ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS

Volume LIX 46 Number 4, 2011

# RESEARCH RESULTS IN THE FIELD OF INFORMATION SUPPORT FOR INNOVATION ACTIVITIES

O. Žižlavský, P. Šmakalová

**Received: March 15, 2011**

**Abstract**

ŽIŽLAVSKÝ, O., ŠMAKALOVÁ, P.: *Research results in the field of information support for innovation activities.* Acta univ. agric. et silvic. Mendel. Brun., 2011, LIX, No. 4, pp. 387–398

The paper deals with an actual issue focused on one of the world wide problem – effective development of an innovation process in the company. Just innovation is deemed as an essential part of company's efficiency and its development with an impact on overall performance and competitiveness. The purpose of this paper is to present and discuss knowledge and findings of original primary research into South-Moravian companies within two projects of Internal Grant Agency Faculty of Business and Management Brno University of Technology, which were conducted in 2009 and 2010. For this analysis a questionnaire survey was used – the results of the primary research reflect innovative activities from the top managers' point of view. The scientific aim of the paper is to gain knowledge and analyse the present status of innovative activities as it pertains to Czech and foreign professional literature and in the Czech business environment. Authors proved with help of questionnaire survey that many companies still neglect information support of their innovation activities although given the importance of innovation as an engine of growth. Moreover, as shown by the primary research, the majority of companies lack a sophisticated marketing information system, modelling and analysis of the future market, analyses of customers, their behaviour and unsaid needs, definition of price strategies, and analysis of new expansion areas. These findings are not affirmative for our business environment.

innovation, research, marketing, competitiveness

In his work, a prominent Czech expert on innovations, Valenta (2001), reached the conclusion that current tougher and tougher competition, globalization of production and markets, as well as implementation of new technologies mean that the success of businesses is dependent on effectiveness and intensity of innovation activities. Innovation is a process that is created via interactions between various actors, e.g. Dolourex (2004) and represents an important element of a company's future success. Tidd, Bessant and Pavitt (2007) warn that innovation is more than just an idea or thought. It is bringing an idea to life. Currently, innovation is considered a decisive condition of a company's competitive advantage. This is stressed by prominent domestic, as well as foreign experts; e.g. Kislingerová (2008), Košturiak and Chál' (2008), Hamel and Green (2007) or Skarzynski and Gibson (2008). The course of the fading economic crisis that negatively impacted operation of current business unambiguously supports the inevitability of innovations. A company that strives to maintain and strengthen its position on the market has to implement a suitable innovation policy that would enable it to achieve a more advantageous position, in comparison with the competition. Dinis (2004) declares that the success of any innovation (and consequently, the competitive advantage of companies) is dependent on the marketing method of management, through which companies strive to adjust or (even better) foresee market trends. Synek *et al.* (2007) also supported the idea that marketing of innovations plays a considerable role in the success of innovations. In their work,

they declare that a competitive advantage can have a differential character in the form of supply of more sophisticated or more varied products that better suit the needs and wishes of users, or it can rest in improvement and better productivity of used production processes or increased quality of products. At the same time, in his work, Professor Maciariello (2008) presents and relates to the economist Peter F. Drucker who is known because of his statement that the purpose of existence of a company rests in creation of customers, and its primary tasks are innovation and marketing. Only they produce results; the remainder produces only costs.

However, without putting innovations on the market, the implementation process is not complete and, therefore, innovation cannot be considered realized. Therefore, activities related to preparation of the market and relevant marketing activities for promotion of a new product have to take place in parallel with solution of technical problems. Even though a prepared product is technically perfect, there is no guarantee that people will accept it and utilize it in the long term. Therefore, if innovation should be successful, it has to be not only feasible, but also its result, the new product, has to be marketable. It has to catch the interest of customers and invoke their willingness to buy this product. Therefore, an important aspect affecting the perception of its output, e.g. behaviour of customers on target markets, cannot be forgotten in innovation activities. At the same time, in their work, the German authors, Trommsdorff and Steinhoff (2009) declare that in their opinion, a large part of variations of success or failure is caused by factors that can be ranked with marketing in the broader sense of the word. Among them, there are strategic, as well as operative decisions and information from market research, from which such decisions are derived. In every case, such factors are linked to behaviour of target customers and competition. It is precisely the target market that decides if an innovation is accepted and, therefore, an innovation process successfully completed, e.g. Tidd, Bassant and Pavitt (2007).

Overall, marketing has the task of understanding and managing innovations within companies and markets where the primary objective of an innovation rests in development of new or modification of old products, in order to improve profitability. The inevitable component of profitability is income and its amount depending on whether a company is able to satisfy customers' needs better than its competitors, e.g. Hauser, Tellis and Griffin (2006). In today's knowledge-based society, correct information can help a company to act against its competition, especially if such company has built a strong marketing information system that is able to quickly convert knowledge into values for a customer, e.g. Allak (2010). For its importance in competition effort, information ranks among very important assets of every company. Marketing decisions also have to be supported by information that helps marketing managers to decide what to produce, when to produce it, and for how much, e.g. Chatzipanagioton, Vassilikopoulou and Siokos (2008). Such necessary information is provided by the marketing information system.

The objective of the article rests in summary and presentation of results of two primary research studies whose tasks rested in acquiring knowledge on the current state of management of innovations in companies of the South Moravian Region of the Czech Republic and formulate proposals leading to improvement of information support of effective management of marketing of innovations.

