Is Your Boss Really Smarter Than You Are? The Influence of the Length of Employment and the Level of Hierarchy on Employee Knowledge about Risk Management

MICHAEL SCHWANDT
PHD STUDENT

e-mail: michael-schwandt@web.de

SUMMARY

This research paper deals with knowledge about risk management; in particular, it examines employee knowledge about handling risks in the construction sector. A survey was conducted among personnel working in the construction business; research methodology is based on a standardised questionnaire. Respondents from all levels of hierarchy and with different lengths of employment are compared in order to find out the influence of these factors on know-how and skills. In the second step data was analysed with statistical methods, such as standard deviation or correlation of different variables. As a main result with regard to the length of service, two groups of employees can be distinguished: Employees with less and employees with more than two years in a company. Two years of service form a kind of threshold, up to which the knowledge increases markedly, while after that it only grows at a slower pace. In terms of the level of hierarchy an almost linear trend was observed, confirming that there is a strong relationship between position within the company and knowledge about risk management: The higher the level of hierarchy, the greater the knowledge of the employees.

Keywords:Risk; Risk Management; Statistical Data Analysis; Construction Industry
Journal of Economic Literature (JEL) codes:C12, D81, G32, J24, L74, M12
DOI: 10.18096/TMP.2015.01.05

INTRODUCTION

Crisis situations do not happen from one day to the next. There are signals that point to them and risks pose only the last phase of a long process. The question of why some companies fail to foresee their economic troubles is a legitimate one. Did decision-makers fail to see the significance of the changes that were taking place in the company's environment? Or was the management not suited to properly handle the situation? It is often not an executive of the company, but rather a normal member of staff, standing at the bottom of the corporate hierarchy, that first encounters the risk factor and attempts to manage it. However, these persons cannot be expected to have risk management skills and knowledge. They often do not have theoretical knowledge and sometimes even their practical experience is lacking.

The knowledge of business companies' staff about risk management is influenced by several variables, with the influence being of different levels. It is therefore not equal for all employees. For a company it may be advantageous to know these variables in order to find a suitable employee for each task or to entrust each employee with tasks that it is certain they can solve. By deliberately changing some variables, the company has the opportunity to improve risk management. It is therefore interesting to research about the influence of different variables on the knowledge of employees.

THEORETICAL BACKGROUND

A precondition for dealing with risks is at first an understanding of what the term risk means at all. In the general perception, risk has a negative connotation. Several authors connect risk with a target hazard risk or the deviation from a pre-determined target. Neubürger (1989) defines risk as *"positive difference between the expected and actual target achievement."* Accordingly, a chance means the negative difference between the expected and the realized level of target achievement. However, another definition of risk shall be mentioned, which was worked out by Ehrmann (2005). His explanation is more suitable to be used in the scope of this article as the definition of the term risk. According to the author risks:

- are connected to decisions;
- originate from the uncertainty relating to assumptions during decision-making;
- mean a danger or hazard.

In addition to the term risk, risk management must be illuminated as well. According to Eichler&Bungartz (2004) there is a very comprehensive, but at the same time also very compact definition of the process of risk management, which, for reasons of comprehensiveness and conciseness appears to be suitable to determine the process of risk management for the scope of this article: *"Enterprise-wide risk management is understood as the process of strategy formulation, the enterprise-wide identification of significant risks and opportunities, managing these risks, taking into account the risk appetite of the company, to ensure the achievement of corporate goals, done by the supervisory board, the upper management, the operational management and the employees."*Haller (1986) places significant risks in the centre of his definition of risk management, which is in his view oriented to:

- recognize and assess the significant risks better in all management activities and in all aspects of leadership;
- tackle risks considered important with suitable instruments and procedures;
- draw general leadership and organizational consequences in terms of risk management.

Companiesin the project businessare to be characterizedby several specifics, which also applies totherequirements with regard to their riskmanagement.Thiscan befurtherdifferentiatedin terms of theindustry in whichthe company operates in. The construction industryis characterizedby some specific distinctionsin particular.The classicrisks ofproject management - such asrisksofquality, cost andtime - naturally apply to the construction industry, too, butthesector can be described in detail throughsome further anomalies thatHorsch (2002) summarizes as follows:

- Every building project can be characterized by uniqueness
- Very often the construction contract is concluded first, and only after that the execution planning with detailed designs is done
- Large construction projects involve a high degree of technical complexity, for which the construction companies partly do not have core competences (any more)
- The technical complexity is tangent to the contractually owed functioning
- Each individual order represents a high financial volume (which is why the credit line is impacted by issuing of a contract performance guarantee and warranty bond)
- The contractual and legal warranty obligation is long (usually five, for some components even ten years), often unpredictable in nature (for example in bad faith) and - depending on the subsequent use of the object - in addition to reparation of defects can also trigger damages.

