

Chapter 3

The model approach to linking innovation and the market value of tourism enterprises

Introduction

The notion of innovation covers the process of implementing positive and new ideas into business practice. Amongst the numerous predictors of changes in market value innovation is one of the most important [Hall 1998]. Hay and Morris set the theoretical link between innovation and market value in 1979. The authors employed one of the most fundamental economic rules indicating that higher returns involve higher risk. They stated that high investment in innovation is a “high risk-high return” strategy, which in turn is attractive to shareholders anticipating better financial performance. In the result investment in innovation results in higher risk and higher potential returns, which increases the market value of equity. Nowadays such an explanation still holds. Despite the risk every innovation carries, in general innovation results in the increase of market value as stated by Sorescu [2012].

From the point of view of the present research it is crucial that most innovation announced to the general public may be to positively influence a company’s cash flow. Such a possibility is recognised by investors and included in their prediction of company value, which in turn is reflected in changes in the market value of equity. A market reacts to the available information. In the case of innovation announcements it seems that markets tend to be very optimistic. Less informative releases, with no details on innovation, may be as influential as their more innovative equivalents [Hall 1998].

There exists some scientific research indicating the positive impact of innovation on market value. Usually authors concentrate on one of the two distinctive

stages of the innovation process: early (e.g. R&D expenditures, patent applications, preannouncements), and late (e.g. new product launches) [Greenhalgh and Rogers 2006; Sorescu and Spanjol 2008]. In both cases the link between the variables was proven to be statistically significant. Ehie and Olibe pinpoint the fact that in contemporary economics a company's development results more from new knowledge than from physical assets which increases the importance of innovation. Innovative products and services enable firms to enhance intangible assets, differentiate themselves from others and thus increase the market value.

Despite the above the scientific research on the relationship between innovation and a companies' market value is relatively seldom. It concerns especially the predictors of market value. In the previous studies most researchers employed only two or three additional variables to improve the estimation of the effects of innovation. In the set of literature studied there were only two papers which covered more than three predictors. Therefore a comprehensive study systematically selecting the most important predictors and testing them seems to be still missing. The research gap concerning the relationship studied and the theoretically related variables appears to remain. Fortunately there seems to be a consensus as far as the market value change proxy is concerned. Most researchers used the measure of abnormal returns to identify the changes in MV resulting from innovation. In such cases they employed the methods of event-studies [Rao, Chandy and Prabhu 2003; Sood and Tellis 2009] and buy-and-hold abnormal returns [Sorescu, Chandy and Prabhu 2007].

In relation to the above discussion the purpose of this chapter was to create a conceptual model representing the relationship between innovation announcements and the market value of the equity of tourism enterprises. Such a model is a novelty and constitutes the author's original contribution. Consistently with the Oxford Dictionary, it is a simplified description of a system or process built to assist prediction [2016]. In the present research a systematic approach to model building was employed. The previous research on the relationship studied was summarised before the author's own propositions were introduced. Thus the first step was comprehensive study of the literature covering both: the impact of innovation on market value in tourism and the impact of innovation on the market value in services performed with the use of Salsa (Search, Appraisal, Synthesis, Analysis) method. The second step comprised the inclusion of seven potential predictors.

The conceptual model of the relationship between innovation and the market value of equity of tourism enterprises covered a comprehensive set of 11 predictors. The model is divided into three parts: innovation-level variables,

firm-level innovation-related variables and interaction and second-order effects. The innovation-level includes seven variables such as: patent, CSR, type, degree of novelty involved, source, stage and communication. The two firm-level innovation-related variables cover: R&D intensity and innovativeness. Furthermore the squared effect of R&D intensity and the interaction between R&D intensity and innovativeness are covered. In the study a total of 8 control variables is determined: industry, size, volume, total cash dividend, operational experience, leverage, return on equity, and growth. Such a model will be tested in the empirical study reported in chapters 4 and 5.

The first part of the chapter provides a general view on the subject. The second part delivers methods applied in a systematic literature study. It starts with the description of the scoping research. Next are details on the search, appraisal and synthesis procedures applied in literature review. The third part of the chapter includes an analysis of the publications gathered in the literature study. The fourth part of the chapter provides details on the model and hypotheses development including the author's proposed predictors. The comprehensive model covering the original input in respect to previous research took graphic and analytical forms.

3.1. A systematic approach to literature studies

The purpose of the systematic literature study was to summarise the research on the relationship between innovation and the market value of the equity of tourism enterprises. It attempted to encompass the comprehensive set of publications in the field. Firstly the scoping research was performed. Second the systematic literature study was completed. It focused on both: the impact of innovation on market value in tourism and on the relationship between innovation and market value in services. The method used relied on four steps: search, appraisal, synthesis and analysis [Booth, Papaioannou and Sutton 2012].

Scoping research

The scoping research aims at determining the general view on the subject, the most influential works, the previous literature reviews on the subject and the grey literature (not formally published) referring to the subject. The general view on the subject is that the relationship between innovation and market value is of key importance [Hall 1998] and that in most cases innovation stimulates growth

in market value [Sorescu 2012] which is crucial from the point of view of present research. However most of the previous studies concerned the manufacturing sector. Services (and especially tourism) were largely neglected [Ehie and Olibe 2010]. In the context of the present investigation the most influential work is “The effect of innovation on hotel market value” by Nicolau and Santa-Maria [2013a]. It refers directly to the impact of innovation on the market value of hotels. The overall results indicated a positive short-term stock market reaction to innovation announcements equalling 1,53% with process and marketing innovation having the highest positive effect. However the authors indicated the need for further investigation as their research relied on only 24 innovation announcements from 2 hotel companies [2013a].

