Change Management's Points of Connection with Project Management and Psychology

Booklet of Doctoral (PhD) Theses

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1   Introduction

The theses presented in this booklet are based on results the majority of which were published in works I wrote jointly with co-authors as indicated in the dissertation as well. The theses are primarily related to two relatively distinct scientific areas (project management (PM), and psychology) and their points of connection to change management (CM). The research questions (RQs) addressed are related to these points of connection, and consequently also provide the structure of the dissertation and this booklet as well.

The structure of this booklet is as follows: Chapter 1 introduces the context of the research, the RQs, briefly the methods used and outlines the structure of the dissertation. Chapter 2 presents hypotheses, related results, and theses by RQ in three main subsections. Chapter 3 presents limitations and future research avenues, while chapter 4 lists references used in this booklet. Appendix 1 lists my publications with the ones relevant for theses marked.

1.1   The Context

Today, dynamic changes and capabilities enabling them and adaptation to them are necessary for modern organizations to succeed (Saxena & McDonagh, 2022)—and, increasingly, even for their survival. This needs perhaps even less in need of explanation than ever before in the years of the post-CoViD-19 era (see, e.g., Chudziński et al., 2022; Florek-Paszkowska et al., 2021; Hitt et al., 2021; S. Zhang et al., 2022) as the "pandemic has pushed the necessity for change with respect to digitization, business models and organizational aspects for many companies even further" (Haumer et al., 2021, p. 423). The Russia-Ukraine war, which is currently very dominant in our region, also shows: there will always be some (unexpected) external circumstance that needs to be addressed (Aguinis et al., 2022; Cumming, 2022). Therefore, it is no coincidence that we often hear that we live in an era of constant change (Kotter et al., 2021) and many including Pettit et al. (2019, p. 56) are on the opinion that the "immutable law" attributed to Heraclitus of the sixth century that "The only constant is change." still holds true in today's volatile business world.

In sync with this line of thought, "scholarly work in the field of change management is on the rise" (Moosa et al., 2022, p. 1044), yet the majority of companies are still far from being in a position to succeed in the years and decades ahead. Faeste et al. (2019) argued that successful companies in the 2020s will be able to continuously learn and adapt to a changing world, to (re)use both human and AI capabilities in combination, and to build on the benefits of the wider business ecosystem. However, achieving this necessary future state, maintaining

and improving organizational performance can—for most companies—only be achieved through profound transformation(s). For this reason, effective management of change is essential even for survival (Mashhady et al., 2022) in today's ever-changing (business) world.

Permanent, continuous changes, however, were not always the norm. The roots of change management (CM) date back to pioneering work of Lewin (1947, 1951) and the National Training Laboratories Institute for Applied Behavioral Science in the mid-20th century (By et al., 2011) when changes were much more sporadic than nowadays. But the development of the world (including the emergence and expansion of globalization as well as digitalization) brought not only more (and more frequent) changes but also more interconnectedness—including a series of interrelated and emergent changes (Schumacher & Scherzinger, 2016).

These trends affect individuals, companies but also scientific fields. Interdisciplinary knowledge integration (Tell et al., 2017) or so-called cross-fertilization, the "processes through which disciplines can learn from each other to address complex and changing empirical realities" (Davies et al., 2018, p. 965) in much needed in today's world.

Consequently, CM also needs to change and has actually been in the process of changing recently (Boonstra, 2023). Its focus seems to have shifted from trying to facilitate the implementations (i.e., the hows) of distinct changes (see, e.g., Lewin, 1947, 1951) to helping organizations build the capacity to be able to withstand or even thrive on constant, even overlapping changes, for instance, through helping organizations develop their change capacity (Buono & Kerber, 2009, 2010; Kerber & Buono, 2005) or organizational resilience (e.g., Conner, 1998; Lengnick-Hall et al., 2011; Reeves et al., 2022; Välikangas, 2010; S. Zhang et al., 2022). However, Schumacher & Scherzinger (2016) claimed recently that how the capacity for handling these simultaneous changes should be developed was still under-researched (see more on this in sections 1.2.1 and 3.1 of the dissertation).

1.2 Research Questions, Goals

The dissertation aims to contribute to the better execution of this change process through exploring some interdisciplinary connections of CM with PM and psychology. First, the intersection of the fields of CM and PM, then points of connection between CM and psychology are examined.

1.2.1 Connection of Change Management and Project Management

As previous paragraphs highlighted it already, the increasing importance of changes is of no debate nowadays (Cowan-Sahadath, 2010; Gareis, 2010; Moosa et al., 2022; Partington, 1996;

Stummer & Zuchi, 2010; Tersine et al., 1997; Turner et al., 1988). Furthermore, the undeniable relation between CM and PM was already recognized more than two decades ago: according to Firth and Krut (1991), changes need to be managed as projects in most large organizations as these organizations use project (or task) teams to implement changes (e.g., reorganizations). Citing Tréhorel's work, Lehmann (2010) claimed that matching CM to PM had become a new challenge for organizations as changes are "increasingly being organized as projects" (Söderlund, 2010, p. 130), while Hornstein (2015) called the integration of CM and PM a necessity. Recent studies (e.g., Badewi, 2022; Mashhady et al., 2022) also highlight the connected nature of the two disciplines and that their joint application is often needed for delivering positive change outcomes (Saxena & McDonagh, 2022).

Based on the above, the following questions arise: How can the knowledge of these two distinct but related fields be better used and exploited? How can interdisciplinary knowledge transfer become possible between CM and PM? This logic leads to the first research question (RQ1), 'How can the common domain(s) of CM and PM be defined?'—both in theory and in practice, as there is a lack of scientific sources dealing with this question.

One might argue that everyday practices of organizations give some answers to such questions: organizational changes are often carried out via projects (Söderlund, 2010) by (project) managers (e.g., Barratt-Pugh et al., 2013). (In Saka's (2003) empirical work, for instance, 12 out of the 14 interviewed change agents were project managers.) However, having been appointed to managing changes does not necessarily mean that the individuals are well qualified for the task. According to Hartley et al. (1997), such "internal change agents" often lack the necessary CM knowledge (Saka, 2003). The same applies vice versa: being appointed the project manager of an organizational change does not necessarily come with the sufficient PM knowledge. Li and Sun (2020) identified four sets of competences needed for international project managers with change management competences being one of these sets.

These organizational practices also suggest that the roles individuals perform in organizations have quite some importance in their (projects') successes. However, despite the undeniable importance of role concepts in both CM and PM, only a few works (Almeida & Ramos Filho, 2019; Crawford & Nahmias, 2010; Gareis, 2010; Gareis & Huemann, 2008; Hornstein, 2015; Lehmann, 2010; Pádár et al., 2011, 2016; Pollack & Algeo, 2014a, 2014b, 2015, 2016; Saxena & McDonagh, 2022; Stummer & Zuchi, 2010) exist that examined these two fields simultaneously (see details in section 2.1.3.1).

