



SUCCESSFUL INNOVATION BY MOTIVATION

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Abstract. Innovation is one of the most important factors for business growth. Human capital plays a significant role in the successful process of innovation. This article deals with employee motivation in the innovation process and the main scientific aim of this study is to present results of research that was undertaken in the Czech Republic at the beginning of 2013. Questionnaires were used for the survey and statistical analyses such as Chi square test or Hierarchical cluster analysis were used for data processing. This study also provides a theoretical and practical overview of business innovation in the Czech Republic.

Keywords: small and medium enterprises, business growth, entrepreneur, innovation, motivation, incentives.

JEL Classification: O31, O32, L26.

Introduction

Small and medium-sized enterprises (SMEs) play an important role in the Czech national economy. They represent 99, 8% of all businesses and create jobs for 60% of working population (CZSO 2013). They also form significant part of urban expansion which is driven by growth companies. There are various factors influencing business growth and one of these factors is innovation (Barringer, Greening 1989). Innovation is one of the most important parts of business competitiveness. Nowadays, we can see more proactive approaches to generate business innovation in both large companies and SMEs (Čichovský 2011; Vojík 2010).

The innovation success also depends on human factor (Marcati *et al.* 2008). Highly motivated employees produce better results and there are several approaches how to motivate people (Dobbs, Hamilton 2006). This study is looking into the analysis of theoretical background of this issue and it focuses on SMEs in the Czech Republic.

1. Growth of small and medium companies

The first extensive scientific research relating to the growth of SMEs was made in the 1990s. Economic scientists compared growth between various SMEs and created the theoretical model of SME growth and expansion (Barringer, Greening 1989). One of the studies that is looking into the economic growth of companies is called “The growth, decline and survival of small businesses” (Headd, Kirchoff 2009).

In the literature there can be found several methods how to achieve business growth and some of them are as follows (Brush *et al.* 2009):

- geographic expansion,
- targeting new markets and customers,
- expansion of the product portfolio,
- adding new ancillary services.

In addition, there are other approaches to business growth and these could be divided into the following six groups (Dobbs, Hamilton 2006):

- stochastic approach,
- descriptive approach,

- deterministic approach,
- developmental approach,
- “learning” approach and
- an approach based on sources.

The first definition of innovation was introduced by Josef Alois Schumpeter (1883–1950) (Schumpeter 1934). However, since then there has been a large number of variations.

Innovation is described in the European Commission document (2005) and its definition is as follows: “Innovation is the application of better solutions, new products and services that meet new requirements and associated market needs. It creates new methods of production, supply and distribution, changes in management, work organization, working conditions and qualification.”

The innovation process is non-linear which means that innovation is stimulated and influenced by many internal and external aspects and sources of information (Kaufmann *et al.* 2002). Innovation is also highly interactive and it is usually expensive. Some companies do not have sufficient capital to finance their research and innovations (Lendel, Varmus 2013). This means that they have to look for other sources of capital. If the company management decides to use external finances it is necessary that they remember the following general principles (Kaufmann *et al.* 2002; Pitra 2006):

- Company management needs to determine how to finance innovation (from own funds or/and external capital) from a long term point of view. The management also needs to make sure that processes within the company flow smoothly.
- When companies are looking for capital it is necessary that they are aware of the costs associated with raising additional finances. Managers should also bear in mind that banks and other financial institutions trade with money and their aim is to make a profit. In addition, borrowers are usually in a worse position than lenders.
- When companies negotiate terms of loans with banks they are usually asked to provide a relevant business plan. However, some companies are reluctant to provide information relating to their business plan and expected future development. On one hand, this is understandable as the companies want to protect their know-how; however, on the other hand, if this data is not provided, the bank will not be willing to offer a loan to them, and therefore, it will be hard to find the necessary capital to fund their research and innovations.

2. Human resources

Human capital is essential for business innovation and it could have a positive effect on the growth of SMEs (Wright *et al.* 2001).

