

## Entrepreneurial New Service Development Strategies: Identifying Critical Success Factors

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### Abstract

The quickly shifting nature of the business environment generates ambiguity in the market place and poses a significant risk for decisions that will be made in the future. Managers do not know which factors are really key ingredients for the innovation process and how to allocate their resources to improve the success of service projects. This article aims to develop a predictive model which identifies the critical factors that impact the success of New Service Development (NSD) and promotes the entrepreneurial ecosystems in hospitality. In-depth, systematic interviews with hotel managers from all over Greece, based on questionnaires, were used to look into a total of 178 service projects. Factor and discriminant analysis were employed to evaluate the relative significance of the important factors of successful NSD and to determine whether new hotel services in Greece will succeed or fail. This research led to the creation of a prediction model that takes into account the unique qualities of services and can highlight the difference between new hotel services that are successful and those that aren't, which support managers to improve the NSD process, increase service performance and therefore enhance entrepreneurial ecosystems. The findings conclude that hotels offering more successful innovative services enhance specific ecosystem-related value. In the context of tourism, which mainly contributes to the Greek economy, service innovation might bring a competitive advantage to all the entities involved increasing the collaboration among actors, the level of employment and hotels' competitive advantage.

Keywords: Entrepreneurial ecosystem; New Service Development; Entrepreneurial orientation; Service innovation; Critical success factors

### 1. INTRODUCTION

In the rapidly changing business environment, where competition and risk are increased, and product life-cycles are short, the innovation process is an emergent topic because it improves businesses' competitive advantage. The importance of services has grown in recent years and many firms have started to develop services with their products to remain competitive in today's era of uncertainty. Service projects can lead to an improvement in their performance. However, more detailed knowledge is required in order to inform managers about the factors that influence the successful development and launching of new services and create value in service ecosystems (Peltier et al., 2020).

By investigating the success factors of service projects, the research revealed that rather than successfully deal with one or two factors, a holistic approach would lead to the success of a project. So either its success or its failure should be a result of an approach that simultaneously manages several components both competently and in a balanced way (Akoğlan Kozak and AcarGürel, 2015). Scholars, in particular, take a holistic approach to the study of new service innovations. This idea builds on what other academics have said about innovation as an idea, product, or service that can come from one person or from a group of people working together in entrepreneurial ecosystems. The emergence of service innovation in an entrepreneurial ecosystem is a topic that researchers are interested in studying (Chandler et al., 2019; Lütjenet al., 2019).

In spite of the fact that service sector industrial economies are becoming increasingly important, limited research has been done to this point on the creation of new products within the context of service industries (Ottenbacher, 2006). Service innovation differs significantly from product innovation, according to recent studies. The complexity and fuzziness of service innovation make it more difficult than product innovation (Story et al., 2017). Customers as well as partners in the service network need to have a greater say in the development of new services, which typically results in procedures that are more dynamic, unpredictable, and less standard (Storey and Cankurtaran, 2016). Due to the increased coordination efforts, corporations are often obliged to manage high-competitive and cooperative ecosystems (Lütjen et al., 2019). When it comes to finding successful service innovation projects, organizations' internal competencies are typically insufficient.

The motivation of this paper is the finding that many models for NSD have been suggested to improve the success rate of service innovation, but they seem not appropriate (Liu et al., 2020). Thus, the main research question which needs further investigation is the following: What are the critical factors which have the potential to influence NSD success? (Sandvik et al., 2014). The risk during the innovation process is high due to the limited knowledge of the factors that influence successful innovations (Hong et al., 2013). External network resources embedded in entrepreneurial ecosystems produce important strategic opportunities to gain partners' knowledge based resources for providing sustainable competitive advantage. Having a strong external network supports the development of new ideas and technologies, the creation of first-mover advantages, and the improvement of risk-taking strategies that significantly contribute to NSD performance (Liu et al., 2020; Xiao et al., 2021). Furthermore, innovation strategies can be encouraged when entrepreneurial orientation is pursued by managers. Managers can influence the service development and capture value by establishing a culture of entrepreneurial orientation (Leckie and McDonald 2020; Wang et al., 2020).

Studying successful service innovation practices and contrasting them with unsuccessful service innovation practices might provide more clarity on the factors that drive successful NSD. Therefore, the aim of this article is to develop a predictive model that examines the influential factors in terms of the success of NSD and the entrepreneurial ecosystem in the hotel industry. A total of 178 usable service projects were studied. Factor and discriminant analysis were employed to evaluate the relative significance of the important factors of successful NSD. In this article, a theoretical basis is developed based on entrepreneurial ecosystem along with other systemic approaches to service innovation in order to develop an innovation infrastructure that helps to overcome the failure of new services.

According to World Travel and Tourism Council's (WTTC, 2020) Impact Report 2020, the direct contribution of tourism to the Greek GDP is 8.7%, and the direct contribution of tourism to employment is 19.8%. Greece is the sixth fastest-growing country and economy in terms of travel and tourism GDP contribution. In 2019, Greece's economy grew the most of any economy in Europe in 2019. This was about six times faster than the growth of the world economy. The industry is responsible for 20.8% of the country's total economic output because it always does a great job. In the context of tourism, hotels are the central business units. As Greece is the 13<sup>th</sup> most popular destination among other countries and Greece's economy relies heavily on tourism, making it one of the country's most important sectors, it is crucial to focus on them because service innovation in tourism might bring competitive advantage not only to hotels but to all the entities involved in service development such as technology providers, local businesses,

transportation firms, customers etc. The results of this study show that hotels that offer new services that work better contribute to an increase in the value of some things related to the ecosystem. Innovation in tourism services, which is a major contributor to the Greek economy, could benefit not only the hotels themselves, but also all the entities involved in the ecosystem increasing the collaboration among actors, the level of employment, and hotels' competitive advantage.

