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Exploring the Incubator Effect on Knowledge Management and Innovation - An Analysis in the Tourism and Hospitality Industry

Carolina do Sado Camal

Master in Management

Supervisor: PhD Álvaro Dias, Invited Assistant Professor, ISCTE -
Instituto Universitário de Lisboa

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Department of Marketing, Operations e General Management

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It is with mixed feeling that I can now say the most challenging project of my academic career is finished. A challenging journey, with its fair share of ups and downs, has come to an end. This was made possible, not only by my perseverance, but also by the people around me.

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Resumo

As empresas incubadoras desempenham um papel importante na gestão do conhecimento e inovação e o objetivo desta dissertação é estudar como isso impacta estes aspectos em startups na indústria de turismo e hotelaria. Através da seleção e análise da literatura relevante, esta pesquisa visa aprofundar o conhecimento sobre o tema, identificando limitações e fornecendo indicações para pesquisas futuras. Para recolher os dados necessários, foi aplicado um inquérito onde foram obtidas sensivelmente 30 respostas. Partindo desses dados, e utilizando a técnica SEM-PLS 4 (Ringle, Silva, & Bido, 2015), foi possível abordar o tema e posteriormente estudar os resultados em duas etapas. Primeiro, avaliando a confiabilidade e validade do modelo e, em seguida, avaliando o modelo estrutural. A literatura analisada foi sintetizada de forma a criar uma conexão coerente entre todas as variáveis em estudo e como estas exercem influência entre si mesmas. A discussão dos resultados, contribuições teóricas e implicações para a gestão concluem a dissertação, juntamente com as limitações encontradas ao longo desta pesquisa. Este estudo permite uma melhor compreensão do papel que as incubadoras podem ter na gestão do conhecimento e inovação na indústria do turismo. Assim, as conclusões desta dissertação podem ajudar não só as incubadoras, mas também as empresas incubadas a terem uma perspetiva diferente sobre como podem ser eficientes e rentáveis em conjunto. A originalidade deste tema advém do facto de em Portugal o tema das incubadoras se encontrar explorado mas não no setor de hotelaria e turismo.

Palavras-chave: Incubadora, Gestão de Conhecimento, Inovação, Turismo

Sistema de Classificação JEL: Z32, L83

Abstract

Incubators play an important role in knowledge management and innovation and the purpose of this dissertation is to study how it impacts those aspects in startups on the tourism and hospitality industry. Through the selection and analysis of relevant literature, this research aims at deepening our understanding of the theme, identifying limitations and providing directions for future research. In order to collect the needed data, a survey was applied, obtaining slightly more than 30 answers. After that and using the SEM-PLS 4 (Ringle, Silva, & Bido, 2015) technique, it was possible to address the topic and later study the results in two stages. First, evaluating the reliability and validity of the model, and then assess the structural model. The analyzed literature was synthesized in order to create a coherent connection between all the variables being studied and how they influence each other. The result discussion as well as theoretical contributions and managerial implications conclude the dissertation, along with the limitations found throughout this research. This study allows a better understanding of the role incubators can have in knowledge management and innovation in the tourism industry. Thus, the conclusions from this dissertation can help not only incubators but also incubated companies to have a different perspective on what and how they can be efficient and profitable together. The originality of this topic comes with the fact that in Portugal the subject of incubators is explored but not on the tourism and hospitality industry.

Keywords: Incubator, Knowledge Management, Innovation, Tourism

JEL Classification System: Z32, L83

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1. Introduction

Throughout the years, the economic scenery and world development have been led by the creation, application and diffusion of knowledge and information. These have been the guides for companies when looking for a better economic performance in order to sustain themselves in the market and to gain competitive advantage (Minello, Marinho, & Bürger, 2017).

