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INFLUENCE OF PROJECT APPROACH IMPLEMENTATION ON THE OCCURRENCE AND PERCEPTION OF CRISES IN AGRICULTURAL ENTERPRISES IN THE CZECH REPUBLIC

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Abstract

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Project management is one of the most important management tool in many enterprises. Agricultural enterprises with project management are able to foresee their future. Their managers are able to identify upcoming problems earlier and get ready to them in advance. Crisis is seen as a phenomenon more common than rare and it is therefore essential that the enterprises respond by reflecting the aspects and impacts of the crisis in their corporate strategy, and the managers learn to manage crises effectively. The paper deals with a single research of the management of small and medium-sized enterprises in the Czech Republic. It is focused on the use of projects in farm management and evaluation of the significance of the crisis managers of these enterprises. Only about 15 % of enterprises manage its organization by projects. The crisis occurs in all organizations, in varying degrees and intensity. Most often agricultural enterprises are faced with a crisis caused by the change in legislation and bureaucracy. The importance of a crisis was evaluated by the managers with an average rate of 3.6 (where 5 was the highest). The questionnaire method was used for primary data collection. The limitation of the paper covers areas such the sample (34 enterprises), methodology and data.

Keywords: agriculture enterprises, crisis, Czech Republic, hypothesis, importance, management, project

INTRODUCTION

In late 2014 were registered over 48.5 thousand entities in structural agricultural statistics of the CSO (Czech Ministry of Agriculture, 2015). Economic results show that the profit of Czech agriculture grew in 2014 compared to 2013 by almost 40 % to 22.9 billion Czech crowns. The record-breaking earnings was mainly due to an exceptionally good harvest, the favourable development of the purchase prices for livestock commodities and increased subsidies as reported by the Czech Statistical Office (CSO) and the Agricultural Union of the Czech Republic (Fialová, 2015).

Basic differences of Czech agriculture, especially compared to the agriculture in the EU-15 include significantly higher average size of enterprises with mostly owned by legal persons that manage more than 80 % of leased land (ÚZEI, 2010). In agriculture the production is based on year's cycle and storing must be taken into consideration. It is necessary to have sufficient inventory of fodder, seed, seedlings and another items till the next harvest or it is necessary to purchase these materials at the right time, for the lowest prices (Vaněček, Toušek and Řehoř, 2007). Agricultural enterprises are increasingly grouped under a cooperative to be able to compete with large producers, and thus gain long-term contracts with customers. Management of enterprises increasingly uses project management to flexibly respond to customer needs in the short term

and possibly to adjust their production to national and European incentives in a short time (Vrchota, 2016).

Human factor forms a key component of the development potential so it is important to pay attention to this factor. The above mentioned significant points are emphasised by the agrarian policy of the EU and national agrarian policy in support of multifunctional agriculture (Hrabánková, Boháčková and Řehoř, 2007).

Any entity, a company or municipality, should constantly try to improve itself (Řehoř, 2015). Organizations of national economy need project management to manage their innovativeness in a focused manner, and to achieve growth and satisfy their strategic objectives in a way that minimizes the high-inherent risk (Owens, 2006).

Project management can be defined as the proces of controlling the achievement of the project objectives (Mohammadjafari *et al*., 2011).

With this method of management, an organization can achieve a major competitive advantage through its high flexibility over multinational companies. In this approach, it is important to realize the difference between the process and the project. The project compared the process is a set of activities that are unique (an organization has not tried this way), and they are clearly limited by an exact time and money (they have limit budget and the date of their end) (Vrchota, 2016). Project management theoreticians need to recognize that different versions of project management are required in different circumstances (Thomas and Mullaly, 2008). The methodologies and components of project management are well documented (Meredith and Mantel, 2002, Turner, 2009, Kerzner, 2013), and so we do not plan to repeat them here. In Czech Republic has not been a lot published to date about the management of projects or strategies in agriculture.

However, as nowadays there is the time of turbulent changes of the environment, the organizations need to deal with the crisis management as well (Rolínek *et al*., 2016). A number of techniques have been identified by researchers and practitioners to help in the proactive planning and strategy development for the prevention or reduction of crises and disasters through sensing potential problems (Gonzales-Herrero and Pratt, 1998, Kash and Darling, 1998).