The structure of the rest of the article is the following. Section 2 discusses the theoretical framework regarding the success factors in NSD. Section 3 describes the methodology applied for data analysis. Section 4 presents the findings, and the last section highlights managerial implications and recommendations for future researchers.

## 2. THEORETICAL FRAMEWORK

### *2.1 Tourism and NSD process*

The tourism sector has been influenced by many factors. Changes in the environment and tourist profile impose a demand to hotels to enhance their service production (Anser et al., 2021; Xu et al., 2018). Creating a long-term competitive advantage requires a suitable business strategy (Liu et al., 2020). Research results have shown that the failure of the new services developed in the tourism sector is relatively high. Hotel managers must design and implement systematically their services in order to meet consumers' expectations (Kitsios and Grigoroudis, 2020; Sandvik et al., 2014). Researchers have identified four levels in NSD. The first concerns about the design of product attributes; for example the characteristics of a hotel room. The second regards on the planning of customer experiences. The next one is the planning of processes, such as front and back offices and the general service system. The final level concerns the design of service business approach, strategy and policy (Kitsios and Grigoroudis, 2020).

In the tourism industry, innovation is essential (Akoğlan Kozak and Acar Gürel, 2015; Anser et al., 2021). Developing new services might be difficult, but it is essential to gaining a competitive advantage (Burton et al., 2017). Innovation is a part of NSD because it helps organizations achieve their goals and improve their operations. NSD is being used more and more to increase sales and profits, attract new customers, open up new markets, and make customers more loyal in response to customers' higher expectations. Although, researchers have highlighted the benefits that NSD brings to the industry, they rarely explain how establishing new services needs integrated and syncretic procedures and tactics, as well as a certain amount of entrepreneurial ambition (Liu et al., 2020).

### *2.2 Critical success factors in NSD*

Alignment between business strategy and service strategy is considered an essential factor in new services' success (Ryu and Lee, 2015). The main benefits of alignment are the following. First, managers can strategically select the markets to enter. Secondly, projects that are strategically planned allow the business to improve the rate of synergy between relevant innovation projects. Finally, managers are knowledgeable about the actions required for successful services, so they can repeat previous actions for NSD (Van der Panne et al., 2003). Therefore, a significant challenge of entrepreneurial ecosystem is the effective and efficient alignment of the different actors' resources and innovation projects to leverage these potentials (Endres et al., 2021).

Motivated employees are considered as main components of the service system, particularly when they interact with customers. As executives develop new services in order to satisfy

consumers' expectations (Kitsios et al., 2009), the participation of employees in the development of new services increases the generation of new ideas and the reduction of uncertainty. New services also help to understand customer needs better, as the feedback given for them before the final market launch contributes to their improvement in terms of design, development and control (Li et al., 2020). Employees are more committed to new service when they understand and maintain the new project (Ottenbacher and Harrington, 2010).

Another important factor is the organization structure which should promote collaboration between the individuals who participate in the process (D'Alvano and Hidalgo, 2012; Morgan et al., 2015). The results of previous researches show that when hotel executives follow a formal process for NSD (with specific steps) they increase efficiency and new services are introduced to the market faster (Edvardsson et al., 2013). Furthermore, when there is an official NSD process, hotels can predict its outcome. This issue is very significant and concerns the generation of new ideas until the launch of new services to the market. For the evaluation of new ideas, a structured process is required (Dörner et al., 2011). Therefore, many researchers have highlighted that service innovation is a collaborative process because customers and other stakeholders in entrepreneurial ecosystems exchange knowledge during the innovation process (Jonas et al., 2018; Vargo and Lusch, 2016).

### *2.3 Entrepreneurial ecosystems and NSD*

Due to the sheer rise of mass-produced goods, the value of services has risen sharply in recent years (Endres et al., 2021). Thus, in order to differentiate themselves from their competitors, many businesses have begun to provide services in addition to their products (Endres et al., 2021). They have the potential to improve their revenue with the help of these service offers. Service ecosystem actors add value to innovations by exchanging unique experiences and perspectives on the invention (Koskela-Huotari et al., 2016; Vargo and Lusch, 2017).

Entrepreneurial ecosystems are being seen by more and more people as a complex web of relationships and communication channels between the different actors. Any of these actors can have an effect on the stages of service innovation development, including preconceptions and implementation processes that lead to value co-creation (Aal et al., 2016). According to Ferreira et al. (2019a; b), the profiles of entrepreneurs and managers and the fact that they use new methods make these organizations more competitive. Due to the increased variability of relationships and interrelations, new opportunities for collaboration can lead to high innovation and entrepreneurial potential in entrepreneurial ecosystems (Cavallo et al., 2019). To maximize the potential of these opportunities, entrepreneurial ecosystems must effectively combine and align the innovation agendas of the various actors in the ecosystem. This presents a significant challenge (Colombo et al., 2019). It is predicted that an increase in the organization's capacity for innovation will ultimately contribute to the innovation success of businesses.