The increasing competition between companies, partly stimulated by economic globalization in the last decades, has contributed for the rising number of challenges in companies. The tourism and hospitality, which is now at a juncture, recovering from the COVID-19 pandemic, is no exception. This industry is widely recognized as an economic key booster, being the third highest world category in export earnings in the world and representing 10% of the world GPD, according to UNWTO (Tourism and COVID-19 – Unprecedented Economic Impacts, s.d.). This industry's dynamic growth, temporarily interrupted by the pandemic, naturally leads to increased competition between companies. In order to face this competition, companies ought to keep up with innovation within the industry so that they can survive, evolve and, ultimately, remain competitive (Najda-Janoszka & Kopera, 2014). However, this industry is often seen as low tech, meaning innovation, especially service innovation, is often underestimated (Hertog, Gallouj, & Segers, 2011). As previously explored by the European Commission (2006) and Hjalager (2002) the small size of enterprises, which relates to significant resource shortage, and high personnel turnover, with highly skilled and motivated personnel often being a critical success factor for innovation, represent the most relevant barriers in internal innovation (Najda-Janoszka & Kopera, 2014).

With the intention of supporting the ones trying to survive in this dynamic and complex market, some auxiliary mechanisms have arisen, such as business incubators, representing an alternative to the process of formation and business development (Sousa, 2019). Incubators, which have been recognized as a booster for innovation, competitiveness and economic growth (Fernandes, 2014), come in handy for start-ups, with the nurturing and development of business and networking, which usually have some financial, administrative and operational restrictions, making it specially challenging for them to enter the market and positively grow (Cooper, Hamel, & Connaughton, 2010).

Although some investigators such as Narvekar and Jain (2006), Kumar (2009), Iguarta (2010) and Jack et al. (2010) have shown a growing interest about knowledge management and innovation since this phenomenon has an impact on the competitiveness and financial performance of companies (Fernandes, 2014), this information regarding the tourism and hospitality industry is scarce.

Thus, the research problem arises, and it consists in establishing a relation between innovation and the three concepts of knowledge management which will be addressed in the literature review. For the purpose of this study, innovation will be the dependent variable and it will be addressed as a process. Exploration and exploitation will be the two items that represent it. For the independent variables, they will be the knowledge management components – acquisition, assimilation, transformation, incubator, social capital, human capital, opportunity recognition and entrepreneurial orientation.

This study aims at exploring the incubator effect on knowledge management and innovation specifically in the tourism industry and by the end of this dissertation the repercussions of this effect should be clear.

The dissertation begins with the theoretical foundations in the literature review, where the relevant concepts will be explained. The methodology will follow and here the most appropriate techniques and methods to be applied in the investigation will be selected. Furthermore, the process of data collection and analysis will be described in detail. The results will then be discussed based on what was obtained from the methodological instruments, the theoretical concepts of the literature review and the initial objectives defined for this study. Lastly, in the conclusion, the limitations of the study will be addressed, as well as suggestions for future research.

2. Literature Review

The capacity a company has of recognizing the value of new information, assimilate it and apply it to commercial ends plays a fundamental role in the development of its innovation and performance capacities. Besides, this capacity represents a multidimensional principle that encases five distinct concepts with different objectives, structures and strategies (Ali, Kan, & Sarstedt, 2016).

Zahra and George (2002) identify four concepts to start off: acquisition, assimilation, transformation and exploitation (Ali, Kan, & Sarstedt, 2016). The fifth concept – exploration – is going to be explained further ahead, taking into consideration the studies of other authors.

Acquisition is the capacity a company has to initiate, identify, value, acquire and gather relevant and crucial knowledge for its operation originating from external sources (Ali, Kan, & Sarstedt, 2016). It is the capability to search for and develop connections with external knowledge sources. There are a few factors that can influence this dimension, namely: both internal and external pre-existing knowledge, previously made investments, human resources and communication (Miller, McAdam, Moffett, Allen, & Puthussery, Knowledge transfer in university quadruple helix ecosystems: an absorptive capacity perspective, 2016).