A number of authors have attempted to define a crisis to help improve their understanding of this phenomenon. Novotný (2007) defines also the symptoms of a crisis – the crisis of a company refers to the stage of its life with adverse developments affecting performance potential, the net assets and liquidity over a longer period of time. A similar definition is also revealed by Synek and Kislingerová (2002), who also mention a radical reduction in sales volume. They also say that these symptoms immediately threaten the existence of an enterprise in case this development will continue. Generally speaking, the crisis it described as a decisive moment. This is the time when the organization develops its performance adversely and unless the newly formed situation is dealt with in time, the existence of an organization is at risk (Řehoř, 2016). Good crisis management should involve more than just an effort to minimize risks to the organization, but should also seek to maximize every opportunity for an organization, which occurs during a crisis (Devlin, 2007).

MATERIALS AND METHODS

This paper aims to evaluate the influence of project management on the occurrence and perception of crises in agricultural enterprises in the Czech Republic. Partial aim is to characterize the various types of crises that have occurred in agriculture.

In the interviews, the managers evaluated and discussed the crisis in their organizations in past years, and consequently, their rating was summarized under the five-point rating scale, where 1 represented the crisis, that was not seen as an important in terms of the business and 5 represented the crisis seen as very important.

The data were collected from 34 agricultural enterprises in the Czech Republic in 2014. Research sample was selected using non-probable random selection, with regard to circumstances of the data collection. The data necessary for conducting the research were collected by a questionnaire survey and they were supplemented by qualitative data, obtained through in-depth interviews as well as case studies. The questionnaire was distributed electronically via e-mail. The questionnaire consisted of many questions, for the purposes of this article, only two were selected. Representatives of different enterprises responded to questions concerning mainly crises that they had to solve during their operation on the market. Each of the selected enterprises identified at least 3 crises they had to deal with trying to minimize the impact on their business activities. Crises that were defined this way were consequently divided into 19 categories. The total number of crisis occurrence was 143.

Data were tested using two-sample Wilcoxon test and his asymptotic variant. This test is a non-parametrical two-sample test, which is most frequently used, when the condition of data normality is not met. Let X1 , ... , Xn and Y1 , ... , Ym be two independent random samples from two continuous distributions, whose distribution functions can only differ in displacement. x0.50, y0.50 states for the median of the first and second distribution. The hypothesis that the distribution functions of the two distributions are the same is always tested, in other words, the medians are tested for equality. The result of test is compared to the alternative hypothesis (the first of medians x 0.50 of enterprises which are project managing, is greater than the latter) (Freund and Wilson

et al. 2010; Friedrich and Majovská 2010). Using the two-sample Wilcoxon test (Mann-Whitney U-test) at the level of importance $\alpha = 0.1$ where X = agricultural enterprises with project management and Y = agricultural enterprises without project management, the hypotheses are tested: H0 = x0.50 – y0.50 = 0 and HA = x 0.50 > y 0.50

In the first stage, all (n + m) values X1, ... , Xn and Y1, ... , Ym are arranged in ascending order by size. The entire process takes place electronically using test statistics software and this step is not described in the article, because it is a lapidary operation. Furthermore, the totals of orders X1, ... , Xn are identified and stated as T1. The sum of the values in the order of enterprises which are not project managing Y1, ... , Ym will be stated as T2. The next step was to calculate the test statistics for U1 and U2, while applies that U1 + U2 = mn (Friedrich and Majovská, 2010).

If statistics min {U_(1,) U_2} ≥ tabulated critical value, for the selected ranges of both selections and chosen level of significance, then than we may reject the null hypothesis of the identity of the compared groups on the significance level $\alpha = 0.05$ and $\alpha = 0.1$ (Budíková and Králová, 2010).

Since for both samples in all test cases applies that n, m are greater than 30 the asymptotic variant of the Wilcoxon test (Mann-Whitney test) is undertaken, which is used for n and m higher than thirty.

Critical codomain for right-side alternative id W = <K2 , n>. Non-negative values k1 a k2 are strictly defined in critical literature. H0 is rejected on the level of significance α, if U0 ∈ W (Freund and Wilson *et al.*, 2010).

RESULTS AND DISCUSSIONS

The legislation connected with bureaucracy and control of government authorities is seen as the most frequent crises (13 %) by the agricultural enterprises. Throughout the research, this crisis is only typical for this sector in comparison with other SMEs, where it occurred in 8–6 % only. Significant occurrence was reported in the crisis related to sales prices (12 %), where there is a strong relationship to commodity prices and thereby to price competition. These crises are also typical for this sector, where prices are influenced by global producers, and because local production must respond to market fluctuations, since the import and export are common.