A service ecosystem's ability to introduce, accept, and launch innovations is directly tied to its marketing communications (Alexander et al., 2018). When an entrepreneurial ecosystem is in place, people from different backgrounds can work together to come up with ideas and talk about new products and services (such as service providers, marketers, suppliers, and customers). Customers are more likely to return to a hotel if it focuses on meeting their requirements and adding value to them, which drives hotel innovation. Customers' feedback is used by managers to identify the weaknesses in their current services and to look for new ways to improve such

services. Thus, co-creation is increasingly linked to these actors' information, skills and knowledge (Peltier et al., 2020).

The basic premise of service exchange is based on the participants' personal skills and knowledge (Vargo and Lusch, 2008; 2004). Value co-creation benefits from the contributions of all participants and affects who are involved in the exchange. Value co-creation in the ecosystem can be enhanced when information flows boost customers' knowledge, abilities, and awareness of how to navigate the ecosystem. When it comes to improving customers' views and acceptance of service innovations, all information flows throughout the continuum have the potential to do so, but NSD places a stronger focus on those that co-create value with customers (Sussan and Acs, 2017). Research into entrepreneurial ecosystems should focus on a more granular level of infrastructures and technology, as stated by Autio et al. (2017). Entrepreneurial ecosystem structures and results may be better understood with this research focus.

To conclude, many businesses have begun to integrate services with their products in an effort to remain competitive in the current unpredictable environment. Offering services may result in an enhancement in their effectiveness. To educate managers about the elements that influence the successful development and launch of new services and add value to service ecosystems, more in-depth understanding is necessary (Peltier et al., 2020). Investigating the elements that contribute to a project's success, the research revealed that a holistic approach would be more effective than focusing on just one or two factors. In other words, whether it succeeds or fails should depend on a strategy that concurrently manages a number of components competently and fairly (Akolan Kozak and Acar Gürel, 2015). Particularly, researchers look at service innovation from a systems approach. This understanding goes beyond earlier academic work that focused on innovation as a concept, product, or service developed by a single actor or by a group of actors in entrepreneurial ecosystems.

Focusing on them is essential because tourism is one of the most significant pillars of the Greek economy and Greece is one of the most well-known travel destinations. Additionally, service innovation in the tourism industry has the potential to give all parties involved in service development—including hotels, local businesses, transportation companies, and customers—competitive advantages. Rising to the challenges posed by an unstable and turbulent environment is not an easy undertaking. To preserve their position in the ecosystem, businesses in the hospitality sector are continually obliged to adapt and update their portfolio mix in order to keep up with the constantly changing requirements of their target market segments (Grönroos and Voima, 2013; Ottenbacher and Harrington, 2010). Innovation in the tourist sector, which makes up a significant portion of the Greek economy, has the potential to boost cooperation among entities, employment levels, and the competitiveness of hotels in addition to providing benefits to the hotels themselves.

There is a significant risk during the innovation process due to the limited findings regarding the factors that influence the success rate of innovation in services (Hong et al., 2013). Studies have well documented the advantages of NSD to the industry, they rarely show how developing new services necessitates formal processes, as well as some degree of entrepreneurial intention (Liu et al., 2020). Thus, this article aims to explore the critical factors which have the potential to influence NSD success.

### 3. METHODOLOGY

The sample studies 4-star and 5-star hotels in intensive tourism areas in Greece. These areas, named, Athens, Thessaloniki, Chalkidiki, Chania, Rethymno, Heraklion, Lasithi and Rhodes consist of large and innovative hotels. As a result, this population of hotels was suitable to investigate the innovation rate in service development. The total number of hotels examined in this sample is 99, with a respond rate of 33% of the total number (66% 5-star hotels and 21% 4-star hotels) for this sample. A total of 178 usable new hotel services projects were collected. These were classified into 140 successes and 32 failures and 6 cases with no new services in last five-year period. It was expected that the rate of NSD projects will be limited according to previous empirical studies which have used a comparative methodology (i.e. Dörner et al., 2011; Edvardsson et al., 2013; Storey and Hull, 2010).

Numerous studies have used the methodological approach of investigating both successful and unsuccessful cases simultaneously (a comparative analysis) (Edgett and Parkinson, 1994; Graner and Mißler-Behr, 2012). The comparison method has been utilized in many studies in the field of new services and positive findings have been obtained from its application. For example, Edgett and Parkinson (1994) implemented it to compare new service developments in British building societies that were registered and maintained active membership status in the Building Societies Association. Edgett (1994) looked at how new services changed in British building societies that were part of the Building Societies Association and were registered. Building societies are like US savings and loans. Cooper and de Brentani (1991) compared successful and unsuccessful commercial services in a manner that was comparable to the methodology that Cooper had utilized in the past (Edgett and Parkinson, 1994; Ernst, 2002). Furthermore, Ottenbacher (2007) used it for comparing NSD in hospitality firms in Germany, Storey and Hughes (2013) used it for comparing NSD activities in UK-based service firms.

The NSD constructs were derived from previous literature (innovation management, NPD, NSD, hospitality) and the findings of in depth personal interviews that were given by owners from hotels as well as CEO's. Five experts knowledgeable about NPD, innovation management, forecasting, data analysis, hotel services and/or scale development were asked to get involved in a pilot test (Edgett and Parkinson, 1994).