Assimilation, as the name implies, is the capacity to assimilate externally generated knowledge, allowing the company to analyze, process and interpret this knowledge through its own operational processes (Ali, Kan, & Sarstedt, 2016). This means the company can comprehend, interpret and learn from external knowledge. The factors that can have influence on this process is the educational level, background diversity, organizational structure, internal communication and human resources (Miller, McAdam, Moffett, Allen, & Puthussery, Knowledge transfer in university quadruple helix ecosystems: an absorptive capacity perspective, 2016)

Transformation describes to what point a company can develop and refine its internal routines, which eases the combination between pre-existing knowledge and recently acquired knowledge (Ali, Kan, & Sarstedt, 2016). It is, at heart, the ability to internalize and convert external knowledge. The factors that can influence this dimension are similar to the ones mentioned above, with the exception of organizational structure which gives place to organizational culture (Miller, McAdam, Moffett, Allen, & Puthussery, Knowledge transfer in university quadruple helix ecosystems: an absorptive capacity perspective, 2016).

Exploitation measures the capacity a company has to use and implement acquired, assimilated and transformed knowledge in its existing routines, operations, competencies and technologies. This allows the creation of new organizational routines and capabilities, including product, process and management innovation (Miller, McAdam, Moffett, Allen, & Puthussery, Knowledge transfer in university quadruple helix ecosystems: an absorptive capacity perspective, 2016). The organizational structure, bureaucracy and responsiveness can influence this process.

Along the same lines, **exploration** can be defined differently depending on the author. According to Gilsing and Nooteboom (2006), for instance, exploration is to search and combine science and technology (Li, Vanhaverbeke, & Schoenmakers, 2008) . However, for the topic being discussed in this dissertation, the most adequate definition might be the one from Atuahene-Gima (2005), that states that exploration is the investment in resources in a way that allows the improvement and expansion of knowledge, competencies and product innovation processes. Essentially, it consists in investing on resources allowing the achievement of new knowledge and abilities. Therefore, exploration comprises topics as research, risk, experimenting, flexibility and discovery (Miller, McAdam, Moffett, Alexander, & Puthusserry, Knowledge transfer in university quadruple helix ecosystems: an absorptive capacity perspective, 2016).

Even in organizations with these different capacities, successful entrepreneurship does not rely solely on what was taught in classroom. Instead, a close linkage between business,

science, technology and other parties is crucial to understand and master the entrepreneurial ecosystem. It is in this context that **incubators** emerge, as they are able to provide a real platform for startups from where they can kick start a new venture whilst contributing to its survival and growth. Besides, incubators also allow the development of entrepreneurial culture and entrepreneurship promotion (Li, Rehman, & Asim, 2019). Having said that, it is possible to hypothesize:

H1a: Incubator positively related to Exploration.

H1b: Incubator positively relates do Exploitation.

Besides there theoretical approaches, other aspects, on the more anthropological side, also have to be taken into consideration. To start off: **social capital**, that can be simply defined as networking capacity, is described by many authors as the stock of relationships, interpersonal trust and norms that allow individuals to relate to each other in a way that ensures the organization's development and sharing of knowledge. For some authors (Teece, 2005) it represents the key to success in firms due to the connection with the communication process. Social capital is a complex combination between work and friendship, making it a multidimensional concept. In this study, cognitive social capital, relational social capital and structural social capital will be taken into consideration.

Then, **human capital**, the result of entrepreneurial training and is often considered a critical factor for organizational performance. According to Becker (1964) and Mincer (1974), this theory considers that knowledge has the ability to add greater cognitive skills to individuals, therefore boosting their productivity and efficiency on activity development (Felício, Couto, & Caiado, 2014). There are a few relevant characteristics in this approach and for the purpose of this dissertation experience, professional proficiency and cognitive ability will be the ones considered. Cognitive skills, as stated before, will have an impact on the workers behavior regarding activity accomplishment. Moreover, according to Dimov (2005) and Gimeno (1997), experience is related to firm activity and economic performance, while professional proficiency is related to the organization's performance (Felício, Couto, & Caiado, 2014).

Another key step in the entrepreneurial process is **opportunity recognition**, with the concept of opportunity itself being considered one of the pillars of entrepreneurship research. It is based on experiences and entrepreneurial characteristics and entrepreneurial behavior that follows (Anwar, Clauss, & Issah, 2021). Christensen (1989) defines it has the perception of a possibility for new profit potential. This can be done by observing external stimuli and exploit it inside the organization (Sambasivan, Abdul, & Yusop, 2009). It focuses on market and

customer demands while it also helps in problem-solving, contributing to the organization's success and performance. Firms with strong potential towards opportunity recognition, which are able to recognize and act upon opportunities more successful over those having little opportunity recognition in the market (Anwar, Clauss, & Issah, 2021).

