

Evaluating service innovation and business performance in tourism: A multicriteria decision analysis approach

Abstract

Purpose: The purpose of this study is to evaluate the effectiveness of the New Service Development (NSD) process in tourism. For this reason, factors influencing the process of service innovation in the hospitality sector were explored and correlated with business performance in the hospitality industry through a multicriteria decision analysis approach.

Methodology: An original multicriteria decision analysis approach is applied in order to estimate the efficiency of the NSD process. The approach follows the principles of ordinal regression analysis, using goal programming techniques. Collected data are based on in-depth structured and questionnaire-based interviews of 77 hotel managers in 147 new services in a representative sample of 99 hotels in Greece. Several financial ratios, covering different aspects of business performance are used in order to evaluate the NSD process for three years after the services innovation had been launched.

Results: These findings reveal the importance of financial liquidity and business efficiency for the hotel industry (i.e., the ability of a firm to use available resources in order to achieve specific sale goals). The aforementioned variables can determine how quickly and effectively assets are converted to cash. In general, the findings show the emphasis that should be given to customer needs, as well as to the effective management of a NSD project.

Originality: Findings of this study may support hotel managers to make complex strategic decisions for future development. These findings have suggested that service innovation should be included as a strategic tool to assess differentiation effort in the hotel industry.

Keywords: New Service Development; Efficiency Evaluation; Multicriteria Decision Analysis; Business Performance; Service Innovation Strategies

Introduction

In today's business environment the rapid changes, such as globalization and competition, have a direct impact on businesses operation. The evolution of business development, along with the increasing customer demanding level, have created the need for companies to constantly seek new ways to differentiate what they offer to the market. Organizations aim to gain a competitive advantage in order to get profitable and sustainable. The ability to create innovative products and services is the key to sustainability and growth. The rapid development of management systems that ensure quality of products and services, the pretentiousness of consumers, the competition from non-traditional sources and the emerging hybrid industries, increase the need for business innovation (Andreassen et al., 2016). Innovation has become the crucial factor for daily business operating activities in the service industry and organizations which fail to change or innovate their services will perform poorly (Huang, 2014).

Numerous studies show that innovative firms may have improved financial (assets, sales, exports, etc.) or business performance results (growth, number of employees, etc.) (Grisseman et al., 2013; Kaliappen and Hilman, 2014). However, all these research efforts focus on the relationship between innovation and business performance, without measuring the efficiency of adopted innovations, especially in the service sector (Hu et al., 2009). Thus, there is a need to develop a deeper understanding of how innovation impacts firm performance (Eisingerich et al., 2009). Furthermore, most studies are cross-sectoral, and thus presented findings cannot be easily extrapolated to the service sector. This justifies the necessity of conducting more sector-oriented studies in order to have comparable and representative results (Kitsios et al., 2009a; 2009b; Kitsios and Zopounidis, 2007).

More research is required to identify the factors that are important for managers within a New Service Development (NSD) process (Edvardsson et al., 2013). More specifically, hospitality innovations fail due to several factors. Managers develop new services without conducting market research, they incorrectly position them in the market without conducting market analysis, and their cost is usually

high. Managers have to develop new services, but when there is limited knowledge of the factors which affect successful innovations the risk is high (Ottenbacher, 2007).

The main aim of this paper is to evaluate the effectiveness of the NSD process in the Greek hospitality industry. For this purpose, the factors influencing the NSD process in the hospitality sector are explored and a multicriteria decision analysis (MCDA) model is applied in order to link these factors with the financial results of the examined hotels. The applied model is an ordinal regression analysis approach, which is an important stream in the area multiple criteria decision aid.

The main contribution of the presented work is the innovative application of an original MCDA model in the NSD process. The applied model is based on previous approaches in ordinal regression analysis, but since NSD is a process with multiple inputs and outputs, the model has been adapted for this particular problem.

The structure of this paper is organized as follows: Section 2 reviews the critical success factors in service innovation studies and discusses the relevant empirical research regarding the evaluation of business performance. Section 3 presents the collected data and the methods used in the analysis, whereas Section 4 presents and discusses the obtained results. Finally, Section 5 concludes the paper and proposes some future research directions.

Theoretical Background

The development of new services and the orientation towards innovation are significant success components for modern enterprises. A strong correlation between innovation strategy and financial outcomes has been found by Kaliappen and Hilman, (2014), who suggested that companies should avoid investing in innovations that do not fit with the strategic goals of the business. Moreover, they found that the relation between financial performance and different types of innovation may vary.

The relation between innovation and business performance may be studied through several variables, such as patents acquired by enterprises, innovations in processes, and particularly investments in R&D (Teirlinck, 2017). Tseng et al. (2008) found a positive correlation between innovation activity

and firm performance in hotels. They concluded that organizational human capital and organizational culture enhances firm innovativeness. The innovation activity is important to hotel performance. Innovative companies, especially those which can use innovation to differentiate their products and services, outperform other competitive companies. All previous research efforts emphasize that innovation is always associated with the business profile, the philosophy adopted, as well as the sector and the size of the organization.

Success Factors and Business Performance in NSD

The investigation of critical success factors in NSD is very important and it is challenging for hotels managers who aim to increase the satisfaction of their customers and their competitive advantage. Thus, it is important to evaluate them and examine if successful and unsuccessful new services can be differentiated (Lin and Hsieh, 2014).

Service design strategy should be consistent with the available human and financial resources. The successful development of service innovation requires the existence of necessary resources. These resources are related to the business strategy, the knowledge, the skills of employees, the structure of the organization, as well the communication with customers (Yang and Kankanhalli, 2013). Businesses have developed innovative strategies for NSD and they should use the appropriate resources to develop the process and thus gain competitive advantage. Most studies focus on the success factors of the process, scarcely paying little attention to the resources required by the process. Resources that impact each stage of NSD are divided into organizational, natural, and knowledge related. The first category includes resources such as the structure, control, reactions and relationships of members of the company. The second category contains resources such as materials, location, and facilities. In the third category resources are related to education, knowledge and skills of employees. When it comes to the innovative climate, Sandvik et al., (2014) highlight that managers should support the climate for innovation in the hotel sector to foster it in offered services and increased benefits of innovation.

Hotels need an efficient strategic implementation that could transform overall strategic direction to fulfill the requirements of the changing marketplace in order to survive. Hotels cannot be merely based on the effectiveness of business strategy in order to increase their performance, but they must create an operative functional strategy that could be well fulfilled with business strategy in order to produce better outcomes (Edvardsson et al., 2013). Many studies show that differentiation strategy and service innovation could increase business performance. Results also have shown that effective differentiation strategy and service innovation will increase competitive advantage and become significant for service organizations in terms of encountering customers' requirements. The firms implementing differentiation strategy tend to pay attention to service innovation. Hotels can develop personalized services through several activities, namely service innovation, superior service, and creative advertisement (Storey and Hull, 2010).

Today, a new or creative idea does not remain "new" for long because products and services can be easily copied. The capability of continuous innovation is the significant factor for a business to be the leader in a market. A firm which has high-quality service innovation can augment innovation performance and customers' satisfaction more frequently than a firm with lower quality in either dimension (or both) (Huang, 2014). Moreover, Eisingerich et al. (2009) argued that organizations with greater focus on service innovation are more possible to successfully commercialize new service offerings. As a result, such organizations will gain better performance than others that do not pay attention to the development and commercialization of new services or service-related processes.

The collection of information about customers' needs is the first step of the NSD. When the new service will be developed, it must be promoted. So, the NSD contains actions of hotels to produce the final new service. An important variable of this factor are the actions of marketing for the new service that have to be promoted (Van der Panne et al., 2003). Additionally, the need for quick introduction of the new service to the market and the lack of control of marketing leads to the development of failed services that diverge from customer expectations. Managers must evaluate the actions of marketing for the new service, but because of the difficulty in market research and the high costs, they stay away from it (Tang, 2014). Service innovation exists due to a higher degree of customer involvement and

active demand from customers. Accordingly, it is necessary for organizations to continually perform innovation in service in order to increase the features of services that meet customer's needs. Thus, customers can simply find personalized service offers in hospitality industry. Hotel managers should offer new and innovative service to the customers based on their requirements in order to augment sustainable competitive advantage (Kaliappen and Hilman, 2014).

