

Empirical model of factors influencing market success of innovations in Hungarian context

Analysis of factors influencing market success of corporate innovations is a popular topic both in the international and the Hungarian literature. Identification of drivers of new product success and analysis of their relations are very critical for the companies to be successful in their core markets. It is agreed in the literature that firm strategy characteristics, firm process characteristics and product characteristics all influence market success. Our main objective was to develop an innovation model integrating the structural and process elements influencing market success of innovations. We empirically tested our model by SEM and found that market success of innovations was highly determined by product characteristics, but it was also significantly, but to a lesser extent, influenced by process characteristics and the firm strategy.

Keywords: innovation, SEM, market success, Hungary

Track: Marketing in Emerging and Transition Economies

1. Introduction, research problem

Innovation is one of the most important factors in market success. In the literature there is an abundance of proofs of the above statement. Cooper and Edgett (2009) stated that "CEOs continue to rate innovation capability as a critical driver for their future business success as they focus on increasing profitability and growth ... and only one product concept out of seven becomes a new product winner; on average 44 percent of businesses' product development projects fail to achieve their profit targets; and half of all new product launches are late to market.". Evanschitzky, Eisend, Calantone and Jiang (2012) found that assessing factors that predict new-product success holds critical importance for companies, as research shows that despite considerable new-product investment, success rates are generally below 25%.". The positive relationship between marketing and innovation is underlined by Drucker (2008) who wrote that "Because the purpose of business is to create a customer, the business enterprise has two--and only two--basic functions: marketing and innovation. Marketing and innovation produce results; all the rest are costs. Marketing is the distinguishing, unique function of the business." Henard and Szymanski (2001) collected 24 drivers of successful new product launches by meta-analysis of the literature of innovation success. However, they did not develop a model of market success of innovation, which is missing in the Hungarian literature, too.

2. Research aim

Our most important research objectives were to create the empirical model of factors influencing corporate innovation on the basis of the related literature and our own previous experiences, to identify the relationships among the elements of the model and to empirically test our hypothetic model. Obviously these aims could have only been achieved after identifying the variables that could be the success factors of innovation and the logical relationship among them. In addition, we wished to explore those factors, dimensions that influence the market success of innovation in Hungary to the largest extent.

3. Conceptualization and operationalization

Henard and Szymanski (2001) identified four dimensions of the drivers of new product success after conducting a meta-analysis of the new product performance literature. They stated that "Of the 24 predictors of new product performance investigated, product advantage, market potential, meeting customer needs, predevelopment task proficiencies, and dedicated resources, on average, have the most significant impact on new product performance." They grouped the driver variables into 4 dimensions entitled product characteristics, firm strategy characteristics, firm process characteristics and marketplace characteristics. Product characteristics is made up of 5 variables: product advantages, product meets customer needs, product price, product technological sophistication and product innovativeness, whereas firm strategy characteristics include marketing synergy, technological synergy, order of entry, dedicated human resources and dedicated R&D resources. Firm process characteristics can be described as a function of structured approach, predevelopment task proficiency, marketing task proficiency, technological proficiency, launch proficiency, reduced cycle time, market orientation, customer input, cross-functional integration, cross-functional communication and senior management support. Last but not least, likelihood of competitive response,

competitive response intensity and market potential are considered as variables of marketplace characteristics.