The field of role concepts provides an opportunity for theoretical (and, based on that, also practical) developments as similarities, differences, and relationships between roles of changes

and projects are not clearly defined in the literature, which results in their ambiguous understanding (Aaltonen & Sivonen, 2009; Ferns, 1991; Gardiner, 2005; Gareis, 2010). As Stummer and Zuchi (2010, p. 384) put it: the "relationship between change roles and program and project roles seems not to be clear, although many changes are organized by projects". The problem is that if both sets of roles are not known and/or understood then someone who is familiar with only one of these two bodies of knowledge (BoK)[1] cannot fully exploit that of the other, in such cases when it would be justifiable to do so.

This gap in the literature described in the previous paragraphs induced a further research question (RQ2): 'Which roles of CM and PM correspond to each other?' One of the aims of this work is to compare the different roles and terminologies of the two fields and to show the similarities, differences, and connections to help academics and practitioners recognize the necessity of studying and applying the other field's BoK. This analysis also implicitly supports PM in addressing (and possibly even exceeding) the needs of stakeholders, especially given that stakeholders often act as change agents, as they have the potential to positively change others' judgments of the project (McElroy & Milk, 2000).

1.2.2   Connection of Change Management and Psychology

For managing changes, which often happen in the forms of projects or program in organizations, successfully the understanding of reactions to change (RTC) is substantially important (Endrejat et al., 2021; Khaw et al., 2022). In a survey of McKinsey & Co., for instance, 563 respondents evaluated "clear, organization-wide ownership and commitment to change across all levels of the organization" as the most important key capability for implementing change efforts successfully (Pustkowski et al., 2014, p. 2, Exhibit 2). These statements seem to be truer than ever before based on Brazzale et al.'s (2022) work, who compared pre-and post-pandemic experiences of employees and found that they "commonly experience more than one change, with those experiencing large amounts of change reporting predominantly negative emotional impacts". Accordingly, CM literature, education, research,

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[1] A BoK is defined as "a set of knowledge within a profession or subject area which is generally agreed as both essential and personally known" (Oliver, 2012, p. 3) and is used in line with this definition throughout this work. Several examples exist, the Project Management Body of Knowledge (PMBoK®) (PMI, 2004, 2008, 2013, 2017, 2021), for instance, is a widely acclaimed one, while the so-called CMBoK™, (CMI, 2013, 2022) the Change Management Body of Knowledge has only been published first in 2013 by the Change Management Institute (CMI).

consultancy, and everyday managerial practice often have to deal with people's different reactions to change—especially with resistance.

There are several different theoretical models of RTC, comprising different aspects of this phenomenon, but the literature is rather fragmented on this topic. Smollan (2011, p. 828) claimed that different dimensions "need to be blended into a more complete and more realistic conceptualization of the term." He was also of the opinion that the proper visualization of the dimensions and complexities of RTC is necessary. Based on the thorough review of the RTC literature, Straatmann et al. (2016, pp. 2–3) also emphasized the vital importance of "a better understanding of the psychological aspects of change" and "comprehensive frameworks which integrate the various streams of research on change management interventions and their effects on employees' reactions to change".

The fact that recent empirical studies tend to adopt the concept of RTC more and more often also underlines the need for conceptual synthesis. Bayraktar and Jiménez (2020), for example, empirically tested the impact of transformational leadership on RTC (meaning commitment to and intention to support organizational change when talking about RTC).

Based on this gap in the literature, this works looks for answer to the thirds research question (RQ3): 'How can the complexity of RTC be described in a more informative way than the concept of resistance to change is able to do so?'.

This work aims to propose a new, comprehensive multi-dimensional model for describing target persons'[2] or groups' RTC and their underlying reasons. The new model synthesizes already known, fragmented, separately published elements, complemented with some new or modified components developed by the authors, into one complex system. The proposed RTC-model comprises multi-dimensional graphic representations and general-purpose change reaction descriptors as well, making the representation of the complexity, ambiguity, and context of RTC possible with enhanced clarity. The results of this work help managers and/or consultants react better when handling such situations.

1.3 Methods, Structure

As can be seen from the previous paragraphs, this interdisciplinary work is built on RQs projecting both theoretical and empirical/practical findings, which has fundamental effects on

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[2] Targets, also called recipients (Barratt-Pugh & Bahn, 2015; Ford et al., 2008) are individuals or groups who are affected by the change (Conner, 1993, 1998; Harrington et al., 2000).

the methods applied. Figure 1 provides an overview of the relations of RQs, hypotheses, and theses throughout this work (which will be introduced in later sections in detail).
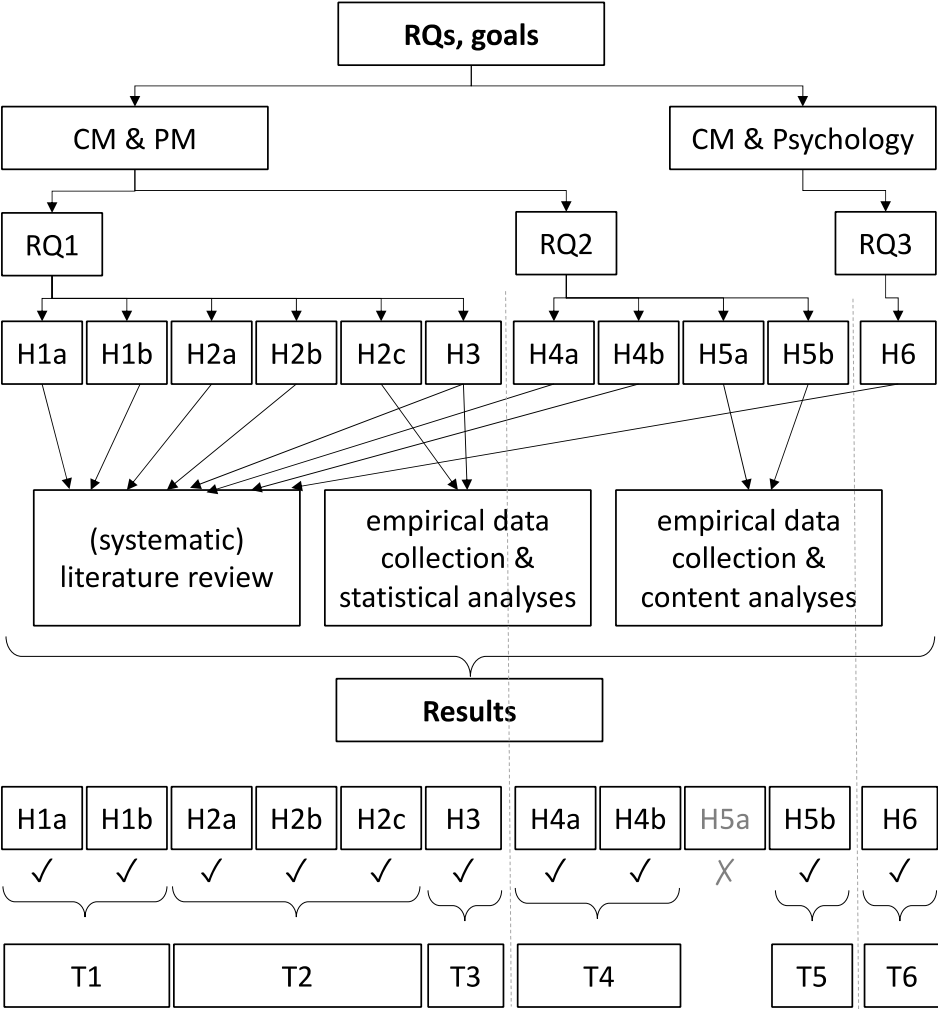
Figure 1: Research structure