## MATERIAL AND METHODS

For the research process, the following hypotheses were defined:

H1: The m*ajority of innovation activities are undertaken by large and medium-sized companies that have sufficient funds for it.*

H2: *Direct expression of effects of innovation activities strongly depends on market development prognoses, and marketing information systems have to help with their predictions.*

With regards to the identified objective of research projects – *learn and study the current state of issues of management of innovation activities and their information support as these areas are currently being solved in Czech, as well as foreign expert literature and practice in Czech companies* – and the method of their fulfilment, when processing the research, the system approach and the following scientific work methods were utilized:

- Analysis is used as a method of acquiring new knowledge and its interpretation. When processing secondary data, a method of secondary analysis was utilized. A source of secondary data was professional literature, especially foreign – books, magazines, articles from scientific and professional databases (Emerald, Science Direct, etc.) or proceedings from scientific conferences, with respect to their professional level and relevance.
- Questionnaire (see below).
- Comparison was utilized for mutual comparison of results of the questionnaire inquiry of individual companies. This basic benchmarking approach selected more innovative companies for further personal interviews with the company's management.
- Inquiry with the objective to acquire the particular data and following discussion about acquired results and verification of their implementation and realization in practice was carried out in the form of personal interviews with companies' managements, i.e. especially with members of the top management, executive agents, or owners of production facilities.
- Content analysis was applied to study of texts processed and acquired in the course of interviews with managers of selected companies (interview

transcriptions, personal supporting documents acquired from respondents).

- Synthesis is used especially when results are pronounced and during production of a methodical proposal for correct development of information support of innovation activities and, thereby, improved competitiveness of a company.
- Induction was utilized especially when generalizing all the findings achieved in the questionnaire inquiry. Verification of found dependencies was verified by application of deduction.
- Statistical methods were utilized when analysing primary data, and their results are presented in tables in this report.

A questionnaire inquiry was carried out for the purpose of determination of the real state of solved issues of management and support of innovation activities. Before the research was commenced, the circle of respondents was duly considered. Research could have been limited based on a company's size, a field, and distribution of companies in the Czech Republic. After careful consideration, it was decided to carry out the research via a random selection between various-sized companies in the South Moravian Region of the Czech Republic. The purpose of limitation to only the South Moravian Region rests in provision of larger predicative abilities of the questionnaire inquiry. Therefore, the executed research has much higher quality because we succeeded in (despite frequent unwillingness to fill out the questionnaire and provide cooperation) in collection of data from a relatively large number of companies within the whole region, which would not necessary happen within the whole Czech Republic, and individual data would be too scattered.

Within two consecutive research projects[1] carried out in 2009 and 2010 under the sponsorship of the Internal Grant Agency of the Faculty of Business and Management of the Brno University of Technology, various approaches to management of the innovation process and creation of innovation strategy were examined in companies operating in the South Moravian Region of the Czech Republic. A total of 53, mostly production, companies participated in the first research project called *Research of a level of development of innovation potential, creation, and evaluation of the innovation strategy of medium-sized and large machine-industry companies in the South Moravian Region in the Czech Republic*. This project uncovered several unfavourable findings on the state of management of innovation activities. Therefore, this area was examined in detail in the second related research project called *Development of knowledge for improvement of information support of the economic management of company development, in accordance with development of the business environment* undertaken in 2010. This related and more extensive research took place from February to June 2010. The key was to approach as many respondents as possible and, therefore, to acquire a sufficiently large data scale factor for evaluation of the primary research. The inquiry itself provided quantitative, as well as qualitative data on the current state of the issue in question. Simplicity and relative briefness of the questionnaire, affecting a respondent's willingness to fill it out, was an important factor when creating the questionnaire. There were the following types of questions:

- With selectable answers and the option to select just one.
- With selectable answers and the option to select several answers at once.
- With pre-defined answers with an evaluation scale.
- Some questions had the option to fill in answers freely.

The questionnaire inquiry itself was carried out in two manners: By electronic questionnaire sent via e-mails. This form of inquiring is very advantageous from the aspect of filling in the questionnaire and, most of all, its evaluation. Absence of personal contact between the interviewer and the interviewee and, therefore, a possibility to provide supplemental data or explain a question, represents a slight disadvantage here. This insufficiency was eliminated by the subsequent phone or e-mail contact. Furthermore, by a personal contact with top management members, executive agents, or company owners in the South Moravian Region. This method of inquiring enables an interviewee to fully grasp the researched issue, and it also allows discussion of the topic in question, in which other valuable findings related to the researched issue are often involuntarily acquired. The disadvantage of this method rests in the big time demand of inquiring.