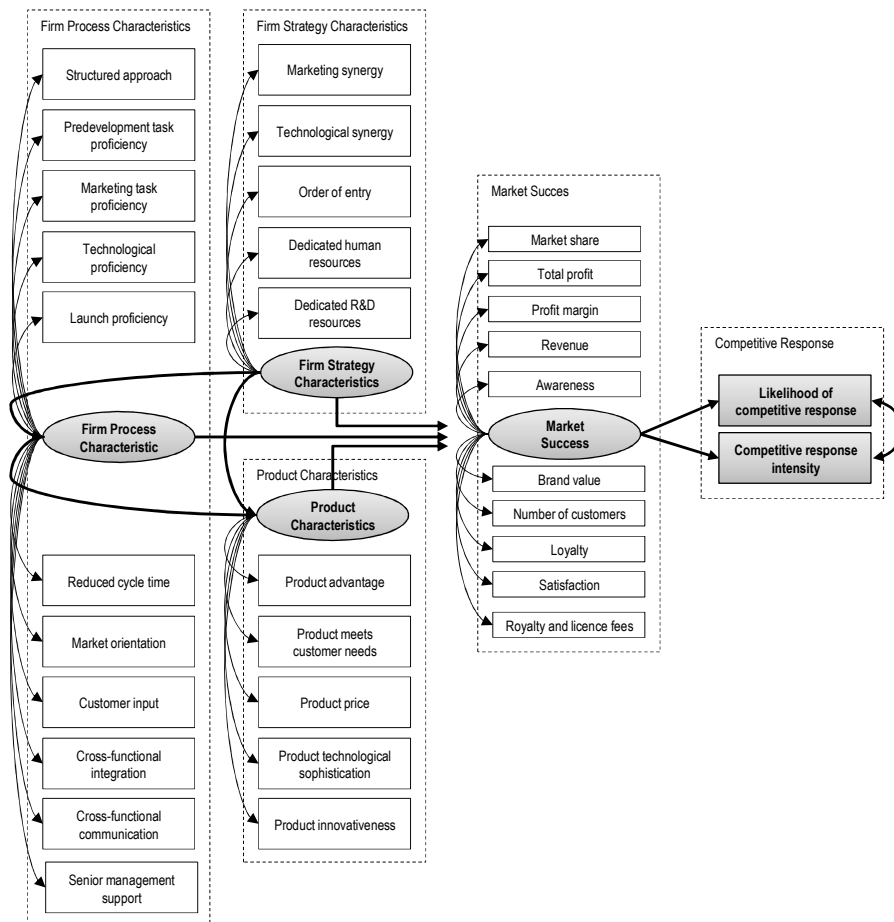


Figure 1 Hypothetic model of factors influencing market success of corporate innovation

The theories presented above were used to set up the hypothetic model of factors influencing market success of corporate innovation (see Figure 1.). In the model by strategic firm characteristics we mean the following variables: marketing synergy, technological synergy, order of entry, dedicated human resources and dedicated R&D resources. Firm process characteristic dimension contains 11 measurement variables. These are the followings in order: structured approach, predevelopment task proficiency, marketing task proficiency, technological proficiency, launch proficiency, reduced cycle time, market orientation, customer input, cross-functional integration, cross-functional communication, senior management support. We assume that firm strategic characteristics have direct impact on process characteristics, which, by their impact on product characteristics have indirect effect on market success of innovation. Besides, we also assume that strategic characteristics, process characteristics and product characteristics also have direct impact on the market success of innovation. Product characteristic dimension is made up by product advantage, meeting consumer needs, product price, technological sophistication, product innovativeness variables. In our model market success of innovation can be described as a function of ten variables namely market share growth, total profit growth, profit margin increase, growing revenue, increasing customer awareness, increasing brand value, growing customer loyalty, growing customer satisfaction, increasing royalty and license fees. Furthermore we also assume, that market success of innovation can also evoke competitors' intensive reaction, that is, the more successful a new product is, the stronger the competitors react after launching it.

That was measured by the number of competitors' reaction and their intensity. In cases of certain variables their meaning and operationalization is summarized by the table below.

Table 1 Operationalization of model variables

Variables	Operationalization
Product Characteristics	
Product advantage	How do you consider the competitiveness of your product compared to the main competitor? 1=Not better at all, 2=Not better, 3=Better and not better at the same time, alike, 4=Better, 5=Much better
Product meets customer needs	How much is your product able to satisfy customer needs? 1=Not at all, 2=Not able to in a good way, 3=Able to and not able to at the same time, average, 4=Able to in a good way, 5=Expressly able to
Product price	How do you consider the value for money of your product? 1=Not good at all, 2=Not good, 3=Good and not good at the same time, average, 4=Good, 5=The best available in the market
Product technological sophistication	How do you consider the technological sophistication and the level of development of your product? 1=Not good at all, 2=Not good, 3=Good and not at the same time, average, 4=Good, 5=Better than any of the competitors"
Product innovativeness	How do you consider the innovativeness of your product? 1=Not innovative at all, 2=Not innovative, copied, 3=Average, only innovative for our company, 4=Among the latest innovative ones, 5=Outstanding, precedes competitors
Firm Strategy Characteristics	
Marketing synergy	Does your firm have those marketing abilities that are essential for the market success of a new product, performance? 1=Not at all, 2=No, 3=Partly, 4=Mostly yes, 5=We have all the marketing abilities needed
Technological synergy	Does your firm have those technological, manufacturing abilities that are essential for the market success of a new product? 1=Not at all, 2=No, 3=Partly, 4=Mostly yes, 5=We have all the technological abilities needed
Order of entry	How do you consider the order entry of your new products? 1=Not suitable at all, 2=Not suitable, 3=Partly suitable, 4=Mostly suitable, 5=Entry was always at the best time
Dedicated human resources	Does your company have the essential human resource for R&D activities? 1=Not at all, 2=No, 3=Partly, 4=Mostly yes, 5=We have all the human resources needed
Dedicated R&D resources	Have your company the essential R&D resources for developing your products, processes? 1=Not at all, 2=No, 3=Partly, 4=Mostly yes, 5=We have all the R&D resources needed.
Firm Process Characteristics	
Structured approach	How was formalized product developmental process typical for your firm in this case? 1=We did not have like this, 2=There were coordinations , 3=It was common but not planned, 4=It was organised but not effective, 5=It was a planned, formalized developmental process
Predevelopment task proficiency	Did you generate product ideas consciously with the participation of the staff within the company, for example with brainstorming or other technique? 0=No, 1=Yes, but it was not effective, ..., 5=Yes, it was professionally well organised
Marketing task proficiency	Did you have marketing/market research during the product developmental process? 0=No, 1=It was not correct professionally, ..., 5=It was professionally thorough research Was concrete marketing conception made before starting product development (what the product should be like, to which market, for which customer, with what kind of positioning)? 0=No, 1=Yes, but it was not professionally established, ..., 5=Professionally established, fixed in written form Were there preliminary calculations regarding rate of return before starting R&D? 0=No, 1= Yes, but it was not professionally established, ..., 5= Professionally established, fixed in written form
Technological proficiency	What kind of R&D activity is typical for your firm during innovation? (Multiple response) 1= Have own R&D activity, 2= We give R&D assignments to other companies, organizations, 3= We buy R&D results and licences
Launch proficiency	Was marketing strategy, market entry program made for launching a new product? 0=No, 1= Yes, but it was not professionally established, ..., 5= Professionally established, fixed in written form
Reduced cycle time	Was market entry timing of the new product consciously pre-planned? 0=No, 1= Yes, but it was not professionally established, ..., 5= Professionally established, fixed in written form
Market orientation	Did the continuous implementation, application of the competitors' analysis happen into the product developmental process? 0=No, 1=Yes, but accidentally, ..., 5=Yes, in a conscious, planned way
Customer input	Do you implement customer (target segments) opinion directly into the product developmental process, in its full phase? 0=No, 1=Yes, but accidentally, ..., 5=Yes, in a conscious, planned way