Methodologically, the complete work falls into the category of mixed method research (Hesse-Biber, 2010) as it combines quantitative and qualitative data to answer (a set of) questions (Figure 1). Theoretical results are based on qualitative data analysis such as systematic literature reviews. Parts of the empirically backed[3] results build on quantitative methods such as the use of inferential statistics (using the software Minitab 21.1.1 and IBM SPSS Statistics 28), while other parts on content analysis. The latter is classified as an inherently mixed method or, as Bauer (2000) put it, a hybrid method that can mediate the unproductive

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[3] See section 2.1.5.1 of the dissertation about the data and sampling used regarding the empirical data collection.

dispute over the virtues of quantitative and qualitative analyses as, by now, computer assisted quantitative data analysis software (such as KH Coder 3 (Higuchi, 2022), which was used in this work) are capable of creating quantitative measures from qualitative data (Hesse-Biber & Leavy, 2011).

The dissertation is structured as follows (Figure 2).

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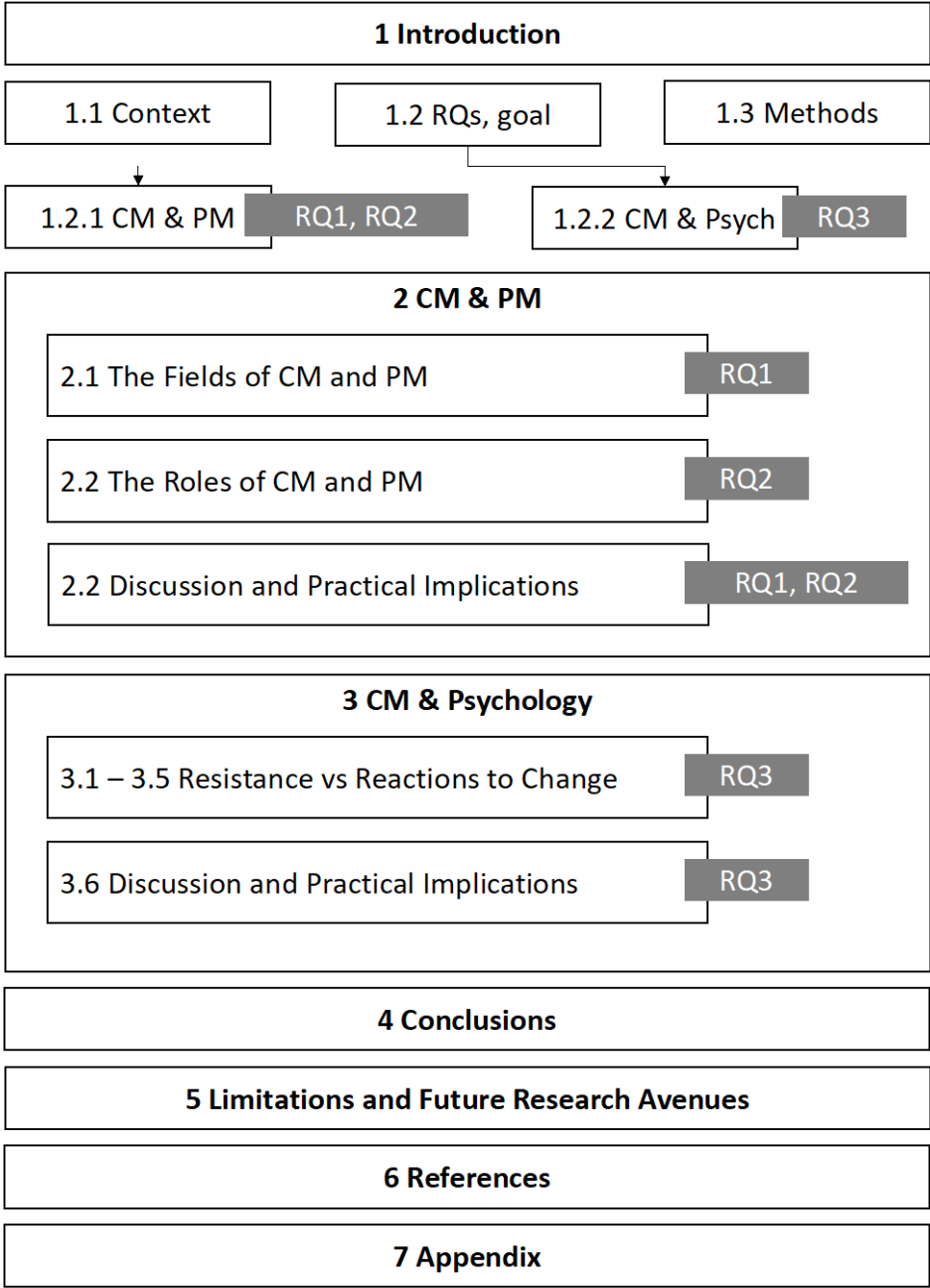
Figure 2: Visual table of contents with a focus on the RQ-led structure of the dissertation

In chapter 2[4] of the dissertation, RQs related to the connection of CM and PM are addressed. Sections 2.1.1, 2.1.2, and 2.1.3 of the dissertation cover basic definitions of CM and PM used later on as well as their relationship. Section 2.1.4 of the dissertation identifies the theoretical common domain of CM and PM, while section 2.1.5 of the dissertation tests these findings based on empirical data. Section 2.1.6 of the dissertation explores the differences in meaning behind the concept "change" from the viewpoint of PM practitioners building on both theoretical and empirical findings. Then, the correspondence of role theories of CM and PM are explored in section 2.2 of the dissertation, in which CM and PM roles (section 2.2.1 of the dissertation), their theoretical (section 2.2.2 of the dissertation) and empirical (section 2.2.3 of the dissertation) correspondence are examined. Discussion of the results and practical implications (section 2.3 of the dissertation) close the chapter.

