

LASZLO BARNA

ANALYSIS OF REQUIRED
COMPETENCES FOR LEADING
PROJECTS IN TRADITIONAL AND
AGILE ENTERPRISE ENVIRONMENT

PHD THESIS

UNIVERSITY OF MISKOLC | FACULTY OF ECONOMICS | INSTITUTE OF MANAGEMENT SCIENCES

DOCTORAL SCHOOL NAME: **Enterprise Theory and Practice Doctoral School**

DOCTORAL SCHOOL HEAD: **Prof. Dr. Károly Balaton**

SCIENTIFIC SUPERVISOR: **Prof. Dr. Csaba Deák**

MISKOLC, 2020

Contents

Thesises 3

I. Description of the research 4

 1. Focus of research..... 4

 1.1 The aim of the thesis 4

 2. Structure and process of the research 5

II. Research process and results 6

 3. The research focus..... 6

 3.1 Summary of hypotheses 6

 4. Defined comptency groups..... 7

 5. Appearance of traditional project management elements in agile environment 8

 6. Comparison of project management soft skills in traditional and agile environment..... 9

 6.1 Evaluation of competencies in terms of importance and presence 9

 6.2 Determining factors 10

 6.3 Comparison of primary research results with outcome of analysing the traditional project management literature 11

 7. Findings of the research 12

Referencies 14

Publications 14

Thesises

Thesis 1), b), c)..... 8

Thesis 2) b)..... 8

Thesis 3), b)..... 10

Thesis 4), b)..... 12

Thesis 5), b)..... 12

I. Description of the research

1. Focus of research

Despite existing differences, in both cases the goal is the same between traditional and agile project management: to carry out a successful project according to predefined requirements.

Since the success of projects is a very popular research area, perhaps one of the most studied topics in the field of projektmanagement; however there is relatively little consensus regarding the concept of the project's success.

As I found during my research technical project management competencies are interpreted as minimum requirements for project managers, so I was carry out the research among the soft skills.

Furthermore, as agile project management is a relatively young aged, the experience of experts is also relative low compared to traditonal project management. However, the continuous expansion of agile project management requires increasing number professionals, and this raises the question of interoperability in terms of the two project management methodology as well. This may also wish to consider interoperability along the soft project management competencies, as I agree by soft competencies needed to achieve the results expressed in hard numbers (Foti, 2003).

As in methodological terms there are innumerable scientific literature present to compare the two approaches, so I planned to start my research in a different way.

I have more interest is the human side of project management, so I would like to have answers about what kind of leadership competencies required for agile and traditional projects, and to identify the common competency sets for the two methods.

Looking at correlations with the success of IT projects (Langer et al. 2008), soft competencies have significant and positive impacts of the project's financial performance and customer satisfaction, and this effect is stronger than in case of hard skills.

I chose my research environment the enterprise environment primarily because I intend to examine the specificity of agile project management for large-scale, multi-party projects.

Since 2006 PMI regularly prepare an annual questionnaire that also shows the expansion of agile project management, because the 2018 results show that among organizations participating in the survey, 41% use at least often agile project management methodologies (PMI, 2018). Examining the previous results(PMI, 2012) like year 2010, it states the project leaders of the organizations used only in 24% - even rarely - agile project management methodologies.

1.1 The aim of the thesis

During the research, my main objective is to highlight soft competencies required for managing projects, and to examine them in addition in traditional and agile project environment.