Organizations should go beyond following current customer preferences, adapting their offerings to existing customer needs. Rather, they ought to be sensitive to future market trends. Thus, they should be both customer oriented and have a future market focus. As a result, organizations confront a balancing act: on the one hand they are obligated to pay attention to the future in order to develop and introduce new products and services, but on the other hand their current customers insist to meet their preferences and adapt existing services rather than developing radical new services (Hillebrand et al., 2011).

Managers aim to create new market opportunities producing new products and services lies in the fact of creating and implementing innovation. In order to achieve this objective, the whole process, from the emergency of innovation as an idea to commercialization and marketing, is necessary to be managed correctly and efficiently. The strategies which have been formulated for this purpose need to be implemented according to a plan and they have to be updated according to the changing circumstances (Dereli, 2015).

Evaluation of Business Performance in NSD

Innovation performance contributes positively to organizational growth and profitability (Gunday et al., 2011). The assessment of business performance can be based in different datasets, but new services and products are most frequently evaluated using financial measures of performance (Ottenbacher, 2007). For example, some variables that measure the profitability of a business-oriented innovation are: efficiency, growth, profit, liquidity, success / failure, and market share (Tseng et al., 2008). Huang, (2014) indicated that innovative products increase product innovation performance,

efficiency, and productivity and they are sources of competitiveness which improve business performance in terms of sales growth and increased market share.

According to Gunday et al., (2011), although innovation remains a crucial strategic priority for the majority of organizations and spending on innovation is getting more and more increased, many managers in hospitality industry remain unsatisfied with the financial returns on their firm's investments in innovation. Success in hotels is thus understood and measured across a number of dimensions and attributes based on financial aspects (Ottenbacher, 2007).

In view of innovation, findings support that superior innovative performance in an organization will positively influence market performance and production performance. Furthermore, from a service delivery view, researchers have reported that service delivery has a positive effect on performance in terms of sales growth, Return on Assets (ROA), market share, and overall competitiveness (Huang, 2014). The added value nature of service innovations could allow an organization to enter into new markets and satisfy customers' preferences. Organizations adopting service innovation can gain better organizational performance (Kaliappen and Hilman, 2014). Satisfied customers augment sales and market share through increased purchases, and thus business performance is enhanced (Grissemann et al., 2013).

Market selection can be considered as the most significant factor in determining success when developing new services. This factor positively influences Return on Investment (ROI) in hospitality organizations. This finding suggests that successful hospitality organizations realize the potential size of the market in which they launch their services. Moreover, successful innovations have an increased rate of market responsiveness. Successful innovations need close customer contact, detailed consumer research, and comprehensive understanding of their requirements (Ottenbacher, 2007).

Generally, all studies report a significant correlation between innovation and business efficiency (Huang, 2014). However, the adoption of innovations may result to business competitiveness, only if the company can defend itself in the market against competitors. In addition, innovations may lead to better flexibility, which is an extremely important advantage in market conditions with strong competition. Managers ought to recognize and manage the innovations in order to increase their

business performance. Having a clear understanding of the exact nature of innovations will support organizations to prioritize their market, production, and business strategies, to that they can be implemented using the appropriate subsequent action plan (Gunday et al., 2011).

Methodology

Conceptual Model

As the purpose of this study is to evaluate the effectiveness of the NSD process in the tourism industry, it is necessary to explore the factors which influence the process of developing new services and correlate them with the financial results of a hotel enterprises. Given the complexity of the NSD process which involves many influencing factors, such as strategy, resource allocation, market impact, etc., as well as the complexity of performance evaluation, the analysis of this relationship is considered as a problem with multiple innovation drivers (inputs) and multiple innovation outcomes. The proposed research model can be found in Figure 1.

[Insert Figure 1 here]

As introduced in Section 2.2, the literature relating to NSD and business performance reveals that innovation contributes positively to organizational growth and profitability. Researchers mainly use financial indices in order to measure the business performance. These indices can be based on growth, profit, market share and overall competitiveness (Grissemann et al., 2013; Huang, 2014; Tseng et al., 2008), as well as customers' satisfaction (Kaliappen and Hilman, 2014). Success in hotels is thus understood and measured across a number of dimensions and attributes based on financial aspects (Ottenbacher, 2007). However, many managers in hospitality industry remain unsatisfied with the financial returns on their firm's investments in innovation, thus it is necessary to examine the NSD success factors which influence the financial results in the hospitality sector.

Data and Variables

A first and thorough study of the Greek hotel sector is concerned has been conducted in 2005, aiming to record and comprehend the decision-making process followed by hotel managers (Kitsios et al., 2013; 2009a). Collecting NSD success factors in Greek and international literature, the aforementioned studies formed a 126 factor questionnaire that has been used in interviews with 99 Greek hotels of a wide geographical range. The study used a Likert-type data collection process and applied several statistical analysis methods. The initial large set of factors reduced in 24 determinant new factors, 6 statistically significant. These factors have been included in a predictive model which may be used as a guide by the hotel managers.

Based on the aforementioned framework, this study analyzes the efficiency of NSD in the hotel performance. For this reason, two sets of variables are used:

- *Innovation drivers*: These variables are based on the NSD process and can be considered as the drivers of financial results. As shown in Table 1, the 24 variables used in the study are categorized into 6 main groups: 1) Enterprise's behavior for the service innovation, 2) Idea generation sources for the provided service, 3) Actions for developing the provided service, 4) Organizational structure impact, 5) Enterprise's resources allocation impact, and 6) Market impact (Kitsios et al., 2013; 2009a)
- *Innovation outcomes*: These variables are based on the financial balance sheets of the examined hotels. A total of 8 financial ratios are used in this study, covering profitability, turnover, efficiency, as well as solvency ratios (Table 2).

[Insert Table 1 here]

[Insert Table 2 here]

The final dataset of the presented study consists of 77 hotels and a total of 153 new service projects, both successes and failures. Data were collected by direct in depth interviews with the hotel managers.

First, hotel managers were asked to provide information based on a successful new product in order to examine the rate of success or failure for a new service. Then, they used each of the 126 variables which represent the activities that implemented during the NSD process in order to identify the level of quality of performance. In the next step, hotel managers were asked to provide information based on an unsuccessful new product. Each respondent defined success and failure based on their own hotel's interpretation of whether the new service encountered their success criteria.

Ordinal Regression Analysis

Ordinal regression analysis has its roots in the works of Charnes et al. (1955, 1961), Karst (1958), and Wagner (1959) who introduced linear programming (LP) in regression analysis, in the context of multiobjective LP or goal programming. In all of these works, the main objective is to analyze the incompatibilities inherent to a system of linear constraints, assuming a dependent (response) variable and a set of independent (explanatory) variables.

In the context of MCDA, the aforementioned regression-type philosophy has been adopted by the UTA methods (see for example Jacquet-Lagrange and Siskos, 1982; 2001; Siskos, 1985; Siskos et al., 2016). The main aim of such approaches is to infer an additive value model by disaggregating preference statements of an ordinal nature, such as the ranking of reference actions, pairwise comparisons of reference actions, etc. in such a way that the value model is as consistent as possible with the given preferences.

The applied MCDA model may be considered as an extension of the MUSA method proposed by Grigoroudis and Siskos (2002). The method is used for the assessment of a set of marginal value functions in such a way that the global value function becomes as consistent as possible with decision-maker's judgments. More specifically, the MUSA method assesses global and partial value functions U and u_i (for the i -th criterion), based on the following ordinal regression analysis equation:

$$\begin{cases} U = \sum_{i=1}^n b_i u_i - \sigma^+ + \sigma^- \\ \sum_{i=1}^n b_i = 1 \end{cases} \quad (1)$$

where n is the number of criteria, b_i is the weight of the i -th criterion, σ^+ and σ^- are the overestimation and the underestimation errors, respectively, and the value functions U and u_i are normalized in $[0, 1]$.

The aforementioned model may be extended in the case of multiple explanatory and response variables. More specifically, given a set of n innovation input (drivers) criteria and a set of m innovation outcome criteria, equation (1) may be rewritten as follows:

$$\sum_{j=1}^m p_j v_j = \sum_{i=1}^n b_i u_i - \sigma^+ + \sigma^- \quad (2)$$

$$\text{with } \sum_{j=1}^m p_j = \sum_{i=1}^n b_i = 1 \quad (3)$$

where u_i and v_j are the value functions and b_i and p_j are the weights of the i -th innovation driver criterion and the j -th innovation outcome criterion, respectively, while it should be noted that u_i and v_j are piecewise linear value functions, normalized in $[0, 1]$.