Cross-functional integration	Who participated in the innovation, product developmental process? (multiple response) 1=R&D organisation, staff, 2=Marketing organisation, staff, 3=Sales organisation, staff, 4=Human resources, staff, 5=Production, manufacturing organisation, staff, 6=Logistic organisation, staff, 7=Customer service organisation, staff, 8=Financial/economic organisation, staff
Cross-functional communication	What kind of regularity is characteristic for the cooperation among the organisational units during the process? 1=Disorganised, ad hoc 2=Occasionally, 3=Medium frequency, 4=Frequent, 5=Regular, intense cooperation
Senior management support	What role did the top management of the firm play in the product developmental process? 1=Was not active or supportive, ..., 5=Very active and supportive
Market Success	What was characteristic for the factors below after the market entry of the new product compared to the other products of the company? 1=Significantly lower 2=Lower, 3=Same can be observed as in the other markets, 4=Higher, 5=Significantly higher
Market share	Market share growth
Total profit	Total profit growth
Profit margin	Profit-margin growth
Revenue	Revenue growth
Awareness	Awareness growth
Brand value	Brand value increase
Loyalty	Increase in customer number
Satisfaction	Growing customer loyalty
Royalty and licence fees	Growing customer satisfaction
Competitive Response	Revenue growth from royalty and license fees
Likelihood of competitive response	How did you consider competitors' reaction after the market entry of the new product? 1=Did not react at all, 2=Negligible portion of the competitors reacted, 3>About 50% of the competitors reacted, 4=Majority of the competitors reacted, 5=Every competitor reacted
Competitive response intensity	All in all what was the intensity of the competitors' reaction like after the market entry of the new product 1=Very weak, 2=Weaker than average, 3=Average, 4=Stronger than the average, 5=Significantly stronger than the average

4. Data collection and analysis

In order to test the hypothetical model, a survey- supported by a questionnaire - was carried out. This model was chosen because its application is very simple, the data collected are responsible and the respondents are restricted to give pre-determined alternatives. Pre-recorded answers reduce diversity caused by respondents and data coding, analysis and interpreting is relatively simple. The population of the sample was made up by companies having R&D activities operating in Hungary. Population size was 1774 companies. Sample frame assigned to population size of the research was provided by the R&D register of the Hungarian Central Statistical Office. The confidence level of the total sample is 95 per cent, its sampling error is $\pm 9,8$ per cent.

Data collection was carried out with telephone interviewing by experienced interviewers prepared for this aim. We carried out univariate, more simple analyses on the sample: frequency tables, means, crosstabs, variance, correlation. Analysis was carried out by Microsoft Excel and AMOS software.