Within the questionnaire inquiry in 2010, a total of 800 respondents were addressed; of those, 750 in electronic form and 50 with printed questionnaires during a personal visit. Companies for the electronic research were selected from the database of contacts called the Technological Profile of CR (www.techprofil.cz) containing more than 2,000 Czech companies operating in the innovation business. The world-wide database, Kompass (cz.kompass.com), which contains more than 34,000 Czech companies, was further utilized. Search based on individual parameters as selected by a user is the guarantee of a required selection of

1 2009: Internal grant No. AD 179001M5 *Research of the level of development of innovation potential, creation, and evaluation of the innovation strategy of medium and large-sized machine-industry companies in the South Moravian Region in the Czech Republic.*
2010: Internal grant No. FP-S-10-17 *Development of knowledge for improvement of information support of the economic management of company development, in accordance with development of the business environment.*

innovating companies. Selection of companies for a personal visit was done based on contacts from the previous solution of the project. That represented a guarantee that companies that are actively involved in innovations and have something to say regarding this topic were included in the inquiry. A total of 139 correctly filled in questionnaires were returned, which represents a 17.4% rate of return. The aforementioned rate of return of the questionnaires can be considered very good because, for questionnaire inquiries, the expected rate of return is usually up to 10%. Despite that, it is necessary to determine the causes of more than 82% of companies not reacting to the questionnaire. Among them could be bad experience with similar questionnaires or unwillingness to participate because of a clutter of similar questionnaires, as well as managers being very busy. The detailed statistics of the questionnaire inquiry is shown in Tab. I.

I: *Overall statistics of the questionnaire survey (source: own research)*

| **Number of addressed companies** | **800** |
|---|---|
| **a) By e-mail** | **750** |
| **b) By personal visit** | **50** |
| Number of undelivered e-mails | 35 |
| Number of partially filled questionnaires | 9 |
| Number of completely filled questionnaires | 139 |
| Real return | 17.4% |

Results of the questionnaire inquiry and interviews with top managers or executive agents enabled identification of significant insufficiencies when managing innovation processes in companies. They include, for example:

- In most cases, innovation is not a company's key process, and more often than not it is based on technology transfer rather than the company's internal research and development.
- Research and development activities start late, take too long and are expensive. This causes time loss and delays in marketing innovations. That in turn negatively impacts profits.
- Indifference and unwillingness of owners and top-level managers to take risks even in the case of promising innovations is manifest, and the prioritizing of certainty prevails.
- In companies, insufficient innovation culture predominates, which can of course be traced back to the lack of top management's interest.
- An unsuitable model of innovation process management is employed. There is no clearly defined problem description, innovation project management, coordination of activities, communication or cooperation. Vague objectives cause changes in the stages of the innovation process, missed deadlines and increased costs.
- There is no marketing information system in place for the modelling of future markets or the analysis of customers, their behaviour and unexpressed needs. Such insufficient knowledge of market requirements is a reason for excessively high innovation costs.

Methods of solution of such insufficiencies were examined by researching professional literature of prominent Czech, as well as foreign authors and other sources, with the objective to contribute to a flawless, if possible, realization of innovation activities of a company. Such solution is already seen in the opening stage of the process where it is necessary to clearly define the customers' needs. Managers first have to utilize results of the market research for determination of its size, nature, customers' preferences, and supporting information for determination of prices of the target products and services. Once companies develop their internal processes towards satisfaction of particular customers' needs, availability of the correct information on the market size and customers' preferences represents the main road to success. In addition to determination of needs of existing and potential customers, this segment can be a source of information on completely new opportunities and markets for products and services, which the company can supply. Information on markets and customers serves the purpose of entry for the second step of the innovation process; i.e. the process of proposal and development of the current product or service. The aforementioned task represents a necessity of marketing development and implementation of the marketing information system.

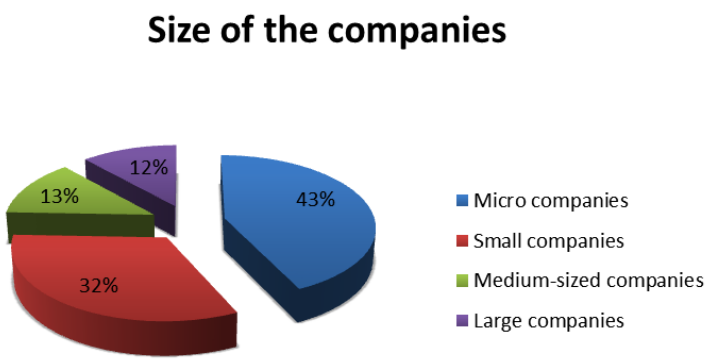
## RESEARCH RESULTS

Information acquired from the questionnaire inquiry in 2010 were evaluated in the following areas:

- Basic data on companies
- Strategy and planning of the innovation process
- Marketing
- Cooperation
- Evaluation of realized innovation activities and innovation barriers
- Financing.

With regard to the scope of the article, thematic focus, and objective, only selected areas of the primary research will be presented here.

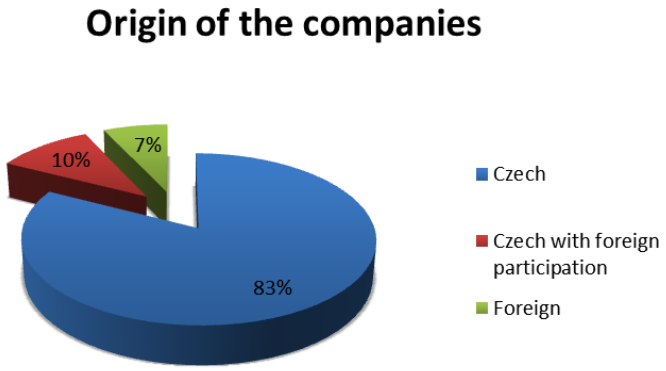
Questions from the first part of the questionnaire were related to the basic characteristic data of the company, such as the company's size, origin, market of operation, etc. Of the total of 139 respondents, the most participating companies in innovations in the South Moravian Region are micro companies (1–9 employees, with a turnover of up to 2 mil. EUR) – 43% of respondents, small companies (10–49 employees, with a turnover from 2 mil. EUR to 10 mil. EUR) – 32% of respondents, medium-sized companies (50–249 employees, with a turnover from 10 mil. EUR to 50 mil. EUR) – 13% of respondents and the least participating