Personal skills of employees significantly influence development of innovations (Tsai *et al.* 1991). In order to improve results of innovation or accept new innovation it is appropriate that a company creates and maintains good cooperative relationships with their employees. Company leaders also have a significant influence with regard to innovations (Javalgi, Todd 2011).

The results of the study (Marcati *et al.* 2008) show that in addition to the technological experience and knowledge human personality also effects formation of innovation. Already in 1998, Barringer and Greening expressed an idea that sooner or later businesses will be confronted with a task of transferring knowledge, skills and motivation of employees due to the further growth of the company (either in the field of geographic expansion or in the increase of sales revenues, assets and a number of employees) (Martin *et al.* 2013). It seems that human knowledge is the start for generating innovation.

There are two types of knowledge – explicit and implicit (Goffin, Mitchell 2005). Explicit knowledge is normally stored in the business database and it is useful if it is used correctly. This type of knowledge represents a business asset. Conversely, implicit knowledge needs to be created from human activity (Ruppel, Harrington 2001). The company itself can also influence creation of implicit knowledge via social environment. This makes the company unique and attractive for new employees (Isabel 2011).

The main conditions that determine formation of a social climate which leads to the development of innovative business can be summarized in the following two points (Pitra 2006):

- involvement of all employees in the development of innovative solutions and building internal consistency between different departments,
- assurance (from the employer) that there is no need to be worried about errors that could be potentially made when a new solution is tested.

Knowledge, sometimes also called knowledge assets, is classified as an intangible company asset; this could be know-how, production techniques, a recipe or intellectual property. All of this has a great potential for creating wealth and prosperity (Sheng-Tun Li, Won-Chen Chang 2007). Indeed, this type of asset is property of the organization but it is important to remember that the original owner is an individual who contributes to the development of a society and is able to communicate, think and solve problems (Nadler L., Nadler Z. 1989). This individual is usually known as a knowledge expert or just a knowledge worker. Some authors believe that the role of a knowledge worker belongs to managers and executives – e.g. Papadakis and Bourantas (1998), Senichev (2013). However, we also encounter the idea that, “every worker belongs to a group of knowledge workers” Evan Rosen (2011). Rosen (2011) also believes that

the terms “knowledge worker” and “worker” are no longer mutually exclusive. People who work by “hands” – manually, can also contribute with their knowledge and experience to the business development. For example, Nečas (2006) presents that a knowledge worker should have the following characteristics:

- performance,
- courage,
- honesty,
- trust,
- morale,
- fairness.

Many economic articles in journals, monographs and statistic researches show that knowledge and information is an important factor for production of valuable assets and innovation.¹ Such a research was made in European countries by Eurostat and it divides information into the four basic groups:

- internal resources,
- market information
- institutional resources,
- other sources of information.

This segmentation is used for the purposes of statistic analysis.

The most common sources of information and knowledge in European companies are internal resources and market resources (Dullayaphut *et al.* 2013). Approximately 40–50% of all information comes from internal environment. Cypriot companies have the largest share of internal innovation, approximately 86% and companies in Lithuania use only 32% in a form of internal innovation. With regard to the market information and knowledge, the largest share of this knowledge comes from customers and suppliers. Entrepreneurs in the Czech Republic receive the majority of information from either internal company environment or from the market (about 39%), of which 32% comes from their customers. Just a little over 4% are institutional resources, and about 5% of the information and knowledge is received from other resources (Parvan 2007).

Executive employees (CEO and management) play the main role at the start of the innovation process. Commercial success of a company depends on managers’ creativity. In addition, the top and senior management must ensure that the coordination of unique and creative problem-solving approaches, which are important for the success of the innovation, is efficient at all time. The majority of innovation projects will require involvement of other elementary innovation (Latham 2005).