The second part of this work (chapter 3[5] of the dissertation) covers results related to the intersection of CM and psychology, more precisely resistance to change and RTC. The synthesis of the suggested model (section 3.4 of the dissertation) and the newly defined descriptors (section 3.5 of the dissertation) come after the summary of current knowledge (sections 3.1, 3.2, and 3.3 of the dissertation). Section 3.6 of the dissertation discusses of the results and practical implications.

Conclusions, and thought on limitations and future research avenues (Chapters 4 and 5 of the dissertation) close the main body, which are followed by the list of references used and the appendix. Appendix 1 lists the author's publications marking relevant one to this work, while Appendix 2 of the dissertation contains the relevant parts of the questionnaire which was used for data collection.

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[4] Most parts of chapter 2 of the dissertation are based on the author's joint publications (Pádár et al., 2011, 2016, 2017, 2019; Sebestyén et al., 2012) with Béla Pataki and Zoltán Sebestyén.
[5] Most parts of chapter 3 of the dissertation are based on the author's joint publication (Pataki et al., 2022) with Katalin Krasz and Béla Pataki.

2 Summary of Hypotheses, Results and Theses by RQs

In this chapter, the main findings of the dissertation will be summarized according to the research questions RQ1-RQ3, which have been raised in Section 1.2.

2.1 *RQ1: How can the common domain(s) of CM and PM be defined?*

The first part of the dissertation aimed to discover how interdisciplinary knowledge sharing between CM and PM is possible as it had been shown by other researchers that the relation of these two areas is undeniable yet also understudied.

Based on an initial literature review and professional experience (sections 2.1.1, 2.1.2, and 2.1.3 of the dissertation covered basic definitions of CM and PM used later on as well as their relationship), the following hypotheses were formed related to RQ1:

H1a: There is a common domain of CM and PM that can be determined in theory.

H1b: The common domain of CM and PM are second order changes that are projects, which transform the very essence of an organization or a system.

H2a: There is a common domain of CM and PM that can be determined in practice.

H2b: The DIP is capable of identifying the common domain of CM and PM: second order changes that are projects, which transform the very essence of an organization or a system.

H2c: Following the steps of the DIP, people can identify projects that are also second-order changes, i.e., (organizational) change projects.

H3: The interpretation of change by people fulfilling PM roles or taking part in projects and the interpretation of change by CM practitioners only partially overlaps, because under the concept of "change" PM practitioners consider both the first-order and second-order changes, while CM only considers second-order ones.

Section 2.1.4 of the dissertation identified the theoretical common domain of CM and PM. Based on Figure 3[6] and its analysis, the following could be stated regarding H1a and H1b. Since CM only deals with second-order changes (domains C and D in Figure 3) but changes that belong to domain C are not projects, domain D contains the only common domain of CM and PM: namely second-order changes that are also projects or, in other words, change projects.
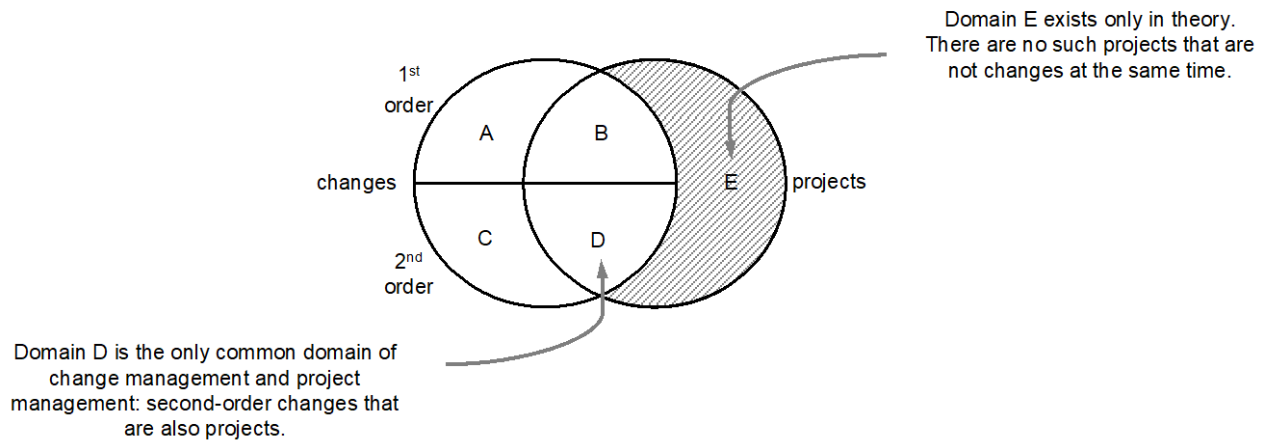

Figure 3:Domains of Changes and Projects
Source: Pádár et al. (2017, p. 805)

Based on these, the following thesis was formed.

Thesis 1

There is a common domain of CM and PM that can be determined (in theory). CM and PM can only make use of each other's body of knowledge (BoK)[7] in this common domain, which consists of such second order changes that are projects (i.e., temporary endeavors with a unique result) transforming the very essence of an organization or a system.

Related publications: Pádár et al. (2011, 2016, 2017) and Sebestyén et al. (2012)

Based on Figure 4 and the related explanation, hypotheses H2a and H2b were regarded as true, acceptable: There is a common domain of CM and PM that can be determined in practice. The DIP (Figure 4) is capable of identifying the common domain of CM and PM:

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[6] Please note that numbering in the case of tables, figures, and mathematical formulas are identical to the numbering of the same items in the dissertation, therefore, numbering in this booklet is not necessarily consecutive.
[7] BoK is used according to its definition provided in section 1.2.1.