Furthermore the early publication of Hall “Innovation and Market Value” [1998] delivered a firm background for studying the relationship between innovation and market value. Hall indicated that the market value of firms is related to their knowledge assets. The author specified that financial markets positively value R&D, investment and patents. New information on the company’s innovation activity causes a positive reaction even if it delivers hardly any specific details.

According to the author of the present book there have been no literature reviews concerning the relationship in the context of tourism or services. Capturing value from innovation in the tourism sector was referred to by Najda-Janoszka [2013] who built on the works of Pierce, Boerner and Teece [2002] and indicated the four crucial factors allowing the value to be captured: the imitability of innovation, the scope of legal protection of innovation, complementary assets and technologies, temporal advantage.

Even though it does not refer to tourism or services the literature review covering “characteristics of innovation and their consequence on market valuation” performed by Sorescu [2012] seems important in the context of the objectives of the present research. The characteristics included: stages of the innovation process, degree of innovativeness, and the place where innovation is generated [Sorescu 2012]. Sorescu evokes numerous ideas and their authors. Innovation needs to be understood as the process ranging from initial idea to product commercialization [Sood and Tellis 2009]. Moreover most researches proved a significant impact of innovation on market value on the two distinctive stages: early stage (e.g. R&D expenditures, patent outputs, preannouncements) and late stage (e.g. new product launches) [Greenhalgh and Rogers 2006; Sorescu and Spanjol 2008]. Furthermore, radical innovation impacts positively on the market value of equity but at the same time it significantly increases a firm’s risk.

Incremental innovation on the other hand impacts positively only on Tobin's q , and therefore it is necessary for the maintenance of normal profits but it is not a source of abnormal economic return [Srinivasan et al. 2009]. Moreover innovation may be generated in house, through technological alliances, obtained from acquired firms, developed with the help of suppliers, customers and other individuals unrelated to the firm [Sorescu and Spanjol 2008]. The relationship between open-innovation and revenues is an inverted U-shape (both searching for innovation too narrowly and too widely may be wrong) [Laursen and Salter 2006; Stam 2009].

The determinants of shareholder value created by innovation include: a firm's size and R&D and marketing activities, firm ownership and environmental factors [Sorescu 2012]. Firm size correlates positively with firm's net present value. However, as far as cumulative abnormal stock returns are concerned, small firms benefit the most [Blundell, Rachel and Van Reenen 1999; Sorescu, Chandy and Prabhu 2003; Lee and Chen 2009]. Marketing support (pre-launch research aiming at determining consumers needs and post-launch marketing campaign) and R&D intensity also relate positively to the impact of innovation on the market value [Curewitz 2009]. Besides, institutional investors are better prepared for handling risk than individual investors which encourages radical innovation in institutionally owned firms [Kochhar and David 1996]. Lastly, firms operating in less than fully competitive markets experience higher returns on innovation [Greenhalgh and Rogers 2006].

The value created by innovation is best reflected in the stock prices [Sorescu 2012]. It is due to the fact that the value of stock overcomes the problems concerning partial measures as earnings, Tobin's Q (vulnerable to accounting choices), consumer satisfaction and attitudes, etc. The announcement of innovation changes investor expectation of future cash flows and in consequence stock prices. That change represented the estimate of the NPV of all future cash flows associated with the innovation concerned. Also it reflects the entire effect that the innovation has on all other metrics (consumer attitudes, earnings etc.). Sorescu [2012] showed that the measure of abnormal returns is dynamic and is often employed to represent changes in market value of equity in event-studies concerning innovation. The short-term cumulative abnormal returns (CARs) were used by Sood and Tellis [2009] and Rao, Chandy and Prabhu [2003]. The long-term abnormal returns were employed: with the use of buy and hold abnormal returns (BHARs) by Sorescu, Chandy and Prabhu [2007], and with the use of calendar time portfolio abnormal returns by Chan, Lakonishok and Sougiannis [2001], and Sorescu, Shankar and Kushwaha [2007].

Furthermore the meta-analysis of the 28 studies (covering 28 individual regressions) on the market value of innovation by Balladrini et al. [2005] is in line with the objectives of the present research. The authors used R&D investment as a proxy for innovation. The relationship between R&D investment (or capital) and a firm's market value is positive. However there is a high degree of variability in the valuation in different industries and countries. The role of R&D in evaluating firm's innovation activities is partial. Patents and advertising posed important moderating roles. Besides, adding industry-level controls improve the specification of the relationship between R&D investment and market value. Balladrini et al. [2005] indicated that their sample covered mainly US-based studies which only allowed a division into US and non-US research and which made the results conclusive for the US market. They postulated that especially the European context is important due to the specific characteristics of the stock markets there [2005, p. 29].

Besides which no grey literature was found (not formally published) and consequently such publications are not reported here nor will they be included.