Further customer requirements (12 %) are seen as a crisis, although agriculture is not a turbulent industry, there are noticeable variations in customer needs, which are determined largely by changing the habits of end-consumers. As reported by interviews with the managers of enterprises in this sector, there is increased pressure on product quality, which is required to demonstrate adequate quality by different certificates that burden the enterprises by administration. The crisis associated with employees (12 %), that include workplace relations, performance and last but not least, the availability of skilled labour force, is the same representation as in the whole sample of SMEs from all sectors can therefore the employee crises occur in all enterprises regardless of their field of business. The crisis related to inputs and suppliers was reported by 8 %. Therefore, it is shown that agricultural enterprises do not depend on suppliers as much as the production enterprises and they do not have to deal with late supplies and low quality as often.

The crises caused by natural conditions were surprisingly reported by 6 % only. The number is only slightly greater compared to the average of all SMEs in the sample. It can therefore be concluded that agricultural enterprises are able to adequately predict and diversify their production, so that any natural conditions do not jeopardize their economy. The same level (6 %) was revealed for technology crises. These are crises related to a failure of machines and production equipment. The interviews reported that it is mostly due to recent modernization that caused reducing the failure rate. In this industry it is common to rent key machines in case of an insufficient capacity.

Crisis associated with competition are represented by 5 % of the sample due to the fact that enterprises s in the sector and area have a good awareness of competitors and they can predict their steps very well, which is also due to low degree of innovation of a higher order in the agricultural sector. Process and capacity crisis reached both 3 %, in both cases it is rather an insignificant crisis, because the processes are stabilized and deeply ingrained in the corporate culture in agriculture, and these change only sporadically. Capacity crisis in this sector are associated with crises of technology and employees. All crises of less than 2 % were included in the category of others. The following crises are

I: *Statistical information of agricultural enterprises*

Project managed	Number of enterprises	Enterprises in %	Number of crisis	Crisis in %	Avarage importance of cricis	Variance	Maximal value	Minimal value	Standard deviation
YES	5	15	19	13	3.33	0.62	4	2	0.82
NO	29	85	124	87	3.58	1.16	5	0	1.08

II: *Type of crises in (non) project managed agricultural enterprises*

Crisis	Non-projectly managed – %	Non-projectly managed – n	Projectly managed – %	Projectly managed – n
Technic. breakdowns	6	7	5	1
Inputs, Supplies	9	11	0	0
Employees	12	15	11	2
Owners	4	5	0	0
Natural disasters	7	9	0	0
Processes	4	5	0	0
Capacity	2	3	5	1
Selling prices	14	17	5	1
Customers, demands	10	13	21	4
Collecting bills	6	8	11	2
Regulations	10	13	26	5
Competition	5	6	5	1
Others (Capital, Entrepreneur, Outdated product, Form of business)	10	12	11	2
Total	100	124	100	19

reported: Capital, Entrepreneur, Outdated product, Form of business and Thefts.

Within the sample of agricultural enterprises, 15 % employed project management, compared to 85 % of enterprises that do not employ project management (see Tab. I). More important crises occurred in the group without the project management, there was an average importance of the crisis on the level of 3.58 points on a 5-grade scale, compared with 3.33 points for enterprises with project management. When comparing the occurrence of crises in enterprises with and without project management, there is a significant difference in crises related to customers and their requirements. The crises there are more common in enterprises with project management (21 % compared to 10 %).

Similarly, the occurrence of crises associated with bureaucracy and administration are more common in enterprises with project management (26 % compared to 10 %). In contrast there are no crises connected to the inputs and suppliers, ownership crisis, procedural crisis and the crisis associated with the natural conditions in enterprises with project management. In other areas, the occurrence of crises is of a similar or minimum difference as shown in the Tab. II.

All projects contain a part of uncertainty and they are exposed to unidentified or poorly predictable phenomena. Organizations that are not managed by projects deal with crises reactively. They will address the crisis when it occurs. Enterprises with project management use a proactive approach. They prepare in advance and they are able to handle a greater number and variety of urgency negative situations than they encountered in the past.