second-order changes that are projects, which transform the very essence of an organization or a system.
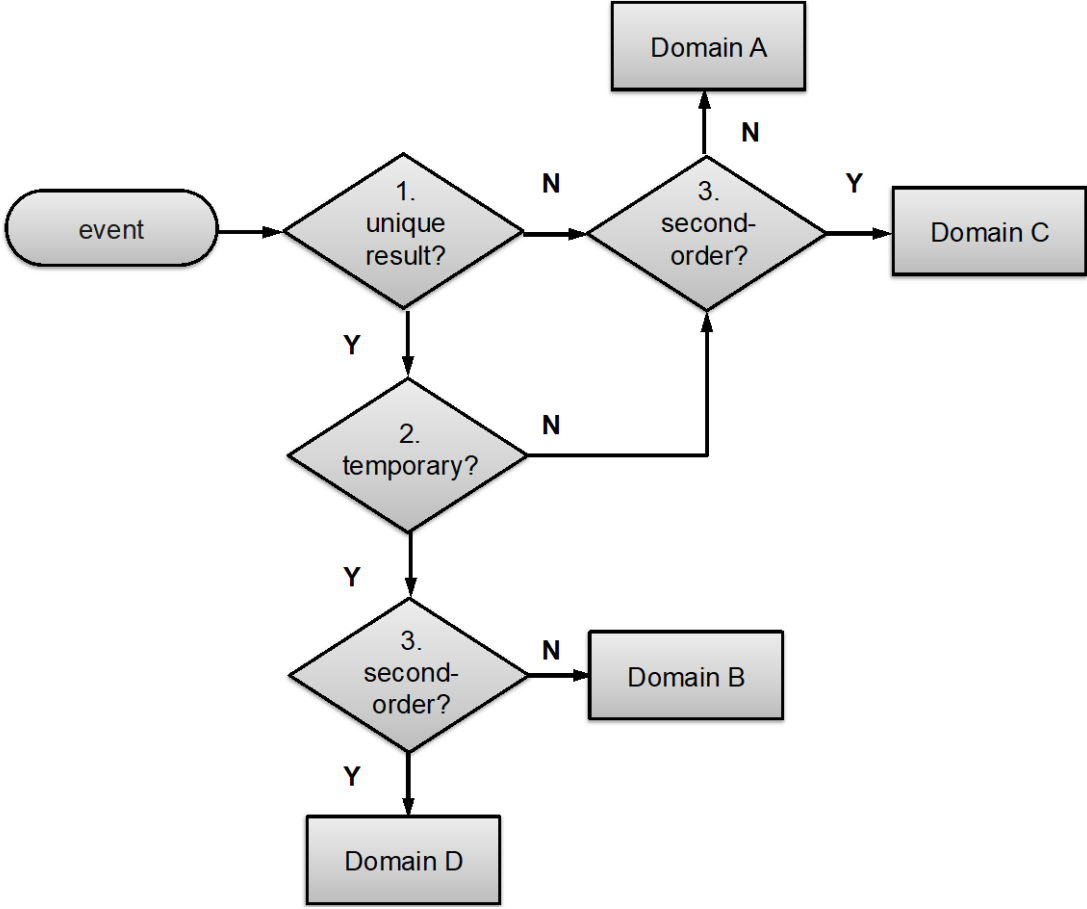
1.	Will the event (make you) create a unique product, service, or result?
2.	Is it a temporary endeavor (i.e., planned for a limited duration)?
3.	Will an essential part/a core element of the system go through a transformation (i.e., second-order change)?

Figure 4: The Domain Identifying Procedure (DIP)
Source: Author's edit based on Pádár et al. (2017, p. 807)

To test H2c, the conditional likelihood that an activity actually belongs to domain D given that this activity was judged to be a project and a second-order change as well (by participants of the survey, see details in section 2.1.5.1 of the dissertation) had to be calculated, and it was estimated as the proportion of the corresponding number of observations. The Minitab Statistical Software (Version 21.1.1) was used for statistical analyses and as a result (Figure 5), at the significance level of 0.05, the alternative hypothesis (H_1) that the conditional likelihood is greater than 0.5 was accepted. (At the significance level of 0.05, the null hypothesis (H_0) that this conditional likelihood (i.e., an activity actually belongs to domain D given that this activity was judged to be a project and a second-order change as well) is equal to 0.5 was rejected.) The

lower bound for p (0.569034) even for this 44/65 conditional probability suggested that the DIP (Figure 4) does not work just by chance.

Method

p: event proportion
Exact method is used for this analysis.

Descriptive Statistics

N	Event	Sample p	95% Lower Bound for p
65	44	0.676923	0.569034

Test

Null hypothesis	H_0: p = 0.5
Alternative hypothesis	H_1: p > 0.5

P-Value
0.003

Figure 5: Hypothesis test results and confidence interval for one proportion (n=65, event=44, H₀: p = 0.5; H₁: p >0.5)

Source: Generated by Minitab 21.1.1 using questionnaire data

In the case of the optimistic scenario (44 + 8 descriptions are actually change projects), at the significance level of 0.05, the null hypothesis (H_0) that this conditional likelihood is equal to 0.5 also had to be rejected, and the alternative hypothesis (H_1) that this is greater than 0.5 had to be accepted (Figure 6). The lower bound for p (0.700947) for the 52/65 conditional probability suggests that the DIP leads to the correct conclusion regarding domain D in, at least, a 70% of the cases.

Method

p: event proportion
Exact method is used for this analysis.

Descriptive Statistics

N	Event	Sample p	95% Lower Bound for p
65	52	0.800000	0.700947

Test

Null hypothesis	H_0: p = 0.5
Alternative hypothesis	H_1: p > 0.5

P-Value
0.000

Figure 6: Hypothesis test results and confidence interval for one proportion (n=65, event=52, H₀: p = 0.5; H₁: p >0.5)

Source: Generated by Minitab 21.1.1 using questionnaire data

Figure 7 provides more detail regarding this last piece of information indicating that with a 95.2 confidence (P-value=0.048) the null hypothesis (H_0) (i.e., this conditional likelihood is equal to 0.7), has to be rejected and the alternative hypothesis (H_1) (i.e., the conditional likelihood is greater than 0.7) has to be accepted.

Method

p: event proportion
Exact method is used for this analysis.

Descriptive Statistics

N	Event	Sample p	95% Lower Bound for p
65	52	0.800000	0.700947

Test

Null hypothesis	H_0: p = 0.7
Alternative hypothesis	H_1: p > 0.7

P-Value
0.048

Figure 7: Hypothesis test results and confidence interval for one proportion (n=65, event=52, H_0: p = 0.7; H_1: p >0.7)

Source: Generated by Minitab 21.1.1 using questionnaire data

Based on Figure 5, Figure 6, and Figure 7 and the related explanation, hypothesis H2c was also regarded as true, acceptable. That is, following the steps of the DIP, people can identify projects that are also second-order changes, i.e., (organizational) change projects). Thus, building on findings presented related to H2a, H2b, and H2c, the following thesis was formed:

Thesis 2

The common domain of CM and PM can be determined in practice with the help of the Domain Identifying Procedure (DIP). The DIP can be utilized to identify if a change is both unique and temporary (i.e., a project) and also one that transforms the organization's or a system's very essence (i.e., a second-order change).

Related publication: Pádár et al. (2017)

Section 2.1.6 of the dissertation explored the differences in meaning behind the concept "change" from the viewpoint of PM practitioners building on both theoretical and empirical findings. The latter built on content analysis (performed by KH Coder 3) of the relevant answers (Q11, Q16) of the survey (see details in section 2.1.5.1 of the dissertation).

In the case of the analysis of "change" definitions by PM practitioners, results in Table 4 show that the word most often appearing in the definitions together with change is "project".