The scoping research permitted the identification of keywords for the main research. It was ascertained that a combination of keywords referring to: innovation, market value, tourism and services is in line with the aims of present research. Therefore four separate groups of keywords were created. The search terms presented below are the compilation of (1) the search terms observed in the literature revised in the process of the scoping research and (2) the search terms used in preliminary studies. Finally the search terms were specified as follows:

1. Referring to innovation: innovation, improvement, modernisation.
2. Referring to the market value: "market value", "firm value", "stock price".
3. Referring to tourism: tourism, hospitality, travel.
4. Referring to services: services, "service industry".

The scoping research resulted in the identification of five databases suitable from the point of view of present study. Due to their wide usage databases such as: Web of Science, JSTOR, Ebsco, Scopus and Scholar were selected¹³.

Despite some evidence in manufacturing or general context, scoping research indicated the research gap concerning the relation between innovation and market value in tourism and services. Therefore, the systematic literature study was performed. It focused on the impact of innovation on companies' market

¹³ Different aspects of the scoping research and the preliminary research were published in Szutowski [2014a; 2014b].

value in tourism and in services. Based on the scoping research, the main literature study's search strategy was formulated. In line with Booth, Papaioannou, and Sutton [2012] procedure consisted of four steps including search, appraisal (technical exclusion, substantial exclusion, inclusion), synthesis and analysis. The whole procedure is presented on the Figure 4.

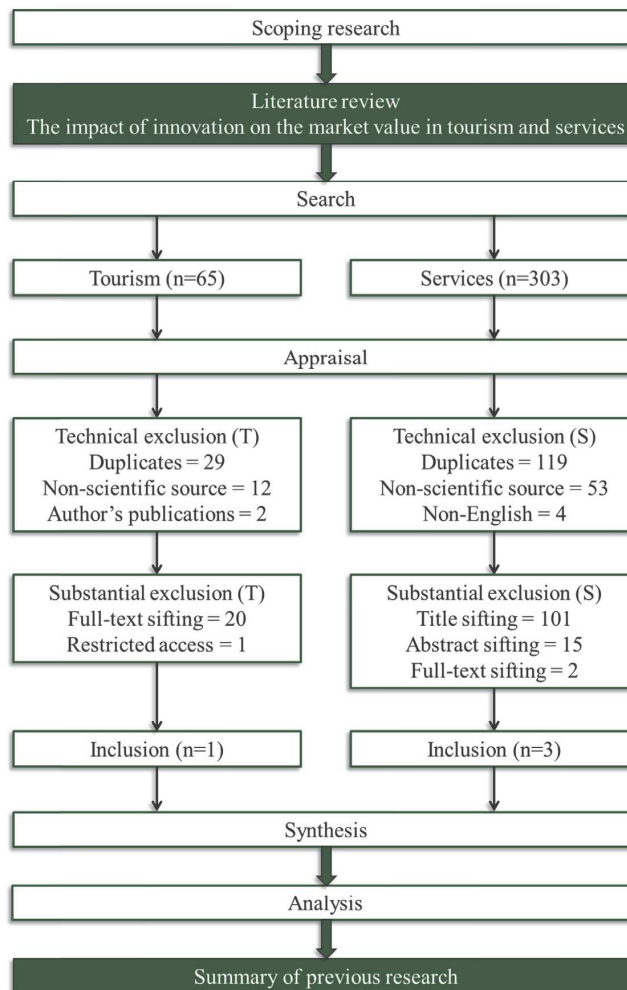


Figure 4. The strategy of literature studies

Source: own elaboration

As may be seen in Figure 4 the procedure relied on four steps preceded by scoping research. The final result of the systematic literature study was the synthesis of previous research on the relationship between innovation and the market value of tourism enterprises. In the context of tourism and services slightly different search terms were employed which identified 368 publications in total.

Search

Search is the first stage of the SALSA method employed in the literature study [Booth, Papaioannou and Sutton 2012]. In the present research the impact of innovation on market value was studied in the context of tourism and services. In the case of tourism every single search was performed as a combination of the three search terms presented above (referring to innovation, market value and tourism). In the case of services the search terms referred to innovation, market value and services. The search procedure was performed in five above databases. Therefore, in the case of tourism, a total of 135 independent searches were performed and in the case of services the number of independent searches was 90. First, the search terms were searched in publication titles. However this resulted in no papers. Therefore the research coverage was expanded according to the capabilities of particular databases to: articles' titles, abstracts and keywords (Scopus), abstracts and titles (Ebsco, JSTOR), titles and topics (Web of Science) and titles (Scholar). Both American and English spellings were covered.

In order to receive the most comprehensive view on the subject, the research covered scientific papers, conference proceedings and books. There were also no restrictions for the source at this stage (e.g. the inclusion of the Journal Citation Report (JCR) by Thomson Reuters). However in order to guarantee the timeliness of the publications a time restriction was set between January 2000 and December 2015 (inclusive).

The procedure resulted in 65 papers in the context of tourism and 303 in the context of services. The precise results disaggregated amongst different keyword combinations are presented in Appendix 1. The papers themselves were evaluated in the next step.

