



## **CRISIS – PROJECT – RISK: ACCORDING TO THE OPINIONS OF HUNGARIAN SMES'**

**Csiszárík-Kocsir Ágnes Ph.D.**, Associate Professor, Óbuda University  
**Varga János Ph.D.**, Assistant Professor, Óbuda University



SUPPORTED THROUGH THE NEW NATIONAL EXCELLENCE PROGRAM OF THE MINISTRY OF HUMAN CAPACITIES

### **Abstract:**

The subprime crisis appeared in 2008 brought many changes in Hungarian and European companies' life as well, even all over the world. The relatively high supply of resources, the low cost of funds, has encouraged the borrowers. Because of the over-supply of credit, companies launched further and further investments. The abundance of the resources before the crisis suppressed the perception of business and project risks, and suppressed the perception of risks as well. It also showed some projects in favourable light, which had been clearly rejected otherwise. The crisis had changed the conditions in macro economies in national and international level too. Loans and credit became more and more expensive, which draw attention to project risks also. Companies had to handle the financial, technical, and other risks more realistically, than they did it before.

Dozens of scientific papers dealing with the management of project risks, with identifying and making recommendations to avoid them. Most of the risks are unavoidable, but still manageable. The perception of the project risk is different. It depends on the size, on the activity as well. The aim of the study is to present the project risks, the opinions about them according to a Hungarian questionnaire research.

**Key words:** *project risk, crisis, financial resources, exchange rate, credit risk, questionnaire research*

**JEL code:** G01, O22

### **Introduction**

Projects as investment actions are essential for the economy of a certain country and a region too. Investments, as the classic macroeconomic income formula<sup>7</sup> shows, are capable of substantially influencing the GDP rate both in a negative or a positive way. Enterprises are special factors of the economic growth, which they are able to affect significantly through their financing and investment activities. This is why it is imperative to discuss the financing and investment decisions of the enterprises together and consistently. As the previously mentioned income formula indicated, in addition to consumption, governmental purchases and income deriving from external relations, investments are also needed for the growth of the economy.

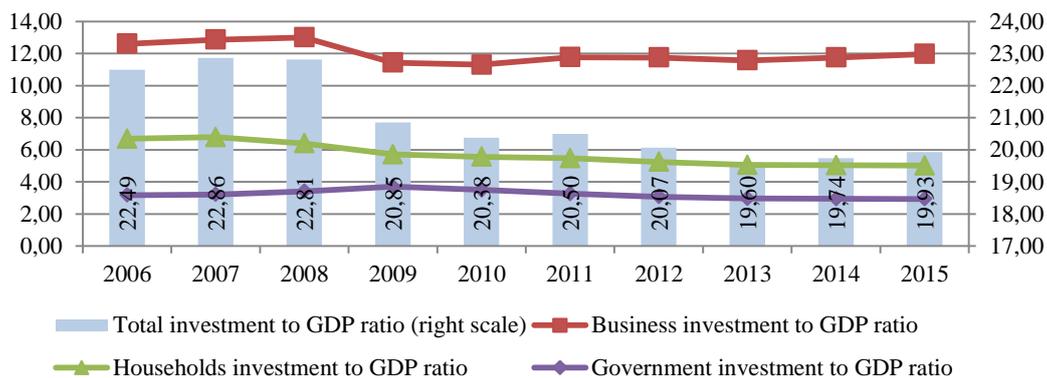
Prior the crisis we had consumed on credit and we had invested in nearly every region of the world with the aid of credit, since the resources had been available without a limit and at a low price. Before the economic crisis erupted in 2008 the countries had tried to push the rate

---

<sup>7</sup>  $Y = C + I + G + (Ex - Im)$



of their economic growth up, which they had accomplished via the cheap loans accessible in masses (Csiszárík-Kocsir et.al, 2016). Due to the credit-funded early consumption and investments the investment ratio in the countries of the European Union had been over 22%, which shrank strongly below 21% and then later below 20% as a result of the crisis. The downturn was detectable in every sector of the economy, as the diagram below shows.