126 variables measured the success or failure of new services, and factor labels are based on the existing literature (Alam, 2010; Atuahene-Gima, 1996; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006). Table 1 in Appendix A displays the variables. In the first step, hotel managers had to discuss about a successful new service. Next, each one of the 126 variables which describe the implemented activities during the NSD process was used so that the level of the quality of the performance could be determined. Then, hotel managers had to discuss about an unsuccessful new product. The definitions of success or failure given by each respondent were based on the interpretation of their own hotel on whether the new service met the success criteria or not (Edgett and Parkinson, 1994). The instrument used five-point Likert-scale. In this measure, "1" meant that the organization had followed the activity "not at all"; percentage of 0% and "5" meant that the organization had completely done the activity; percentage of 100%. This approach resulted in a more reliable rating compared to a continuous scale (Edgett and Parkinson, 1994).

Table 1 presents some descriptive data across hotels.

### *3.1 Analysis*

First, the results of scale reliability were presented and then data was analyzed using two techniques named; factor analysis and discriminant analysis. The variables that did not constitute a strong relationship with the other ones were identified estimating an initial item-total correlation for successful or unsuccessful new services based on 126 variables. The variables which had low scores were removed based on the values of indicators such as Kaiser-Meyer-Olkin and Bartlett's Test ( $KMO > 0.5$ ) and Measures of Sampling Adequacy ( $MSA > 0.5$ ). Then, the process was reproduced for the combined successful and unsuccessful projects (178). The acceptable minimal value for sampling adequacy was 0.500. Thus, the variables that scored a measure lower than this value, were removed. As a result, 57 variables were active for data analysis with value for sampling adequacy greater than 0.500. Also, indexes such as Cronbach's alpha and KMO were calculated in order to estimate the reliability of data. Cronbach's alpha and KMO values meet the thresholds of 0,950 and 0,842, respectively. Thus, the multi-item scale that was used had a high degree of reliability and data are suitable for factor analysis.

### 3.1.1 Factor Analysis

The final solution included 14 interpretable factors that account for 74,222 of both the common and unique variance. The range of communalities was from 0,565875 to 0,862508. Thus, a confidence level was permissible in the final model. The Bartlett's test of sphericity was implemented to verify the suitability of data in order to apply factor analysis (Garson, 2013). The result of this test for sphericity was high at 7482,843. The associated significance level was small at 0.00000. The KMO is another measure that estimates the rate of prediction among variables (Garson, 2013). The value of the KMO measure was 0,842.

Principal Component Analysis (PCA) using (VARIMAX) was used in order to implement factor analysis. If the eigenvalue (latent root criterion) of a factor was lower than one, then this factor was removed (Garson, 2013). The final solution included 14 interpretable factors that account for 74,222 of both the common and unique variance. The range of communalities was from 0,565875 to 0,862508. Thus, a confidence level was permissible in the final model (Loehlin and Beaujean, 2017).

Cronbach's alpha for the 14 factors was used in order to calculate the internal reliability of the model (Table 2). The range of alpha values was from 0,635121 to 0,88672. Factors were not acceptable and removed when the value of Cronbach alpha was lower than 0,635121. Table 3 in Appendix A presents the final solution which includes the factor loadings. The 14 factors that have strong variable loadings proved to be easy to understand.

## 4. RESULTS

The factors included in the final model refer to resource allocation (Factor II), proficiency of predevelopment (Factor V), project focus strategy (Factor VI), human resources management (Factor X), formalization development procedures (Factor XIII), the business and financial analysis (Factor I), the launch effectiveness (Factor III), the detailed market study (Factor IV), the preliminary market assessment (Factor VII), the business analysis prior to launch (Factor IX), the continuous evaluation and improvement (Factor XI), idea generation (Factor XII), market synergy (Factor VIII) and market potential (Factor XIV).

The 57 variables have effectively reduced to 14 factors using factor analysis. Despite the fact that these factors which predict the success or failure cannot be identified from a factor analysis, the factor scores can distinguish successful or unsuccessful projects in the subsequent discriminant analysis.

#### 4.1 Discriminant Analysis

A two-group Wilks's stepwise discriminant analysis was applied to deal with the fact that the independent variable was metric (internal) and the dependent variable was metric with two values; success or failure. The factor scores that did not provide a satisfactory value of discrimination were eliminated by the stepwise method. The added advantage of being a robust technique was produced by the analysis (Izenman, 2013).

The unstandardized and standardized discriminant function coefficients are shown in Table 4 in Appendix A. The relative significance of each function is displayed by the standardized coefficients. Standardized coefficients display the relative significance of each function. The discriminating contribution of its respective factor score was increased when the standardized coefficient value risen. Nine factors which had low values were excluded from the final model because they did not significantly contribute to the model. These factors were the following: resources allocation, launch effectiveness, detailed market study, preliminary market assessment, human resources management, business analysis prior to launch, proficiency of predevelopment, continuous evaluation and improvement, and market potential.

By using a combination of respective coefficient values of the factor score and the original ones a discriminant score was calculated for each case. In the following predictive model format the discriminant score  $D_m$  was calculated for case  $m$  and  $f_x$  represents the factor score:

$$D_m = -4,019 - 0,617 F I - 1,690 F V - 0,941 F VI - 0,599 F VIII - 0,417 F XII$$

Table 5 in Appendix A presents the discriminant function as well as the related statistics. The average score for all successful and unsuccessful cases is represented by the functions applied at group means (group centroids). The chi-square is a transformation of the Wilks's lambda. The eigenvalue was 0.951. This value represents that a significant function had been formulated.