Valenta (2001) identifies the following three main functions of managers:

- make changes pertaining to the innovative action

- prepare a project and coordination with regard to the implementation of innovative actions
- approve the implementation of innovative actions

The next step, leading to the success, is to ensure that the coordination of unique and creative approaches is efficient in a long term (Pitra 2006). The fact that development of innovations and their preparation to enter the market must be actioned in line with other business day-to-day activities should not be ignored. The timing of new innovations is also crucial.

It is important that the company management, which is seeking innovation, supports new ideas from all employees (at any company level). In other words, innovation ideas should not come from the Science and Research Department only (Pitra 2006); innovation should be supported by all employees and it should be part of their day-to-day work.

3. Motivation

Employment of highly disciplined and qualified staff could be an important aspect that could help with the business success. These employees do not have to be controlled constantly, and therefore, the company management can focus on business innovation.

This phenomenon is called disciplined corporate culture. This type of a corporate culture supports formation of business social climate. It can be achieved through the correct selection of employees and a flexible company structure. As it is not always possible to apply theory in real life managers need to motivate employees to enhance performance and efficiency of the innovation process. Motivation as a science began to develop in the 1960s (Pinder 2008) but its roots go back centuries. One of the first theories of motivation was the Maslow’s hierarchy of needs, followed by others such as Heldberg’s theory etc.

Part of motivation is work motivation which consists of direct and indirect motives (Tureckiová 2004). Direct motives are internal and indirect motives are external. A more detailed division is as follows (Urban 2008):

- motivation based on the attractiveness of work (intrinsic motivation),
- motivation based on financial rewards (extrinsic motivation),
- motivation based on personal reputation,
- motivation consisting of the social mission work.

There are two basic ways of „influencing”, such as personal and impersonal management factors. Impersonal or “hard” factors of management are associated with strict mandatory rules in the corporate governance and working standards (Gagné 2005). These factors provide employees with a system of regulations; however not all employees accept them in a positive way (Gagné 2005, Van Knippenberg 2000).

¹ Information generates knowledge

Personal or “soft” factors of management are focused on empathy. These factors emphasize employees’ needs & wishes and their importance in a team; they should be used to create a positive attitude to work. Personal factors are difficult to measure.

In order to make sure that the company operates efficiently, it is recommended to combine these two methods. The company climate could get worse if one of the methods is missing.

Managers can use different motivators in order to lead their employees in the right direction (Farace, Mazzotta 2011). These can be of various kinds, such as financial award, sporting and cultural events, announcement of the best employee of the month, compliments, support employees’ feelings that the work is meaningful, provide employees with freedom and security or assurance that they are valuable members of the team.

4. Methodology

Both primary research and secondary research (such as scientific journals and monographs) were used as part of this study. One hypothesis and 2 related research questions were defined and these were answered via a questionnaire survey (primary research).

Questionnaire survey is a type of a quantitative research method. The questionnaire survey was evaluated by statistical methods which are described and applied below (in a form of graphs and tables). Both open-ended and close-ended questions were used in the questionnaire.

Research sample – The basic sample was consisted of SMEs (producing leather and similar products and manufacturing furniture) in the Czech Republic. The research questionnaire was sent to 1,500 sample companies. One type of the questionnaire was created for employees and the second one was intended for employers. It was important to get data from both these groups.

Data collection for the questionnaire survey was carried out in the second quarter of 2013 and it lasted three months.

Table 1. Company size (based on a number of employees)

| | | Number of completed questionnaires | Percentage | Valid percentage | Cumulative percentage |
|-------|-----------------|------------------------------------|------------|------------------|-----------------------|
| Valid | Micro (1–9) | 232 | 72.0 | 72.0 | 72.0 |
| | Small (10–49) | 70 | 21.8 | 21.8 | 93.8 |
| | Medium (50–249) | 20 | 6.2 | 6.2 | 100.0 |
| | Total | 322 | 100.0 | 100.0 | |

The net result was: 322 responses from employers and 322 responses from employees.