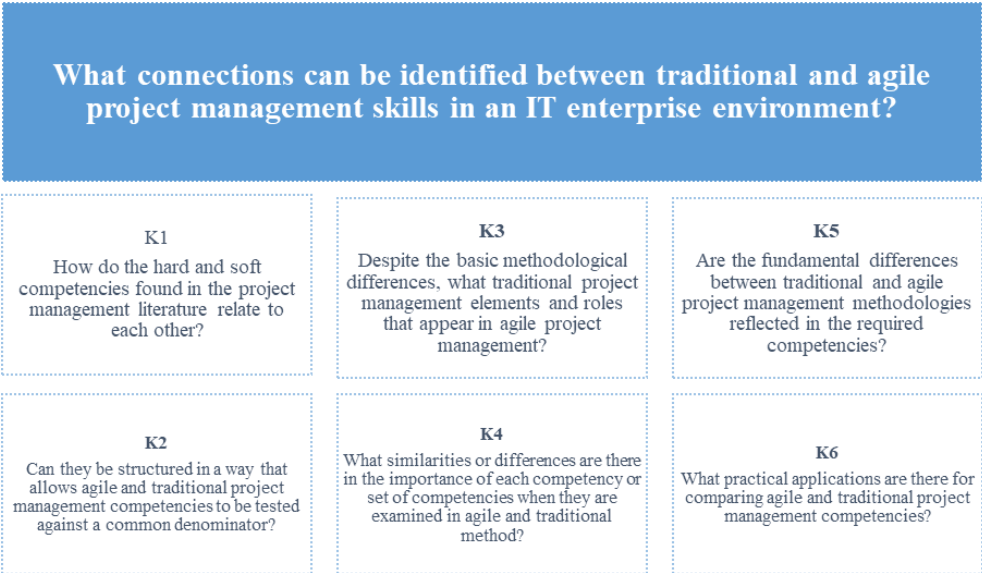
So many experienced and reputable professionals dealt with the mapping project management skills that I do not wish to launch a research on this topic, but I can use the existing results to compare the project management competencies related to traditional and agile methodology.

To achieve the main goal it was necessary to identify the competencies required for leading traditional and agile projects, compare and analyze them. I did it in order to develop a model that can be used not only to verify my hypotheses, but in can be used in practice.

I have also developed a framework that one hand organizes the involved competencies on same basis and examines the connections, furthermore it can be applied in practical life contexts, which can be used both traditional and agile project environment.

The fundamental question of my research is what connections can be identified between traditional and agile project management skills in an IT enterprise environment?

I started examining the basic question with further breakdown into specific units.



1. Figure Fundamental question and sub questions

2. Structure and process of the research

I built the structure of the research through based on the research questions. The research is using the structure formulated by Earl Babbie (Babbie, 2008). After the problem statement and the research questions, I reviewed the relevant literature and research results related to obtain additional funds to set up the hypotheses. The planning of verification the hypotheses started with conceptualization and operationalization then I determined the specific research methods.

First, I made the meta-analysis of soft skills related to traditional project management by relying on the relevant literature. Soft project management competencies identified in the literature have been placed in a system that allowed me to compare the traditional and agile project management of the examined field. I prepared a questionnaire used for the research, based on this model, so I could compare the results of the meta-analysis and get common conclusions. Using interviews, I examined the existence of traditional knowledge areas of project management in agile environments. I analyzed the information obtained during the data collection and research and finally I presented the results.

II. Research process and results

3. The research focus

3.1 Summary of hypotheses

H1 After a thorough examination of traditional and agile project management literature, I believe that in corporate IT environment

- a) Despite the fundamental methodological differences, more than half of traditional project management knowledge areas are present in agile project environment,
- b) Due to the different methodological features the biggest difference exists in the case of project risk management knowledge area
- c) In case of agile project management the most frequently appeared knowledge areas are communication and stakeholder management

H2 After identification the characteristics of agile project management methodology, I believe that in corporate IT environment,

- a) Despite the agile project management methodology the agile project manager role is existing
- b) Limitations of the agile project management can be reduced by using the agile project manager role

H3 I assume based on my own experience and the characteristics of agile project management that within competencies required for leading agile projects:

- a) Competencies can be identified with lower existence as importance,
- b) Based on the characteristics of agile project management, these are primarily connected to strengthen teamwork

H4 Based on examination of traditional and agile project management literature and secondary researches I believe that

- a) Despite the fundamental methodological differences, certain competency groups have similar importance in both traditional and agile project management.
- b) However, the most important soft skills are different for the two groups.

H5 Based on the characteristics of two methodologies, and my own experience I assume:

- a) Project managers working in agile environments require greater competences related to interpersonal relationships and communication, compared to traditional project managers.
- b) During the comparison of competencies required for leading traditional and agile projects different set of competencies can be identified, which clearly point in the direction of necessary development to switch between the two environments.