Source: own compilation based on Eurostat, 2017

Figure 1: Investments in the countries of the European Union before and after the crisis

In order to increase the investment ratio we need projects, which are specific forms of investment actions. The projects always have a well-defined start date and end date, and they are always carried out to achieve some specific and usually unique goal. Consequently, a project differs from the normal corporate activities, because in this case we always have to face some new and unknown series of actions. However, this process is full of risks and uncertainties (Chapman, 1998). These two concepts are often treated as synonyms, although they have different meanings, as it was expressed mathematically by Knight (1921) as well. In his opinion, we talk about risks when we know the probability of occurrence of a certain event, whereas it is an uncertainty if we don't know this probability.

Nevertheless, it has to be noted that it is almost completely impossible these days to make such a distinction, as the probabilities are hard to foresee, which is why these notions are used as synonyms after all. The main point of the risks can best be set out as factors that threaten the achievement of the goal or divert the desired outcome. According to Renn (1992), uncertainty is a condition for the risks, because the future is always unpredictable. Hillson (2002) agreed that the risk is a presumption of an uncertain event, which can have a negative or a positive impact too. Bernstein (1998) also explained risks with the existence of uncertainty, which is down to the lack of and inaccuracy of information.

Numerous articles, studies and books deal with the risks of the projects. The risk of a project is basically the probability of some kind of danger materializing, which will have a rather negative than positive effect on the goals of the project or on the organization as a whole. In accordance with the opinion of the PMI (2013), the organizations and stakeholders always sense and assess the risks that occur during a project. The attitude towards the risks is determined by the organization's risk appetite, tolerance and the size of its risk threshold that the organization still considers bearable. Many studies have tried to analyse and examine the risk predisposition and risk detection as well.



The Big Five Personality Model (extraversion, agreeableness, conscientiousness, neuroticism, openness to experience) – introduced by Zhao and Seibert (2006) – needs to be highlighted, on the basis of which Wang and his co-authors (2016) wished to look into the relationships with the project risks. Certain factors are able to influence the attitude towards risks both in a positive and negative direction, as Ulbert and Csanaky (2004) noted too in connection with the positive illusions, which are usually related to the judgement of the abilities and skills of the individuals. These are relevant from the aspect of the project managers.

Based on some surveys, 70% of the projects fail due to inadequate planning. The most common mistakes are the underestimation of the budget and the insufficient management of risks. The failed projects will not be able to contribute to the increase of the investment ratio and to the promotion of the economic growth. Hence the failed projects will always appear as a loss or damage, for which the organization wasted the resources in vain. These effects also show up at the level of the national economy as a loss in the form of lost growth.

Part of the risks derives from the complexity of the projects. With regard to the complexity of the projects, Geraldi et al. (2001) named the following five dimensions: structural complexity, uncertainty, dynamic, pace – speed, and socio-political dimensions. Every one of them is a risk-generating factor that needs to be evaluated in the course of an exploratory analysis.

The risks are meant to be handled by the risk management of the project (PRM<sup>8</sup>), which is more and more considered to be a factor increasing the probability of the project's success (Olechowski et.al, 2016), yet the usage of these techniques and tools is still rather occasional to the project managers (Raz et.al, 2002). Several techniques exist for the management of risks. Some of them can be eliminated by insurance, while others can be minimized or shared (Lewicki et.al, 1998) by an appropriate calculation, like for example by NPV calculation (Paquin et.al, 2016) or by contracts (Adler et.al, 2016), but still there are factors that remain unmanageable. Fekete (2009) mentions two levels of risk management:

- risk controlling, as a cause-specific measure (reducing the probability of occurrence, reducing the effect), and
- risk financing, as an effect-specific measure (insurances, contracts).

The companies have to create their action plan to manage risks in light of the above.

The risks can be very diverse, and there are several forms of their categorization. Renn (1998) claimed that there are technological risks created by the social environment, high-volume risks that cannot be controlled by individuals, monetary risks and risks voluntarily taken by individuals. Coenen (2004) named five groups of risks: market risks (competition), operational risks (operation), financial risks (equity transactions, exchange rates, interest rates), environmental risks (legislation, business), and other risks (organizational structure, natural environment).