THE AIM OF THE RESEARCH AND EXPECTED RESULTS

In the focus of this article is a comparison of employees in the construction industry with regard to the length of their employment and their hierarchical level. The question to answer is the influence of these variables on the knowledge of the employees. First, the relationship between the length of service in the company and the knowledge about risk management is researched. Employees who have been in the business for a long time already know the company very well and know exactly how risk management works in their business. With a high probability, they could already gain a lot of experience, which results in higher skills and knowledge about risk management. With employees who are new to the company, this knowledge is often lacking. They have to orientate themselves in unfamiliar circumstances, solve new tasks and have not been able to collect as much experience compared to employees with higher seniority. It is therefore presumed that between the length of service and the knowledge about risk management a positive relationship can be found, which forms also the first hypothesis:

Hypothesis 1: There is a connection between the time of employment on the one hand and employee knowledge about risk management on the other hand.

A similar presumption applies to the organizational level at which the employee is working. Here it can be assumed that only those employees are promoted who have solved previous tasks with above-average success and meanwhile have gained experience in dealing with different risk situations. In addition, it may be assumed that employees on a higher hierarchical level understand what employees on a lower hierarchy level do, and could provide guidance to them or theoretically could even solve the tasks themselves. Therefore, a connection between the hierarchical level and the knowledge about risks is suspected and a corresponding hypothesis formulated:

Hypothesis 2: There is a connection between the hierarchical level on which employees fulfil their duty on the one hand and their knowledge about risk management on the other hand.

With regard to the relationshipbetween the level of hierarchyandthe knowledge aboutrisk management, the author has performeda series of interviews with experts. The results of this interview series can be found in Schwandt (2014).As an outcomeof theinterviewsurveys,the importance of theinvolvement of staffat the lowestlevel of hierarchyhas been confirmed.Accordingto the interviewedconstruction managers, the perception ofrisk managementdiffers

depending on theorganizationallevel. This is especially trueforrisk awareness, which is more evidentat the higher levels ofmanagement, for example among executive managers, thanon the middlehierarchical level, among chief construction managers or project managers. Risk awarenessis leastdeveloped withsite managersand foremen, who work at the lowestorganizational level in terms of white collar personnel. Hererisks areless detectedandinformation about risks has yet notfullyreached them or is not understood. Also thetransfer of knowledgetakes place alongthe hierarchical structure.The managementtakes part intraining courses and passes along theirknowledge totheintermediate level, which in turn addresses thelevelof normal employees.However, the developmentof employeestakes along time because informationoftenarrivesincomplete oronlywith a timedelay.The staff addresses problems sometimes, buta sufficientsensitivity to risks is not yetavailableto all employees. Italso occurredthat an issue involving risk wasindeedunderstoodtheoretically, butwasnotassociatedwith the risksontheir own project. In any case,integrated risk managementextends to allhierarchical levelsand includesnormalemployeeson the lowestlevel of the organization, too.

THE APPLIED RESEARCH METHOD AND THE PROCESS OF ANALYSIS

The hypotheses were researched with the help of a questionnaire. Data-collection by questionnaire is a very common instrument of scientific research and offers several advantages. A large number of people can easily be interviewed and the information obtained can be statistically analysed, and conclusions with respect to the research subject can be drawn. To achieve this goal, the use of a standardized questionnaire is recommended, in which all questions are formulated uniformly and the answer choices are already predetermined. Through the classification of respondents to groups of attributes, in this particular case the lengths of employment and the level of hierarchy, and the statistical analysis of the responses of these groups, inferences can be drawn on the impact of the variable.