The value of canonical correlation was 0.698 and it supports a good level of correlation among the differences in the proportion of the total variance of the two groups. Despite the differences among means, there wasn't any apparent degree of the total variance in the discriminant score (Wilks's lambda = 0.513). These differences were supported through the statistical analysis which represents the value of a transformed Chi-square which was 107,260 with five degrees of freedom, and a significance level defined for the study at (0.0001). Table 6 in Appendix A presents the ability of that function to predict successful or unsuccessful service projects. The classification matrix identifies the predictive function.

88.5 per cent of the cases were accurately allocated. 121 new product cases (90.3 per cent) were classified and only 6 were misclassified (9.7 per cent) from a total of 134 successful new product projects. 25 cases (80.6 per cent) were classified and 6 cases (19.4 per cent) were misclassified from the 31 projects which were classified as failures.

The outcomes of the classification matrix confirm that the predictions based on model's ability were more effective than using random chance. A comparison between successful and unsuccessful projects and the probability of random chance indicated that 90.3 per cent of the successful new service projects and 80.6 of the failure cases have been correctly classified. However, 81.2 per cent of the successful services and 18.8 per cent of the unsuccessful projects were correctly classified using the probability of random chance.

The discriminant function was interpreted using the magnitude of the standardized coefficients (Table 4). The contribution of a respective factor to the discriminating power of the function



increased as the size of a coefficient increased. Predevelopment proficiency (.975) is the factor which contributes the most to the discriminating power of the function. Factors which affect the probability of new services being developed are the concern of hotel managers about the size of the potential market to which the new services will be addressed and the expectations of the potential customers in these markets (.85799), the increased support for the new service when it is introduced to the market (.71448) and the high concentration of management in an organization to understand the internal consequence for managers in order to realize the importance of planned activities (.82062), the forecast of the outcomes of the performance of a new project in the early stages of development to take place (.77457). What is required for the NSD process so as to be successful is a readiness not only to adopt higher levels of risk but also to communicate and co-create new services with different actors who are involved in an entrepreneurial ecosystem. Hotel managers should be aware of market size and the potential customers in this market in order to communicate with them, get feedback about the new service and improve it to meet customers' needs. As entrepreneurial ecosystems are complex and it is difficult to create value for all the actors in the ecosystem, hotel managers should support the new service and have the required knowledge about their customers to create cooperation opportunities that can lead to high innovation and entrepreneurial potentials in the entrepreneurial ecosystem.

The next factor that had an impact on the model was Project Focus Strategy (.563). Despite the influence of this factor to the outcome of the new service, this factor does not contribute to successful or unsuccessful new services as strong as that of the previous factor. Businesses which collaborate with an entrepreneurial ecosystem should increase NSD performance. However, the outcomes of the analysis show that its effect is less than the expected than the other significant factors, such as integrated development teams, formalized service development process and customer co-creation. Business strategy is aligned with resource investment and as a result the objectives are associated with revenues and competitive advantage in the company (.47622). So, the strategy for NSD should be aligned with resources and capabilities (Edvardsson et al., 2013) as it focuses on its mission along with long-term goals and yet on the way it provides value to its customers contrary to other businesses (Storey and Hull, 2010).

Finally, three factors which significantly affect the success of new services but the degree of their contribution was low were business/financial analysis (.400), market synergy (.378) and idea generation (.326). An effective business/financial analysis should be analytical and realistic it should include customer's and competitor's analysis. The data used to describe market synergy was the alignment between the existing image of the company, the increase in competitive advantage compared to the products produced by competitors and finally the strong support once the new service is introduced to the market. The first activity for conducting successful NSD projects is the implementation of a market and a financial analysis. The outcomes of the paper show that market responsiveness, human resources and market attractiveness influence the success and failure for new services.

## 5. DISCUSSION

### *5.1 Main findings*

The results indicate that managers in hotels who invested in suitable resources (e.g. people, time, and money) implemented NSD research activities effectively and on time. Furthermore, managers who spent more resources on marketing activities to determine customers' needs conducted effectively and on time promotion of new services. They have the opportunity to

implement a strong effort of climb including demonstrations, congresses, seminars for the customers, commercial leaflets, exhibitions, and advertisements. Therefore, managers in hotels can develop new services that will meet customers' needs, and increase their satisfaction and competitive advantage. In contrast, managers who have spent limited resources cannot implement R&D activities. This restriction leads to the fact that services may not satisfy customers' expectations and reduce hotels' competitiveness.

Taking the fact that NPD includes complex, sequential and interactive activities into consideration, the existence of some unexplained variance in the results of factor analysis as well as some misclassification of findings from the predictive ability of the discriminant factors does not come as a surprise. The differentiation of competitive and economic climate existing in the specific period of time concerning the specific services involved in this sample can explain some of these unexplained factors. Others by the way can be proved beneficial as they can possibly help isolate factors which may affect the NPD process. For instance certain personality traits that would be more effective than others when implementing the NPD process could possibly be associated. A significant finding of the paper is that hotels that participate in ecosystems with high levels of innovation can provide more inventive and competitive services than hotel ecosystems with low levels of innovation.