Appraisal

The appraisal stage is used to ensure the particular value that individual studies hold for the research [Booth, Papaioannou and Sutton 2012]. The procedure was itself divided into two main steps: exclusion and inclusion. The idea

behind the first was to eliminate the inappropriate publications from the point of view of present research. Inclusion aimed at adding to the set of papers studied the potentially important works omitted in the search procedure.

Exclusion consisted of pinpointing publications inappropriate from the point of view of current research. The publications were excluded for two main reasons – technical and substantial.

In the process of excluding papers due to technical reasons the papers published by non-scientific sources (popular science magazines and news) were excluded. In the context of tourism all the papers published in popular science journals and news ($n = 12$) were eliminated. The search results showed papers published by the author of the present thesis ($n = 2$). They reported the results of the preliminary studies and will not be included in the set of articles studied. In the context of services 53 non-scientific publications were eliminated. The process of elimination of duplicates resulted in the exclusion of 29 papers referring to tourism and 119 referring to services. In the context of services four publications in languages other than English (Spanish, Lithuanian, and French) were excluded. At this step 22 and 127 publications remained for tourism and services respectively.

A substantial exclusion in the context of tourism was performed based on the full texts of the remaining papers. It covered the elimination of all papers with no actual references to one of the three domains – innovation, market value and tourism ($n = 13$) or with no possible contribution to the present study due to the lack of conclusions on the relationship studied ($n = 7$). Moreover the access to one of the publications was restricted. The substantial exclusion in the context of services relied on three siftings: title sifting, abstract sifting and full-text sifting. In the first all titles were reviewed to eliminate publications which do not concentrate on the subject ($n = 101$). Therefore, after the title sifting, 26 papers remained. Abstract sifting relied on the study of publications' abstracts in order to eliminate inappropriate publications. Based on the abstracts 15 publications were eliminated (5 – manufacturing, 2 – no references to market value, 8 – no focus on innovation). The remaining 11 publications were assessed based on their full texts. In this step two publications were eliminated (1 – restricted access, 1 – no focus on innovation). At this step one publication remained in the context of tourism and nine in the context of services.

Inclusion consisted of the inclusion of publications important from the point of view of the current research but omitted in the previous steps. The

one step forward (with the use of a Scholar database) and backward snowballing procedures were performed [Jalali and Wohin 2012]. The backward snowballing consisted of a reference check of all the publications and resulted in 25 publications. The forward snowballing consisted of finding publications in which those selected in the literature study were quoted. It delivered one result important from the point of view of present research. First from the 26 publications found in the snowballing procedures, four duplicates were eliminated. Second abstract and full text sifting were applied. The procedure resulted in eliminating 18 publications (12 – were out of the time frame, 3 – no focus on innovation, 2 – focused on manufacturing, 1 – only in Chinese). Finally four publications were included as the result of the inclusion procedure. The number of publications remaining for further analysis were fourteen – two in the context of tourism and twelve in the context of services.

Synthesis

The papers remaining for the analysis were synthesised to deliver an overview of the approaches to the relationship studied. In order to deliver an overview of the relationship between innovation and market value a mapping review procedure was applied [Graham-Matheson et al. 2006]. The procedure relies on the precise attribution of codes to all publications studied. The key aspects of the studies are mapped using keywords and then presented in the form of a table. The key words were review-specific and developed for the present study. In all the papers the existence of the relationship between innovation and market value was demonstrated. The papers were synthesised in the form of two tables (covering tourism and covering services) containing the reference information and the information on the studied relation. Table 4 and Table 5.

Based on the synthesis step it may be concluded that the relationship between innovation and market value in tourism and services exists and is positive. However the numerous approaches and the non-compliance in the choice of variables indicate the need for further analysis which is important from the point of view of present research.

Table 4. The papers concentrating on the impact of innovation on market value in tourism

No	Author(s)	Year	Title	Relation	Sample	Time	Country
1	Nicolau and Santa-Maria	2013a	The effect of innovation on hotel market value	Positive, moderated by type	2 hotel companies listed in Spain – NH and Sol Mella. 24 announcements.	1996–2008	Spain
2	Zach, Krizaj and McTier	2015	The Value of Tourism Innovation: The Case of US Hotels	Negative in the case of new property openings	2 hotel companies listed in US. 131 announcements	2011–2013	US

Source: own sources

Table 5. The papers concentrating on the impact of innovation on market value in services

No	Author (s)	Year	Title	Relation	Sample	Time	Country
1	Chuang and Lin	2015	Co-creating e-service innovation: Theory, practice, and impact on firm performance	Positive, indirect relationship through cocreation	396 financial service firms	03.2013 – 10.2013	Taiwan
2	Nicolau and Santa-Maria	2013b	Communicating excellence in innovation	Positive relation moderated by growth, experience and service character	30 announcements of innovation awards	1994–2008	Spain
3	Son et al.	2011	Understanding the impact of IT service innovation on a firm's performance: The case of cloud computing	Positive relation moderated by size and service character	183 firm-level announcements regarding cloud computing	2005–2010	US
4	Khansa and Liginlal	2009	Has decreasing innovation hurt the stock price of information security firms? Time series analysis	Positive relationship driven by R&D intensity and patents	33 security software companies	1998–2008	US
5	Filson	2002	The impact of e-commerce strategies on a firm's value: Lessons from Amazon.com and its early competitors	Positive relationship moderated by the source of innovation (alliances and acquisitions)	328 events for Amazon.com, BarnesandNoble.com, CDNOW, N2K	1997–2001	US