For a detailed review of the hypotheses, a part of the questionnaire contained questions with the help of which the participants' knowledge can be measured. In order to limit the effort to evaluate all questionnaires differently, it appeared advisable to have the questions answered in a multiple-choice system. Through this approach, space for individual answers to the questions was given and the questionnaire could still be standardized and then analyzed by statistical means. Taking into account the advice of Babbie (2003) for structuring a questionnaire, the questionnaire was divided into the following parts:

a) Knowledge about risk management
- Questions about risk management in general (8 questions)
- Questions about risk management in business companies (8 questions)
- Questions about risk management on construction projects (8 questions)

b) Questions regarding personal data (4 questions)

The questionnaire included a total of 66 questions and several topics connected with risk management, including reasons for risky projects and risk awareness. The results of these parts of the questionnaire are not listed here since they are very specific and would exceed the scope of this article. In order to explore the knowledge of the employees about risk management, the questionnaire was divided into three blocks, each containing eight assertions. The first block contained general statements with regard to risk management, in the second block statements about the company for which the respondents work could be found. Assertions about the handling of risks especially in construction projects formed the third group. Every question appeared in the form of a *"true or false"* statement, which was to be answered by the respondents. Half of the assertions in each block were correct, the other half were incorrect. Through different distributions of correct and incorrect responses within the three blocks, conclusions could be drawn about the knowledge of employees in the three areas of risk management.

The questionnaire was completed by a total of 209 participants. All persons participating in the survey were at the time of the survey employees of various construction companies. Respondents were working on construction projects, in the administration of their companies or in executive positions. To process the large number of data on a professional level and be able to analyse it using statistical tools, the evaluation of the data set was operated with the help of SPSS Statistics. Most of the evaluations were carried out by the method of analysis of variance (ANOVA = ANalysis Of VAriance), which analyses the effect of independent variables on dependent variables. The method is based on the calculation of variances and according to Hajdu (2003) has the advantage that *"the variance usually in the implementation of comparisons makes sense"*, so it is suitable, for example, for testing hypotheses. Among the completed questionnaires there were also some that were not filled in completely or were partly faulty. However, these questionnaires are part of the evaluation. In order not to distort the results, the missing data has not been replaced by average values or incorporated in the analysis by using any other different method.

RESULTS OF THE SURVEY

First, it is worthwhile to consider the answers as a whole. Already the two extreme values are interesting. The achieved minimum score is zero, so at least one of the respondents did not give a single correct answer. The maximum score however is 20 correct answers. This means that out of the theoretically possible 24 points, the participant with the most correct answers was able to answer just 83.3% of the questions correctly. These two extreme values, which were determined from all questionnaires, generate the first impression that the knowledge of the respondents can be further improved. This impression is enhanced when one considers the average values. All respondents answered on average 11.6 questions correctly. From a number of 24 questions, this value is even slightly below the threshold of 50%. This value is backed up by the standard deviation. Standard deviation was four correct answers, which means that the respondents answered on average between 7.6 (31.7%) and 15.6 (65.0%) of 24 questions correctly. As shown in

Table 1, the participants, on average, were able to answer only about half of all questions with a standard deviation of four correct answers.

Table 1
Statistical figures regarding knowledge about risk management

Correctly answered questions	N
Minimum	0,00
Maximum	20,00
Mean	11.6054
Standard Deviation	3.9824

Source: author's own work

Forfurther analysis of thesurvey,thetotal of allrespondentswasdivided intosubgroups. One of the examined variableswas thelength of service. Employeeswithemployment in their companyof less than twoyearsarerepresentedwith a share ofalmost24%. Thelargestgroupwith a share ofalmost39% was formed by employeeswithbetweentwoandfiveyears of employment. Fromthis point, thenumber of employeesdecreases steadilywith increasingseniority. Overall, however,there isa balanced distribution, and allgroups are representedwithasignificantnumber of elements, see *Table 2* below.

Table 2
Breakdown of the variable „Length of employment“

Length of employment	Frequency	Percent
0-2 years	50	23.9
2-5 years	81	38.8
5-10 years	40	19.1
More than 10 years	27	12.9
No answer	11	5.3
Total	209	100.0

Source: author's own work

Itseems reasonable to assumethatemployees whohave beenin thebusinessfor a longer timehavebeenworkingonseveral projects, have alreadyencounteredvariousrisks, havedealt withtheseandhence have higherexperience in risk management. Therefore, thehypothesisassumedthat a connection existsbetween theknowledge aboutriskmanagementandthelength of serviceof an employeein a company.