The main principle of the aforementioned model is that the weighted sum of marginal values of u_i should be as close as possible to the weighted sum of marginal values v_j .

According to the previous assumptions and using a goal programming approach, the parameters of the ordinal regression analysis problem may be estimated using LP techniques where the objective is to minimize the sum of errors (σ^+ and σ^-), subject to the following constraints:

- a) Equation (2) for each case (in this study for each new service project).
- b) Monotonicity constraints for u_i and v_j .
- c) Normalization constraints of u_i , v_j , b_i , and p_j .
- d) Non-negativity constraints for all model variables.

In order to assure the linearity and reduce the size of the previous model, special transformations are applied (see Grigoroudis and Siskos, 2002 for details). Moreover, a post-optimality analysis step, based on a heuristic method for near optimal solutions search, is also included in the aforementioned model (Siskos, 1984; Siskos and Grigoroudis, 2010).

The model is similar to canonical correlation analysis, under the philosophy of ordinal regression. A detailed presentation of the principles of ordinal regression analysis, including a discussion about model stability, may be found in Grigoroudis and Siskos (2010; 2002).

Action Diagrams

The most important results of the previous MCDA model refer to criteria weights (b_i, p_j) and average performance indices (i.e., mean value of u_i and v_j). Combining these results, a series of action diagrams may be developed based on the survey results. These diagrams are similar to SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis and may be considered as a type of Importance-Performance Analysis (IPA).

These diagrams are divided into quadrants, according to performance (high/low) and importance (high/low) that may be used to classify improvement actions (Figure 2).

[Insert Figure 2 here]

More specifically, status quo quadrant is characterized by low performance and low importance. Therefore, no action is required because criteria located here are not considered important. However, given the dynamic nature of these diagrams, these particular criteria may be considered as potential future threats. On the other hand, leverage opportunity quadrant is characterized by high performance and high importance. The criteria located in this area may be considered as advantages against competition. Also, action opportunity quadrant is characterized by low performance and high importance. Potential improvement actions should be focused on these criteria in order to improve

company's performance. Finally, transfer resources quadrant is characterized by high performance and low importance. This means that company's resources are utilized to achieve high performance in criteria that do not appear important, therefore these resources may be better used elsewhere. For example company's resources may be used in order to improve the satisfaction dimensions located in the action opportunity quadrant. A detailed discussion of action diagrams, including analytical guidelines are given by Grigoroudis and Siskos (2010).

Results

Descriptive Statistics

The descriptive statistics of the innovation outcomes for each year are presented in Tables 3-5. Results show that the gross profit margin has been improved since 2004, given that the average and the maximum value have been increased, while the minimum value of this index has been decreased. Similarly, the net profit margin has been improved during the examined period, since its average value was negative in 2004 and positive in 2006. Some indices appear to have a positive change in 2005, however their values have been decreased in the second year (2006). These indices include asset turnover, equity turnover, and liability turnover. It is important to note that the range of these indices, as well as their maximum values, increased the last two years. Moreover, the average value of ROE is negative in 2004, but the maximum value of this index is increased during the three years. Also, the value of ROA is negative (or close to zero) in the examined period. Finally, the average value, as well as the minimum value of the solvency ratio is reduced every year.

[Insert Table 3 here]

[Insert Table 4 here]

[Insert Table 5 here]

The results of the correlation analysis between innovation drivers and outcomes are presented in the Appendix. The findings indicate that 23 out of 24 innovation drivers are significantly correlated with at least one innovation outcome in 2004, however, the frequency of the highest correlation rates decreases over the next two years. In 2005, the results showed that NSD variables, such as strategic focus, idea generation, preliminary market assessment, operational analysis, and market synergy are significantly correlated with the innovation outcomes. In 2006, the NSD variables preliminary market assessment and operational analysis are also significantly correlated with the innovation outcomes.

Ordinal Regression Analysis Results

The ordinal regression analysis model has been applied in three different period: 2004 (the year that innovation had been developed), 2005, and 2006. Such a dynamic approach may study potential hysteresis in the relation between the examined variables.

As noted in the previous section, the most important results of the applied MCDA model refer to criteria weights and average performance indices, which show the relative importance and performance of innovation drivers and outcomes, respectively. These results are normalized in [0, 1] and thus is easy to identify the strong and weak points of the efficiency of the NSD process.

Table 6 presents the weights and the average performance of the main NSD dimensions. As it can be observed, operational analysis is the most important dimension throughout the years, but it appears to have one of the lowest average performance indices. In general, the importance, as well as the performance of these NSD factors appear unvaried during the examined period. Businesses which define and implement a service strategy should improve NSD performance, but the strategic operational aspects of NSD process are not yet understood. Project focus strategy was characterized as the commitment level of the management, tasked with identifying objectives, arenas of focus and strategic plans for action. In parallel companies' strategy is directly related to resource investment and to association of the objectives with the final income and profit of the company businesses (Carvalho and Sarkar, 2014; Storey and Hull, 2010). New products that exhibited a high degree of project focus

strategy also had a higher chance of success than products that did not score well in these areas. Market synergy was characterized as tending to fit well with the existing image of the firm, providing a superior advantage compared to competitor products and having been given strong support once launched. Successful NSD projects start with a market and a financial analysis. The findings of the survey in new hotel service development projects shows that market responsiveness, market attractiveness and human resources are related to success/failure of innovative services.

Similarly, the weights and the average performance indices of the financial variables are shown in Table 7. Regardless of the influence of the general economic environment, it seems that the most important impacts refer to the improved performance of profitability and turnover.

[Insert Table 6 here]

[Insert Table 7 here]

The action diagrams for innovation drivers and outcomes confirm the results of the ordinal regression analysis model. More specifically, in the action diagram for NSD variables in 2004 (Figure 3), the criteria included in the “transfer resources” show that hotels pay attention to innovation drivers that are not relatively important for the efficiency of the NSD process. The resources allocated to these criteria may be transferred to other important innovation drivers. Contrary, market synergy criteria are located in the “leverage opportunity” quadrant. These criteria mainly focus on customer satisfaction and needs (i.e., potential customers’ needs were considered in the commercialization stage of the new service, an analysis of how the product meets customers’ needs have been conducted, and customers’ purchase decision process and behavior was clearly perceived by hotels). The results indicate that hotel managers focus their attention on customer satisfaction. Also, operational analysis criteria appear as the most important weaknesses, since they are located in the “action opportunity” quadrant. These criteria include realistic business analysis, discount cash flow analysis, breakeven and return on investment analysis, and informal analysis (guesses and estimates). These variables are important

because they are responsible for the increase of revenues, as well as the reduction of costs in NSD projects. Finally, the following variables related to idea generation and preliminary market assessment appear in the “status quo” quadrant: systematic mechanism to capture and collect new ideas for development, preliminary market assessment prior to any major investment, and enough time and money spent on preliminary market assessment. Although no immediate improvement action is necessary, these criteria may be considered as potential future threats.

Regarding the action diagram for NSD variables in 2005 and 2006 (Figure 4 and Figure 5), the results are similar with those in the previous year. Operational analysis appear as a critical innovation driver. Despite the fact that hotel managers implement informal analysis (guesses and estimates), the rate of sales and their competitive advantage are not increased.

[Insert Figure 3 here]

[Insert Figure 4 here]

[Insert Figure 5 here]

Figure 6 presents the action diagram for innovation outcomes in 2004. As shown, solvency ratio and asset turnover are the most important competitive advantages of financial results, since they are important in the NSD process and have a relative high performance. The large influences of these criteria may be justified by the high importance of operational analysis dimension in the action diagram of NSD variables in 2004 (see Figure 3). Also, equity turnover appear as a critical financial variable, locating in the “action opportunity” quadrant. This result, combining with the performance of the asset turnover ratio, shows that hotels do not manage efficiently their investment.

Regarding the action diagram for innovation outcomes in 2005 (Figure 7), results indicate an improvement in the following financial ratios: solvency ratio, equity turnover, and liability turnover. Moreover, net profit margin, asset turnover, and ROA appear to have a relatively low influence in the

NSD process. Moreover, ROE is located in “action opportunity”, indicating that hotel managers do not efficiently manage their assets and this has a negative effect on profits.