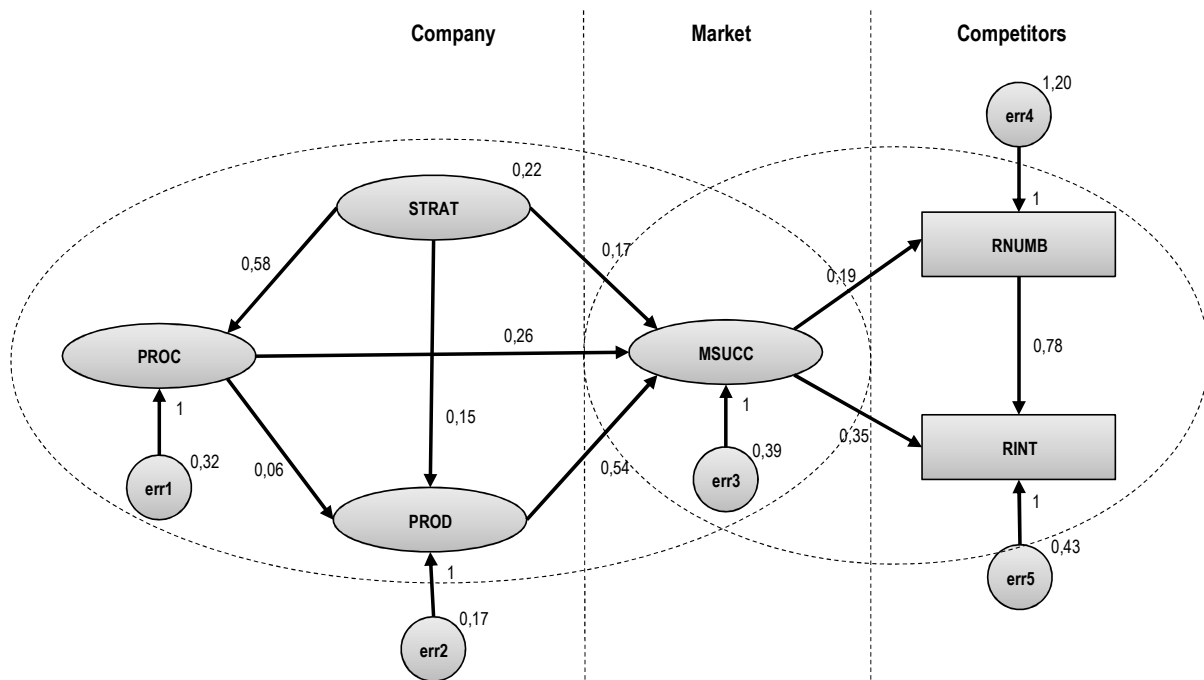


Figure 2The empirical model of factors influencing market success of corporate innovation

5. Research results

Hypothetic model was tested by AMOS, in which six variables were defined. Four of them were latent variables: firm strategy (STRAT), firm process (PROC), product characteristics (PROD) and market success (MSUCC). Furthermore two manifest variables were in the model: reaction number by competitors (RNUB) and intensity.

According to the results it can be stated, that quality, standard of innovation and product developmental process are determined significantly (RW, Regression Weight=0,578; P=0,000) by firm strategy characteristics, as well as marketing and technological synergy and dedicated human and R&D resources. Firm process and strategy characteristics also have impact on product characteristics, although these effects are not so strong (in case of process: R.W.=0,61, in case of strategy: R.W.=0,151). In our model market success is determined by three factor groups (strategy, process and product characteristics) and on the basis of the results it can be stated that product characteristics have the biggest impact (R.W.=0,54), while strategy and process characteristics have much less (in case of process R.W.=0,256, in case of strategy R.W.=0,170).

From our further analyses it is clear that market success of the firm has influence on the number of competitors' reaction (R.W.=0,193) and intensity (R.W.=0,350) but at the same time the number of reactions also influence reaction intensity to a large extent (R.W.=0,782). This is the strongest and certainly significant relationship during the model testing. Model testing would not be complete without analysing the responsibility of the model. Results prove that our model is valid: (CMIN) P=0,062; CMIN/DF=1,997; GFI=0,939; AGFI=0,785; TLI=0,833; CFI=0,933; RMSEA=0,132.

6. Conclusion

On the basis of our empirical analysis it can be stated that for the sake of successful innovation, coordinating firm strategy characteristics and process characteristics is extremely important because strategy characteristics have very strong influence on process characteristics. However it is more important to optimise product characteristics that are determined by product advantage, meeting customer needs, competitive price, product technological sophistication and product innovativeness, as these variables have the strongest direct influence on the market success of innovation. If we would like to achieve market success with innovation, optimization of product characteristics is insufficient because process characteristics and strategic characteristics also have direct impact on market success, although this influence is much weaker than at product characteristics, but their effects are not negligible at all. Therefore to achieve market success, the optimisation of all the three factor groups is needed. Certainly, successful innovation – proving our assumption- cause strong reactions from the competitors that are signalled by the growth of reaction numbers and their growing intensity.

7. Literature

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