---

<sup>8</sup> PRM = Project Risk Management



## **Research results and discussion**

### **Methodological background**

The basis of the study is the primary research conducted in 2016, which has been carried out through a pre-tested and standardized questionnaire<sup>9</sup> in Hungary. The research is still ongoing and the introduced results are only partial results, reflecting the opinion of 592 enterprises that have answered the questionnaire form. The questionnaire assessed the enterprises' point of view in three aspects: their financing, investment activity and project management. This essay is dealing with the evaluation of the results of the project part. The finalization of the questionnaire had been preceded by in-depth interviews, and then the questionnaire form was created by using the outcome of the qualitative research. The questionnaire contained only closed questions for the sake of the better assessment of the sample and the answers. There was an earlier round of the examination between 2013 and 2015, prior to the present form of the questionnaire, where the issue was assessed in the same thematic areas but with fewer questions. The sample chiefly consists of SMEs because of their weight and economic dominance. The questionnaire was filled by the enterprises completely anonymously, and their identity has not been identified in any way. Due to the segmentation of the sample, the research required only the company form, the scope of activities, the domestic property rates, and the main balance sheet and income data (net sales revenues, earnings after taxes, balance sheet total). The results are not considered representative, but they provide for the possibility of conducting and establishing a representative research at a later time. The sample introduced above was assessed with the help of the SPSS 19.0 and MS Excel 2010 programmes.

In the present study we examined the sample by number of employees and the sector. The composition of the sample is shown in the following table:

Table 1

#### **The composition of the sample according to the number of employees and the working sector**

	Number of employees			Sector	
	db	%		db	%
below 50	478	80,7	primary	59	10,0
between 50-250	60	10,1	secondary	139	23,5
above 250	54	9,1	tertiary	394	66,6

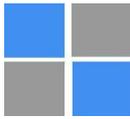
*Source: own research, 2016, N = 592*

### **The results of the research**

During the part of the research presented in this study we asked the respondents to rate the listed project risks on a Likert scale of 1 to 4, reflecting how significant they were. On this scale 1 meant that the risk was not significant at all, while 4 was the rating of the extremely significant risks (the respondents marked with 0 could not assess the size of the risk). A wide

---

<sup>9</sup> Hereby I would like to thank for the assistance of the students of Óbuda University, who contributed to the dissemination and filling of the questionnaires.



spectrum of risks is included in the list, containing elements from both the macroeconomic and microeconomic levels.

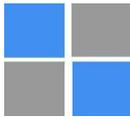
Table 2

**Assessment of the project risks based on the % of the answers given to the certain levels, along with the mean and the variance of the ratings**

	0	1	2	3	4	Mean	Variance
Risk caused by suppliers	2,20	3,89	27,36	48,31	18,24	2,7652	0,7553
Authorization difficulties	2,53	1,52	15,71	38,18	42,06	3,1571	0,8433
Change in the exchange rate of the forint	2,36	2,70	17,06	39,86	38,01	3,0845	0,8660
Change of loan rates	2,70	2,36	16,89	40,03	38,01	3,0828	0,8815
Delay in time	1,86	2,03	16,89	43,07	36,15	3,0963	0,7707
Risk of information flows	3,55	5,41	27,53	36,82	26,69	2,7770	1,0297
Lack of capacity	3,89	6,76	27,87	39,36	22,13	2,6909	1,0261
Risk caused by contractors	2,53	2,20	17,23	42,40	35,64	3,0642	0,8419
Cost overrun	2,03	1,69	16,39	44,26	35,64	3,0980	0,7620
Management risk	3,38	4,90	32,94	43,75	15,03	2,6216	0,8380
Incorrect identification of milestones	8,28	7,09	26,35	36,82	21,45	2,5608	1,3161
Technical design risk	2,53	3,04	23,31	43,75	27,36	2,9037	0,8486
Risk of the financial situation	2,87	2,03	14,86	43,75	36,49	3,0895	0,8465
Risk of financial planning	3,21	1,01	17,23	45,27	33,28	3,0439	0,8339
Political risk	6,59	8,78	25,84	29,90	28,89	2,6571	1,3763
Lack of specialists	2,36	5,57	17,40	36,82	37,84	3,0220	0,9894
Natural hazard	4,56	20,10	39,02	25,17	11,15	2,1824	1,0496