Finally, the action diagram for innovation outcomes in 2006 is presented in Figure 8. The results are similar with those ones in the previous year. However, gross profit margin and asset turnover ratios are improved compared to 2005.

[Insert Figure 6 here]

[Insert Figure 7 here]

[Insert Figure 8 here]

Successful vs Unsuccessful New Services

Comparing the main results of the MCDA model between successful and unsuccessful new services may also give valuable information about the efficiency of NSD process. For example, Table 8 compares the average performance indices of the analytical innovation drivers between successful and unsuccessful new hotel services. The findings indicate that hotel managers who develop unsuccessful new services fail to analyze how the product meets customers’ needs, align the service with the overall image of the hotel, consider potential customer needs in the commercialization stage of the new service and perceive customers’ purchase decision process and behavior. Moreover, hotel managers did not carry out a realistic business analysis, a discount cash flow analysis and a breakeven and return on investment analysis. They did not also conducted forecasts of expenses and sales. Another important factor for the development of unsuccessful new services is the limited time and money that were spent on preliminary market assessment. Finally despite the fact that potential customers had not showed a great need for this class of product, hotel managers proceeded in developing the new service without considering the high-potential risk.

[Insert Table 8 here]

Table 9 compares the weights of the major innovation drivers between successful and unsuccessful new services and results show that operational analysis is a significant variable in the two cases. However, in the cases of successful new services, market synergy appears as the most important variable because hotel managers analyze how the product meets customers' needs compared to competing products, how the service will be aligned with the overall image of the hotel, how the potential needs of customers will be considered in the commercialization stage of the new service, how the customers' purchase decision process and behavior will be clearly perceived by the hotel, if there is strong support for the new product after its launch and finally, if the potential customers had showed a great need for this class of product. Also, in the case of unsuccessful services, the after launch review and assessment variable is important because hotel managers evaluate the launch process and assess the weaknesses of the new service. The outcome for new services was negative because managers did not pay attention to several aspects of the preliminary market assessment, given that importance of this variable is rather low during all examined years.

[Insert Table 9 here]

Similarly, Table 10 compares the weights of the major innovation outcomes between successful and unsuccessful new services. In the case of unsuccessful services the solvency ratio index has the most significant influence and this stems from the fact that hotels did not efficiently manage their investments in order to develop successful services. Gross profit margin and equity turnover appear to have an increased importance for unsuccessful services over the years. Similarly, gross profit margin has also an increased importance for successful services. However, hotels with successful services appear to give higher importance in asset turnover and lower importance in ROE over the years.

[Insert Table 10 here]

Conclusions

Concluding Remarks

This study examined the linkage between innovation drivers and outcomes of NSD applying a MCDA method. The results reveal specific factors that seem to play an important role in innovation efficiency performance. For example, operational analysis appears as the most important NSD dimension in all of the examined years. This category refers to one of the initial stages of NSD and can be characterized as a test of project feasibility and profitability. In this stage, hotel managers make growth forecast regarding the potential revenues and costs of new service projects, the return of investment, the competitors in the market, and then they decide whether to continue the project or not. Market synergy is also an important dimension. It is not a particular stage of the NSD process, but represents the control of the market, targeting mainly to the consumer. Market synergy concerns the harmonization of new services with the market and the customer desires and needs. Firms continuously examine for product or market opportunities by scanning and monitoring the environment and they act as the creators of change by developing innovative services to which their competitors must respond (Huang, 2014). In this survey, hotel managers claimed that new services were competitive and they could meet customers' needs. The results of the MCDA model support their view, given that the overall weights of these criteria is up to 80% in all the examined years.

Another important dimension refers to strategic focus, which is the first stage of the NSD process, where the innovation strategy is formulated in agreement with the overall business strategy and objectives. Its importance is justified by the relevant literature, since a company that identifies appropriate areas of interest, can set long term goals in the market. While strategy has great effect in NSD, surveys about service strategy based on empirical studies are limited. Strategy plays a significant role in selecting and implementing NSD projects. As service innovation plays an important role in the improvement of hotel performance, a differentiation strategy should be implemented by managers to increase hotel performance (Kaliappen and Hilman, 2014). This is preferred by managers

in tourism sector, since it enhances service innovation capabilities to determine gaps in market offerings, it provides new opportunities, new services, and it increases customer satisfaction. So, as the objective of NSD is to meet the customers' needs and business' requirements, the service strategy should be aligned with the image and the overall business strategy of the hotel (Carvalho and Sarkar, 2014).

Preliminary market assessment is an important dimension, where managers should spend enough time and money on this process and they should define the target market. The weights of this variable are low, so it is obvious that managers did not focus their actions on this stage.

Regarding the financial variables, the most important ratios refer to equity turnover and solvency ratio, which appear very important in all of the examined years. Other important variables, although their weights may vary during the examined period, include: gross profit margin, asset turnover, liability turnover, and ROE. Service innovation performance has become the new paradigm for firms to maintain or capture markets, meet customers' needs, improve success rate of service innovation and finally increase business growth and profitability.

Examining and comparing successful and unsuccessful new service projects, important differences may be observed regarding the importance of variables. In the case of successful services, the most significant variables were operational analysis and market synergy, where hotel managers analyze the customers' needs, the alignment of new service with the overall image of the hotel, the customers' purchase decision process and behavior, and the support for the new product after its launch. In contrast, in case of unsuccessful services, the after launch review and assessment variable is important because hotel managers evaluate the launch process and assess the weaknesses of the new service.

These findings reveal the importance of financial liquidity and managerial efficiency for the hotel industry (i.e., the ability of a firm to use available resources in order to achieve specific sale goals). The aforementioned variables can determine how quickly and effectively assets are converted to cash. In general, the findings show the emphasis that should be given on the one hand to the customer needs, and on the other to the effective management of a NSD project.

Hotel organizations must continuously develop new services to be successful and the results of these and further investigations will be of potential value to hotel and generally hospitality managers, as it will enable them to focus on NSD more strategically and professionally. Findings that arose from this study could support hotel managers to make strategic decisions for future development. MCDA techniques used in order to analyze a broad set of variables regarding financial performance may help hotel managers to consider new approaches and methodologies that facilitate the decision making support processes. This paper brings together methodological contributions within MCDA and business development, given that MCDA techniques include valuable tools for structuring and evaluating complex decision situations that may allow for more informed, potentially better decisions. These findings suggested that service innovation should be included as a strategic tool to assess differentiation in the hotel industry. Service innovation can be used in achieving the effectiveness of the hotel's differentiation strategy in improving superior performance. Instead of treating NSD as something that just happens, managers are obligated not only to pay attention to a NSD strategy that focuses on the value proposition and the firm's strategy, but also to consider the customer value creation process. MCDA methods are not widely used in field of NSD (Dinçer and Yüksel, 2019; Lee et al., 2012; 2010; Yang et al., 2018), but given the complexity of the NSD process which involves many influencing factors, such as strategy, resource allocation, market impact, etc., the analysis of innovation performance may be considered as an MCDA problem.

Limitations and Future Research

This study has focused narrowly on the consumer oriented hotel services sector. As a result, the generalizability of the findings to other hotel service sectors and, in general, to other service industries is limited, therefore further empirical research is required to determine the transferability of the presented findings. Cross-cultural comparisons would also be a fruitful area for investigation.

In this survey, 144 new service projects (119 successful and 27 unsuccessful) were examined. The number of unsuccessful service projects was low and the estimations of new services in performance

outcomes were not satisfied. So, future researchers could expand the sample and could examine deeply more unsuccessful service projects.

Finally, more work is needed from both a qualitative and a quantitative perspective. Qualitative studies in the form of in-depth case studies can provide a wide base of knowledge on the subtle but influential practices occurring within service organizations. This can, in turn, provide a better foundation for future quantitative studies.

Furthermore, future research efforts that may include a customer satisfaction survey about the newly developed services. This survey is important to combine the actions that have been done before the development of new hotel services, in order to get feedback from customers and improve the NSD process.

