-4-5-6-7	Many new lines of products or services
IPS3. Changes in product or service line have been mostly of a minor nature	1-2-3-4-5-6-7	Changes in product or service line have usually been quite dramatic
In dealing with its competitors, my firm . . .		
IPS4. Typically responds to actions which competitors initiate	1-2-3-4-5-6-7	Typically initiates actions which competitors than respond to
IPS5. Is very seldom the first business to introduce new products/services, administrative techniques, or operating technologies, etc.	1-2-3-4-5-6-7	Is very often the first business to introduce new products/services, administrative techniques, or operating technologies, etc.
IPS6. Typically seeks to avoid competitive clashes, preferring a "live-and-let-live" posture	1-2-3-4-5-6-7	Typically adopts a very competitive, "undo-the-competitors" posture

Appendix A.3. Corporate Risk Management (CRM)

(seven-point scale: 1 = "strongly disagree" and 7 = "strongly agree").

Table A4. Items of Corporate Risk Management scale.

CRM1. A strong proclivity for low-risk projects (with normal and certain rates of return)	1-2-3-4-5-6-7	A strong proclivity for high-risk projects (with chances of very high returns)
In general, the top managers of my firm believe that . . .		
CRM2. Owing to the nature of the environment, it is best to explore it gradually via timid incremental behavior	1-2-3-4-5-6-7	Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives
When confronted with decision-making situations involving uncertainty, my firm . . .		
CRM3. Typically adopts a cautious, "wait-and-see" posture in order to minimize the probability of making costly decisions	1-2-3-4-5-6-7	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities

Appendix A.4. Competitive Advantage (CA)

(seven-point scale: 1 = "much worse" and 7 = "much better").

Appendix A.4.1. Cost

    CA1: Production cost per unit.
    CA2: Cost of goods sold.
    CA3: Selling price to end-users overseas.

Appendix A.4.2. Service

    CA4: Product accessibility.
    CA5: Technical support/after-sales service.
    CA6: Delivery speed and reliability.
    CA7: Product line breadth.

Appendix A.4.3. Product

    CA8: Product quality.

CA9: Packaging.
CA10: Design and style.

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