*Source: own research, 2016, N = 592*

The responding enterprises considered the authorizations to be the largest risk with the average rating of 3.1571. This means that the delays in taking the project-related administrative steps, which the enterprise has no power to influence whatsoever or only marginally, constitute the biggest obstacle in front of the successfulness of the project. According to the results, the second most significant risk is the cost overrun (3.0980). Underestimated expenses or their sudden increase during the implementation and operation of the project is also a major cost



factor. The risk with the third highest rating is the delay in time (3.0963). Two of the three most significant risks are part of the project triangle well-known from the basic knowledge of project management. If two items of the triangle are among the most substantial risk factors, then it also gives an explanation to the previously mentioned 70% failure rate. These risks belong to the group of manageable risks, if the enterprises implementing the projects can see them and are aware of their importance, because in that case the enterprises are able to respond as well.

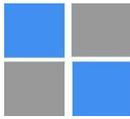
All the subsequent risks in the order are of a financial nature: risk of the financial situation (3.0895), change in the exchange rate of the forint (3.0845) and change in the loan rates (3.0828) are all regarded as high and significant risks. The distinction between the means of the above factors is only a few per thousand, so they are situated broadly at the same level in the respondents' way of thinking. On the basis of the assessments, the respondents characterized the risks with a rating of 3 or 4 in nearly 80% of the cases. They classified the natural hazards (2.1824) as one of the least significant risks. The reason for this is that Hungary is sheltered by the Carpathian Basin, and natural disasters that would inherently ruin the ongoing development of a project (whether it is a construction, R+D, infrastructural, telecommunication or other project) when every other condition is unchanged are relatively rare. The risks deriving from the incorrect identification of milestones (2.5608) and the management risks (2.6216) are deemed less serious too. These risks were seen by the respondents as ones that can be minimized with the help of adequate management and planning.

Furthermore, we were curious about how the segmentation features above influence the assessment of the risks. We measured the correlation via Pearson's Chi-square values, with the assistance of a crosstabs evaluation. The correlation was statistically proven where the Chi-square values were under 0.05. The values are shown on the following table.

Table 3

**Correlation between the assessment of project risks and the size and activity of the enterprise**

	Number of employees	Working sector
<b>Risk caused by suppliers</b>	0,364	0,278
<b>Authorization difficulties</b>	0,092	0,182
<b>Change in the exchange rate of the forint</b>	0,357	0,135
<b>Change of loan rates</b>	0,746	0,462
<b>Delay in time</b>	0,403	0,383
<b>Risk of information flows</b>	0,034	0,235
<b>Lack of capacity</b>	0,350	0,106
<b>Risk caused by contractors</b>	0,490	0,352
<b>Cost overrun</b>	0,188	0,125
<b>Management risk</b>	0,048	0,127



<b>Incorrect identification of milestones</b>	0,078	0,617
<b>Technical design risk</b>	0,316	0,412
<b>Risk of the financial situation</b>	<b>0,033</b>	0,187
<b>Risk of financial planning</b>	<b>0,018</b>	0,209
<b>Political risk</b>	<b>0,000</b>	0,113
<b>Lack of specialists</b>	<b>0,000</b>	0,291
<b>Natural hazard</b>	<b>0,011</b>	0,072

*Source: own research, 2016, N = 592*

As the table demonstrates, the scope of the enterprise's activities does not have an impact on the perception and assessment of the risks at all. On the other hand, in certain cases the number of employees can be associated with the risk assessments, since the rating of the information flow, the management risk and some of the financial and macroeconomic risks are clearly affected by the size of the company.

