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## Gospodarka turystyczna w regionie Przedsiębiorstwo. Samorząd. Współpraca

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**THE MODEL APPROACH TOWARDS MEASURING  
THE IMPACT OF INNOVATION  
ON TOURISM ENTERPRISES' MARKET VALUE<sup>1</sup>**

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PRZEDSIĘBIORSTW TURYSTYCZNYCH.  
UJĘCIE MODELOWE**

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**Summary:** The purpose of present paper was to explore the relationship between financial effects of innovation/stock price changes and theoretically related variables. The research was conducted in three countries – Poland, Italy and Sweden. It concentrated on listed tourism enterprises and relied on the event-study method. The data was analysed using the regression model. All the necessary evidence concerning innovation was gathered through ProQuest database, and the information on the tourism companies' market value through stock exchanges' databases. Based on the literature studies a set of eight variables differentiating the relation between innovation and market value was determined. The research revealed that organisational innovation generates a stronger impact on the market value than product innovation does. It also revealed that innovation signalled by a single announcement generates higher increase in market value than the one communicated through a series of releases. The limitations included the limited spacial scope. It was also not possible to verify the significance of two variables due to the insufficient number of observations. Increasing the geographical differentiation and expanding the sample seem beneficial for further research. The proposed model possesses practical applicability. It could support tourism companies' managers in the planning of innovation policies. The paper attempts to fulfil the research gap concerning the relation between innovation and the market value of tourism enterprises. The introduced model constitutes the main novelty.

**Keywords:** innovation, tourism enterprise, market value.

**Streszczenie:** Celem niniejszego opracowania było zmierzenie wpływu innowacji na wartość rynkową przedsiębiorstw turystycznych. Badanie zostało przeprowadzone w trzech krajach: w Polsce, we Włoszech i w Szwecji. Podmiotem badania były giełdowe przedsiębiorstwa turystyczne, wykorzystano metodę analizy zdarzeń. Dane analizowano przy wykorzystaniu modelu regresyjnego. Informacje o innowacjach pochodziły z bazy danych ProQuest, dane doty-

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czące wartości rynkowej z baz danych poszczególnych giełd kapitałowych. Na podstawie studiów literaturowych wskazano osiem zmiennych, które determinują zależność pomiędzy innowacjami i wartością rynkową przedsiębiorstw turystycznych. Wyniki wskazują, iż innowacje organizacyjne wpływają na wartość rynkową silniej niż innowacje produktowe. Ustalono ponadto, iż wyższy ponadprzeciętny zwrot generują innowacje komunikowane poprzez pojedyncze ogłoszenie niż te, dla których ukazało się dwa lub więcej ogłoszeń. Ograniczeniem badań był wąski zakres przestrzenny. Ponadto nie zweryfikowano istotności dwóch zmiennych ze względu na zbyt małą liczbę obserwacji. Istotnym dla dalszych dociekań naukowych byłoby rozszerzenie zakresu przestrzennego i zwiększenie liczby obserwacji. Zaproponowany model posiada implikacje praktyczne. Może być wskazówką dla menedżerów planujących politykę innowacyjną i informacyjną przedsiębiorstw turystycznych. Badanie jest próbą wypełnienia luki poznawczej dotyczącej zależności pomiędzy innowacjami i wartością rynkową przedsiębiorstwa turystycznego. Zaproponowany model stanowi główną wartość dodaną.

**Słowa kluczowe:** innowacje, przedsiębiorstwo turystyczne, wartość rynkowa.

## 1. Introduction

Tourism is one of the main contributors to the European Union's economy. It represents directly 3,1% of the gross domestic product (GDP), however as far as the indirect and induced effects are concerned its contribution to the GDP grows to almost 9% [WTTC 2014]. According to the forecasts, its role will increase constantly during the following years [WTTC 2014]. Such a situation results in the increase in competition between entities operating in the tourism industry, which in turn results in the increase in innovation in companies seeking for competitive advantages.

The overall effect of innovation on the enterprise is presumed to be positive [Nicolau, Santa Maria 2013]. However, it can vary considerably from one innovation to another due to its heterogeneous nature [Khan, Khan 2009]. At the same time, the best measure of innovation's effects seems to be company's value, which for public companies is reflected through stock prices [Damodaran 2001]. Nevertheless, the scientific discussion on the effects of innovation on the market value of tourism enterprises is scarce and the important research gap exists [Hjalager 2010]. Therefore, the purpose of present research is to explore the relationship between financial effects of innovation/stock price changes and theoretically related variables.

The research was performed on the data from three countries: Sweden, Italy and Poland due to the strong differentiation in the overall innovative activity in these countries. The sample covered the tourism enterprises listed on the main markets of primary stock exchanges. The innovation was represented by publicly available announcements. In order to measure the abnormal returns resulting from innovation the event-study method was employed. The results were analysed and explained through the author's regression model.