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Appendix

[Insert Table A1 here]

[Insert Table A2 here]

[Insert Table A3 here]

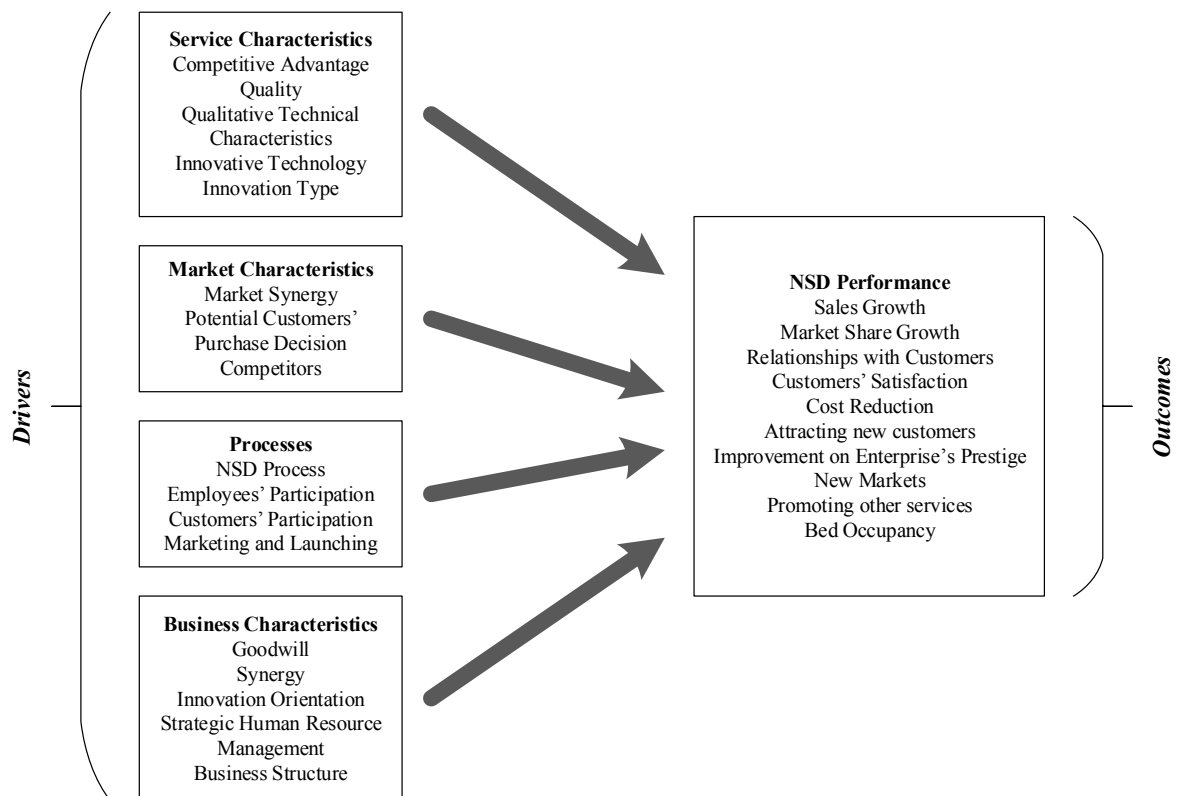


Figure 1. Conceptual model

Figure 2. Action diagrams

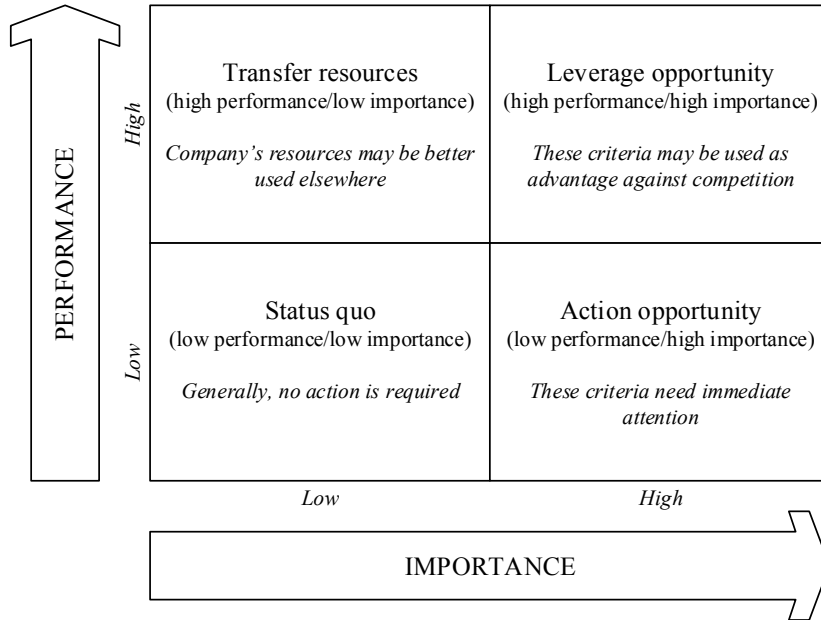


Figure 3. Action diagram for innovation drivers (2004)

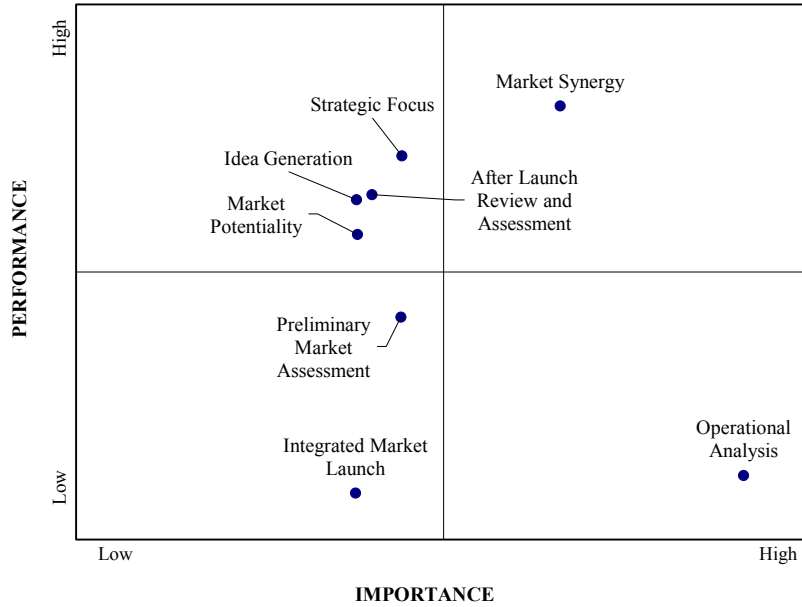


Figure 4. Action diagram for innovation drivers (2005)

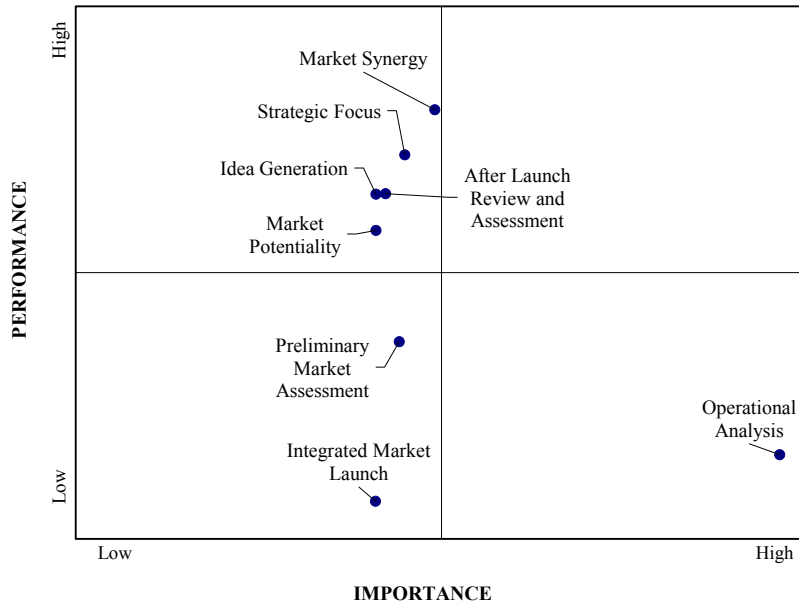


Figure 5. Action diagram for innovation drivers (2006)