Another significant finding is that managers in hotels conducted a detailed market study before developing a financial analysis, spent enough time and money on a preliminary market assessment, executed a marketing plan for the promotion of the service as well as a study for the size of the potential market because they invested suitable resources. Therefore, managers can develop new services that will meet customers' needs.

Idea generation is combined with service strategy because successful new services require both new ideas and adoption with strategic direction and business structure (Leckie and McDonald, 2020; Wang et al., 2020). Entrepreneurial ecosystem perspective recommends that innovation includes the diffusion of ideas that are adopted by many actors and the outcomes of diffusion lead to launch of successful new services in the marketplace and the development of competitive advantage for hotels (Bustinza et al., 2019; Vargo et al., 2020). Along with this hospitality industry must strive towards building an integrated entrepreneurial ecosystem involving all actors where information is distributed to ensure effective use of the available resources in order to service failures, customer dissatisfaction and develop competitive advantage.

### *5.2 Theoretical and managerial implications*

As the theoretical contribution, this paper combines the NSD process with the ecosystem-based view by identifying the elements that predict the success of NSD to increase innovation. Systemic approaches to service innovation and the entrepreneurial ecosystem perspective were assessed in this paper, and a prediction model for NSD was developed that helps overcome market failure.

The findings provide critical theoretical understanding to actors in entrepreneurial ecosystems, including consultants, managers, developers, and business owners. A primary difficulty of entrepreneurial ecosystems is to effectively and efficiently combine and integrate all of the diverse actors' resources and innovation activities. These different actors need to know what the critical success factors are for the development of new services that can support the innovation in entrepreneurial ecosystems. Actors in entrepreneurial ecosystems can generate new knowledge through the exchange of feedback and suggestions from each other to improve services. This

makes it simpler for users with less experience to comprehend the supported innovation approaches

The findings of this study have a wide range of significant implications for managers in the hotel sector. Observing the shifting values and trends in the tourism industry could have a significant impact on how hotels respond. Hotels need to be able to organize their entrepreneurial environment if they want to involve their customers and other ecosystem actors in service innovation. It is thus possible to increase managers' knowledge of the market by focusing on specific factors that affect the success of new services, as well as internal knowledge and experience, to adopt a suitable strategy to respond more quickly to market changes. A multi-level phenomenon, rather than a linear process, underpins the activities that drive service innovation, and thus provides a foundation for understanding how actors in the hotel eco-system influence innovation activities.

External ecosystem actors are fundamental for the development of new services, and managers must be able to detect, map, and identify these actors in order to gain access to their value. Thus, they should evaluate the non-direct value-adding stakeholders as well as the direct ones. Managers can use co-evolutionary development processes along the servitization journey to engage actors in the NSD process and improve value-adding interactions while evaluating the gap between the existing (current) and required (new) ecosystem. As a result, they need to be aware of the factors that affect the success of new services.

Service innovation is a multi-level and multi-actor phenomenon which brings user innovators into the ecosystem. Higher sales revenues and a more innovative hotel brand can both be achieved when R&D managers have a deeper understanding of consumer needs and develop more new solutions that better meet those needs. Many companies have been actively engaging their users in the innovation process through, for example, innovation toolkits, innovation challenges, or lead-user workshops in order to leverage their efforts in this direction.

Entrepreneurship is an option for those who want to bring innovations to market. In order to obtain the necessary experience and build a customer base, these user entrepreneurs generally operate under the radar of established companies. Since these users create solutions for themselves and share them with others, they see the possibility for commercialization while doing so. As a result, they need to be aware of the factors that influence the success of new services and products they offer.

The outcomes provide significant theoretical and practical insights to actors participated at entrepreneurial ecosystems such as hotel managers, customers and entrepreneurs. The essential and systematic alignment of the different actors' resources and service projects is the significant challenge in entrepreneurial ecosystems. These actors have to be informed about the factors that determine whether new hotel services will succeed or fail, which support managers to improve the NSD process, increase service performance and therefore enhance entrepreneurial ecosystems in the tourism sector.

## 6. CONCLUSION

### *6.1 Limitations and Future research*

The aim of this article was to develop a predictive model which examined the factors that impact the successful development of new services and entrepreneurial ecosystem in the hotel sector.

Because the survey was limited to the hospitality sector, this paper has some limitations. Needless to say that critical success factors addressed in this paper have to be re-evaluated in other sectors to successfully accomplish predictions regarding their specific successful or not new service projects in order to generalize the findings of this survey. It is necessary that the transferability of the results to other service sectors should be examined by future empirical research. An interesting field of investigation would be that of cross-cultural comparisons.

Another limitation of this paper is that variables such as capacity and location of the hotel, the number of services offered in the last five years, the type of innovation as well as the sources from which the idea for the service offered came from were not evaluated. In addition, managers who participated in interviews were able to describe the success and failure of new products from their perspective. Many scholars have used this approach, while some argue that this term should be defined.

The alignment between NSD strategy and the resources of actors in entrepreneurial ecosystems requires further investigation. Whether or not a particular organizational structure is best for achieving desired results will be examined in the future. Researchers could examine how new services can be efficiently integrated into various organizational structures.

For the purpose of gaining a better understanding of how hotel innovation is affected by the ecosystem's stakeholders and structure, this study conceptualizes service innovation as a multi-actor and multi-level phenomenon. However, neither the role of each actor in the creative process nor the type of involvement is examined in the study. Engaged actors are considered as part of a wider structure in an entrepreneurial ecosystem perspective, which can either boost or decrease engagement amongst those actors. More holistic views encourage future study into the antecedents of participation in both intra- and inter-organizational collaboration initiatives, and at the individual level.