4. Defined competency groups

As a huge number of competencies were identified from the literature I had to create a system for easier handling and make them comparable, which can serve as a basis for my analyzes. So after analyzing the literature I established the following classification system for project management soft competencies:

1. Table Defined competency groups

Defined project management soft skills groups

1. Collaboration and Teamwork	<ul style="list-style-type: none"> ▪ Capability of designing the team and operating efficiently through involvement and creating team-based atmosphere of active work, respect and openness, teamwork and the use of incentive tools.
2. Personal relationships and communication	<ul style="list-style-type: none"> ▪ Able to detect and take into account others' feelings, views and beliefs. ▪ the ability to convince others, is able to gain the support of others for different ideas, proposals, projects and solutions with respect by applying logical arguments, it takes into account the interests of others and other indirect strategies.
3. Leadership and management	<ul style="list-style-type: none"> ▪ Ensuring that everyone understands exactly who should perform which tasks, and why. ▪ Providing guidance and clear feedback, the project manager is able to form a team and carries out regular coaching and consultation activities.
4. Information Management	<ul style="list-style-type: none"> ▪ The information is gathered from various sources with a variety of methods for clarity, effective planning, decision-making and problem-searching. ▪ Commitment to work and information for completeness, so the project manager carefully preparing for seminars, meetings and presentations as well as monitor the implementation of certain options and decisions.
5. Analytical thinking and mentality	<ul style="list-style-type: none"> ▪ To approach problems in a logical way, through their systematic breakdown and examination. ▪ During each step the project manager keeps in mind the purpose of the task, always sets targets related to it, and keep them until they are constantly in mind. ▪ The Project Manager shall take into account the possible outcomes, situations, events and actions impact.
6. Personal attitude	<ul style="list-style-type: none"> ▪ The project manager believes in she or he is able to perform tasks and willing to provide assistance to the team members facing challenges.

The following order has been determined after the analysis of the literature in relation to specific types of competencies:

2. Distribution of the competence groups mentioned in the literature

competency group	Number Mentions
Analytical thinking and mentality	112
Personal relationships and communication	96
Leadership and management	88
information Management	72
Cooperation and teamwork	58
personal attitude	50

5. Appearance of traditional project management elements in agile environment

Traditional project management knowledge areas are recognized by agile project management methodology, but with different approaches. On that basis, I think an interesting question is how the agile project management professionals see the situation. I wanted to get answers from active agile environment project managers about identified knowledge areas applied in the PMBOK(PMI, 2013) and also asked regarding agile project manager role.

T1 Despite existing basic methodological differences between traditional and agile project management, in enterprise IT environment, from project management knowledge areas:

- a) Present in agile project environment:
Project Communications Management, Project Scope Management,
Project Scheduling Management, Project Integration Management,
Project Quality Management, Project Human Resource Management,
Projektstakeholder- Management
- b) Project Risk Management knowledge area is not present, but it would be reasonable to use
- c) most frequently appearing areas: Project Communications Management,
Project Scope Management, Project Scheduling Management

I. Thesis 1), b), c)

Summarizing the interview results we can say that the agile project manager especially useful for projects that done in various places, for complex projects. Her or his main responsibilities include organizational change management, involving the temporary project team, coordinating non-project organization activities, ensure communications between distant agile teams and the sharing of information of public interest.

T2 Despite the agile project management methodology specifics of enterprise IT environments

- a) There agile project manager role, whose main task is agile project teams working on the same project coordination to components
- b) agile project management limitations can be reduced by using the agile project manager role

II. Thesis 2) b)

6. Comparison of project management soft skills in traditional and agile environment

6.1 Evaluation of competencies in terms of importance and presence

In the planning phase I have decided that I would like to assess the competencies based on their importance and presence as well to get results that points towards the necessary competencies for professionals to have.