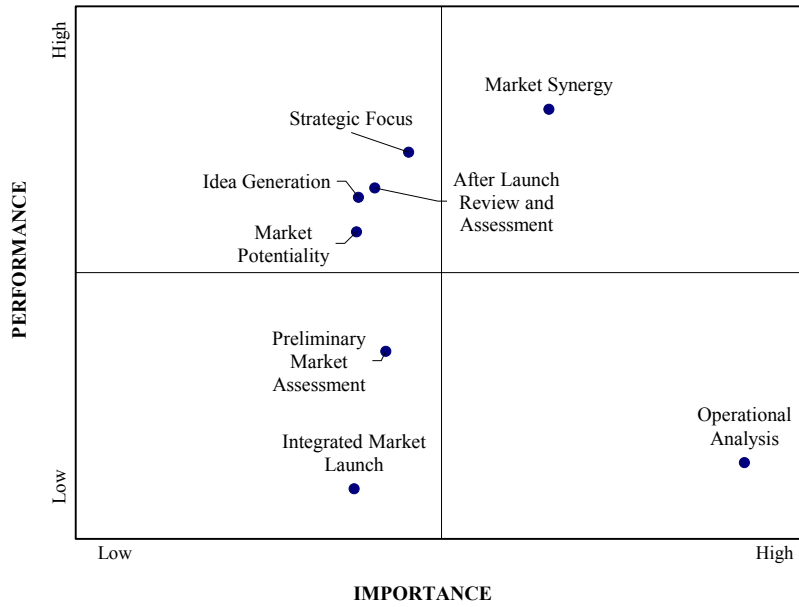


Figure 6. Action diagram for innovation outcomes (2004)

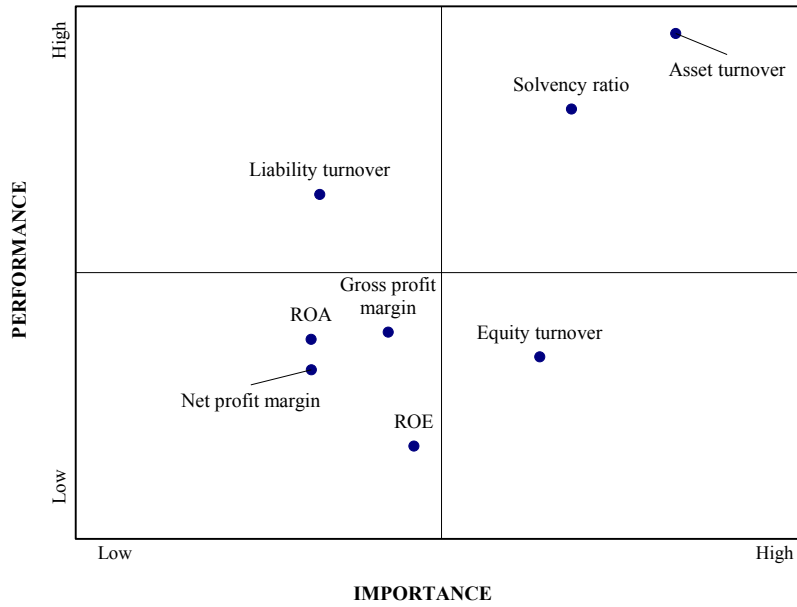


Figure 7. Action diagram for innovation outcomes (2005)

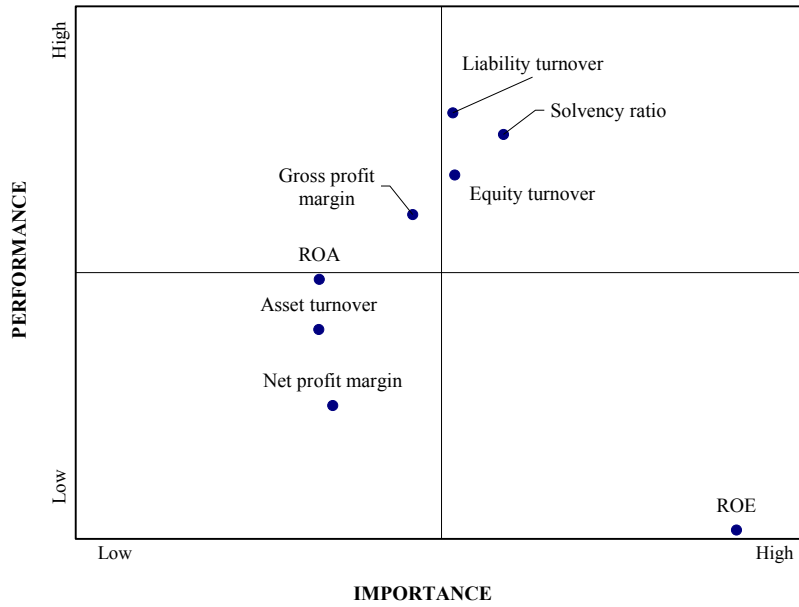


Figure 8. Action diagram for innovation outcomes (2006)

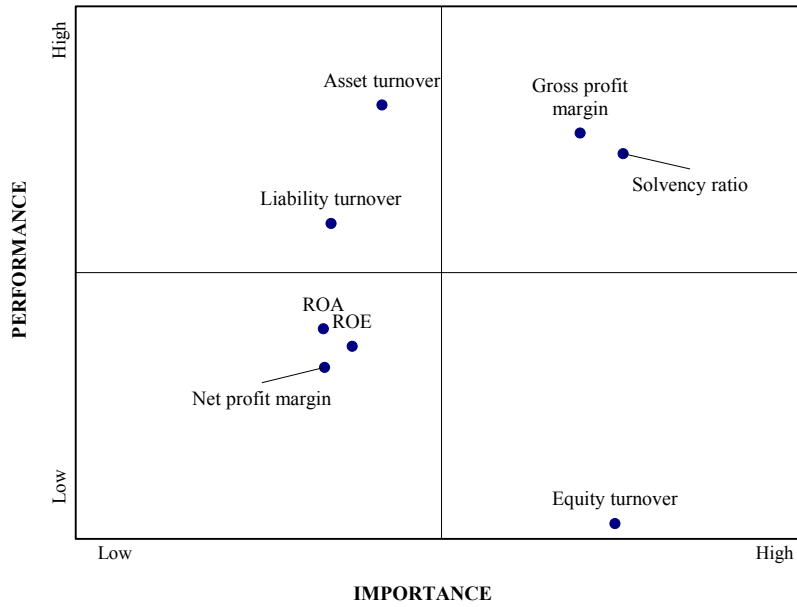


Table 1. NSD variables (innovation drivers)

Dimensions	Variables
Strategic focus	<ol style="list-style-type: none"> 1. Clearly defined strategic objectives 2. Expression of objectives as contribution to the income of the company 3. Clearly identified areas of strategic focus 4. Clearly defined strategic action plans
Idea generation	<ol style="list-style-type: none"> 5. Systematic mechanism for capturing and collecting new ideas for development
Preliminary market assessment	<ol style="list-style-type: none"> 6. Preliminary market assessment prior to any major investment 7. Enough time and money spent on preliminary market assessment 8. Clear and focused definition of the target market
Operational Analysis	<ol style="list-style-type: none"> 9. Realistic business analysis 10. Comprehensive competition analysis 11. Forecasts of expenses and sales 12. Discount cash flow analysis 13. Breakeven and return on investment analysis 14. Informal analysis (guesses and estimates)
Integrated market launch	<ol style="list-style-type: none"> 15. Integrated promotion plan (e.g., brochures, advertisements, direct sales, exhibitions, seminars for clients)
After launch review and assessment	<ol style="list-style-type: none"> 16. Successful performance measurements and forecasts of the new service 17. Advertising, promotion and communication efforts targeted to the right customer segment
Market potentiality	<ol style="list-style-type: none"> 18. Previous knowledge of the potential market size
Market synergy	<ol style="list-style-type: none"> 19. Analysis of how the product meets customers' needs in comparison to competition 20. Service aligned with the overall image of the hotel 21. Customer needs were considered in the commercialization stage of the new service 22. Clearly perceived customers' purchase decision process and behavior 23. Strong support for the new product after its launch 24. Evidence for great need by potential customers

Table 2. Financial variables (innovation outcomes)