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## Appendix A

Final validation of the discriminant model was used to evaluate previous validity checks to compensate for any possible weakness. To accomplish this, a cross-validated (leave-one-out-classification) technique was used. The validation requirements, which assessed the classification ability of the discriminant function, were met using this approach which calculated an estimation of error rate in the classification (Izenman, 2013). An observation, a calculation of the discriminant function, and a classification of the withheld observation were included in this technique and support its implementation. In order to expose all observations, this process was repeated. The outcome of the process was a new classification matrix which presented the withheld projects.

The average values of results of cross-validated classifications were presented in Table 7 in Appendix A. Concerning the group of successful new projects, the cross-validated results were



almost same to the classification results that were above mentioned. The validity of the discriminating ability is supported by the reasonable range of the stepwise classification rates of the failure group of cases.

The dataset was divided into two samples (a test sample and a retest/hold sample) based on another cross-validation procedure. This means that one needs a sizeable number of cases: to take approximately 70% of the cases as the test sample. Only those cases in the analysis are validated by the cross validation method which involves each case being assorted by the functions developed by all other cases other than that one. Under this scope 88.3 per cent of the original selected group cases were accurately allocated, 90.7 per cent of them were correctly assorted and 84.7 per cent of selected cross-validated grouped cases were correctly assorted, as well. Table 7 in Appendix A presents the test-retest outputs with the leave one out classification option invoked (this will not be applied for the retest sample). The three results are consistent with that when the whole sample was used. Thus, new cases can be “discriminated” by using this discriminating equation from the whole sample. This test-retest performed several times.

Region	Hotels	Hotel class AA (5*)	Hotel class A (4*)
Central Macedonia	16%	44%	9%
Crete	21%	67%	14%
Dodecanese islands	20%	93%	13%
Athens	3%	10%	1%

Table 1: Descriptive data about the sample of the survey

Factors	Cronbach's alpha	Likert scale
Business/Financial Analysis	0,79112	Five-point Likert-scale. (“1” meant that the organization had followed the activity “not at all”; percentage of 0% and “5” meant that the organization had completely done the activity; percentage of 100%)
Resource allocation	0,88672	
Launch Effectiveness	0,635121	
Detailed Market Study	0,850277	
Proficiency of predevelopment	0,855607	
Project Focus Strategy	0,845524	
Preliminary Market Assessment	0,76817	
Market synergy	0,76361	
Business Analysis prior to Launch	0,868754	
Human Resources Management	0,730395	
Idea generation	0,63768	
Business analysis prior to launch	0,868754	
Continuous evaluation and improvement	0,697073	
Market potential	0,671152	

Table 2: The Results of Cronbach alpha

Factor I		References
<b>Business/Financial Analysis</b>		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
Variables	Factor Loading	
We conducted a Discount Cash Flow (DCF) analysis	0,81067	

We implemented a brake – even and Return on Investment (ROI) analysis	0,78754	
We conducted a superficial analysis: not formal, approximately guesses and estimates	-0,75116	
We conducted a forecasting of expenses and sales	0,71535	
We implemented a thorough and realistic business analysis	0,71225	
We implemented a thorough review of the competitors' products	0,56308	
A promotion plan with commercial leaflets, exhibitions and advertisements were conducted and at the same time powerful effort of promotion from the sales force: demonstrations, congresses, and seminars for the customers	0,51742	
A sharp, focussed definition of the target market was developed in the preliminary market assessment	0,43475	
We thought that our product was clearly superior to competing products in terms of meeting customers' needs	0,42508	
We spent enough time and money on a preliminary market assessment	0,48009	
Factor II		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Resource allocation</b>		
Variables	Factor Loading	
NSD research activities can be implemented effectively and on time because suitable resources - people, time and money - are committed	0,82062	
NSD-related marketing activities can be implemented effectively and on time because suitable resources - people, time and money - are committed	0,77694	
Operational or process activities can be undertaken effectively and on time because suitable resources - people, time and money - are committed	0,76587	
We spent enough time and effort on the actual design and development of the product features	0,53096	
We thought that our product was clearly superior to competing products in terms of meeting customers' needs	0,50878	
All members of the project team were committed and enthusiastic about the new project	0,50131	
There was a high level of awareness within the company that this new product was being developed	0,46619	
The product aligned well with our current image of the hotel in the marketplace.	0,47344	
Factor III		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Launch Effectiveness</b>		
Variables	Factor Loading	
All the various communication materials were in place or ready prior to the market launch	0,75038	
A detailed and documented plan was conducted	0,64772	
Very limited efforts were conducted: nothing really exceptional for the promotion	-0,61690	
We used enough resources – time, money and people –for the market launch	0,58482	
Both an identifiable set of marketing activities specific to this product and a full-scale launch occurred	0,58244	
There was a high level of collaboration between the persons that were charged with the sale of new service	0,47301	