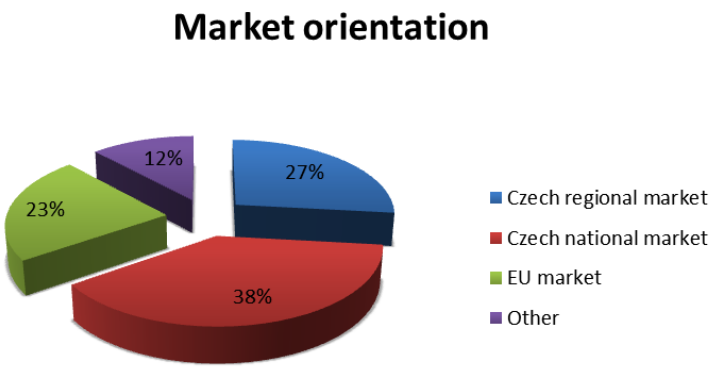

1: *Distribution of companies by size (source: own research)*

in innovations are large companies (more than 250 employees, with a turnover exceeding 50 mil. EUR) – 12 % of respondents. This result is probably caused by the fact that the larger the company is, the more demanding organization of any innovation changes in it is and, therefore, smaller companies with more flexible organization structures innovate more. Such finding refuted the original hypothesis that said that the majority of innovation activities are undertaken by large and medium-sized companies that have sufficient resources for it. The results of the answer about the size of the company are shown in more detail on Fig. 1.

The vast majority of addressed companies (83 % of respondents) have Czech owners, 10 % of companies have foreign participation, and only 7 % have foreign owners. Here, 65 % of inquired companies are doing business within the Czech Republic; of it, 38 % operate on the domestic market within the whole CR, 27 % of those questioned operate on regional markets only within the CR regions, 23 % are doing business in the EU member and candidate countries, and the remaining 12 % are doing business around the world. These facts are graphically shown on Fig. 2 and Fig. 3.




2: *Origin of the companies (source: own research)*




3: *Market orientation (source: own research)*

### Strategy and planning area

The strategy and planning area, in which respondents answered the question about what innovations, were implemented by the company during the last three years and what importance they carry for the company, represented another part of the research. They could select from five predefined answers. Since respondents were able to select more answers for this question, a recalculation had to be carried out where a relative frequency was determined as a percentage of a number of selected answers to the total amount of respondents in the group. The following finding was derived from it:

- Product innovation: 28% occurrence of this answer
- Process innovation: 25% occurrence of this answer
- Organization innovation: 22% occurrence of this answer
- Marketing innovation: 23% occurrence of this answer
- No innovation: 2% occurrence of this answer.

These balanced results highlight the fact that product innovations often require process innovations, e.g. in the form of acquiring new production technology, and in order for these product innovations to be successful on the market and bring the company a higher value, it is often necessary to seek new distribution channels via marketing innovations.

Respondents also evaluated the importance of such innovations for the company based on the following scale: 1 – very important, 2 – important, 3 – neutral, 4 – not important, 5 – completely unimportant. In the summary of the percentage ration of positive answers, i.e. values 1 (very important) and 2 (important), the order of individual possibilities was determined. Therefore, results show that respondents see the importance of innovations for their company in the following order: innovation of products, processes, organization, and marketing. Companies that have not implemented any innovations evaluate their importance as almost zero because the field or market in which the company participates or on which it operates, does not require an innovative approach and, therefore, they maintain the existing amount and quality of their output. Evaluation of the importance of individual types of innovations for companies in the South Moravian Region is shown in Tab. II.

The main motives leading to commencement of such innovation activities are growth of revenues/profits, reaction to demand, increased quality, increased market share, and last but not least, inspiration by competitors. A review of the main

II: *Importance of particular innovation types for companies (source: own research)*

| | Average | Standard deviation | Modus | Evaluating 1–5 (%) | | | | | Σ 1+2 (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | |
| **Product innovation** | 2.2857 | 1.0302 | 2 | 18 | 29 | 14 | 12 | 27 | **47** |
| **Process innovation** | 2.2419 | 0.9619 | 2 | 18 | 28 | 16 | 10 | 28 | **46** |
| **Organizational innovation** | 2.3485 | 0.9127 | 2 | 15 | 28 | 26 | 8 | 23 | **43** |
| **Marketing innovation** | 2.3226 | 0.9801 | 2 | 16 | 27 | 19 | 10 | 28 | **43** |
| **None innovation** | 2.3125 | 0.8455 | 3 | 4 | 7 | 7 | 1 | 81 | **11** |