6	Ho, Fang and Hsieh	2011	The relationship between business-model innovation and firm value: A dynamic perspective	Positive relationship moderated by high-tech/low-tech industry	2 companies: HTC (high tech) and 7-eleven Taiwan (low tech)	1997–2011; 1979–2011	Taiwan
7	Ehie and Olibe	2010	The effect of R&D investment on firm value: An examination of US manufacturing and service industries	Positive relationship driven non-linearly by R&D investment and moderated by firm size and industry concentration.	26,429 firm-years	1990–2007	US
8	Meng, Zhang and Wei	2015	Market value of innovation: An empirical analysis of China's stock market	Positive relationship moderated by debt to assets ratio, sales, asset turnover, degree of total leverage, assets to sales ratio, tradable shares and ratio of shares from top ten controlling shareholders.	1,455 firms	2003–2013	China
9	Ho, Keh and Ong	2005	The effect of R&D and advertising on firm value: an examination of manufacturing and non-manufacturing firms	No significant relationship	15,039 firm-years	1962–2001	US
10	Cho and Pucik	2005	Relationship between innovativeness, quality, growth, profitability and market value	Positive relationship mediated by increase in quality	Companies from the Fortune database	1999–2001	US
11	Dotzel, Shankar and Berry	2013	Service innovativeness and firm value	Positive relationship moderated by customer satisfaction, firm age, market size, market growth, operating margin and competitor innovation activities.	90 firms/9industries/1,049 innovations	2000–2004	US
12	Hall, Jaffe and Trajtenberg	2005	Market value and patents	Positive relationship moderated by R&D intensity, patent yield of R&D, and citations received by the patent.	4,864 firms, 3 million patents, 16 million citations	1963–1999 (P), 1975–1999 (C)	US

Source: own sources

Analysis

The comprehensive literature study covering both the impact of innovation on market value in tourism and the impact of innovation on the market value in services resulted in two publications in the context of tourism and twelve papers referring to services. In order to achieve the purpose of the analysis of the literature to determine the relationship between innovation and the market value of equity of tourism enterprises all the fourteen publications were analysed jointly. The analysis covered the main similarities and differences amongst the approaches to the relationship between innovation and market value. The meta-synthesis method was used here which follows the seven-step meta-ethnography approach by Noblit and Hare [1998] and Siau and Long [2005]. All the analysed articles were compared and merged with one another. The procedure resulted in the creation of a model representing the relationship between innovation and market value in tourism. The analysis stage will be described in the next section.

3.2. Linking innovation to the market value of tourism enterprises

In accordance with one of the purposes of the present research to create a model representing the relationship between innovation announcements and the market value of equity of tourism enterprises the analysis of the selected literature covered the indication of the predictors of the market value of equity. The procedure laid the ground for the synthesis of previous research and the inclusion of the author's propositions. Taxonomic analysis was employed and a three-item classification system was proposed [Onwuegbuzie, Leech and Collins 2012]. Based on the attributed keywords the whole set of variables used or indicated in the set of papers studied was divided into consistent groups. Content analysis and meta-synthesis were performed in order to indicate key variables and the commonalities and differences between them. All the papers found in the literature study were included in the meta-synthesis. It seems that in the context of the relation studied three distinctive groups of variables are important: innovation-level predictors, company-level innovation-related predictors and control variables.

3.2.1. Innovation-level variables

There were four publications which focused entirely or partially on the innovation-level analysis and its impact on market value. However it is important to notice that

it is in this group that the only two papers covering the tourism industry are placed. In order to identify innovation-level predictors of the relationship studied a content analysis of the four papers was performed. The data is provided in Table 6.

Table 6. Innovation-level variables

Authors	Variables	Use	Variable's proxy	Remarks
Nicolau and Santa-Maria [2013a]	Type	Used	Division into: product, process, organisational, marketing. Authors extracted also distribution innovation.	(1) Study performer in the tourism industry. (2) Classification adapted after OECD and Eurostat[2005].
	CSR	Proposed	–	
Zach, Krizaj and McTier [2015]	Type 1	Used	Division into: product, process, management, logistics, institutional	(1) Study performer in the tourism industry. (2) Adapted after Hjalager [2002].
	Type 2	Used	Division into: regular, niche, revolutionary, architectural	Adapted after Hjalager [2002], who in turn adapted it after Abernathy and Clark [1985].
	Type 3	Used	Division into: product, process, organisational, market	Adapted after Jacob et al. [2003], who in turn adapted it after Sundbo and Galouj [1998].
	Type 4	Used	Division into: product, process, delivery, organisation, market (and marketing)	Adapted after Volo [2006].
	Type 5	Used	Division into: product, process, marketing, organisational	Adapted after OECD and Eurostat [2005].
	Type 6	Used	Division into: product, process, market, institutional	Adapted after UNWTO [2002].
Khansa and Liginlal [2009]	Patent count	Used	–	The authors indicated also the worth of patent citations: „the extent to which patents are cited is an indication for their worth" [2009, p. 5].
Hall, Jaffe and Trajtenberg [2005]	Citations received by patent	Used	The ratio of citations to patent stocks	The authors did not concentrate directly on the innovation-level analysis but they recognised the importance of patent citations which may be attributed to this level.