Factor IV		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Detailed Market Study</b>		
Variables	Factor Loading	
We conducted a detailed market study, that involved primary market research, before developing a financial analysis	0,78736	
We developed a good definition of the product concept before beginning a field or customer survey	0,75409	
We spent enough time and money on a preliminary market assessment	0,50695	
A marketing plan was conducted for the promotion of the service	0,45200	
We conducted a study for the size of the potential market	0,42468	
A plan developed for the afterwards promotion period of new service	0,41509	
The idea derive from insistence and no from passive search	0,40349	
Factor V		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Proficiency of predevelopment</b>		
Variables	Factor Loading	
The performance of new service are forecasted from previous stage	0,77457	
The new product was supported once it was launched	0,71448	
Potential customers had a great need for this class of product	0,60552	
We were well informed of the size of the potential market for our product	0,59759	
The advertising, promotion and communication effort was well targeted – at the right customers	0,52320	
Factor VI		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Project focus strategy</b>		
Variables	Factor Loading	
Existed clear determined strategic objectives	0,69068	
Identified arenas of strategic focus	0,68992	
Identified clear strategic plans of action	0,66275	
We conducted a preliminary market assessment and then we invest in time or money	0,54155	
The objectives were expressed as contribution in the final income and/or profit of the company	0,45868	
Factor VII		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and

		Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Preliminary Market Assessment</b>		
Variables	Factor Loading	
We conducted a preliminary market assessment for competitors' products	0,79894	
There were many discussions with the sales force	0,60100	
We conducted a thorough review of the competitor's products	0,54688	
We took into consideration the customer opinion of the new product very early in the development process	0,41651	
Written evidence (documented) supported the preliminary assessment of the market as well as technical needs	0,41490	
Factor VIII		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Market synergy</b>		
Variables	Factor Loading	
By the time we commercialized our product, we understood our potential customers' needs and expectations for the product	0,85799	
We understood the customer's purchase decision well – the “who, what, when, where and how” of his purchase behaviour	0,76327	
The product aligned well with our current image of the hotel in the marketplace	0,48522	
Factor IX		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Business Analysis prior to Launch</b>		
Variables	Factor Loading	
We gathered the significant information of marketing: forecasts of sales, and projections of expenses for marketing activities	0,77399	
A detailed economic analysis was conducted afterwards the growth of new service, including assessment of output or profitability	0,76195	
Factor X		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Human Resources Management</b>		
Variables	Factor Loading	
Extensive education of first line personnel for the distribution of the service	0,87125	
Extensive education of operational departments personnel for the distribution of the service	0,83033	

People from other functional groups were involved in the development process as early as possible	0,49201	
Organized a multi-disciplinary project team, members participating from different departments of the organization to support the new service development project	0,40198	
Factor XI		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Continuous evaluation and improvement</b>		
Variables	Factor Loading	
Measures and objectives were used to evaluate customer test markets	0,71505	
Was held internal evaluation with discussion when the market was already studied	0,60407	
Existed access in secondary published data	0,46181	
Factor XII		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Idea generation</b>		
Variables	Factor Loading	
New ideas were captured and collected through a systematic effort	0,63768	
Factor XIII		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Formalization Development Procedures</b>		
Variables	Factor Loading	
The actual development process became more formal within the company as the development process evolved	0,70307	
Factor XIV		(Alam, 2010; Atuahene-Gima, 1996; Cooper et al., 1994; de Brentani, 2001; Edgett and Parkinson, 1994; Edvardsson et al., 2013; Menor and Roth, 2007; Ottenbacher and Harrington, 2010; Ottenbacher, 2007; Ottenbacher et al., 2006)
<b>Market potential</b>		
Variables	Factor Loading	
We were informed of the size of the potential market for our product well	0,48920	
The objectives were expressed as contribution in the final income and/or profit of the company	0,47622	

Table 3: The Results of the Factor Analysis

Factor score	Discriminant function coefficients			
	Unstandardized	The ranking of the coefficient from high (1) to low (5)	Standardized	The ranking of the coefficient from high (1) to low (5)
<b>F I:</b> Business Analysis	,402	(3)	,400	(3)
<b>F V:</b> Organization – Internal Consequence	1,063	(1)	,975	(1)
<b>F VI:</b> Project Focus Strategy	,528	(2)	,563	(2)
<b>F VIII:</b> Market Synergy	,363	(4)	,378	(4)
<b>F XII:</b> Idea generation	,314	(5)	,326	(5)

Table 4: Discriminant Function Coefficients (Stepwise)

Canonical Discriminant Function			
Group	Function	Related statistics	
Success	0,466	Eigen value	0,951
Failure	-2,015	Canonical correlation	0,698
		Wilks' lambda	0,513
		Chi-square	107,260
		Degrees of freedom	5
		Significance	0,0001

Table 5: Canonical Discriminant Function

Classification Results(a)					
		Group	Predicted Group Membership		Total
			Success	Failure	
Original	Count	Success	121	13	134
		Failure	6	25	31
	%	Success	90,3	9,7	100,0
		Failure	19,4	80,6	100,0

Table 6: Classification Results

Validation Classification Results (b,c,d)						
			Group	Predicted Group Membership		Total
				Success	Failure	
Cases Selected	Original	Count	Success	80	8	88
			Failure	5	18	23
		%	Success	90,9	9,1	100,0
			Failure	21,7	78,3	100,0
Cases No tSelected	Cross-validated(a)	Count	Success	78	10	88
			Failure	7	16	23
		%	Success	88,6	11,4	100,0
			Failure	30,4	69,6	100,0
Cases No tSelected	Original	Count	Success	43	3	46
			Failure	2	6	8
			Success	93,5	6,5	100,0
			Failure	25,0	75,0	100,0

Table 7: Validation Classification Results