Table 4: Results from the word association analysis. Words with the top 30 Jaccard-similarity to the word „change" in definitions (n=177) of "change" by PM practitioners

	Word	Part of Speech	Unconditional Probability	Conditional Probability	Jaccard-similarity
1	project	Noun	38 (0.211)	31 (0.244)	0.2313
2	company	Noun	24 (0.133)	21 (0.165)	0.1615
3	work	Verb	23 (0.128)	20 (0.157)	0.1538
4	different	Adj	24 (0.133)	18 (0.142)	0.1353
5	organization	Noun	19 (0.106)	15 (0.118)	0.1145
6	work	Noun	19 (0.106)	15 (0.118)	0.1145
7	consider	Verb	13 (0.072)	13 (0.102)	0.1024
8	mean	Verb	13 (0.072)	13 (0.102)	0.1024
9	team	Noun	15 (0.083)	13 (0.102)	0.1008
10	management	Noun	13 (0.072)	12 (0.094)	0.0938
11	activity	Noun	15 (0.083)	12 (0.094)	0.0923
12	need	Verb	13 (0.072)	11 (0.087)	0.0853
13	task	Noun	11 (0.061)	10 (0.079)	0.0781
14	structure	Noun	13 (0.072)	10 (0.079)	0.0769
15	way	Noun	14 (0.078)	10 (0.079)	0.0763
16	example	Noun	9 (0.050)	9 (0.071)	0.0709
17	time	Noun	9 (0.050)	9 (0.071)	0.0709
18	everyday	Adj	11 (0.061)	9 (0.071)	0.0698
19	organizational	Adj	11 (0.061)	9 (0.071)	0.0698
20	plan	Noun	8 (0.044)	8 (0.063)	0.0630
21	think	Verb	8 (0.044)	8 (0.063)	0.0630
22	come	Verb	9 (0.050)	8 (0.063)	0.0625
23	use	Verb	9 (0.050)	8 (0.063)	0.0625
24	require	Verb	7 (0.039)	7 (0.055)	0.0551
25	make	Verb	9 (0.050)	7 (0.055)	0.0543
26	tool	Noun	9 (0.050)	7 (0.055)	0.0543
27	colleague	Noun	6 (0.033)	6 (0.047)	0.0472
28	budget	Noun	7 (0.039)	6 (0.047)	0.0469
29	implement	Verb	7 (0.039)	6 (0.047)	0.0469
30	technical	Adj	7 (0.039)	6 (0.047)	0.0469

Source: Generated using KH Coder 3 based on questionnaire data (Q11)

A visual representation of these results is shown in Figure 10, which presents the minimum spanning tree (with the Jaccard co-efficient shown along the edges) of the co-occurrence network up to the top 60 words as the result of the word association analysis for the target word "change" in definitions (n=177) of "change" by PM practitioners.
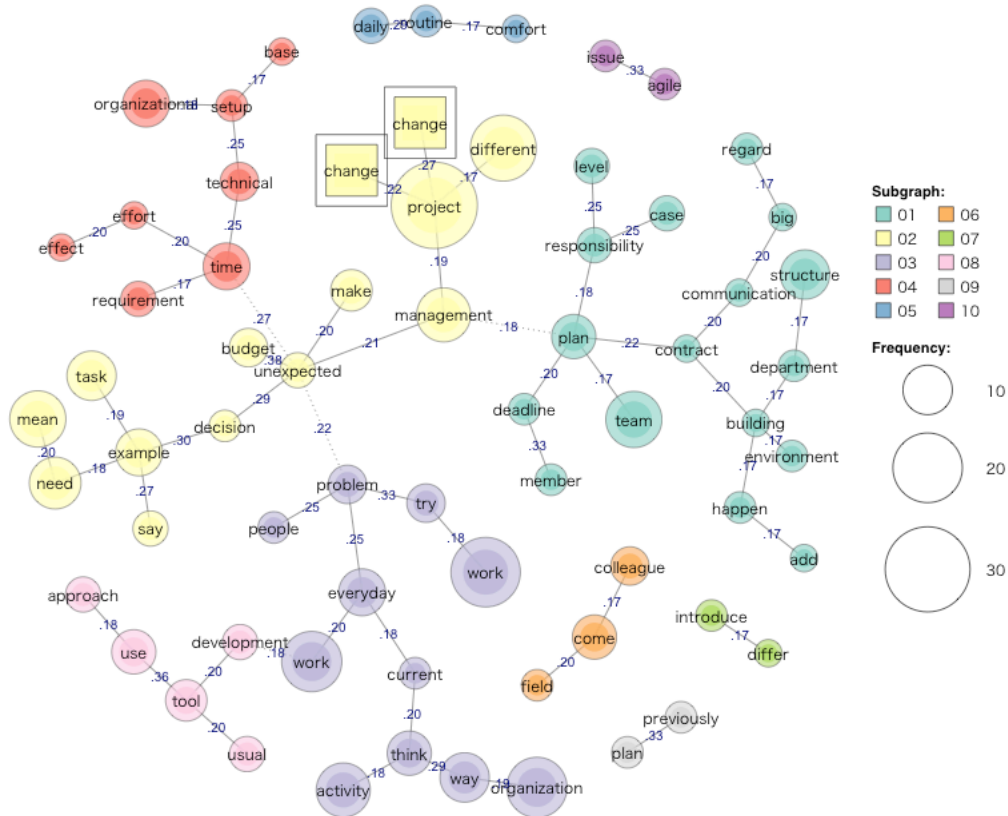
Figure 10: The minimum spanning tree (with the Jaccard co-efficient shown along the edges) of the co-occurrence network up to the top 65 words as the result of the word association analysis for the target word "change"(shown in rectangles separately as a verb and as a noun) in definitions (n=177) of "change" by PM practitioners.

Source: Generated using KH Coder 3 based on questionnaire data (Q11)

Some subgraphs of Figure 10 (sub-graphs colored, e.g., red #04 or green #01) suggest that changes in project specifications also appear in the examined definitions. This notion is supported by various examples:

- "*Customers change their **requirements** from time to time. For example we had 10 seconds to react to a key being pressed. Later on in the project the customer assigns a Change Request (CR), and says we no longer have 10 seconds, only 8 seconds to react. We consider something changed, if the requirement is so different from the previous state that we have to modify the software in order to fit the new specification.*" (Respondent 12, highlight added by the author)

- "*A customer change request (**technical** change in the product) is received, which influences the project **time**, **efforts** and costs.*" (Respondent 78, highlight added by the author)

- "*Change is an unexpected, unforeseen development that has an effect on the implementation of the project. Most of the time we need to deviate from the original*

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*project **plan** to handle the change. As my projects are financed by grants, we need to amend the workplan, the HR plan, or the budget and declare these changes to the grant operating agency while we also need to communicate the changes to the management of the organization. It always takes extra time and effort. Examples for change: resignation of a project team **member** / change in procedures within the organization / a team **member** is not ready with his or her work on time and this causes a delay (…)"* (Respondent 141, highlight added by the author)