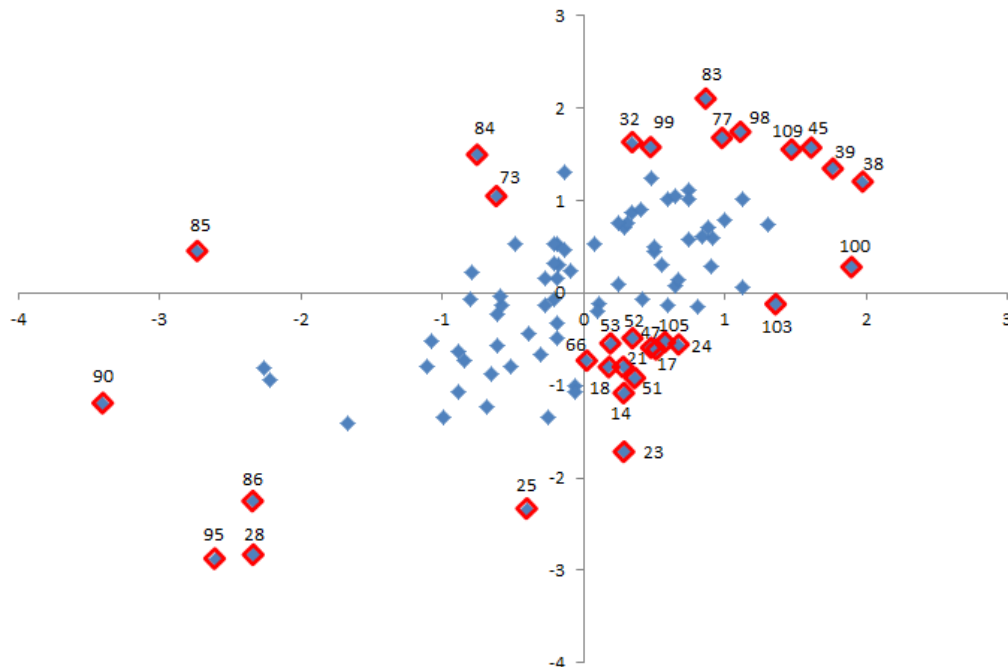
In order to reach this, each competency could be evaluated according to the following dimensions in the questionnaire:

- A - How important is the presence of these competencies in the management of projects in your area.
- B - how typical is that a project manager working in a similar field like you have the questioned competencies.

I deliberately did not ask everyone to evaluate themselves, because I think it would have been the result that everyone would consider a competency important if she or he has it.

With these two dimensions it has become possible to examine the importance and presence of competencies, which may worth and not worth the effort to develop.

I placed all results into a coordinate system (2. Figure), to identify extreme values of each quadrant ((x):important - not important; (y): present - not present).



2. Figure location of the test skills in the coordinate system

It can be read from the established coordinate system which competencies have a higher or lower value of importance, which are present to the extent by the experts asked.

Based on the above hypothesis H 3 a) and b) confirmed, however it is worth noting that compared to my original premise of Leadership and management competence group also representing itself with competences that are necessary but missing.

T3 Within soft project management competencies required for leading agile projects in enterprise IT environment:

- a) Competencies can be identified with lower presence as importance
 - b) They are mostly related to the strengthening of cooperation and teamwork furthermore leadership and management
-

III. Thesis 3), b)

6.2 Determining factors

As I mentioned 99 competencies were reviewed by respondents along two dimensions, so the number of variably quite high. To be able to handle this large data set that contains variable within each competency groups, I have established factors along the two dimensions, using factor analysis.

3. Table Description of identified factors

		Importance		Presence
Cooperation and teamwork	F1_1	Team formation and involvement	M1_1	Encouragement and recognition of teamwork
	F1_2	Ensure cooperation within the team and outside	M1_2	Encourage and involvement
Personal relationships and communication	F2_1	Getting to know other people and their views	M2_1	Understanding the feelings and views of others
	F2_2	Persuasion and foundations	M2_2	Activity in the discussions and decision-making influence
Leadership and management	F3_1	Description of ongoing project progress	M3_1	Information sharing, support and feedback
	F3_2	Ensure information sharing	M3_2	Communicate progress and delegation
Information management	F4_1	Recognizing and sorting information	M4_1	Robust risk management
	F4_2	Preparation and considering other aspects	M4_2	Find and identify the necessary information
Analytical thinking and mentality	F5_1	Demonstration and maintain commitment	M5_1	Analysis of components and their effective presentation
	F5_2	Recognizing contradictions and several scenarios to achieve the objectives	M5_2	Prioritization and consideration of different points of view and outputs
	F5_3	Considering consequences	M5_3	Detection and treatment of engagement points
Personal attitude	F6_1	Managing stress and frustration	M6_1	Managing stress
	F6_2	Clear decisions and learning from mistakes	M6_2	Sturdiness

With the dimension of importance identified factors have prepared for agile project management competency map, which summarizes how soft skills required for the management of agile projects.

6.3 Comparison of primary research results with outcome of analysing the traditional project management literature

At the beginning of analyzing traditional project management competencies my goal was to gain the comparable results with my primary research on agile project environment. I have examined the related soft competencies in traditional project management and summarized them in a way to be comparable with the outcome of the questionnaire.

This has been done based on the importance factor of the questionnaire, as the analyzed literature also focusing on the importance, so I think this comparison gives a more accurate outcome. For the comparison, I used the importance results of each competency groups.