Source: own sources

In the context of the impact of innovation on market value the division of innovation by type seems justifiable. Innovation may be divided using the classification of OECD and Eurostat [Nicolau and Santa Maria 2013a]. However

“the use of other taxonomies would offer a broader view in terms of academic perspectives (as it would permit the identification of the best explanatory classification) as well as in terms of management perspectives (as it would show decision-makers the best innovation types according to the taxonomy used)” [Nicolau and Santa Maria 2013a, p. 77]. At the same time distributional innovation appears to be a specificity of tourism [Nicolau and Santa Maria 2013a]. The importance of distribution in the context of tourism seems to be confirmed in the extant literature [Kachniewska 2014]. Furthermore, the importance of organisational changes in contemporary economics was emphasized as “innovations led to new types of management concepts and tools” [Nesterak 2012].

There are numerous taxonomies which may be used to code innovation announcements such as: Hjalager [2002], Jacob et al. [2003], Volo [2006], UNWTO Thesaurus on Tourism and Leisure Activities [UNWTO 2002] and the OECD and Eurostat Oslo Innovation Manual [2005]. All of the taxonomies were employed by Zach, Krizaj and McTier [2015] but the authors do not provide any details as to how precisely the attribution of codes was performed. The variables’ proxies and remarks presented in Table 6 stem from the direct analysis of the publications shown. It is worth noticing that the “Type 4” variable is based on the matrix of innovation types and dimensions of tourism experience which are: accessibility, affective transformation, convenience, value [Volo 2006]. The need for a dedicated classification of innovation for tourism seems to be supported.

In total there were seven different proxies for innovation type used in the previous research without indicating the superiority of any of them. Most of them concentrated on the subjective division but the “Type 2” variable included also the degree of novelty. Therefore it was concluded that a research gap concerning the types of innovation in tourism remains. In order to determine the appropriate classification a separate study of literature was conducted.

The examination of the different classifications of innovation in tourism was based on the systematic literature studies. Journal scope was limited to the journals included in Thomson Reuter’s Journal Citation Report, section “hospitality, leisure, sport and tourism”. The papers were synthesized using meta-synthesis following the steps of meta-ethnography approach. The innovation classifications delivered by the selected publications were translated by one another. It resulted in two distinctive approaches to type based on the: subject and degree of novelty¹⁴. The procedure is presented in Appendix 2.

¹⁴ The comprehensive research on the classification of innovation in tourism companies was published in Szutowski [2014b].

The result of the systematic literature studies is delivered on the Figure 5. The figure is composed of the two axes. The vertical axe covers the five types of innovation in tourism. The horizontal axe covers three degrees of novelty involved. Incremental innovation represents the minor improvements, the “new to the company” category stands for the novelties at the company level, and the radical innovation represents the innovation new to the market. The presentation of both classifications in one multidimensional framework constitutes a basis for precise analysis of innovation in tourism companies.

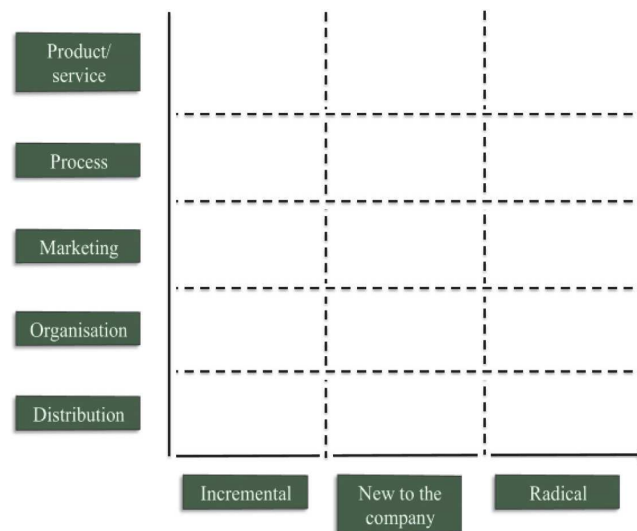


Figure 5. Multidimensional classification of innovation in tourism

Source: own development

It was ascertained that the subjective classification by type designed for tourism companies should encompass five types, defined as follows:

1. Product/service – new or significantly improved products and services e.g. components, user friendliness, functional characteristics, technical specifications, etc..
2. Process – new or significantly improved production method of goods or services e.g. equipment, software, techniques, etc..
3. Marketing – new or significantly improved marketing methods e.g. promotion, pricing, design, packaging, etc..

4. Organisation – new or significantly improved organisational methods including both internal organisational and external relations e.g. staff empowerment, job profiles, authority systems, collaborative structures, etc. and collaboration with research organizations, relationships with other firms and institutions, integration with suppliers, etc..
5. Distribution – new or significantly improved delivery methods, logistics, sales channels e.g. intermediaries, distribution channels, etc..