When evaluating the risk of information flow, based on the value of the adjusted standardized residuals the smallest companies marked 4 as the expected value lesser times, and it is the other way round with the largest companies. A similar correlation cannot be found at the risk of financial planning, because the AdjR values stay below 2 in absolute terms every time. By the assessment of the risk deriving from the lack of specialists, according to the AdjR values the connection is detectable when value 1 is selected. In this case the smallest enterprises performed under the expected value again, whereas the largest companies produced results higher than the expected value. The previously described link can be seen again at the risk posed by the financial situation regarding the selection of value 1, but here the category of the medium-sized enterprises appear too, and they marked value 2 in a percentage higher than expected. In connection with the natural hazards, value 4 was chosen above the expected value by the largest companies, while in the case of political risks the recently introduced correlations apply.

It can therefore be concluded that the smallest companies, where the number of employees is below 50, assessed the highlighted risks with a lot stronger rating than it had been anticipated. The smallest enterprises rated the risks with 1 fewer times than expected, which means they considered them to be higher. The explanation lies in the smaller enterprises being more exposed to risks, for they have less means to manage them and to reduce their impact. Moreover, they are more vulnerable financially as well, it is harder for them to get loans and they don't possess enough reserves, which restricts the ability of the projects' risk management to take actions.

#### **The results based on the size and the sector**

We further analysed the average values of the risks on the basis of the segmentation features introduced above, for the sake of the better visibility of the risks that evolve at the certain segments the strongest, which is illustrated by the below tables.



Table 4

**Assessment of the project risks based on the average values, with regard to the number of employees of the enterprises**

	below 50	between 50-25	above 250
Risk caused by suppliers	2,74	2,77	3,00
Authorization difficulties	3,18	3,23	2,85
Change in the exchange rate of the forint	3,10	3,08	2,94
Change of loan rates	3,08	3,05	3,15
Delay in time	3,09	3,05	3,22
Risk of information flows	2,73	2,90	3,04
Lack of capacity	2,69	2,70	2,72
Risk caused by contractors	3,08	3,00	3,00
Cost overrun	3,10	3,03	3,15
Management risk	2,58	2,77	2,80
Incorrect identification of milestones	2,52	2,65	2,81
Technical design risk	2,91	2,97	2,76
Risk of the financial situation	3,09	3,05	3,09
Risk of financial planning	3,07	3,03	2,85
Political risk	2,72	2,40	2,35
Lack of specialists	3,07	2,95	2,65
Natural hazard	2,14	2,33	2,37

*Source: own research, 2016, N = 592*

As it is laid down by the table, by their size the enterprises viewed different risks as the most serious. The smallest and the medium-sized enterprises also deemed the authorization the highest risk factor, but in their case the change in the forint's exchange rate is on the second place (which is fifth based on the sample mean). This is because these enterprises can start projects mostly from loans, or previously they started projects from loans. Foreign currency lending posed a huge problem for both the households and the corporations in Hungary after the crisis, and the enterprises experienced it directly almost without exception. That is why this risk factor was placed so high on the list. The smallest enterprises put cost overrun to the third place, followed by the risks resulting from the financial situation, while they ranked the other important element of the triangle – delay in time – fifth, which was third according to the sample mean.

The medium-sized enterprises gave the third place to the change of loan rates, which is closely related to the factor that comes second in the list. The medium-sized enterprises are more creditworthy in the eyes of the banks and they are granted loans more preferably, due to which the risk of changes in the loan rates is real to them as a factor affecting the results. The risks on the fourth and fifth place are the same as introduced above.

The largest enterprises assessed the risks from the aspect of the project triangle and the finances. To them the delays in time, the changes of loan rates and the cost overruns cause the biggest problems, and not the administration and the financial situation. It is surprising, since thanks to their size and knowledge these enterprises are the ones that have the most means to control the



certain elements of the triangle. In their case the financial situation is only fourth, but the risk of information flow appears too, which was not present at the previous two categories. The larger enterprises are more aware of the value of information, they treat them as a production factor, and as a consequence of their higher project activity they consider information to be precious more than their smaller counterparts do.