Some answers appear to cover second-order changes as well, for instance:

- "*Change of team structure and the allocation of **responsibilities**; execute additional activities (not part of initial action **plan**) in order to meet targets.*" (Respondent 94, highlight added by the author)
- "*Change can be structural or process based. Process based change in a simple approach is a modified process flow granting the same output. Structural change is the modification of the **organizational setup**.*" (Respondent 172, highlight added by the author)

Taking a step further and having a look at collocation statistics (Table 5) as the result of KWIC or concordance analysis also contributes to the acceptance of H3. Table 5 shows those (top 35) words that appear most frequently five words left and right form the target word (in this case "change"). The word "project" is ranked fifth in this list which means it appears not only often in the definitions in which the word change appears (see Table 4 and Figure 10) but also appears often close to the word change in these definitions (Table 5). This suggests that change is defined somehow related to projects, which—as Figure 3 shows—can refer to first-order and second-order changes as well. Quantitative text analysis helps identify these underlying patterns, thus suggesting "which part of the data is considered to be important and which part of the data is to be interpreted in detail by researcher" (Higuchi, 2017, p. 144).

Table 5: Results from the concordance analysis. Words with the top 35 scores in definitions (n=177) of "change" by PM practitioners

Word	Part of speech	L, 5	L, 4	L, 3	L, 2	L, 1	R, 1	R, 2	R, 3	R, 4	R, 5	Score
change[8]	Noun	10	7	10	5	0	0	5	10	7	10	19.167
mean	Verb	0	0	0	0	0	8	2	0	1	0	9.250
process	Noun	3	4	1	3	2	0	1	3	3	2	8.083
organizational	Adj	1	1	1	0	6	0	1	1	1	0	7.867
project	Noun	3	4	0	3	2	0	1	3	2	2	7.500
company	Noun	0	1	2	3	2	0	1	4	2	1	6.950
new	Adj	3	4	3	1	0	0	2	1	5	2	6.083
management	Noun	0	2	1	1	1	2	2	1	1	0	5.917
technical	Adj	0	0	2	0	4	0	0	2	1	1	5.783
consider	Verb	2	2	5	3	1	0	0	0	1	1	5.517
organization	Noun	1	0	0	1	2	0	2	2	0	2	4.767
significant	Adj	0	0	0	0	4	0	0	1	0	0	4.333
customer	Noun	1	0	1	0	2	0	0	3	1	2	4.183
make	Verb	0	1	0	0	1	2	0	0	1	0	3.500
everyday	Adj	0	1	4	0	0	0	2	1	1	1	3.367
big	Adj	0	0	0	0	3	0	0	1	0	0	3.333
think	Verb	0	0	2	1	2	0	0	0	0	0	3.167
different	Adj	1	3	2	0	0	1	0	0	0	1	2.817
work	Noun	0	0	1	3	0	0	0	2	1	0	2.750
work	Verb	2	0	0	0	1	0	1	0	2	1	2.600
request	Noun	0	0	1	0	0	2	0	0	1	0	2.583
activity	Noun	0	0	0	3	0	0	1	1	0	1	2.533
law	Noun	0	0	0	0	1	1	1	0	0	0	2.500
schedule	Noun	0	0	0	1	1	0	1	0	1	1	2.450
handle	Verb	0	0	1	2	1	0	0	0	0	0	2.333
morphogenetic	Adj	0	0	0	0	2	0	0	1	0	0	2.333
structure	Noun	0	2	0	0	1	0	0	1	2	0	2.333
constant	Adj	0	0	0	1	1	0	1	0	1	0	2.250
require	Verb	0	1	0	3	0	0	0	0	1	1	2.200
product	Noun	0	1	1	1	0	0	1	1	0	1	2.117
role	Noun	1	0	0	2	0	0	1	1	0	0	2.033
budget	Noun	0	2	0	0	1	0	1	0	0	0	2.000
team	Noun	0	1	1	0	0	0	1	1	2	0	1.917
attitude	Noun	0	0	0	1	0	1	0	1	0	0	1.833
level	Noun	2	1	0	1	0	0	0	2	0	0	1.817

Source: Generated using KH Coder 3 based on questionnaire data (Q11)

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[8] The word "change" may appear in the context of another instance of it. For example, "**Change** means something will be better or maybe worse than previously. Positive **change** when a **change** makes my job easier, faster and effectiver [sic] for a long time." (Respondent 11, highlight added by the author)

The following definition is a good example that could be found based on the results of the collocation statistics (Table 5), which are based on the KWIC or concordance analysis (i.e., the word "project" appears in the fifth position on the left from the word "change")[9]:

"*In our* **project** *we have to handle* **changes***. In PM plan, we define the process of change management (contract, communication etc.).*" (Respondent 2, highlight added by the author)

Similar examples could be brought, for instance, in the case of the word "technical", which according to Table 5 appears most often right before (L, 1) the word "change"[10]:

- "**technical changes** *are changes in the customer specification or in the process landscape, organisational changes are changes in the project team setup, in the line management or in the processes of the company*" (Respondent 20)
- "*For* **technical changes** *every activity changing the setup of a Configuration Item is a change, even risk times requires a change. Typical technical changes to me is installation, migration, decommissioning. Project changes are when the contracted timeline, budget or scope has to be changed.*" (Respondent 65)

Even though the examples above regarding Table 5 presented definitions regarding first-order changes brought to the attention of the author based on the quantified characteristics of the examined textual data via content analyses (Higuchi, 2017), there are also definitions that mean second-order changes when defining the concept "change": For instance, the word "significant" appears most often right before (L, 1) the word "change" according to Table 5:

- "*Introducing and utilizing new software technologies which require* **significant change** *in our workflow.*" (Respondent 175, highlight added by the author)

Or the word "organizational" appears most often right before (L, 1) the word "change" according to Table 5

- "*There was a large* **organizational change** *in the company during last summer (and ever since). New teams were set up from scratch, other teams totally disappeared.*" (Respondent 87, highlight added by the author)

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[9] Respondent 141's previously quoted definition is also an example for this scenario.
[10] Respondent 78's previously quoted definition is also an example for this scenario.

The analyses highlighted that "technical" and "organizational" appeared to be keywords in how changes had been defined in the examined sample. Furthermore, they also appear in the same definition, which clearly distinguishes and includes first-order and second-order changes as well:

*"**technical** changes are changes in the customer specification or in the process landscape, **organisational** changes are changes in the project team setup, in the line management or in the processes of the company"* (Respondent 20, highlight added by the author)

Based on Figure 10, Table 4, and Table 5 it could be stated that definitions of change by PM practitioners contain both first-order changes and second-order changes, which supported the acceptance of H3 as CM does not deal with first-order changes (e.g., changes in project specifications).