In the context of the present research it seems appropriate to recognise the importance of patents. The patent count may be used as a proxy of innovation. It may be used in the context of the whole service industry. The number of citations a patent obtains is a measure of its value [Khansa and Liginlal 2009]. However “substantial time is needed after a patent is granted to accumulate significant information about its citations. This means that citations-based analysis will never be usable for the evaluation of current or very recent innovations” [Hall, Jaffe and Trajtenberg 2005, p. 31]. Furthermore patents might be used as a proxy of innovative output. They indicate that patents are a rich data source for the study of innovation due to several reasons: patents deliver highly detailed information on innovation, the number of patents is significant and growing, the information is disclosed voluntarily. However one serious limitation of the use of patents as an innovation proxy may be denoted: “not all innovations are patented simply because not all inventions meet the patentability criteria and because the inventor has to make a strategic decision to patent as opposed to relying on secrecy or other means of appropriability” [Hall, Jaffe and Trajtenberg 2005 p. 5]. Furthermore authors state that “we have very little idea of the extent to which patents are representative of the wider universe of inventions since there is no systematic data about inventions that are not patented. This is an important, wide-open area for future research” [2005, p. 5].

In the papers studied the patent variable was not internally divided which means that no different types of patents were extracted in the analysis [Khansa and Liginlal 2009]. Therefore in the present research no typology of patents is introduced. In the simple approach the patented innovation will be compared with non-patented ones. In the context of tourism patents are often impractical which stems from the nature of the changes implemented. The reliance on technological advancements is growing but tourism companies are most often the users not the creators of these solutions.

In conclusion the analysis of the innovation-level predictors of the company's market value resulted in the identification of two variables: patent (patented/

not patented), type (product/service, process, marketing, organisation, distribution). The above variables will be included in the conceptual model presented in section 3.4.6. The model.

3.2.2. Firm-level variables

The variables used in the previous studies were different but interrelated. Thus a method of data integration was required. In order to identify key predictors and control variables a meta-synthesis was performed. The procedure allowed the synthesis and translation of studies.

All the publications included in the papers studied were related to some extent by their subjective scope. The information on the statistically significant firm-level variables and variables' proxies used in particular researches are presented in Table 7. In the present study the variables used in the selected publications were divided into the ones referring to innovation and control variables.

Table 7. Statistically significant variables reported in the articles studied

Author(s)	Variables	Proxies	Remarks
Nicolau and Santa-Maria [2013b]	Growth	Growth in turnover over the last three years	Significant (positive)
	Experience	Age	Significant (negative)
	Service character	Service/manufacturing character	Significant (positive) for "Experience x service" Insignificant for "Service"
Son et al. [2011]	Firm size	Distinction between large (S&P 500) and SME (S&P SmallCap 600 and S&P MidCap 400) based on the indices	Significant (higher in SME).
	Industry sector	Manufacturing/non-manufacturing sector	Significant (higher returns in non-manufacturing)
	Strategic intention	Operational efficiency which attempts to improve work productivity internally and strategic positioning which aims to enhance business capabilities in the market	Significant (internal higher in software; external higher in hardware).
Khansa and Liginlal [2009]	R&D intensity	Ratio of R&D spending to revenue	Significant (positive)
Filson [2002]	Alliances and acquisitions	Product Line Expansion through/ without alliances and acquisitions	Significant (strategies that do not involve acquisitions and alliances generate more value)

Author(s)	Variables	Proxies	Remarks
Ho, Fang and Hsieh [2011]	Business model	Incremental, radical	Significant (radical delivers higher returns)
	Target market	New, existing	Significant (new delivers higher returns)
Ehie and Olibe [2010]	R&D investment	Ratio of R&D expenditure to total net sales	Significant (positive)
	Size	Natural logarithm of a firm's total sales	Significant (negative)
Meng, Zhang and Wei [2015]	Debt to assets ratio	Debt to assets ratio	Significant (negative)
	Size	Sales	Significant (negative)
	Asset turnover	Asset turnover	Significant (positive)
	Degree of total leverage	Degree of total leverage	Significant (positive)
	Assets to sales ratio	Assets to sales ratio	Significant (negative)
	CSH	Ratio of shares from top ten controlling shareholders	Significant (positive)
	Tradable shares	Tradable shares	Significant (positive)
	Industry	Service industry/manufacturing industry	Significant (higher in service industry)
Cho and Pucik [2005]	Innovativeness	Innovativeness score ranking – Fortune	Significant (positive)
	Quality of products and services	Quality score from ranking – Fortune	Significant (mediation effect of quality existed in the relationship between innovativeness and market value)
	Growth	Growth in assets, revenues, and capitalisation	Significant (mediates the relation between innovativeness and market value)
Dotzel, Shankar and Berry [2013]	Customer satisfaction	American Customer Satisfaction Index as reported by the National Quality Research Centre (1–100)	Significant (positive)
	E-innovativeness,	Annual firm-level count of e-innovations (new-to-market e-innovations weighted twice relative to new-to-firm e-innovations)	Significant (positive)
	Firm size	Natural logarithm of firm's sales revenues	Significant (positive)
	Firm age	Natural logarithm of firm's age in years	Significant (negative)