We have conducted the same evaluation in connection with the scope of activities, which is shown in the following table.

Table 5

**Assessment of the project risks based on the average values, with regard to the scope of the enterprises' activity**

	Primary	Secondary	Tertiary
Risk caused by suppliers	2,76	2,86	2,73
Authorization difficulties	3,05	3,10	3,19
Change in the exchange rate of the forint	2,85	3,08	3,12
Change of loan rates	2,97	3,04	3,11
Delay in time	2,97	3,10	3,11
Risk of information flows	2,95	2,78	2,75
Lack of capacity	2,56	2,78	2,68
Risk caused by contractors	2,97	3,11	3,06
Cost overrun	2,93	2,99	3,16
Management risk	2,41	2,68	2,63
Incorrect identification of milestones	2,47	2,47	2,60
Technical design risk	2,78	2,97	2,90
Risk of the financial situation	2,85	3,14	3,11
Risk of financial planning	2,85	3,05	3,07
Political risk	2,71	2,47	2,72
Lack of specialists	3,07	3,05	3,01
Natural hazard	2,07	2,33	2,15

Source: own research, 2016, N = 592

Segmenting the sample on the basis of the activities, we get a different list than by the sample mean. The enterprises belonging to the primary sector, the ones that produce and manufacture goods, named the lack of project specialists as the most significant risk. This is completely understandable, because the decrease in the number of specialists and the growth of the number of white-collar employees (graduates) at the expense of the number of blue-collar workers is detectable not only in Hungary but at a European or even global level as well. The enterprises of the primary sector also ranked the authorization difficulties second, and then they put the risks of loan rates to the third place. The fourth position went to the risks caused by contractors, which is connected to the lack of qualified professionals, and the risk due to delays in time was fifth on this list. The enterprises of the secondary sector put the financial situation, the risks caused by contractors and the delays arising from the authorization difficulties to the podium.



The presence of the risks caused by contractors makes sense, since both sectors carry out production and conversion activities directly or indirectly, for which they need buildings, machines and instruments. These are specific tangible investments, and their success highly depends on the experience, capacity and expertise of the contractors. The delay in time and the change in the exchange rate of the forint are on the fourth and fifth place, which were among the first five significant factors in the sample mean too. The enterprises of the tertiary sector – that are involved in service activities – picked the same first two factors as the sample mean, namely the risks caused by authorization and cost overrun. Afterwards they named the more significant financial risks, which are the change of exchange rates and loan rates, and finally they put the delay problems to the fifth place.

### **Conclusions**

In view of the above it can be stated that to date, mainly to the impact of the crisis in 2008, the risk management of projects has become a priority area of project management, although according to the experts the priority of this field is still not what it should be. The risks may be diverse, but as a result of the crisis we deem the financial risks the most critical. Thanks to the post-crisis shifts in the market we have learnt that there is no such thing as free money or unlimited liquidity. We have also learnt that there are no cheap loans either.

The results of the research revealed that the enterprises regarded the administrative activities as the highest risks, which are able to cause such damages and losses due to the prolongation of the deadlines that can take the whole project to a very negative direction. They attached roughly the same value to the financial risks, which meant a high rating, above the average 3. Some of the financial risks are of a macro nature, thus the enterprises have no direct influence on them. Indirectly these risks can be reduced by certain financial instruments or prevented by insurances, but they still have a strong impact on the project, and usually a negative one. The risk assessments of the enterprises have changed considerably due to the crisis. We have a more realistic picture of the sources of financial risks than we did before 2008. Every enterprise possesses the receptiveness to risks, but it is rather linked to the size of the enterprise, as it was seen through the Chi-square results as well. Mostly the smaller enterprises are receptive to the financial risks, which is absolutely understandable, since these enterprises do not have such an extensive system of relationships that could provide ample resources for them. It became clear that the enterprises feel uncertainty towards the two main elements of the project triangle (time and cost).