Table 3
Statistical figures for the variable „Length of employment“

Time of employment	N	Mean	Standard Deviation
0 - 2 years	44	9.59	3.7374
2 - 5 years	74	12.04	3.6730
5 - 10 years	35	12.05	4.2213
More than 10 years	25	13.16	3.9862

Source: author's own work

The results of the surveyconfirmed thatthelength of servicesignificantlyinfluencestheknowledge of the employees. As can be seen in *Table3*, twogroups can be distinguished with regard to the time of employment:theemployees with lessand the employees withmore than twoyears in a company. Thestaff whohave beenat most twoyears with their companyachievedan average scoreof only9.6, while theemployeeswith longerthan twoyears inbusinessachieveda significantly highervalueof at least12. The first groupwere able to answercorrectlyon averageabout 40% of all questions, whilethis figure among the employeesof the second groupwasat about 50% to 55%. Results distributesimilarlywhenone considers thethreeknowledgeblocksseparately, see *Table 4*. Thefewestcorrect answersin allblocks of knowledge were given by the employees withatenureofup to twoyears. With one exception,the employees with the highest employment duration achieved the highest values. In parallel,the largest increase is to be found between the first twogroups.

Table 4
Average number of correctly answered questions per test section (max. 8/section) by length of employment

Time of employment	General Knowledge	Company knowledge	Construction knowledge
0 - 2 years	2.90	2.00	4.71
2 - 5 years	3.59	2.82	5.50
5 - 10 years	3.30	3.05	5.67
More than 10 years	3.42	3.32	6.46

Source: author's own work

This findingis confirmed by theone-wayanalysis of variance. Withthree degrees of freedom, the result for theF test(in the statisticalmeaning thetest ofvarianceanalysiswith respect to thetest statistic) leads to a value of almost six: F (3) = 5.864. This is a mid-levelvalue for whichitcan be assumedthat thelength of servicesignificantlyinfluencesthe knowledge about riskmanagement. However,no lineartrendcan be observed, so we cannot saythat knowledgeisgreater the longer theemployee works in the company. Employees who have beenin the company for 10 years or more, do know more,but not significantlymorethanemployeeswithaseniority of 2-5or5-10years. It seemsthat twoyears of serviceform a kind ofthreshold, up to which theknowledgeincreases markedly, whileafter that it onlygrowsat a slower pace.

Furthermore, as part of the analysis it was tested whether connections to other variables exist. This test also confirmed the influence of the variable length of employment on knowledge about risk management and led

to similar results, see *Table 5.* On the one hand, there are significant differences between the four groups compared to each other in terms of awareness of the rules. Employees, who have been with the company for only a short period, know the regulations the least. The level of awareness increases with the length of service and reaches the highest value among the employees who have been in the company for at least 10 years.

Furthermore, as part of the analysis it was tested whether links to other variables exist. In case of two groups, according to *Hunyadi et al.* (2000) the Mann-Whitney test is used. For comparing at least three samples to each other, the Kruskal-Wallis test can be utilized. Both work as a non-parametric statistical test that do not assume a given probability distribution and examine differences in the median of each group. The chi-square provides information on the distribution of the values, dF on the degree of freedom and the significance level on the probability of error. Only such links are shown below in which the significance level has a maximum of 5%. Subsequently, the groups can be compared to each other based on the respective group average (mean rank). The Kruskal-Wallis test showed that the employee groups differ in how they perceive the filing system for the regulations. Here it is noticeable that the employees with increasing seniority specify that it is increasingly difficult to track the location of the regulations. For employees with high job tenure regulations are usually well known, but where they can be found exactly, is not always known.

Table 5
Variable „Length of employment“: Interrelations with other variables

Kruskal Wallis Test	Knowledge about risk management	Statement 25 “I know the rules valid in our company.”	Statement 30 “It is diffi-cult to track the reviews of rules, because they are filed at different places.”
Chi-Square	16.2511	11.8393	8.1476
df	3	3	3
Asymp. Sig.	0.001	0.008	0.043
0 - 2 years	63.12	80.96	82.73
2 - 5 years	95.95	95.01	91.90
5 - 10 years	96.86	98.42	103.55
More than 10 years	106.52	125.00	116.35

Source: author's own work

Since the respondents have indicated on which hierarchy level they are working in their company, conclusions can be drawn on the connection between the knowledge of the employees about risk management and their hierarchical level within the company. When specifying hierarchical level, respondents could choose from three possible answers. The first group includes the highest hierarchical level to which the general management and heads of subsidiaries and business areas of a company belong. As expected, this group was the smallest, with a share of about 5%, as only a limited number of positions are available on this level. The middle level group was significantly greater, with a share of almost 36%. Here all project managers, senior site managers and department heads were recorded, who together formed the middle organizational level. The group of normal employees constituted the third group, which, as expected, formed the largest party with a share of more than half of all respondents. Members of this group usually have neither responsibility for profit nor responsibility for other staff. The exact breakdown is shown in *Table 6.*

Table 6
Breakdown of the variable „Hierarchy level“

Hierarchy level	**Frequency**	**Percent**
Upper level	10	4.8
Middle level	75	35.9
Low level	114	54.5
No answer	10	4.8
Total	209	100.0

Source: author's own work

In general employeesreach a higherlevel in hierarchyifthey have distinguished themselves bygood performanceorif they have moreexperiencethroughmany years of service. Thereforethehypothesisassumedthat there is a connectionbetween knowledge aboutriskmanagementandtheorganizationallevel at whichtheemployeeisworking within the company.