Inevitably connected with this is **entrepreneurial orientation**. An entrepreneurial organization is one that is innovative, proactive and risk-taking. Therefore, entrepreneurial orientation is undoubtedly related to the organization's performance (Rezaei & Ortt, 2018). Entrepreneurial orientation is considered a crucial element of an organization's competitive advantage and performance (Nusane, Szczepanska-Woszczyna, Chaiyawit, Kassakorn, & Khalid, 2021). Currently, and taking into consideration globalization and increasing competition, organizations that have a higher level of entrepreneurial orientation are more likely to have better performance indicators (Fan, et al., 2021).

Taking all of this into consideration, it is then possible to hypothesize:

H2a: Human Capital Experience and Opportunity Recognition mediate the relation between Incubator and Exploitation.

H2b: Human Capital Experience and Opportunity Recognition mediate the relation between Incubator and Exploration.

H2c: Human Capital Professional Proficiency and Opportunity Recognition mediate the relation between Incubator and Exploitation.

H2d: Human Capital Professional Proficiency and Opportunity Recognition mediate the relation between Incubator and Exploration.

H2e: Human Capital Professional Proficiency mediates the relation between Incubator and Opportunity Recognition.

In this dissertation, exploitation and exploration will be the two items that represent innovation – the dependent variable. Acquisition, assimilation, transformation, incubator, social capital, human capital, opportunity recognition and entrepreneurial orientation are the independent variables.

3. Methodology

3.1. Data collection

In this dissertation, the first step was to revise previous studies that addressed the chosen topic, allowing me to identify the key issues and gaps to focus on. Firstly, a literature review was gathered, using only secondary data such as academic journals, articles, papers and

dissertations.

Secondly, descriptive data was collected through a 15-minute anonymous questionnaire, available from May to October 2022. Since the target respondents were members of currently or previously incubated companies, the method chosen to spread the questionnaire was e-mail and LinkedIn. Within the period mentioned above it was possible to get 31 answers.

3.2. Questionnaire design

A three-section questionnaire, in English, was developed to study and explore the opinion of professionals that work or have worked in incubated organizations, regarding the different variables chosen to study knowledge management.

In the first section of the questionnaire respondents had to answer two elimination questions with a declaration of consent and whether or not they worked in an incubated company. This way, respondents that didn't match the profile required could be automatically excluded from the study.

The second section of the questionnaire had fifteen questions, each of them regarding the variables being studied. This study adopted existing scales to measure all variables. All of them were 5-likert scale questions – 1-strongly disagree to 5-strongly agree – except from the ones about Human Capital – 1-less important to 5-more important. Acquisition, Assimilation, Transformation, Exploitation and Exploration were measured using four items each that were adapted from Flatten et al. (2011). Incubator was measured using six items adapted from Li et al. (2019). Social Capital was divided in cognitive, social and structural approaches with four items each, adapted from Hoang and Truong (2021). Human Capital was also divided in different approaches (knowledge, experience, professional proficiency and cognitive ability), each of them with three to six items adapted from Felício et al. (2014). Opportunity Recognition was measured through five items retrieved and adapted from Guo et al (2016). Lastly, Entrepreneurial Orientation was measured from eight items adapted from Fan et al. (2021).

The final part of the questionnaire was dedicated to demographic aspects with eight questions: gender, nationality, year of birth, qualifications, current position, number of employees, years of experience and current field of activity.

3.3. Sample profile

The collected sample is composed of 31 individuals, 48% (15) males and 52% (16) females. This shows a rather balanced sample when it comes to gender. The majority of the sample is composed of 11 individuals (36%) between the ages of 30-39, followed by 9 individuals (29%)

with 40-49 years old. The least significant age gaps are 50-60 representing 19% of the sample and, lastly, 20-29 with 16%.