	Market growth	Annual percentage growth in industry sales revenues	Significant (positive)
	Acquisitions	Annual firm-level count of acquisitions	Significant (positive)
	Operating margin	Ratio of net income before depreciation to sales revenues	Significant (positive)
	Competitor innovation activity	Ratio of annual incremental cumulative competitors' sales revenues to market size	Significant (negative)
	Market growth*utility	Market growth*utility	Significant (negative)
Hall, Jaffe and Trajtenberg [2005]	R&D intensity	The ratio of R&D stocks to the book value of assets	Significant (positive)
	Patent yield of R&D	The ratio of patent count stocks to R&D stocks	Significant (positive)
Chuang and Lin [2015]	E-service capability	Three items: technology, human and business	Significant (positive)
	Cooperation capability	Construct formed of 10 items	Significant (positive)
Ho, Keh and Ong [2005]	R&D intensity	Ratio of R&D spending to revenue	Significant (positive)
	R&D ²	Squared R&D intensity	Significant (negative)
	Size	Natural logarithm of market capitalisation	Significant (negative)

Source: own sources

Amongst all the literature ten papers reported 35 statistically significant firm-level variables important from the point of view of the present research. The variables were strongly diversified. Based on the meta-synthesis and analysis of the publications seven were pinpointed as crucial for the present research (two innovation-related and two control variables). R&D intensity and innovativeness were the only two innovation-related variables. They will be discussed in the next sub-section. Furthermore five control variables were continuously reported as crucial in previous research: size [e.g. Ehie and Olibe 2010], industry [e.g. Son et al. 2011], growth [e.g. Cho and Pucik 2005], experience [e.g. Dotzel, Shankar and Berry 2013] and degree of total leverage [e.g. Meng, Zhang and Wei 2015].

Firm-level innovation-related predictors

There are numerous firm-level variables important in the context of market value changes. However only a few refer to innovation. From the point of view of this research their extraction is of crucial importance. Table 8.

Table 8. Firm-level innovation-related predictors and their proxies

Variables	Proxies		
	1	2	3
R&D intensity	Ratio of R&D spending by the revenues [Khansa and Liginlal 2009]	Ratio of R&D expenditure to total net sales [Ehie and Olibe 2010]	Ratio of R&D stocks to the book value of assets [Hall, Jaffe and Trajtenberg 2005]
Innovativeness/ e-innovativeness	Innovativeness score ranking – Fortune [Cho and Pucik 2005]	Annual firm-level count of e-innovations (new-to-market e-innovations weighted twice relative to new-to-firm e-innovations) [Dotzel, Shankar and Berry 2013]	

Source: own elaboration

The company R&D intensity reflects the firm's expenditure on R&D. The ratio of R&D spending to sales revenues may be used as "this measure is better at capturing how intensive R&D activities are to meet demand. R&D intensity has been found to be a major determinant of firm market value" [Khansa and Liginlal 2009, p. 5]. Furthermore, the ratio of R&D expenditure to total net sales may be employed as "this is preferred to using absolute R&D investment level as it relates to firm size and may confound the relationship R&D investment has on the market performance of a firm" [Ehie and Olibe 2010, p. 130]. Also, the ratio of R&D stock to the book value of assets may be used [Hall, Jaffe and Trajtenberg 2005]. Based on the above examples it may be concluded that the ratio of R&D expenditure to total net sales is the best proxy of R&D intensity in the present research. It accounts for a company's size which in turn is important amongst the strongly diversified tourism enterprises.

The innovativeness of a company may stand for "the innovativeness score ranking" drawn from Fortune [Cho and Pucik 2005] and the annual firm-level count of e-innovations (new-to-market e-innovations weighted twice as much as new-to-firm e-innovations) [Dotzel, Shankar and Berry 2013]. It seems that in the case of present research employing the annual firm-level count of innovation

is more appropriate due to practical reasons (most tourism companies are not covered by such rankings). Thus this proxy will be employed. Contrary to the measure used by Dotzel, Shankar and Berry [2013], in this research all types of innovation will be equally important.

Control variables

There are numerous variables that impact on the changes in market value of equity. Their omission in the model results in transmitting their effect on the variables actually included in it. Such a phenomenon may cause a significant bias in the estimation of the parameters. Thus the selection and inclusion of control variables is a well-founded requirement. Control variables cover the firm-level innovation-unrelated variables. Table 9.

Table 9. Control variables and their proxies

Variables	Proxies			
	1	2	3	4
Size	Distinction between large (S&P 500) and SME (S&P SmallCap 600 and S&P MidCap 400) based on the indexes [Son et al. 2011]	Natural logarithm of a firm's total sales [Ehie and Olibe 2010]	Sales [Meng, Zhang and Wei 2015]	Natural logarithm of firm's sales revenues [Dotzel, Shankar and Berry 2013]
Industry	Service/manufacturing character [Nicolau and Santa-Maria 2013b]	Manufacturing/non-manufacturing sector [Son et al. 2011]	Proposed [Khansa and Liginlal 2009]	Proposed [Meng, Zhang and Wei 2015]
Growth	Growth in turnover over the last three years [Nicolau and Santa-Maria 2013b]	Growth in assets, revenues, and capitalisation [Cho and Pucik 2005]		
Operational experience	Age [Nicolau and Santa-Maria 2013b]	Natural logarithm of firm's age in years [Dotzel, Shankar and Berry 2013]		
Leverage	Degree of total leverage Meng, Zhang and Wei [2015]			

Source: own sources