4. Table Traditional and agile project management soft skills groups Importance

competence groups	Traditional project management		Agile Project Management	
	Number Mentions	Relevance values	Relevance average dimension	Relevance values
Cooperation and teamwork	58	2	5.6365	3
Personal relationships and communication	96	5	5.8558	5
Leadership and management	88	4	5.7825	4
Information Management	72	3	5.5238	2
Analytical thinking and mentality	112	6	5.4196	1
Personal attitude	50	1	5.9238	6

Importance value (1 less, 6 most important)

As during the analysis of traditional project management literature the number of mentions were taken into consideration and in case of agile project environment the average of the responses were calculated, the order of importance shows the difference.

Comparison of primary and secondary research results shows the presence ratio of each competence groups. In my opinion both the similarities and the differences gives valuable conclusions. Note that "Analytical thinking and mentality" has the highest score in case of traditional project management and has the least for agile project management. "Personal attitude" group has the highest score in case of agile project management and lowest for traditional.

T4 In corporate IT environment in case of traditional and agile project management competencies soft

- a) Despite the fundamental methodological differences in the 'Leadership and Management' and 'Personal Relationships and Communication' competency groups have almost equal importance.
- b) The most significant difference is in the „Analytical thinking and mentality" and „Personal attitude" competency groups. "Analytical thinking and mentality" is the most important in case of traditional project management and the least important for agile project management. "Personal attitude" group is the most important for agile project management and least traditional.

IV. Thesis 4 a), b)

The table also illustrates the order of competency groups in case of agile project management in case of importance. It is worth noting here that significant difference is recognized among the "personal attitude" and "analytical thinking and mentality" groups. In case of the other four groups, the difference is less or they are equal regarding in both methodologies. The results support the hypothesis H5.

T5 Due to the traditional and agile project management methodology characteristics:

- a) Project managers active in agile environment require competencies related to interpersonal relationships and communication more, compared to project managers working in a traditional project environment.
- b) During comparison of soft skills required for driving traditional and agile projects can be identified sets, which clearly highlights which competencies require development to effectively support switching between the two methodologies.

IV. Thesis 5 a), b)

7. Findings of the research

Main scope of my research is to examine the project management soft competencies from a new aspect, analyzing them not just in a traditional, but in agile project environment as well.

To reach my aim, it was necessary to identify, compare and analyses the soft competencies required for managing traditional and agile projects. That made it possible to create a model, which can both prove my hypothesis and can be used in the professional life also.

Therefore, my first goal was to set up a framework that systematizes the related competencies on the same basis and examines the connections among them. On the other hand, it also makes possible to discover correlations that can be applied in the traditional and agile project environment.

I consider as a new finding in case of thesis about PMBoK knowledge areas represented in agile project environment (Thesis 1 a), b), c)) that it is not examined previously which of these knowledge areas are represented in agile project management environment in enterprise IT environment. Only their interpretation in an agile project environment was considered in

previous literatures. I have the same evaluation regarding thesis (Thesis 2 a), b)) describing the agile project role. In the literature the general conclusion is that, the agile project manager is not interpretable, but my primary research conducted different outcome. My conclusion is that this role is present in It enterprise environment and can also reduce the limitations of the methodology.

I managed to gain new results in terms of traditional project management as well, despite its very strong literature base with soft competencies. My research points out that usually the communication is considered as the most important factor in project management, but the outcome shows (using the existing literature sources) that, it is in the second place and the most important one is the analytical thinking. Furthermore, I determined the soft competencies of agile project management that has lower importance as presence, so the ones that should be considered for development (Thesis 3).

The main question of my research aims to compare the agile and traditional project management soft skills. I was able to prove that, despite basic differences in methodologies, there are competence groups that have similar significance. However, what is even more important that not only difference was identified, but also the most important competence group for one methodology is the least important for the other (Thesis 4). The results provide practical help because as more and more organizations start using agile methodologies instead of traditional project management, it becomes necessary to relocate traditional project managers into agile project environment (Thesis 5). The results of the research can serve as a guide to determine during a transition period, which competencies have to be developed. The following summary table also present the research questions and the answers received.