Regarding the sample's level of education, the majority of respondents (52%) had a master's degree, and the most common after that was the bachelor's degree with 32%. This may be, to some extent, related with the participant's current positions: more than half of the sample has either top-level or middle-level management positions. Three of them with 30 or more years of experience, sixteen with 10 to 30 years and eleven with less than 10 years in business. All of them were in the tourism and hospitality industry.

The data collected was organized and analyzed using Microsoft Excel for Microsoft 365.

4. Results and Discussion

4.1. Statistical analysis

To test the conceptual model the structural equation model (SEM) was used. More specifically, Partial Least Squares (PLS), which is a variance-based structural equation modelling technique, by means of SmartPLS 4 software (Ringle, Silva, & Bido, 2015). The analysis and interpretation of the results followed a two-stage approach. First, the reliability and validity of the measurement model was evaluated and then the structural model was assessed.

To assess the quality of the measurement model, the individual indicators of reliability, convergent validity, internal consistency reliability and discriminant validity were examined (Risher & Hair, 2017). The results showed that the standardized factor loadings of some items were above 0.6 (0.729 and 0.957) and were all significant at $p < 0.001$, which provided evidence for the individual indicator reliability (Risher & Hair, 2017). Internal consistency reliability was confirmed because all Composite Reliability (CR) values surpassed the cut-off of 0.7 (see table 1) (Risher & Hair, 2017).

Convergent validity was also confirmed for three key factors. First, all items loaded positively and significantly on their respective constructs. Second, all constructs had CR values higher than 0.70. Third, as table X shows, the Average Variance Extracted (AVE) for all constructs exceeded 0.50 (Bagozzi & Yi, 1988). The discriminant validity was assessed using two approaches. First, the Fornell and Larcker criterion, that requires that a construct's square root of AVE (bold values on the diagonal on table X) is larger than its biggest correlation with any construct (Fornell & Larcker, 1981). Table X shows that this criterion is satisfied for all constructs. Second, the Heterotrait-Monotrait ration (HTMT) criterion was used (Henseler, Ringle, & Sarstedt, 2015; Risher & Hair, 2017).-

The structural model was assessed using the sign, magnitude and significance of the structural path coefficients. The magnitude of R2 value for each endogenous variable as a

measure of the model's predictive accuracy and the Stone-Geisser's Q2 values as a measure of the model's predictive relevance (Risher & Hair, 2017). The VIF values ranged from 1.00 to 2.226, which was below the indicative critical value of 5 (Risher & Hair, 2017). These values indicated no collinearity.

Latent variables	CR	AVE	1	2	3	4	5	6
(1) Exploration	0.834	0.715	0.846					
(2) Exploitation	0.775	0.634	0.613	0.796				
(3) Human Capital Professional Proficiency	0.814	0.688	0.539	0.578	0.829			
(4) Human Capital Experience	0.872	0.579	0.482	0.559	0.742	0.761		
(5) Incubator	0.909	0.668	0.379	0.846	0.585	0.643	0.817	
(6) Opportunity Recognition	0.784	0.646	0.645	0.555	0.632	0.828	0.550	0.804

Table 1 - Composite Reliability, Average Variance Extracted, correlations and discriminant validity checks.

The coefficient of the determination R2 for the five endogenous variables of Human Capital Professional Proficiency was 67.303, Human Capital Experience was 69.387, Opportunity Recognition was 75.631, Exploitation was 70.193 and Exploration was 80.923. These values surpassed the threshold of 10% (Falk & Miller, 1992). The Q2 values for all endogenous variables (0.072, 0.075, 0.435, 0.328, 0.101, 0.249, 0.238, 0.165, 0.111, 0.157, 0.193, 0.096, 0.181) were above zero, which indicates the predictive relevance of the model. Bootstrapping with 5000 subsamples was used to evaluate the significance of the parameter estimates (Risher & Hair, 2017).

4.2. Quantitative results

The results in table 2 show that Incubator hasn't a significant effect on Exploration ($\beta=0.027$, n.s.), which means H1a is not supported. On the opposite, this same variable has a significant positive effect on the other component of innovation – Exploitation – ($\beta=0.775$, $p<0.001$), supporting H1b.