Table 7
Statistical figures for the variable „Hierarchy level“

Hierarchy level	**N**	**Mean**	**Standard Deviation**
Upper level (General management, heads of subsidiaries)	7	14.14	4.2594
Middle level (project managers, department heads)	67	12.09	3.8562
Low level (normal employees)	106	11.15	3.9177

Source: author's own work

The survey results confirmed the hypothesis: the higher the level of hierarchy, the greater the knowledge about risk management. In *Table 7* it can be seen, that the employees on the low hierarchy level on average answered 11.2 questions out of a total of 24 questions correctly, which corresponds to a rate of 46%. The staff on the middle level of hierarchy could answer half of the questions correctly and thus achieved a better value. The respondents on the highest hierarchy level reached the highest value. On average, they could answer 14.1 questions correctly, which corresponds to 59%. Between the upper and the lowest hierarchy level a gap of three correctly answered questions can be found, which means that the upper level was able to answer 12.5% more questions right. This result is also confirmed by the results within the three blocks of knowledge, see *Table 8.* In each

block, the score of the employees at the lowest hierarchical level is the lowest and the score of the employees on the upper level is the highest. The only exception is knowledge about risk management on construction projects, where the respondents on the middle level reached a slightly higher value than the executives. However, these values hardly differ and may be distorted by the small number of respondents in the first group. In general, across all levels of hierarchy a nearly linear trend can be observed, which confirms that there is a connection between position within the company and knowledge about risk management. The survey has thus confirmed the hypothesis. As the number of elements in the first group is relatively small, at first we may speak of a trend, but not of statistically proven significance. However, this is due to the nature of the thing, because in any organization, the number of employees on the highest level is the smallest, because the number of positions is very limited.

Table 8
Average number of correctly answered questions per test section (max. 8/section) by level of hierarchy

Hierarchy level	General knowledge	Company knowledge	Construction knowledge
Upper level (General management, heads of subsidiaries)	4.33	3.25	5.70
Middle level (project managers, department heads)	3.33	2.85	5.82
Low level (normal employees)	3.30	2.58	5.23

Source: author's own work

With regard to the hierarchy level of the employees surveyed further relations to other variables were sought using the Kruskal-Wallis test. As can be seen in *Table 9* this was achieved for the question of attendance in a training on risk management as well as for the question about information on new regulations. In both cases, the survey showed results in accordance with the hierarchy level. Executives on the upper level are informed and trained; even at the middle level, this happens sometimes. At the level of normal employees less information is communicated and they also participate in less training.

Table 9
Variable „Hierarchy level“: Interrelations with other variables

Kruskal Wallis Test	Knowledge about risk management	Statement 21 “Attendance in a training about risk manage-ment.”	Statement 27 “I get informed when risk management regulations are revised.”
Chi-Square	7.1128	11.4241	6.0503
df	2	2	2
Asymp. Sig.	0.029	0.003	0.049
Upper level	131.71	132.50	114.40
Middle level	96.72	106.67	104.55
Low level	83.85	88.95	87.23

Source: author's own work

CONCLUSION

Employees’ knowledge about risk management is influenced by several variables. Depending on the variable, this influence turns out differently. The influence of variables on employees’ knowledge was explored with the help of a questionnaire. The total of all respondents has been divided into subgroups in order to investigate whether the dependent variable - the knowledge of respondents - shows significant differences in the various groups.

The first variable examined was therelationship between thelength of service for a company and knowledge aboutriskmanagement. With regard to the lengthof service, two groups of employeescan be distinguished: employees with lessand employees withmore than twoyears in a company. Theemployees whohad spent less than twoyears with the companyreachedon averageonly9.6of the theoretically possible24correct answers, while theemployeeswho had been employed longerthan two yearswith the companyachieved a significantlyhighervalueof at least12. The staffin the first groupwere able to answercorrectlyon averageabout 40% of all questions, whilethis figure wasamong the employeesof the second groupat about 50% to 55%, depending on howlong they hadbeenemployed by the company.