The Table 1 shows types of companies participating in the research.

The above results were statistically tested by using program IBM SPSS Statistic 20. For this research were used the following analysis.

4.1. Chi-square test

The Chi-square test is used in the cases where the elements of the basic set of measurements have only one character X , which is a random variable, qualitative or quantitative type. From this basic file is chosen a data file (x_1, x_2, \dots, x_n) , which can classify and determine the absolute class frequency (Řezanková 2010).

$$\sum_{i=1}^K \chi^2 = \frac{(n_i - n\pi_{i,0})^2}{n\pi_{i,0}}, \quad (1)$$

where $n_{\pi_{i,0}}$ is expected variable i -category in the selection of range n (Řezanková 2010).

4.2. Chi-square test of independence for two nominal variables

$$\chi_p^2 = \sum_{i=1}^R \sum_{j=1}^S \frac{(n_{ij} - n\pi_{ij,0})^2}{n\pi_{ij,0}}. \quad (2)$$

Using this statistical test, one can test a relationship (contingency) between 2 variables.

4.3. Hierarchical cluster analysis

The aim of the cluster analysis is to classify n objects (in this case regions), out of which each is described with p attributes (in this case indicators) into several, preferably homogeneous, groups (clusters). We require the objects in the clusters to be as similar as possible, while the objects from different clusters as dissimilar as possible. The precise number of clusters is usually not known. A cluster analysis is an investigation method; it should serve as a certain guide for further data processing (Řezanková *et al.* 2010).

Having fulfilled the above-mentioned conditions, it is possible to proceed to the creation of a graphical output of the cluster analysis, so-called dendrogram. Dendrograms are usually used to illustrate the results of the agglomerative hierarchic clustering procedure (Řezanková 2010, 2007). A dendrogram, therefore, shows the individual steps of the calculation of the cluster analysis. In the case of regional assessment of ICT development, the regions will be shown on the vertical axis, while the horizontal axis will show the distance (differentiation) between clusters.

Results

One hypothesis (H1) and two related research questions (Q1 and Q2) were established for the research purposes. The research questions are important for a better understanding of the situation in Czech companies and they are also helpful for understanding of motivation during the process of creating innovation. The understanding of this process leads to a suggestion model of employee motivation.

Hypothesis H1: Employee motivation leads to the creation of successful innovation

Research question Q1: What company incentives are offered to motivate employees to create successful innovation?

Research question Q2: Are employees happy with the company motivation incentives?

Two questionnaires were used for the research purposes; the first one was designed for companies/employers and the second one was prepared for their staff/employees. Based on the outcomes from these questionnaires we can test H1 and analyze Q1 and Q2.

5.1. Hypothesis H1: Employee motivation leads to the creation of successful innovation

It has been suggested that employee motivation leads to the creation of successful business innovation. The questionnaire survey was used to test this hypothesis. The questionnaire included questions focused on employee motivation. These questions were statistical analyzed. The questions were answered by both employees and entrepreneurs.

According to the observed answers it is possible to modify the suggestion. This means that if there are differences in answers motivation of employees is not directly linked to increase in business growth of SMEs. Vice-versa, if there are no differences in answers motivation of employees helps SMEs to expand. The chi-square χ^2 test was used for evaluation purposes. The following statistical hypotheses were based on 1% level of significance:

- H_0 – there are no differences in answers
- H_1 – there are differences in answers

Table 2 illustrates a number of answers that are important for the analysis of the defined hypothesis: Employee motivation leads to the creation of successful innovation.

Table 3 below shows results of the chi-square test (χ^2).

At the 1% significance level we ignore the null hypothesis (there are no significant differences in answers) but we accept the alternative hypothesis (there are significant differences in answers), i.e., motivation of employees contributes to the creation of successful innovation in SMEs.

Hypothesis H_1 has been accepted.