III: *Main motives for innovation activities and their importance (source: own research)*

| | Average | Standard deviation | Modus | Evaluating 1–5 (%) | | | | | Σ 1+2 (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | |
| **Revenue/profit growth** | 1.5556 | 0.7027 | 1 | 53 | 33 | 8 | 1 | 5 | **86** |
| **Demand reaction** | 1.8750 | 0.8120 | 2 | 34 | 41 | 15 | 4 | 6 | **75** |
| **Product/service quality increase** | 1.7595 | 0.8600 | 1 | 45 | 28 | 15 | 4 | 8 | **73** |
| **Market share increase** | 1.8182 | 0.9220 | 1 | 42 | 28 | 14 | 6 | 10 | **71** |
| **Inspiration by competitors** | 2.4133 | 0.7676 | 2 | 7 | 46 | 27 | 8 | 12 | **53** |
| **Education Challenge** | 2.2714 | 0.9699 | 2 | 19 | 34 | 17 | 12 | 18 | **53** |
| **Product line extension** | 2.5000 | 0.9528 | 2 | 12 | 38 | 21 | 18 | 11 | **51** |
| **Employee satisfaction** | 2.3784 | 0.8495 | 3 | 14 | 33 | 33 | 7 | 13 | **47** |
| **Legislation limits** | 2.3143 | 1.1025 | 1 | 26 | 20 | 21 | 15 | 18 | **46** |
| **Exigency of production decrease** | 2.3134 | 0.9337 | 3 | 19 | 24 | 29 | 7 | 21 | **42** |
| **Environmental legislation** | 2.3750 | 1.1110 | 1 | 22 | 18 | 20 | 15 | 25 | **40** |
| **New technology development** | 2.6984 | 1.0486 | 3 | 13 | 16 | 25 | 20 | 26 | **29** |
| **Production capacity expansion** | 2.8392 | 0.9407 | 3 | 7 | 14 | 27 | 18 | 34 | **21** |
| **Other** | 2.000 | 1.000 | – | 1 | 0 | 1 | 0 | 98 | **1** |

motives for commencement of innovations and their importance is summarized in Tab. III.

Results were derived from evaluation of respondents, again, based on the scale: 1 – very important, 2 – important, 3 – neutral, 4 – not important, 5 – completely unimportant. Inspiration by competitors represented an important motive as well. Therefore, it is possible to find so-called imitating companies among companies that implemented innovations, which created new innovations only for their own company, but not from the aspect of the market; i.e. they implemented new products or services already provided by competitors. A similar situation applies to process innovations where sources of innovations were modified or assumed technologies developed by competitors. As for inquired companies, innovators who assume and modify already known technologies unambiguously prevail.

Motives of innovation activities represent a starting point for innovation strategies. Strategic marketing and research, with a nomination by top management, participates in strategy proposal and formulation. The objective of every innovation strategy rests in achieving a competitive advantage leading to the company's improved position on the market (other objectives are derived). When creating a competitive advantage, first of all, companies have to be aware of their competitors' strategies, as well as their own competitive advantage.

Almost all inquired companies (93% of respondents) are aware of their competitive advantage, which they have in comparison with their competitors. Only 7% are not aware of such advantage.

The process of formulating strategy results in production of an innovation plan that serves as the base for creation of other partial plans. When evaluating how much importance a company gives to production of innovation plans, the majority of companies replied that the biggest consideration goes to short-term plans, plans up to 1 year, and plans up to 2–3 years. Then, 8% of respondents do not compile any innovation plans and 1% of respondents compile plans that have different deadlines than defined (see Tab. IV).

## Marketing area

If we wish to seek sources of innovation ideas, it is necessary to verify if companies are able to identify, grab, and further process innovation impulses and ideas. Impulses for innovations in a company's vicinity come most often from external customers. That is closely followed by generation of impulses based on competitors. Utilization of impulses from professional literature, conferences, trade fairs, and exhibitions comes next. Innovation impulses inside

IV: *Innovation plans development (source: own research)*

| | Average | Standard deviation | Modus | Evaluating 1–5 (%) | | | | | Σ 1+2 (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | |
| **Short-term plans** | 2.1618 | 0.9642 | 2 | 23 | 28 | 20 | 8 | 21 | **51** |
| **1 year plan** | 2.4783 | 0.8095 | 2 | 8 | 34 | 30 | 8 | 20 | **42** |
| **2–3 years plan** | 2.5714 | 0.9974 | 3 | 12 | 17 | 23 | 13 | 35 | **29** |
| **None plan** | 2.7500 | 0.8874 | 3 | 2 | 6 | 10 | 5 | 77 | **8** |
| **Other** | 2.7500 | 0.4330 | 3 | 0 | 1 | 4 | 0 | 95 | **1** |

V: *Innovation incitation and its importance (source: own research)*

| | Average | Standard deviation | Modus | Evaluating 1–5 (%) | | | | | Σ 1+2 (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | |
| **Customer** | 1.3855 | 0.6555 | 1 | 66 | 26 | 2 | 2 | 2 | **92** |
| **Internet** | 2.0988 | 0.8549 | 2 | 24 | 42 | 22 | 6 | 6 | **66** |
| **Competitors** | 2.2561 | 0.8087 | 2 | 15 | 48 | 26 | 7 | 4 | **63** |
| **Employee** | 2.1538 | 0.8332 | 2 | 21 | 39 | 26 | 5 | 9 | **60** |
| **Partners** | 2.1842 | 0.8692 | 2 | 20 | 40 | 21 | 7 | 12 | **60** |
| **Own research into customers** | 2.2836 | 0.9433 | 2 | 16 | 34 | 17 | 11 | 22 | **50** |
| **Suppliers** | 2.4595 | 1.0804 | 2 | 19 | 30 | 17 | 21 | 13 | **49** |
| **Service** | 2.4079 | 0.7809 | 3 | 12 | 34 | 38 | 5 | 11 | **46** |
| **Exhibitions** | 2.4478 | 1.0116 | 3 | 17 | 21 | 27 | 13 | 22 | **38** |
| **Conferences** | 2.7581 | 0.9278 | 2 | 4 | 28 | 20 | 20 | 28 | **32** |
| **Professional literature** | 2.7727 | 0.8841 | 2 | 5 | 27 | 27 | 18 | 23 | **32** |
| **Public sector** | 2.6379 | 1.0618 | 3 | 13 | 16 | 21 | 17 | 33 | **29** |
| **Management consultants** | 2.9434 | 0.8559 | 3 | 4 | 14 | 27 | 17 | 38 | **18** |