To test the mediation hypotheses (H2a-H2e), Risher & Hair (2017) recommendations were followed. Therefore, the bootstrapping procedure was used to test the significance of the indirect effects via the mediator (Preacher & Hayes). Table 3 presents the result of the mediation effects. The indirect effects of Incubator in Exploration via the mediators of Human Capital Experience and Opportunity Recognition is significant ($\beta=0.328$, $p<0.01$), therefore supporting H2b. All remaining indirect hypotheses were not significant since $p>0.05$.

Path	Original sample (O)	Standard deviation (STDEV)	T Statistics (O/STDEV)	P values
H1a: Incubator -> Exploration	0.027	0.215	0.125	0.900
H1b: Incubator -> Exploitation	0.775	0.154	5.021	0.000

Table 2 - Structural Model Assessment

Indirect effect	Original sample (O)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
H2a: Inc->Hce->OR->Expt	0.066	0.091	0.726	0.468
H2b: Inc->Hce->OR->Expr	0.328	0.126	2.610	0.009
H2c: Inc->HCpp->OR->Expt	0.003	0.025	0.115	0.909
H2d: Inc->HCpp->OR->Expr	0.014	0.072	0.199	0.842
H2e: Inc->Hcpp->OR	0.022	0.110	0.203	0.839

Table 3 - Bootstrap results for indirect effects.

Lastly, another study – Importance-Performace Map Analysis (IPMA) – was conducted in order to study the importance of these relations. In PLS-SEM, the IPMA is a helpful analysis that turns the standard path coefficient into a more practical approach. This means that IPMA does not analyze solely the performance of an item, but it also assigns its importance (Hair, et al., 2019). Following that, the IPMA results give management insight into how to handle and enhance the identified high-importance and low-performance areas (Ringle & Sarstedt, 2016).

This analysis was carried out and the results are shown in figure 1. The path coefficients are represented as arrows (the bolder the arrow, the higher the importance) and convey the relative importance; performance values are represented as circles and show the average value of latent variables' scores (the closer to 100, the higher is the performance) (Hair, Hult, Ringle, & Sarsted, 2017).

As figure 1 shows, the importance Opportunity Recognition has, for example, to Exploration is much more important than to Exploitation. These relations were already known but only through this analysis it is possible to understand the importance of each one to that variable. It is also possible to, once again, confirm what was stated in table 2: the role of the Incubator is much more important on Exploitation than in Exploration. This not only reiterates H1a and H1b, but also enriches it as it demonstrates the importance of each.