The outcome shows that employee motivation leads to the creation of successful innovation.

Table 2. Number of answers to test the hypothesis

| Employee motivation leads to the creation of successful innovation | Observed answers | Expected answers | Residual |
|--|------------------|------------------|----------|
| Absolutely yes | 188 | 80.0 | 108.0 |
| Likely yes | 100 | 80.0 | 20.0 |
| Likely not | 24 | 80.0 | -56.0 |
| Absolutely not | 10 | 80.0 | -70.0 |

Table 3. Chi-square test

| | Employee motivation leads to the creation of successful innovation |
|--------------------------------------|--|
| Chi-square | 245,900 ^a |
| df | 3 |
| Asymp. Sig. <input type="checkbox"/> | ,000 |

Note: 0 cells (.0%) have expected answers less than 5.

5.2. Research question Q1: What company incentives are offered to motivate employees to create successful innovation?

Both types of questionnaires were used (for employees and for employers) to analyze this question. Employees and employers had to choose from incentives/benefits which are offered by their company. Their answers were further compared. The following questions were used in the questionnaires:

- Question 1 for employees – What motivation incentives does you employer offer?
- Question 2 for employers – What motivation incentives do you offer to your employees?

Table 4. Employees' and employers' responses - Q1

| Employers | yes | no | Employees | yes | no |
|-------------------------|-----|-----|-------------------------|-----|-----|
| Appreciation | 139 | 183 | Appreciation | 115 | 207 |
| Financial award | 176 | 146 | Financial award | 162 | 160 |
| Free time activities | 100 | 222 | Free time activities | 101 | 221 |
| Healthcare benefits | 45 | 277 | Healthcare benefits | 45 | 277 |
| Investment in education | 163 | 159 | Investment in education | 164 | 158 |
| None | 14 | 308 | None | 33 | 299 |
| Other | 0 | 322 | Other | 4 | 318 |

Source: own results

Table 4 shows employees' and employers' answers with regard to the work-related incentives. All respondents (employees as well as employers) were asked to confirm if a certain type of incentive was or was not generally used in their company.

As it can be seen from the above table financial award, investment in education and appreciation are the most popular incentives. There were some differences between employees' and employers' answers. The different answers are marked in red colour. There could be many reasons for

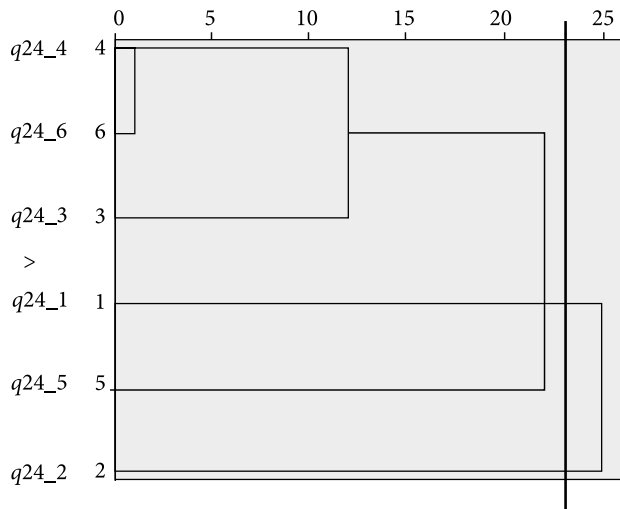


Fig. 1. Dendrogram using single linkage (rescaled distance cluster combine)

Table 5. Employees' responses – Q2

| Are you satisfied with the incentives that are offered by „your“ company | Number of answers | Percent-age | Cumulative percentage |
|--|-------------------|-------------|-----------------------|
| Absolutely yes | 41 | 12.7 | 12.7 |
| Likely yes | 106 | 32.9 | 45.7 |
| Likely no | 102 | 31.7 | 77.3 |
| Absolutely not | 73 | 22.7 | 100.0 |
| Total | 322 | 100.0 | |

Table 6. Chi-square tests of independence for two nominal variables

| | Value | df | Asymp. Significant (2-sided) |
|--------------------|---------------------|----|------------------------------|
| Pearson Chi-Square | 31.103 ^a | 4 | .000 |
| Likelihood Ratio | 28.202 | 4 | .000 |

Note: 0 cells (0,0%) have expected count less than 5. The minimum expected count is 6.00.

different responses, such as different understanding of the question or changes (good or bad) in the company.