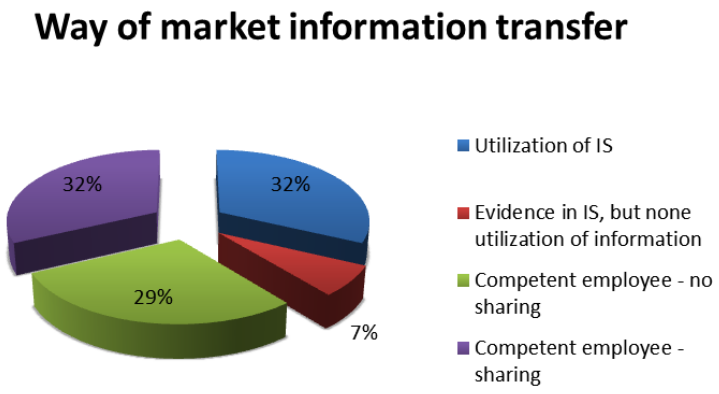
a company come the most often from employees or as a result of a need to change technology and processes, via which products are produced or services offered. A list and evaluation of innovation impulses are shown in Tab. V.

In-house collection of innovation ideas from employees is an interesting area. The brainstorming system is very often utilized during staff meetings on all the levels. Here, some companies also apply a motivation element in the form of a one-time bonus paid to an employee who solves a problem in question. On the other hand, other companies have a system based on collection points where employees may leave their impulses that are further evaluated during staff meetings. Based on realized interviews, it is possible to state that individual systems of communication with one's own employees when collecting innovative ideas differ from company to company. The bonus system represents a unifying element.

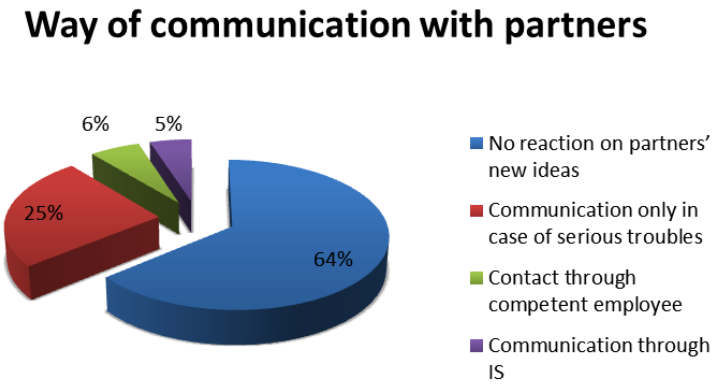
When determining in which manner market information is shared in a company, it was discovered that 32% of companies are utilizing a high-quality information system (hereinafter the "IS") that is used by competent workers. That is a status in which a company has correctly implemented IS with correctly defined access possibilities for competent workers. That creates prerequisites for effective creation of strategic plans in a company and for sharing innovation impulses within individual company departments and between them. Unfortunately, only approx. 1/3 of inquired companies operate like this. For the other 32% of companies, there is practical knowledge that is sufficient and known to all the competent workers and, therefore, there is no need to engage in collecting and processing additional information. Such companies are utilizing know-how of their workers. When such worker leaves, a problem occurs. Non-sharing of information leads to growth of such worker's value and creation of pseudo-key positions in the company. For 29% of inquired companies, information on the market, contracts, and competitors is usually taken by competitive workers; however, they are not systematically shared for further utilization in the company. Such companies have IS, but only on the level of local stations, and mutual interconnection of information flow across a company is not utilized. Slow-down of flow of marketing information then expresses itself in delay in production of strategic plans or their frequent changes and corrections. The remaining 7% of inquired companies record information about the market by means of the company's information system, but workers do not optimally utilize it. Such companies do not pay enough attention to transfer of marketing information. Such companies are usually based on routine and practical experience and adjust their planning accordingly. Results of answers of inquiries companies to the transfer of market information issue are shown in Fig. 4.

In addition to internal communication, external communication with the company's partners is important for a company as well, and in the majority of cases, it takes place via competent workers who register suggestions and comments (64% of respondents). Informal communication with partners via marketing staff is the basis. They are responsible for transfer of information to the company and for ensuring that it is undistorted. A quarter of companies communicate with partners via the company's information system (25% of respondents). 6% of companies do not have the scope to react to partners' suggestions. Such companies behave as closed units and consider all the information related to their internal environment their know-how and, therefore, they usually are not too willing to communicate with their partners. The remaining 5% of companies communicate with partners only in the case of serious problems. Fig. 5 presents results of communication with partners.