5. Table Research Questions and Answers Summary

Research questions	Method for answers	Answer
K1 How do the hard and soft competencies found in the project management literature relate to each other?	Literature Analysis	Summary of literature findings (subsection 5.5)
K2 Can they be structured in a way that allows agile and traditional project management competencies to be tested against a common denominator?	Literature Analysis	Defined competency groups (chapter 7)
K3 Despite the basic methodological differences, what traditional project management elements and roles appear in agile project management	Hypothesis 1 a), b), c) Hypothesis 2 a), b)	Thesis 1 a), b), c) Thesis 2 a), b)
K4 What similarities or differences are there in the importance of each competency or set of competencies when they are examined in agile and traditional method?	Hypothesis 3 Hypothesis 4 a), b)	Thesis 3 Thesis 4 a), b)
K5 Are the fundamental differences between traditional and agile project management methodologies reflected in the required competencies?		
K6 What practical applications are there for comparing agile and traditional project management competencies?	Hypothesis 5 a), b)	Thesis 5 a), b)

Referencies

- Babbie, E., 2008. *A társadalomtudományi kutatás gyakorlata* 6. kiadás., Balassi Kiadó.
- Foti, R., 2003. Learn from the Pros - Consultants bring more than Best Practices to an Organization. *PM Network*, 17(12), pp.36–43.
- PMI (2013) *A guide to the Project Management Body of Knowledge (PMBok), Projektmenedzsment útmutató*. 5th edn. Budapest: Akadémiai kiadó.
- PMI (2018) *Pulse of the Profession*. Available at: www.pmi.org.
- Scott-Young, C. and Samson, D. (2004) 'Project Success and Project Team Human Resource Management: Evidence from Capital Projects in the Process Industries', in *Proceedings of the PMI Research Conference*. London.
- Langer, N., Slaughter, S. and Mukhopadhyay, T. (2008) *How do Project Managers' Skills Affect Project Success in IT Outsourcing?* Georgia, USA.

Publications

Articles published in international, listed journals

- [2012] (Társsz.: Deák Csaba) Identifying key project management soft competencies at a Telecommunication Company,
In. *European Journal Of Management*, Volume 12, Number 3, 2012, 137-141 p. ISSN: 1555-4015
- [2012] Lean assessment in SMEs
„5th Small and Medium Sized Enterprises in a Globalized World” Kolozsvár, Románia, 2011. szeptember 22-24.
In. *Studia UBB Negotia*, Volume LVII, 2012, 95-106 p. ISSN: 1224-8738

Articles published in national, listed journals

- [2013] Assessing the Importance of Project Management Soft Competencies in an IT and Telecommunication Company
in. *Theory, Methodology, Practice*, Volume 2013, Issue 01, 17-21 p. ISSN: 1589-3413

Conference publications outside the University of Miskolc

- [2012] Identifying key project management soft competencies in IT and telecommunication sector,
In. VII. Kheops tudományos konferencia „Aktuális gazdasági és társadalmi attitűdök magyarországon” Mór, 2012. május 16., Előadáskötet 27-34 p. ISBN 978-963-87553-9-1
- [2012] Identifying project management competency factors in IT R&D projects
8th International Bata Conference for Ph.D. students and Young Researchers, Zlin, April 19th 2012, [CD] ISBN 978-80-7454-138-4
- [2011] A Model for Risk Quantification in Production Processes.
In. Current Issues in Economic Research - Entrepreneurship in the Global Economy: Economics, Innovation, Competition and Social Change, 127-134 p. Szerk: Anca Borza, Christian Richter, Ovidiu Bordean INFER, 2011
ISBN 978-3-9814-328-0-0
- [2010] A kockázatok számszerűsített értékelése.
„Tanulás- tudás – gazdasági sikerek” avagy a tudásmenedzsment szerepe a gazdaság eredményességében. Tudományos Konferencia. Győr, 2010 április 14. 212-215. p. [CD], ISBN 978-963-06-9109-3

Conference publications published by the University of Miskolc

- [2012] Competency framework of key project management soft competencies
research
„XXVI. microCad International Scientific Conference” 29-30 March 2012.
University of Miskolc, [CD] ISBN 978-963-661-773-8
- [2011] Challenges of Intercultural Project Management
„XXV. microCad International Scientific Conference.” 31. March – 1. Apr. 2011.
University of Miskolc. Szerk.: Bikfalvi Péter.
- [2010] Termelési folyamatok kockázatainak azonosítása.
„XXIV. microCad International Scientific Conference.” 18-20 March 2010. University of Miskolc. Szerk.: Bikfalvi Péter. 17-22. p.
ISBN 978-963-661-925-1 Ö
ISBN 978-963-661-921-3