The task of the future is given. We have to introduce the methodology of risk management to the enterprises, especially to the smaller ones, for the purpose of which the non-profit organizations that are meant to serve the development of the enterprises are perfectly capable of. The relevant literatures under this topic offer numerous means and methods for the management and measurements of risks, the utilization of which is essential for the future success of the projects because of the growing investment ratio, so that the next crisis would not hit the enterprises that badly, neither at a national nor an international level.



## References

- Adler, T.R. – Pittz, T.G. – Meredith, J. (2016): An analysis of risk sharing in strategic R&D and new product development projects, *International Journal of Project Management*, vol. 34., no. 6., 914.–922. pp.
- Bernstein, P.L. (1998): Szembeszállni az istenekkel - A kockázatvállalás különös története. Panem, Budapest,
- Chapman, R.J., (1998): The effectiveness of working group risk identification and assessment techniques, *International Journal of Project Management*, vol. 16., no. 6., 333.–343. pp.
- Coenen, M. (2004): Risikomanagement und risiko controlling im RWE-Konzern, *Controlling*, vol. 16, no. 2., 97.-102. pp.
- Csiszárík-Kocsir, Á.- Szilágyi, T.P. (2016): A beruházás gazdaságossági számítások elterjedtsége a hazai kkv-k körében, *Vállalkozásfejlesztés a XXI. században VI. – Tanulmánykötet, Óbudai Egyetem, Keleti Károly Gazdasági Kar*, 39.-52. pp.
- Fekete, I. (2009): Folyamat alapú működési kockázatfelmérés – kockázatelemzés alapú belső ellenőrzés, *Egészségügyi Gazdasági Szemle*, 2009/6. szám, 5.-10. pp.
- Geraldi, J., Maylor, H., Williams, T. (2011): Now, let's make it really complex (complicated). *International Journal of Operations & Production Management*, vol. 31., no. 9., 966.-990. pp.
- Hillson, D. (2002): Extending the risk process to manage the opportunities, *International Journal of Project Management*, vol. 20., no. 3., 235.-240. pp.
- Kinght, F.H. (1921): *Risk, Uncertainty and Profit*, Hart, Shaffner & Marx, Houghton Mifflin Company, Boston,
- Lewicki, R. – McAllister, D. – Bies, R., (1998): Trust and distrust: new relationships and realities, *Academy of Management Review*, vol. 23., no. 3., 438.–458. pp.
- Olechowski, A. – Oehmen, J. – Seering, W. – Ben-Daya, M. (2016):The professionalization of risk management: What role can the ISO 31000 risk management principles play?, *International Journal of Project Management*, vol. 34., no. 8., 1568.–1578. pp.
- Paquin, J.P. – Gauthier, C. – Morin, P.P. (2016): The downside risk of project portfolios: The impact of capital investment projects and the value of project efficiency and project risk management programmes, *International Journal of Project Management*, vol. 34, no. 8., 1460.–1470. pp.
- Project Management Institute (2013): *A Guide to the Project Management Body of Knowledge*, PMI Inc., Pennsylvania
- Raz, T., Michael, E. (2001): Use and benefits of tools for project risk management, *International Journal of Project Management*, vol. 19., no. 1., 9.–17. pp.
- Renn, O. (1992): Concept of Risk: A classification, In: S. Krimsky & D.Golding (Ed.): *Social theories of risk*, Paeger, Westport, 53.–79. pp.
- Renn, O. (1998): Three decades of risk research: accomplishments and new challenges, *Journal of Risk Research*, vol 1., no. 1., pp. 49.-71. pp.
- Ulbert, J. – Csanaky, A. (2004): Kockázatelemzés és kockázati magatartás, *Közgazdasági Szemle*, vol. 51., no. 3., 235.-258. pp.
- Zhao, H. – Seibert, S.E. (2006): The big five personality dimensions and entrepreneurial status: a meta-analytical review, *Journal of Applied Psychology*, vol. 91., no. 2., 259.–271. pp.