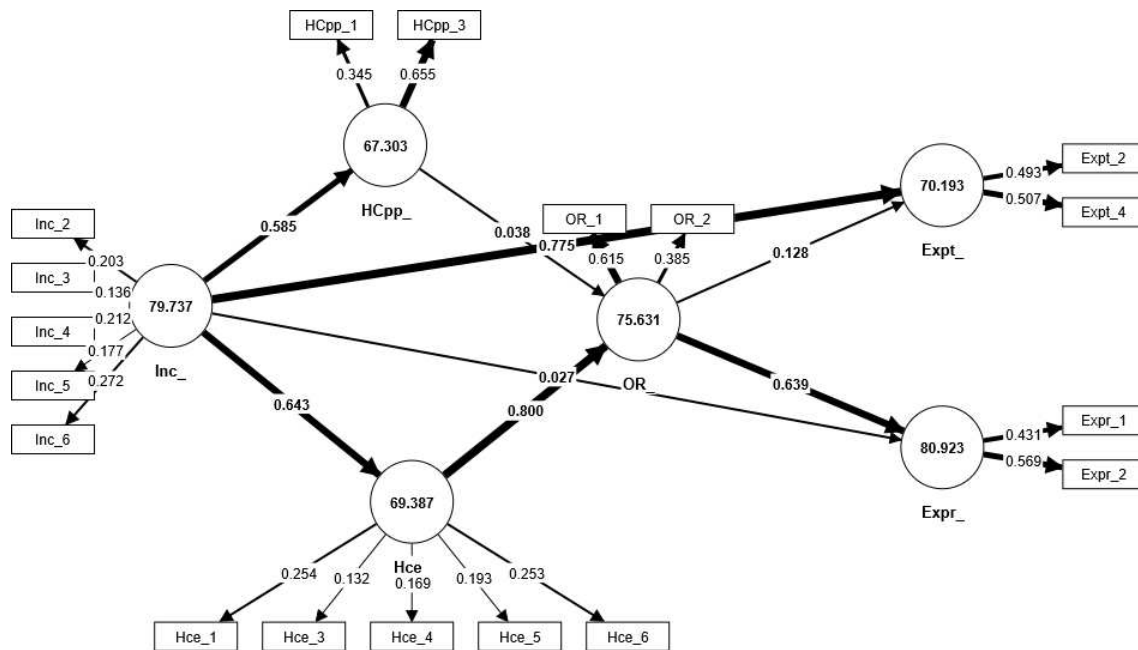


Figure 1 - Importance-Performance Map Analysis (IPMA).

4.3. Discussion

In this chapter, the results obtained are compared not only with the literature review but also with previous studies from other authors. According to the study developed in this dissertation, it becomes clear the role an incubator can have in a startup, especially when it comes to innovation and performance. This reinforces previous studies carried out by Spender et al. (2017) and Weiblen & Chesbrough (2015) where it became clear that innovation is a key component if companies want to compete successfully in today's competitive market and globalized economy. Moreover, even though the authors mentioned in the literature review had already studied the relations between the variables presented and their impact on the organization's performance, the indirect effects weren't explored in detail. After this study, it is now possible to conclude that these indirect relations – Incubator and Exploration through means of Human Capital and Opportunity Recognition – can, in fact, be significant. Ultimately, this enables the enhancing and refining of knowledge in this area.

5. Conclusões

5.1. Theoretical contributions

This study contributes to the literature in several ways. First, it addresses the topic of ambidexterity since we are analyzing both the direct and indirect effect incubators can have on the two types of innovation (exploration and exploitation). This allowed a deeper and differentiated understanding of how organizations in the tourism industry can benefit from being incubated and how this will impact their overall performance in the future. Furthermore,

it was possible to understand that, even though incubators may not have a significant impact on an explorational level, they can have a remarkable role on an exploitative level. This means that it does affect how the investment in resources will facilitate knowledge and competencies expansion, as well as the adoption of innovative processes.

5.2. Managerial implications

It is possible to conclude that incubators have an inevitable impact on a startup's performance and on how they will carry out innovation within. In this dissertation, we analyzed specifically the ones in the tourism industry, a highly competitive and continuously changing one. Due to the characteristics of this industry, it is crucial that all actors remain updated, efficient and innovative in order to survive in the market. Through this study, it became clear that incubators have an impact on these aspects and how they can help a company work more efficiently using innovation.

5.3. Limitations and future research

The findings of this study should be interpreted with caution since it has a few limitations that can indicate different paths for future research.

Firstly, the sample is small, which can represent a risk when extrapolating to a generalized population. Besides its reduced size, it is limited to incubated companies in the tourism industry, hence it may not be generalized to other types of organizations. Secondly, the majority of respondents aren't Portuguese. Inevitably this conditions the results, mainly due to political and economic factors.