The first result of the research stems from the literature studies, which allowed the identification of eight variables determining the relation between innovation and

tourism enterprise's market value. The results of the empirical research revealed that organisational innovation generated stronger impact on the market value than product one. Also the research revealed that innovation signalled by a single announcement generated a higher increase in market value than the one communicated through a series of releases.

The present paper is organised as follows: the literature review presents the variables determining the relation between innovation and tourism company's market value, the method section is dedicated to the description of the research and the data analysis including author's regression formula and the results section presents the estimation of the regression model. The article terminates with the discussion and conclusions.

## 2. Literature review

There is a complex relation between innovation and tourism company's market value. As a result, different innovations influence the market value differently in different conditions. In order to indicate a set of variables determining the relation a systematic literature study with the use of SALSA (Search, Appraisal, Synthesis, Analysis) approach was performed [Booth, Papaioannou, Sutton 2012].

The analysis of abstracts of 72 publications issued between 1999 and 2013 and the precise content analysis of the 29 best fitting the subject allowed to extract 52 factors influencing the studied relation, which in turn were unified into solid groups. The groups and the number of articles referring to it are presented in Table 1.

**Table 1.** Factors affecting the relations between innovation and value of tourism enterprises

Innovation characteristics	Number of papers	Company characteristics	Number of papers
Commercialisation	16	Potential of development	29
Newness	14	Potential of commercialisation	11
Strategy	10		
Orientation	10		
Type	4		

Source: own research.

The description and coding of the features contained in Table 1 is presented below.

### A. Innovation characteristics

1. Commercialisation – potential of successful commercialisation. In present research it was coded as supported (if a company supports innovation e.g. with a marketing campaign) or not supported.

2. Newness – the degree of novelty involved. In present research it was coded as innovation new to the market or new to the company.

3. Strategy – being an outcome of company’s strategy. It was coded as innovation consistent with company’s strategy or unexpected one.

4. Orientation – targeting on consumers. It was coded as market oriented (aiming at the final consumer) or other innovation.

5. Type – classification used in present project was in line with Szutowski [2014] and covered such innovation types as: product/service, process, marketing, organisational, distributional, and institutional.

#### B. Company characteristics

1. Potential of development – firm ability to develop innovation.

2. Potential to commercialise – firm capability to benefit from innovation.

In present research the two variables will be replaced with a single one “experience” and coded as the number of successful developments within a year in the case of innovation development preannouncements and the number of successful implementations within a year in the case of its commercialisation announcement.

The systematic literature studies were supplemented by additional research, which led to the introduction of the communication variable. It is especially important if after releasing the initial information a company updates it [Sorescu, Shankar, Kushwaha 2007]. In such a case, investors remain up-to-date which diminishes the risk factor. In present research the communication variable was coded as the number of releases on a particular innovation.

Also, the innovation was analysed in two stages – development and commercialisation. The development stage was defined as: “project initiation, progress, and other events that imply a project has not yet reached a successful outcome” [Kelm, Narayanan, Pinches 1995, p. 771]. The commercialisation stage begins with the introduction of innovation [Kelm, Narayanan, Pinches 1995] and finishes when investors fully incorporate the information on innovation in the stock prices. Therefore, the coding of the stage is either under development or after commercialisation.

### 3. Method

In the present research the assumption of market efficiency is slightly modified. The current research implies that investors’ reactions are not immediate [Brav, Heaton 2002] and as Fama and French [2007] state single investors can overvalue or undervalue assets (market remains efficient as it averages the reactions). Previous research [Szutowski, Bednarska 2014] implied that innovation produced the highest average cumulated abnormal return (ACAR) in the period from 10 days before the event to 10 days following it (jointly 21 days as the event day is placed in the middle). Therefore, in the present research it is assumed that investors react to both public and private information in the period of 21 days surrounding the event. Such an approach allows the introduction of event-study method.

The event-study method is used to measure financial effects of unanticipated events and it allows assessing whether there are abnormal stock price changes

associated with them [McWilliams, Siegel 1997]. In the present research the innovation announcement and preannouncements made by the tourism enterprises represented the events. The cumulated abnormal returns (CARs) were calculated as the difference between actual ones and the three-factor Fama and French model [Fama, French 1993] estimation. The CARs were calculated for the period from 10 days before the event to 10 days after it. The average CAR constituted the independent variable of the regression.

The spacial scope of the research encompassed three countries: Sweden, Italy and Poland due to their differentiated innovative capabilities [European Commission 2014]. The research was performed on the data of tourism companies listed on the main markets of the primary stock exchanges in the period from 2007 to 2014.

All the necessary information concerning innovation was gathered through ProQuest database and all the data on the market value through the stock exchanges databases.

Initially the regression model included a series of quantitative and qualitative variables. The first ones were: communication and experience represented by natural numbers. The qualitative variables were mostly binary ones: commercialisation, newness, strategy, orientation and stage. The last qualitative variable – type had multiple categories.