Dimensions	Variables
Profitability	1. Gross profit margin (Gross profit/Sales) 2. Net profit margin (Net income/Sales)
Turnover	3. Asset turnover (Sales/Total Assets) 4. Equity turnover (Sales/Equity) 5. Liability turnover (Sales/Liabilities)
Efficiency	6. ROE – Return on Equity (Net income/Equity) 7. ROA – Return on Assets (Net income/Total Assets)
Solvency	8. Solvency ratio (Equity/Total Liabilities)

Table 3. Descriptive Statistics for innovation outcomes (2004)

Criteria	Range	Min	Max	Average	SD
Gross profit margin	1.45	-0.58	0.88	0.141	0.206
Net profit margin	1.72	-1.25	0.47	-0.060	0.248
Asset turnover	1.14	0.07	1.21	0.371	0.203
Equity turnover	10.53	-1.30	9.23	1.106	1.636
Liability turnover	5.23	0.14	5.37	1.146	1.186
ROE	7.44	-6.09	1.35	-0.128	0.747
ROA	1.92	-1.51	0.41	-0.020	0.144
Solvency ratio	13.22	-0.12	13.10	1.905	2.276

Table 4. Descriptive Statistics for innovation outcomes (2005)

Criteria	Range	Min	Max	Average	SD
Gross profit margin	0.98	-0.10	0.88	0.181	0.159
Net profit margin	1.04	-0.79	0.25	-0.013	0.152
Asset turnover	3.51	0.08	3.59	0.414	0.416
Equity turnover	60.79	-0.68	60.11	1.956	7.024
Liability turnover	7.75	0.14	7.90	1.219	1.398
ROE	1.68	-1.14	0.54	-0.022	0.213
ROA	0.38	-0.14	0.24	0.003	0.044
Solvency ratio	10.81	-0.21	10.60	1.873	2.416

Table 5. Descriptive Statistics for innovation outcomes (2006)

Criteria	Range	Min	Max	Average	SD
Gross profit margin	0.92	-0.02	0.90	0.203	0.154
Net profit margin	1.12	-0.66	0.46	0.018	0.142
Asset turnover	6.05	0.10	6.15	0.431	0.679
Equity turnover	40.44	-9.04	31.41	1.517	5.109
Liability turnover	7.47	0.18	7.65	1.163	1.396
ROE	10.27	-4.32	5.95	0.003	0.927
ROA	1.36	-1.09	0.27	-0.001	0.134
Solvency ratio	11.98	-0.51	11.47	1.817	2.397

Table 6. Weights and average performance indices for innovation drivers

Dimension	Weights (%)			Average performance (%)		
	2004	2005	2006	2004	2005	2006
Strategic focus	7.22	6.29	8.26	80.88	80.00	81.11
Idea generation	1.45	1.38	1.79	74.67	74.67	74.67
Preliminary market assessment	7.07	5.34	5.33	58.07	54.72	52.75
Operational analysis	50.64	69.90	51.57	35.66	39.46	36.90
Integrated market launch	1.31	1.31	1.24	33.17	33.17	33.17
After launch review and assessment	3.41	3.02	3.91	75.38	74.73	76.02
Market potentiality	1.57	1.39	1.54	69.77	69.77	69.77
Market synergy	27.32	11.38	26.36	87.92	86.08	87.20

Table 7. Weights and average performance indices for innovation outcomes

Dimension	Weights (%)			Average performance (%)		
	2004	2005	2006	2004	2005	2006
Gross profit margin	8.77	10.41	23.14	38.92	68.53	75.60
Net profit margin	3.40	4.57	3.53	32.35	31.49	45.63
Asset turnover	28.91	3.55	7.94	91.09	46.24	79.20
Equity turnover	19.38	13.48	25.81	34.62	76.20	25.68
Liability turnover	3.98	13.34	4.03	62.95	88.23	64.05
ROE	10.58	34.03	5.65	19.00	7.34	48.33
ROA	3.38	3.59	3.45	37.65	55.94	50.56
Solvency ratio	21.60	17.03	26.44	77.88	84.07	72.97

Table 8. Average performance for innovation drivers between successful and unsuccessful services

Dimension	Variables	Average performance index (%)	
		Successful services	Unsuccessful services
Strategic focus	1. Clearly defined strategic objectives	94.75	76.85
	2. Expression of objectives as contribution to the income of the company	85.29	54.63
	3. Clearly identified areas of strategic focus	87.18	56.48
	4. Clearly defined strategic action plans	86.97	55.56
Idea generation	5. Systematic mechanism for capturing and collecting new ideas for development	81.93	60.19
Preliminary market assessment	6. Preliminary market assessment prior to any major investment	71.64	35.19
	7. Enough time and money spent on preliminary market assessment	41.81	19.44
	8. Clear and focused definition of the target market	70.38	54.63
Operational Analysis	9. Realistic business analysis	69.96	29.63
	10. Comprehensive competition analysis	77.73	50.00
	11. Forecasts of expenses and sales	75.42	36.11
	12. Discount cash flow analysis	62.61	26.85
	13. Breakeven and return on investment analysis	55.04	23.15
	14. Informal analysis (guesses and estimates)	16.18	50.00
Integrated market launch	15. Integrated promotion plan (e.g., brochures, advertisements, direct sales, exhibitions, seminars for clients)	40.13	9.26
After launch review and assessment	16. Successful performance measurements and forecasts of the new service	81.72	29.63
	17. Advertising, promotion and communication efforts targeted to the right customer segment	88.45	60.19
Market potentiality	18. Previous knowledge of the potential market size	80.04	40.74
Market synergy	19. Analysis of how the product meets customers' needs in comparison to competition	88.03	77.78
	20. Service aligned with the overall image of the hotel	93.70	83.33
	21. Customer needs were considered in the commercialization stage of the new service	94.54	83.33
	22. Clearly perceived customers' purchase decision process and behavior	95.80	87.04
	23. Strong support for the new product after its launch	93.49	72.22
	24. Evidence for great need by potential customers	87.18	36.11

Table 9. Weights for innovation drivers between successful and unsuccessful services

Dimension	Weights (%) Successful services			Weights (%) Unsuccessful services		
	2004	2005	2006	2004	2005	2006
Strategic focus	4.00	4.00	4.00	4.00	5.83	20.50
Idea generation	1.00	1.00	1.00	1.00	1.00	1.00
Preliminary market assessment	5.30	5.94	3.00	13.36	3.00	12.26
Operational analysis	28.60	37.38	25.48	33.86	65.63	30.44
Integrated market launch	1.00	1.00	1.00	1.00	1.00	1.00
After launch review and assessment	2.00	2.88	2.00	16.48	9.88	16.76
Market potentiality	1.00	1.00	1.00	1.00	1.00	1.00
Market synergy	57.09	46.80	65.52	29.30	12.66	17.04

Table 10. Weights for innovation outcomes between successful and unsuccessful services

Dimension	Weights (%) Successful services			Weights (%) Unsuccessful services		
	2004	2005	2006	2004	2005	2006
Gross profit margin	6.02	13.10	30.03	19.63	7.88	22.95
Net profit margin	3.00	3.00	3.00	3.00	6.52	3.00
Asset turnover	31.09	41.13	41.92	3.00	3.00	3.00
Equity turnover	13.98	14.28	10.20	29.25	36.71	34.45
Liability turnover	26.99	3.00	3.00	3.00	3.00	3.00
ROE	12.92	8.57	3.00	3.00	3.00	5.58
ROA	3.00	3.00	3.00	3.00	3.00	3.00
Solvency ratio	3.00	13.93	5.86	36.12	36.89	25.03

Table A1. Correlation analysis (2004)