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7. Annexes

Annex 1 – conceptual model

Variables	Items	Adapted from
Acquisition	Our venture's management emphasizes the exchange of information and experience with companies within the same industry	(Flatten, Engelen, Zahra, & Brettel, 2011)
	In our venture a periodical meeting with external experts within our industry for the accumulation of relevant information goes without saying	
	In our venture the search for relevant information concerning our industry is an every-day business	
	Our venture's management expects that the employees deal with information beyond our industry.	
Assimilation	Our venture's management emphasizes cross-departmental support to solve problems.	
	Our venture's management demands periodical cross-departmental meetings to interchange new developments, problems and achievements.	
	Our venture's management emphasizes a shared lingo for intra-corporate communication.	
	In our venture employees share their knowledge, their information and their experience willingly with their colleagues	
Transformation	Our venture's management emphasizes the systematic reuse of insights out of past projects.	
	Our venture's policy encourages our employees to engage in further training and continuous learning	
	In our venture employees are able to apply new knowledge in their practical work.	
	Our venture's management provides employees with enough scope for development to use the aggregated information for experimenting with alternative solution possibilities.	
Incubator	Our venture, while being incubated, grooms the entrepreneurial skills and capabilities of young entrepreneurs.	(Li, Rehman, & Asim, 2019)
	Our venture considers that working at a common place with similar professionals helps us to solve the common problems and to share each other's network and resources.	
	Our venture, while being incubated, benefits from a wonderful professional environment that boosts the motivation and productivity of young entrepreneurs.	
	At our venture's incubator, the mentoring and coaching sessions help the incubates to get directions quickly, and follow the right track to start a new business.	
	Our venture's incubator networking service gives opportunity to young entrepreneurs to meet with the different parties that are involved in entrepreneurship ecosystem.	
	Our venture's incubator is a good platform to start new business by young entrepreneurs to promote entrepreneurship.	
Social capital	CognitiveSC - In our venture colleagues and I agree about what matters at work.	(Hoang & Truong, 2021)
	CognitiveSC - In our venture colleagues and I are eager to pursue the enterprise's shared goals and purposes.	
	Cognitive SC - In our venture colleagues and I share the same vision and objectives.	
	RelationalSC - In our venture I have a connection with my colleagues.	
	RelationalSC - In our venture my colleagues help me overcome difficulties over time.	
	RelationalSC - In our venture I will trust my colleagues when I need help.	
	RelationalSC - In our venture I may rely upon my colleagues when I need.	
	StructuralSC - In our venture I have a positive relationship with colleagues.	
	StructuralSC - In our venture I am aware of who has	

	competencies or skills or knowledge that will be helpful to me.	
	StructuralSC - In our venture colleagues know what skill or knowledge or competency I have.	
	StructuralSC - In our venture I am aware of what skill, knowledge or competency might be helpful to my colleague.	
Human capital	Academic level of the chairman	(Felicio, Couto, & Caiado, 2014)
	Academic level of the director/manager	
	Specific training of the chairman	
	Specific training of the director/manager	
Experience	Business experience	
	Management/leadership experience	
	Technical/technological work experience	
	Commercial work experience	
	Industry experience	
	Diversified experience	
Professional proficiency	Professional proficiency in a technological area	
	Professional proficiency in a company management	
	Widespread knowledge	
	Communication skills	
Cognitive ability	Strategic decision-making regarding risk-taking propensity	
	Ability to innovate	
	Perception of risks and threats	
	Discovery and exploitation of opportunities	
Opportunity recognition	Our venture searches and identifies opportunities from changes in customer demand and preferences.	(Guo, Su, & Ahlstrom, 2016)
	Our venture searches and identifies opportunities from changes in technological environment.	
	Our venture searches and identifies opportunities from changes in economic environment.	
	Our venture searches and identifies opportunities from changes in regulatory environment.	
	Our venture searches and identifies opportunities from changes in political environment.	
Entrepreneurial orientation	In our venture innovations are appreciated above everything else.	(Fan, et al., 2021)
	Our venture emphasizes R&D, technological leadership and innovativeness instead of trusting only those products and services, which we have traditionally found to be good.	
	In our venture, many people want to take risk.	
	Our venture has brought several new products or services to the market within the last five years.	
	Our venture intends to get into markets before our competition.	
	We are typically ahead of competitors in presenting new products or procedures.	
	Our venture is typically ahead of competitors in presenting new products or procedures.	
	In our venture people want to be the first in the markets.	
Exploration	Our venture looks for novel technological ideas by thinking "outside the box".	(Flatten, Engelen, Zahra, & Brettel, 2011)
	Our venture's looks for creative ways to satisfy its customers' needs.	
	Our venture aggressively explores new market segments.	
	Our venture actively targets new customer groups.	
Exploitation	Our venture launches innovative products/services promptly with regard to its research.	
	Our venture's management supports the development of prototypes.	
	Our venture regularly reconsiders technologies and adapts them in accordance with new knowledge	
	Our venture has the ability to work more effectively by adopting new technologies.	