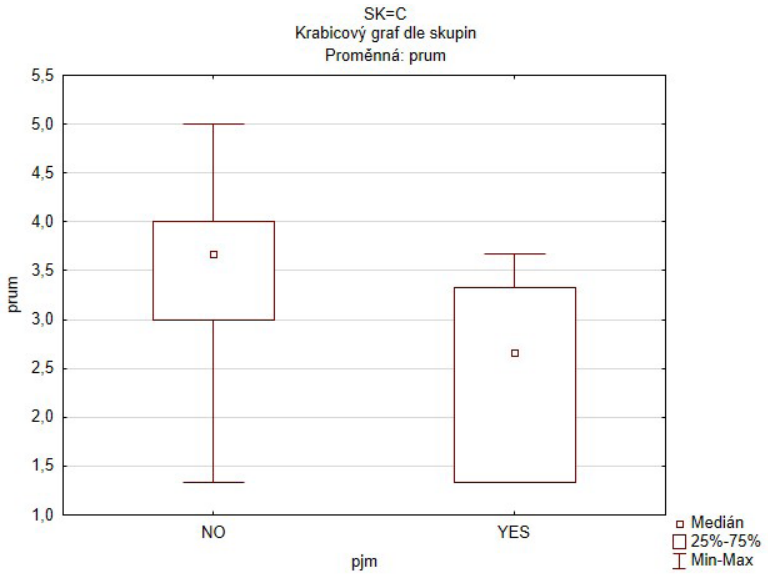
As Tab. III revealed, p-value of 0.0518 is close to the level of importance ($\alpha = 0.5$) and it is possible to reject the null hypothesis in favour of the alternative hypotheses (a positive value of $Z = 1.945$) that there is a significant difference in occurrence of crises between enterprises with and without project management more favourable to enterprises with project management.

The results of Tab. III to are also displayed in Fig. 1. The right part of Fig. 1 are entered data from C enterprises (Agriculture, construction and utilities).

The graph shows that the non-project managed enterprises have a wider range of data from 1.4 to 5 points compared to project controlled businesses, where the variance values is the same medium quantile of the lower limit at 1.4 points. A variance exceeds the upper middle quantile of just 0.3 points. The median is the level of 2.6 points for project-managed enterprises compared to the median level of 3.6 points for non-project-managed organizations. Visually we can believe that there is a difference between the two groups enterprises in the perception of the crisis, although it was not confirmed by the Wilcoxon test at the level of $\alpha = 0.05$ significance.

III: *Mann-Whithney U-test*

OECD	Non-projectly managed	Projejectly managed	Z	p-value
C	548	47	1.9451	0.0518



1: *Median and interval of data layout in projectly and no-projectly managed enterprises from sector C*

CONCLUSION

When a crisis breaks out, the managers of agricultural enterprises need to deal with the question of who will lead the process of recovery of an enterprise, and they need to look for a crisis manager. Qualities of a crisis manager are certainly crucial to the success of the process of crisis management. Especially, they have to decide correctly, avert a crisis and use it as an opportunity to improve the organization.

Agricultural enterprises also reported the positive influence of project management on the occurrence and perception of crises. The p-value was reported at the level of 0.0518. The threshold of disproving the null hypothesis of agreement between the two samples was set under the level of $\alpha = 0.05$. We can also believe that project managed enterprises better perceive the crisis in this category.

Managers of agricultural organizations in the Czech Republic should be more interested in the issue of project management and on approaching the performed activities as projects and seek to implement them successfully. The best crisis managers also know what changes are needed in corporate governance, organizational culture, and information technology (which confirms Lerbinger, 2012).

Overall, the small and medium enterprises confirmed the assumption that companies without project management perceive a crisis worse than project-managed enterprises. These businesses have the advantage that they process the crisis plans (Cioffi, 2009; Pich, 2002) and they plan for a shorter period. For this reason, their ability to predict the crisis is more accurate. Proactive planning through the use of strategic planning and issues management will help reduce risk, time wastage, poor resource management and reduce the impacts of those that do arise (as mentioned Heath, 1998 and also Thompson and Martin, 2010).

A guideline, which should be followed by agricultural enterprises, is complicated, but in the end, it affects the comprehensive development of rural areas. It is all about linking the activities of farms, rural communities and other entities that can bring interesting additional financial resources and increased prosperity not only to enterprises, but to all operators in rural areas. Knowledge of project management is a competence that fits every organization. Project management can be described as a means for effective and efficient implementation of changes and a way to overcome the crisis.

For the development and competitiveness of agriculture in the Czech Republic, an active support from the state is necessary. An integral part of improving competitiveness is a diversification of activities that reduce existential risk arising from the failure of one of the enterprise's activities. Another possible way is through grants from the Operational Programme of Rural Development and Fisheries. This must be based on project implemented by the agricultural enterprises. Its preparation and administration, however, is the main obstacle why the enterprises are not asking for subsidies. There are many organizations that they can create their project and get an appropriate financial resource to facilitate their development.

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