Next aim of a questionnaire research was to find out whether companies do evaluate the realized innovations activities and whether they utilize marketing information system for the evaluation of predictions of future markets. For that purpose the hypothesis H2 *Direct expression of innovation activities effects significantly depends on market development forecasts. Marketing information systems have to support their predictions* and following questions from the




4: *Way of marketing information transfer (source: own research)*




5: *Way of communication with partners (source: own research)*

questionnaire will be used: *Does your company evaluate the realized innovation projects?* and *Is there implemented and utilized marketing information system for future markets modelling in your company?*

VI: *Relations research of innovation activities evaluation and markets forecasts (source: own research)*

| innovation activities evaluation / markets forecasts | No | Yes | $n_i$ |
|---|---|---|---|
| No | 26 | 8 | 34 |
| Yes | 37 | 68 | 105 |
| $n_j$ | 63 | 76 | 139 |

Independency statistic test of two qualitative characters will be carried out for statistic dependency verification. Null fragmental hypothesis $DH_0$ is going to be tested that random values are not depended in comparison with alternative fragmental hypothesis $DH_1$.

$DH_0$: Expression of innovation effects and modeling future markets are not relate to each other.

$DH_1$: Expression of innovation effects and modeling future markets are related to each other.

Calculated test criterion $\chi^2 = 6{,}959$ for selected significance level $\alpha = 0{,}05$ is determined a quantile of Pearson distribution. Because the value of test criterion was realized in critical field ($6{,}959 > 3{,}841$), fragmental null hypothesis $DH_0$ is refused on five percentage level signification and alternative fragmental hypothesis $DH_1$ is accepted. Random values are dependent and relationship between direct expression of innovation activities effects and market progress forecasts by marketing information system was demonstrated.

Based on primary research results and statistic independency test it is possible to consider the research hypothesis as confirmed.

## DISCUSSIONS AND RESULTS

In SMR, those most engaged in innovations are micro companies (43 %) and small companies (33 %) that have a Czech owner (82 %); of those, 39 % operate on the domestic market within the whole Czech Republic and 27 % operate only on the regional market.

During the last three years, the majority of innovations executed by companies were organization and marketing innovations; however, companies perceive product and process innovations as more important. It generally applies that almost every product innovation should invoke at least one process innovation. When, for example, a company begins to produce a new product, a need for necessary technology that is needed for production of a new product can arise. Such a need can be fulfilled by purchase of new machinery. This is innovation of a production process. In other cases, companies maybe do not even perceive changes executed in relation to product innovations as process innovations. When a company, e.g. as a result of a new product supply, modifies activities of its sales department, in reality it is a process innovation invoked by the initial product innovation. In some cases, even product innovation of a lower intensity invokes subsequent process innovation of a higher intensity. Theodor (2008) singles out the beginning of the Ford car factory, as an example. Even though its first mass-produced car, the Model T, meant an important product innovation, production organization through standardization, flow production, and Taylor principles of scientific management brought a lot of much more fundamental innovations. The Model T was designed in such a way that it prompted a need to completely innovate the process of its production. Without such process innovations, Henry Ford would not be able to achieve his plans for production of a standardized cheap car in large series.

The result of a significant innovation activity is logical because, in general, if organizations are not prepared to continually renew their products and processes, their chances of survival are significantly jeopardized.

The main motives leading to commencement of such innovation activities are especially factors of growth of revenues and, therefore, operation

profits, reaction to demand, increased quality of products or services, and increased market share. The aforementioned motives are derived from innovation needs prompted by a customer, and they serve as a starting point for creation of innovation strategy.

The structure and intensity of competition and its more or less aggressive behaviour affects competition and innovation pressure. According to Trommsdorff and Steinhoff (2009), when identifying competitors, it is necessary to include, in addition to publicly acting competitors, also the potential ones, i.e. those who are not in the market yet or who do not engage in public tenders of the field in question, but have potential and strategy available. The majority of enquired companies (87%) monitor and know the competitors' strategy and, at the same time, 93% of respondents are therefore aware of their competitive advantage.

The process of formulating strategy results in production of an innovation plan that serves as the base for creation of other partial plans. Almost all inquired companies emphasize processing of short-term plans and plans for 1 year.

The conclusion derived from the aforementioned facts is that if a company wants to receive impulses for its further development and maintain its position on the top, it is necessary to always focus on a customer who should be perceived as a driving force for progress. High-quality relations have to be built between companies and their customers. Primary research results showed that an innovation impulse primarily arises from a customer.

Individual innovation impulses are then target-collected by a company. During the collection, in-house networks are utilized, as well as networks of external co-workers; for example, authorized dealers, etc. In practice, collection that is rather informal is more often proven good; for example, via discussions with service technicians during assemblies. A customer does not feel so bound and is willing to handle matters that he would not even mention otherwise. With regards to their own potential, companies try to convert received impulses to innovation ideas that can be utilized during the following work. The main source of innovation ideas are then employees or management of companies. With regard to the fact that companies engage their employees in seeking innovation ideas, they are also trying to motivate them.

In personal interviews, managers of some companies admitted that they do not pay enough attention to transfer of marketing information, despite the existence of some information system. At the same time, marketing management within the innovation process is usually left out, especially in the case of small and medium-sized companies. Therefore, a company management loses its insight into environment and new trends, which can cause problems with distribution, downturn of revenues, decreased profit, and it can even lead to existential problems in the future.