In order to incorporate the last qualitative variable a series of binary ones was introduced [Górecki 2010]. For the qualitative variable with  $m$  categories,  $m-1$  binary variables were used. Thus one of the categories was voluntarily missed. It was called the category of reference. In the present research the category of reference for type variable was product innovation (also: the institutional innovations did not occur in the sample).

The two variables – newness and strategy were excluded from the model due to their zero variance. The studied innovation was neither new to the market, nor unexpected. The final form of the regression model took a form of the equation:

$$y = \beta_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \varepsilon$$

where:  $x_1 - 1$

$x_2$  – commercialisation

$x_3$  – orientation

$x_4$  – type (process)

$x_5$  – type (marketing)

$x_6$  – type (organisation)

$x_7$  – type (distribution)

$x_8$  – communication

$x_9$  – experience

$x_{10}$  – stage

$\varepsilon$  – error term

Such a model allowed to measure the effects of innovation on the market value of tourism enterprises and to measure the impact of the variables influencing the studied relation.

#### 4. Results

The results were derived from 58 observations (innovation announcements released by 13 studied companies). The average cumulative abnormal return (independent variable) for the period of 21 days surrounding the event equalled 2,27%.

The regression model allowed explaining 27% of the variance. The  $R^2$  equalled 0,27045;  $F(9, 48) = 1,977$ ,  $p = 0,063$ . At the same time adjusted  $R^2$  was significantly lower and equalled 0,137. Still,  $R^2$  seems a better measure due to the high number of degrees of freedom that equalled 48.

The regression coefficients ( $\beta$ s), the standard errors,  $t$ -statistic and  $p$ -level were calculated. All the data is reported in Table 2.

**Table 2.** Regression coefficients

	Coefficients	Standard Error	$t$ Stat	$p$ -level
Intercept ( $X_1$ )	-1,138	3,521	-0,323	0,748
Commercialisation	4,162	2,553	1,630	0,110
Orientation	0,531	2,457	0,216	0,830
Type (process)	1,666	3,587	0,465	0,644
Type (marketing)	3,560	3,719	0,957	0,343
Type (organisation)	7,303	3,173	2,302	0,026**
Type (distribution)	5,320	3,244	1,640	0,108
Communication	-2,884	1,592	-1,812	0,076*
Experience	-0,243	0,532	-0,456	0,650
Stage	-1,343	2,511	-0,535	0,595

\*\* prob. < 0,05; prob. < 0,1

Source: own research.

Among all the variables one was statistically significant at the 0,05 level and one at the 0,1 level. The organisational innovation produced the abnormal returns more than seven times higher than product innovation (reference category). On the other hand, the innovation communicated to investors by several releases generated the abnormal returns which were almost three times lower than those generated by innovation signalled through a single one. Also the commercialisation and type (distribution) variables are worth mentioning. The innovation that was actively supported generated the abnormal returns four times higher than the non-supported one. However, such a difference was statistically significant only at the 0,110 level.

The distribution innovation generated the abnormal return five times greater than the product one. Such a result was statistically significant at the 0,108 level.

All the other variables were proven not to have the statistically significant impact on the studied relation. Nonetheless the insignificant variables were not removed from the equation. The estimators of least-squares regressions are biased due to omitting important variables. However, the addition of insignificant ones does not make the estimators to be biased [Górecki 2010]. Therefore, all variables suggested in the innovation theory were included. The conclusion can be drawn that in their case the sample did not confirm the theory.

## 5. Discussion and conclusions

The research aimed at measuring the impact of innovation on the market value of tourism enterprises. The survey was performed on the data from three countries: Poland, Italy and Sweden during from the period of 2007-2014. The subjective scope encompassed public tourism companies. The average cumulative abnormal return generated by innovation equalled 2,27%. The regression model explained 27% of the variance of ACAR.

Among the 8 variables, 2 could not be measured (newness and strategy). Organizational innovation produced significantly higher ACAR than the product one (category of reference). Such a result is inconsistent with the research of Nicolau and Santa-Maria [2013], who state no statistically significant difference between the impact of product and organisational innovations on the market value (authors used different classification of innovation based on their five types). Present research also revealed that the innovation signalled by a series of announcements produced the significantly smaller ACAR than the one communicated by a single release. It is contrary to the research of Sorescu, Shankar, Kushwaha [2007], which stated the opposite (the research was conducted in the software and hardware industries). Other variables included in the regression model were not statistically significant, thus did not confirm the theory of innovation.

The main research limitations included a small sample and modest geographical differentiation. Due to these facts the significance of two of the variables was not verified and the results could not be generalized. The author's regression model requires further investigation. It seems beneficial to conduct it on the increased sample. Practical implications of the research cover the identification of variables important in planning company's innovation and information policies by managers. The results indicate that the management should remain cost effective, as the organisational innovation (which does not entail high R&D costs) seems more appreciated by the investors than the product innovation. Also, the results encourage managers to maintain high workload efficiency, as only the first announcement effort seems beneficial. The research attempts to fulfil the research gap on the impact of innovation on the market value of tourism enterprises.

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