The largest increase was identified between the twogroupswithaseniority of 0-2and2-5years. However,no lineartrendcould be ascertained demonstrating, for example,that knowledgeisgreater the longer theemployee has been working in the company. Employees who have beenin a company 10 years or moredo know more,but not significantlymorethanemployeeswith2-5or5-10years. It seemsthat twoyears of serviceform a kind ofthreshold, up to which theknowledgeincreases markedly, whileafter that it onlygrowsat a slower pace.

The survey has also gained other results with regard to the length of service, demonstrating that this variable exerts an important influence on the knowledge of the respondents. There were significant differences among the four groups compared to each other in terms of awareness of the rules

on risk management. For employees who have been with the company only a short time, the regulations are the least known. The level of awareness increased with the length of service and reached the highest value among the employees who had been in the company at least for 10 years. On the other hand, the employee groups differed in terms of how they perceive the filing system for the regulations. Here it is noticeable that the employees with increasing seniority stated even more, that it is increasingly difficult to track timeliness and location of the regulations. For employees with high job length the rules were known, but where they can be found and what the system of the rules is was less known with increasing seniority. Thus, the survey has clearly confirmed that the length of service affects the employees' knowledge about risk management significantly. In short, this study found that there is a connection between the time of employment on the one hand and employees knowledge about risk management on the other hand.

The second variable examined was the organizational level of the surveyed employees and a link to their knowledge about risk management. The survey results have confirmed the hypothesis: the higher the level of hierarchy, the greater the knowledge of the employees. Across all levels of hierarchy, an almost linear trend was observed, confirming that position within the company affects knowledge about risk management. Of the 24 questions, the staff on the lowest hierarchy level were able to answer correctly on average 11.2, which corresponds to arate of 46%. The staff on the middle level of hierarchy achieved a better value and with 12.1 were able to answer half of all questions correctly. The staffat the highest hierarchy level reached the highest value. They could answeron average 14.1 questions correctly, which corresponds to 59%. Between the upper and the lower level of hierarchy were thus three correct answers, which means that the upper level was able to answer 12.5% more questions correctly, representing a significant difference. One explanation for the results could be the connection between hierarchical level and attendance of training courses. Executives on the highest hierarchy level are regularly trained, on the middle level of the hierarchy this happens only sometimes, while on the level of the normal employees clearly less training takes place. The study has thus found that there is a connection between the hierarchical level on which employees fulfil their duty on the one hand and their knowledge about risk management on the other hand.

REFERENCES

BABBIE, E. (2003): A társadalomtudományi kutatás gyakorlata (The Practice of Social Research), Budapest: Balassi Kiadó

EHRMANN, H. (2005): Kompakt-Training Risikomanagement (Compact-Training Risk Management), Ludwigshafen: Friedrich Kiehl Verlag

EICHLER, H. & BUNGARTZ, O. (2004): Enterprise Risk Management – aktuelle Entwicklungen im Bereich unternehmensinterner Risiko- und Überwachungssysteme (Enterprise Risk Management – Current Developments in the Area of Company-internal Risk- and Control Systems), Zeitschrift Interne Revision, Vol. 3, p. 108.

HAJDU, O. (2003): Többváltozós statisztikai számítások (Multivariation in Statistical Calculations), In: Statisztikai módszerek a társadalmi és gazdasági elemzésekben, Budapest: Központi Statisztikai Hivatal, p. 59.

HALLER, M. (1986): Risiko-Management – Eckpunkte eines integrierten Konzepts (Risk-Management – Cornerpoints of an Integrated Concept), Schriften zur Unternehmensführung, Vol. 33, p. 9. http://dx.doi.org/10.1007/978-3-322-86198-6_1

HORSCH, R. (2002): Umsetzung eines RisikoManagementSystems (Implementation of a RiskManagementSystem), Baumarkt und Bauwirtschaft, Vol. 7, p. 31.

HUNYADI, L. MUNDRUCZÓ, GY. & VITA, L. (2000): Statisztika (Statistics), Budapest: Aula Kiadó, p. 611.

NEUBÜRGER, K.(1989): Chancen- und Risikobeurteilung im strategischen Management: Die informatorische Lücke (Estimation of Chances and Risks in Strategic Management: The Informative Gap), Stuttgart: Schäffer-Poeschel Verlag, p. 29.

SCHWANDT, M. (2014): Risk Awareness in the Construction Industry – Assessment of the Current Situation with Help of Interviews, in: Berényi, László: Management Challenges in the 21st Century, Saarbrücken: Lambert Academic Publishing, p. 147-159.