	Gross profit margin	Net profit margin	Asset turnover	Equity turnover	Liability turnover	ROE	ROA	Solvency ratio
Clearly defined strategic objectives	.109	.199(*)	-.109	.035	-.109	.155	.261**	-.103
Expression of objectives as contribution to the income of the company	.075	.171(*)	-.014	-.157	-.018	.123	.199*	-.019
Clearly identified areas of strategic focus	.079	.146	-.189*	.039	-.310**	.162*	.202*	-.271**
Clearly defined strategic action plans	.228**	.261**	-.146	.019	-.202*	.198*	.254**	-.198*
Systematic mechanism for capturing and collecting new ideas for development	-.024	-.034	-.253**	.025	-.339**	.121	.054	-.229**
Preliminary market assessment prior to any major investment	.099	.049	-.172*	.040	-.267**	.119	.095	-.256**
Enough time and money spent on preliminary market assessment	.045	.011	-.223**	-.163*	-.211**	.138	.072	-.134
Clear and focused definition of the target market	.144	.228**	-.061	-.223**	-.102	.188*	.205*	-.107
Realistic business analysis	.037	.104	-.165*	.091	-.169*	.038	.092	-.183*
Comprehensive competition analysis	-.051	.056	-.184*	-.159*	-.035	.030	.077	-.086
Forecasts of expenses and sales	.041	.129	-.187*	-.204*	-.206*	.180*	.126	-.177*
Discount cash flow analysis	-.011	.131	-.258**	-.160*	-.211**	.150	.123	-.151
Breakeven and return on investment analysis	.030	.077	-.160*	-.092	-.219**	.118	.079	-.236**
Informal analysis (guesses and estimates)	.084	.064	.259**	-.021	.326**	.048	.115	.312**
Integrated promotion plan	-.041	-.024	-.202*	-.068	-.250**	.069	.030	-.210**
Successful performance measurements and forecasts of the new service	.060	.092	-.030	.154	-.100	.028	.116	-.109
Advertising, promotion and communication efforts targeted to the right customer segment	.136	.135	-.087	.020	-.127	.173*	.202*	-.150
Previous knowledge of the potential market size	.124	.068	-.149	.067	-.212**	.093	.136	-.174*
Analysis of how the product meets customers' needs in comparison to competition	-.006	.128	-.346**	-.070	-.231**	.205*	.223**	-.134
Service aligned with the overall image of the hotel	.059	.228*)	-.141	.046	-.150	.134	.273**	-.107
Customer needs were considered in the commercialization stage of the new service	.155	.262**	-.009	.055	.070	.148	.271**	.054
Clearly perceived customers' purchase decision process and behavior	.075	.202*	-.069	.025	.018	.162*	.268**	.038
Strong support for the new product after its launch	.135	.145	-.037	.059	-.072	.124	.183*	-.087
Evidence for great need by potential customers	.101	.131	-.175*	.034	-.116	.131	.176*	-.075

* Significant at the 0.05 level

** Significant at the 0.01 level

Table A2. Correlation analysis (2005)

	Gross profit margin	Net profit margin	Asset turnover	Equity turnover	Liability turnover	ROE	ROA	Solvency ratio
Clearly defined strategic objectives	.116	.107	.025	.068	-.088	.058	.132	-.115
Expression of objectives as contribution to the income of the company	.117	.125	.014	-.076	-.037	.171*	.191*	-.030
Clearly identified areas of strategic focus	.115	.042	-.068	.006	-.246**	.060	.054	-.236**
Clearly defined strategic action plans	.164*	.118	-.134	-.076	-.250**	.020	.114	-.233**
Systematic mechanism for capturing and collecting new ideas for development	-.002	-.105	-.152	-.053	-.325**	-.061	-.193*	-.258**
Preliminary market assessment prior to any major investment	.092	-.075	-.108	-.030	-.251**	-.082	-.092	-.279**
Enough time and money spent on preliminary market assessment	-.008	-.108	-.138	-.116	-.218**	.079	-.112	-.164*
Clear and focused definition of the target market	.113	.127	-.065	-.148	-.038	.196*	.139	-.042
Realistic business analysis	.031	.072	-.039	.035	-.090	-.051	.049	-.119
Comprehensive competition analysis	-.075	.000	-.001	.005	.013	.033	-.027	-.046
Forecasts of expenses and sales	-.053	.025	-.196*	-.235**	-.156	.098	.001	-.110
Discount cash flow analysis	-.084	.015	-.200*	-.188*	-.136	.060	-.024	-.058
Breakeven and return on investment analysis	-.049	-.001	-.144	-.154	-.190*	.040	-.065	-.190*
Informal analysis (guesses and estimates)	.164*	.089	.105	.006	.237**	.053	.169*	.240**
Integrated promotion plan	-.074	-.094	-.150	-.107	-.235**	-.043	-.111	-.195*
Successful performance measurements and forecasts of the new service	.150	.071	.088	.133	-.104	.025	.085	-.146
Advertising, promotion and communication efforts targeted to the right customer segment	.092	.029	-.106	-.083	-.141	-.031	.060	-.135
Previous knowledge of the potential market size	.205*	.041	-.033	.032	-.157	.061	.049	-.140
Analysis of how the product meets customers' needs in comparison to competition	-.013	-.001	-.160*	-.036	-.191*	-.023	-.073	-.114
Service aligned with the overall image of the hotel	.079	.119	.016	.074	-.162*	-.013	.105	-.152
Customer needs were considered in the commercialization stage of the new service	.198*	.173*	.073	.067	.097	.054	.152	.056
Clearly perceived customers' purchase decision process and behavior	.115	.110	.043	.055	.010	.046	.082	.012
Strong support for the new product after its launch	.185*	.053	.044	.071	-.132	.058	.058	-.163*
Evidence for great need by potential customers	.082	.054	-.094	-.020	-.149	-.030	.047	-.116

* Significant at the 0.05 level

** Significant at the 0.01 level

Table A3. Correlation analysis (2006)

	Gross profit margin	Net profit margin	Asset turnover	Equity turnover	Liability turnover	ROE	ROA	Solvency ratio
Clearly defined strategic objectives	.114	.113	.043	.043	-.016	.020	.005	-.043
Expression of objectives as contribution to the income of the company	.128	.161*	.001	-.229**	.017	.192*	.076	.036
Clearly identified areas of strategic focus	.108	.058	-.047	.000	-.151	.071	.032	-.092
Clearly defined strategic action plans	.147	.137	-.122	.038	-.142	-.008	.134	-.107
Systematic mechanism for capturing and collecting new ideas for development	.026	-.036	-.141	.055	-.188*	.013	.028	-.062
Preliminary market assessment prior to any major investment	.073	-.049	.103	.147	-.201*	-.034	.045	-.212**
Enough time and money spent on preliminary market assessment	.010	-.031	-.105	-.185(*)	-.159*	.235**	.049	-.117
Clear and focused definition of the target market	.124	.165*	-.082	-.229**	-.031	.168*	.135	-.003
Realistic business analysis	-.008	.081	-.021	.056	-.076	-.045	.022	-.091
Comprehensive competition analysis	-.025	.078	.063	-.206*	.061	.170*	-.032	-.004
Forecasts of expenses and sales	-.039	.108	-.203*	-.231**	-.147	.184*	.186*	-.075
Discount cash flow analysis	-.064	.131	-.186*	-.189*	-.210**	.180*	.146	-.135
Breakeven and return on investment analysis	-.006	.119	-.144	-.156	-.127	.180*	.130	-.096
Informal analysis (guesses and estimates)	.156	.029	.066	.040	.211**	-.057	.024	.180*
Integrated promotion plan	-.100	-.056	-.117	-.077	-.208**	.130	.047	-.151
Successful performance measurements and forecasts of the new service	.118	.060	.089	.036	.028	.010	-.061	.012
Advertising, promotion and communication efforts targeted to the right customer segment	.082	.043	-.119	.059	-.118	-.045	.132	-.113
Previous knowledge of the potential market size	.200*	.070	-.034	-.023	-.187*	.100	.001	-.154
Analysis of how the product meets customers' needs in comparison to competition	-.011	.031	-.090	.007	-.186*	.045	.029	-.126
Service aligned with the overall image of the hotel	.077	.109	.030	.075	-.142	-.079	-.016	-.132
Customer needs were considered in the commercialization stage of the new service	.172*	.143	.056	-.001	.072	-.015	.008	.031
Clearly perceived customers' purchase decision process and behavior	.114	.089	.033	-.019	.055	-.020	-.011	.079
Strong support for the new product after its launch	.174*	.037	.049	-.005	-.007	.056	-.024	-.056
Evidence for great need by potential customers	.088	.110	-.061	.045	-.111	-.013	.078	-.120

This is the pre-print version. The final version is available at: Kitsios, F. and Grigoroudis, E. (2020). Evaluating service innovation and business performance in tourism: A multicriteria decision analysis approach, *Management Decision*, 58 (11), pp. 2429-2453. [see: <https://www.emerald.com/insight/content/doi/10.1108/MD-09-2019-1326/full/html>]

* Significant at the 0.05 level

** Significant at the 0.01 level