## SUMMARY

When making decisions regarding innovation plans, a company management cannot do without relevant information on markets. Therefore, as derived from empirical research, marketing market research studies that focus on acquiring knowledge on behaviour of customers and competitors, market segmentation, a possibility to place a product, an estimate of a potential market share, etc. are increasingly important in practice. The second function of marketing in a company rests in seeking a way of applying an innovated product or service, e.g. convincing a customer about advantages of a product in question.

In order to achieve this goal, it is necessary to create a company marketing team consisting of experts who are real professionals in their field, have knowledge, and who are willing and able to voluntarily cooperate with team members and support each other.

These days, everybody is probably aware of the importance of high-quality and timely information for correct decision making. It is also considered a matter of fact that a company has to reflect the wishes of its customers and very closely monitor development on markets, otherwise it would not be able to react accordingly and maintain its position on markets. Therefore, companies should have marketing information systems implemented. Their necessity was ultimately highlighted by results of the primary research as well. In smaller companies, such system can even have a completely informal process when all the interested parties meet and discuss a problem. It is apparent that from a certain size of a company, such "system" is completely unsuitable, and a marketing information system has to be formalized and systemically built.

Unfortunately, as shown by the primary research, the majority of companies lack a sophisticated marketing information system, modelling and analysis of the future market, analyses of customers, their behaviour and unsaid needs, definition of price strategies, and analysis of new expansion areas. Several hypotheses were declared before the research was commenced. In the area of potential predetermining more or less innovative companies, a company's size used to be considered the key factor when innovation activities are usually undertaken by large and medium-sized companies

that have sufficient resources for it. However, this hypothesis was not confirmed because in the South Moravian Region, the majority of innovations are undertaken by micro companies and small companies (these groups form a total of 75% respondents).
In the marketing area, it was assumed that direct expression of effects of innovation activities strongly depends on market development prognoses, and marketing information systems have to help with their predictions. Based on the found facts and statistic independency test, it is possible to declare this hypothesis confirmed.

## REFERENCES


ALLAK, B., 2010: Evaluating the Adoption and use Internet–based Marketing Information system to Improve Marketing Intelligence (The Case of Tourism SMEs in Jordan). *International Journal of Marketing Studies*, 2, 2: 87–101. ISSN 1918-719X.

DINIS, A., 2006: Marketing and Innovation: Useful tools for competitiveness in rural and Peripheral Area. *European Planning Studies*, 14, 1: 9–22. ISSN 0965-4313.

DOLOREUX, D., 2004: Regional Networks of Small and Medium Sized Enterprises: Evidence from the Metropolitan Area of Ottawa in Canada. *European Planning Studies*, 12, 2: 173–189. ISSN 0965-4313.

HAMEL, G., GREEN, B., 2007: *The Future of Management*. 1. vyd. Boston: Harvard Business School Press, 272 s. ISBN 978-1-4221-0250-3.

HAUSER, J., TELLIS, J. G., GRIFFEN, A., 2006: Research on Innovation: A Reviwe and Agenda for Marketing Science. *Marketing Science*, 25, 6: 687–717. ISSN 0732-2399.

CHATYIPANAGIOTOU, K., VASSILIKOPOULOU, A. & SIOMKOS, G., 2008: An Empirical investigatin of the relationship between market orientation and MrkIS effectiveness in upscale hotels in Greece. *Journal of Targeting, Measurement and Analysis for Marketing*, 16, 4: 285–3237. ISSN 0967-3237.

KISLINGEROVÁ, E., 2008: *Inovace nástrojů ekonomiky a managementu organizací*. 1. vyd. Praha: C. H. Beck, 293 s. ISBN 978-80-7179-882-8.

KOŠTURIAK, J., CHÁĽ, J., 2008: *Inovace: Vaše konkurenční výhoda*. 1. vyd. Brno: Computer press, 164 s. ISBN 978-80-251-1929-7.

MACIARIELLO, J., 2009: Marketing and Innovation it he Drucker Management system. *Journal of the Academy of Marketing Science*, 37, 1: 35–49. ISSN 0092-0703.

SKARZYNSKI, P., GIBSON, R., 2008: *Innovation to the Core: A Blueprint for Transforming the Way Your Company Innovates*. 1. vyd. Boston: Harvard Business School Press, 320 s. ISBN 978-1422102510.

SYNEK, M. et al, 2007: *Manažerská ekonomika*. 4. vyd. Praha: Grada Publishing, a.s., 464 s. ISBN 978-80-247-1992-4.

THEODOR, M., 2008: Podněty pro inovace v českých podnicích. *Ekonomika a management*, 2, 3. ISSN 1802-8934.

TIDD, J., BESSANT, J., PAVITT, K., 2007: *Řízení inovací – zavádění technologických, tržních a organizačních změn*. 1. vyd. Brno: Computer Press, 549 s. ISBN 978-80-251-1466-7.

TROMMSDORFF, V., STEINHOFF, F., 2009: *Marketing inovací*. 1. vyd. Praha: C. H. Beck, 291 s. ISBN 978-80-7400-092-8.

VALENTA, F., 2001: *Inovace v manažerské praxi*. 1. vyd. Praha: Velryba, 346 s. ISBN 80-85860-11-2.



Address

Ing. Ondřej Žižlavský, Ph.D., Ústav financí, Ing. Petra Šmakalová, Ústav managementu, Fakulta podnikatelská, Vysoké učení technické v Brně, Kolejní 2906/4, 612 00 Brno, Česká republika, e-mail: zizlavsky@fbm.vutbr.cz, smakalova@fbm.vutbr.cz