A hierarchical cluster analysis to find similar groups of incentives was used as a next step. Each incentive has its own label: 24–1 appreciation, 24–2 financial award, 24–3 free time activities, 24–4 healthcare, 24–5 education, 24–6 none.

The below dendrogram illustrates the main two groups: **financial** (financial award) and **non-financial** benefits.

- **Cluster 1 (non-financial incentives)** – this includes incentives such as healthcare, education allowance, leisure activities, praise and recognition, and others. This group can be described as non-financial business motivators.
- **Cluster 2 (financial incentives)** – the second cluster contains just one item – financial award.

3.3. Research question Q2: Are employees happy with the company motivation incentives?

In addition, employees were asked whether they were satisfied with incentives they receive from their employers. Their answers are shown in the following table.

Fully satisfied were just 41 out of 322 employees. The majority of employees answered “likely yes” or “likely not”. These two options represent an uncertain position or indecisive employees. Therefore, it is not clear whether employees are satisfied with incentives or not. However, it is possible to see a negative trend towards company incentives used in the sample companies (102 respondents said that they were not satisfied with the company incentives).

There was a further test in order to establish if there was contingency between successful innovation and company motivation incentives. In respect of the following 2 hypotheses were set out:

- H_0 – there is no correlation between successful innovation and incentives
- H_1 – there is correlation between successful innovation and incentives

The test with χ^2 on 1% level of significance was used to evaluate the hypothesis. At the 1% significance level we ignore the null hypothesis and accept the alternative hypothesis, i.e. **employee motivation contributes to the generation of successful innovation in small and medium-sized enterprises.**

Conclusions

The relationship between employee motivation and business innovation is not covered sufficiently in the literature and this is an issue. The majority of existing research is related to companies that are not based in the Czech Republic. Therefore, the hypothesis and research questions used in this study were focused on motivation and company incentives in Czech companies. It was demonstrated that a

relationship between employee motivation and creation of successful innovation exist.

The research results have also shown that employees were not always satisfied with incentives offered by their employers. As innovation and its success is fundamental for business competition this finding was alarming. If employees are not satisfied with the company incentives they may not be willing to be involved in new innovations and this could have an adverse effect on business growth of the company. It has also been established that some employees would welcome more holidays.

According to the author's research have been formulated the following these five steps:

- set goals,
- motivate in time (there is no need to wait for a new project),
- use valuable incentives (ask your employees about their preferences),
- include all relevant employees in the incentive program and keep your promises

Motivation is an important factor for building comfortable working environment and it could have a positive effect on innovations. Even though it should be easier to make this type of environment in SMEs the research results have shown that financial awards were not always sufficient and it would be beneficial if employers also focus on other needs of their employees. Some employees had different views on company incentives than their employers and this issue is subject for further research.

In additional next possibility for staff development could be also connatural management which is linked with motivation (Koleňák *et al.* 2013).

SMEs form important parts of all national economies and their importance could grow as they are supported by the national governments and the European Union. The ongoing support could also secure their privileged position in the economy. Therefore, it is necessary that the research in their growth and life cycles continues. The research results should become an important part of theoretical knowledge not only for the scientific community but also for the wider professional public (including managers, entrepreneurs and other professionals).

Ongoing education of company management can improve performance of individual companies. Business growth is underpinned by successful innovation, and therefore it necessary that companies adopt appropriate motivation incentives for their employees.

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