Therefore, based on findings of section 2.1.6.1 as well as Figure 10, Figure 11, Figure 12, Table 4, Table 5, Table 6, Table 7, the following thesis was formed:

<u>Thesis 3</u>

The interpretation of change by people fulfilling PM roles or taking part in projects and the interpretation of change by CM practitioners only partially overlaps, because under the concept of "change" PM practitioners consider both the first-order and second-order changes, while CM only considers second-order ones.

Related publication: Pádár et al. (2019)

2.2 RQ2: Which roles of CM and PM correspond to each other?

The correspondence of role theories of CM and PM were explored in section 2.2. of the dissertation and further hypotheses were also formulated in regard to RQ2 calling for the joint examination of certain CM and PM roles in the common domain of CM and PM (i.e., second-order changes that are also projects). Namely:

H4a: The role of the change sponsor in CM corresponds to the role of the project sponsor in PM in theory based on their definitions in the common domain of CM and PM (i.e., in the case of second-order changes that are also projects).

H4b: The role of the change agent in CM corresponds to the role of the project manager in PM in theory based on their definitions in the common domain of CM and PM (i.e., in the case of second-order changes that are also projects).

H5a: Practitioners performing the role of the project sponsor (PM role) also perform the activities of a change sponsor (CM role) in the common domain of CM and PM (i.e., in the case of second-order changes that are also projects).

H5b: Practitioners performing the role of the project manager (PM role) also perform the activities of a change agent (CM role) in the common domain of CM and PM (i.e., in the case of second-order changes that are also projects).

Based on Table 10 and the related analysis and explanation, H4a and H4b were regarded as true, acceptable. That is, the role of the change sponsor in CM corresponds to the role of the project sponsor in PM in theory based on their definitions (H4a); and the role of the change agent in CM corresponds to the role of the project manager in PM in theory based on their definitions (H4b) in the common domain of CM and PM (i.e., in the case of second-order changes that are also projects).

Table 10: The correspondence of change management and project-related roles within domain D

				Sponsor		Agent (AG)	Target (T)		Advocate (A)	
				Initiating (IS)	Sustaining (SS)		Transition Target (TT)	New State Target (NST)	Voluntary (VA)	Asked (AA)
Sponsor			owner	✓	–	can be	can be	can be	–	–
			sponsor	–	✓	can be	can be	can be	–	–
Project Manager				can be	can be	✓	can be	can be	can be	can be
Team Manager	Project Management Team			IS can be a member	SS can be a member	✓	TT can be a member	–	VA can be a member	AA can be a member
	Performing Organization (PO)		resources	IS can be a member	SS is a member	AG is a member	TT can be a member	–	VA is a member	AA can be a member
	Project Team Members (PTMs)			IS can be a member	SS is a member	AG is a member	TT can be a member	–	VA can be a member	AA can be a member
	Influencer			can be	can be	–	can be	–	–	can be
	Customer/User		user	can be, if affected	can be, if affected	can be, if affected	can be	✓	can be	can be
		Project Champion		can be	–	can be	can be	can be	✓	✓
Project Board	Portfolio Managers/ Portfolio Review Board			IS can be a member	SS is a member	–	TT can be a member	–	VA can be a member	AA can be a member
PRINCE2 (OGC, 2004)	PMBoK (PMI, 2004, 2008, 2013)	*Kerzner* (2003)	Turner (2006, 2009)	TT, NST, VA, and AA introduced by the authors						
				Conner (1993, 1998); Harrington et al. (2000)						

Note: The checkmark (✓) indicates roles (i.e., pairs of CM and PM roles) that correspond to each other based on their definitions. A minus sign (-) was used when roles of the given pairing cannot have the same (very similar or overlapping) meaning under any circumstances. Additionally, none of the roles in the pairing is a subset of the other. (PMBoK stands for Project Management Body of Knowledge, all other abbreviations are deducible from the headers of the Table.)

Source: Author's edit based on Pádár et al. (2017, p. 809)

Based on the above, the following thesis was formed:

<u>Thesis 4</u>

CM and PM roles correspond to each other (based on their definitions) on the common domain of CM and PM (i.e., in the case of second-order changes that are also projects): the change sponsor to the project sponsor; the change agent to the project manager.

Related publications: Pádár et al. (2011, 2016, 2017, 2019) and Sebestyén et al. (2012)

Section 2.2.3 of the dissertation examined the correspondence of the select CM and PM roles based on empirical data. For testing H5a and H5b, chi-square (χ^2) tests were performed (using Minitab 21.1.1 and IBM SPPS 28) on the binary variable pairs of change sponsors and project sponsors and as well as change agents and project managers.

Figure 17 presents the tabulated statistics for the aggregated binary variables related to project sponsor (Qs34_37_project_sponsor_Y_N) and change sponsor (Qs41_42_change_sponsor_Y_N) activities.

Rows: Qs34_37_project_sponsor_Y_N   Columns: Qs41_42_change_sponsor_Y_N

	0	1	All
0	5	1	6
1	28	10	38
All	33	11	44

Cell Contents
    Count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	0.257	1	0.612
Likelihood Ratio	0.277	1	0.598

2 cell(s) with expected counts less than 5.

Cramer's Measure of Association

Cramer's V-square   0.0058480

Figure 17: Tabulated statistics for the binary variables related to project sponsor
(Qs34_37_project_sponsor_Y_N) and change sponsor (Qs41_42_change_sponsor_Y_N) activities (n=44)
Source: Questionnaire data analyzed using Minitab 21.1.1

Based on the statistical test results in Figure 17, the null hypothesis (H_0) that the two variables are independent (not associated, i.e., activities performed by project sponsors and change sponsors are independent of each other) was accepted at the significance level of 0.05. The alternative hypothesis (H_1) that the two variables are dependent (associated) was rejected. The Cramer's V-square value of approx. 0 indicated that there was no associative connection between the two variables. Consequently, H5a was rejected.

Figure 21 presents the tabulated statistics for the aggregated binary variables related to project sponsor (Qs38_40_project_manager_Y_N) and change agent (Q44_change_sponsor_Y_N)[11] activities.

Figure 21: Tabulated statistics for the binary variables related to project manager
(Qs38_40_project_manager_Y_N) and change agent (Qs44_change_agent_Y_N) activities (n=44)
Source: Questionnaire data analyzed using Minitab 21.1.1

Based on Figure 21, the alternative hypothesis (H_1) that there was an associative connection between the two variables (i.e., activities performed by project managers and change agents are not independent of each other) was accepted at the significance level of 0.05. (The null hypothesis (H_0) that the two variables are independent (not associated) was rejected.) The

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[11] Since there was only one activity statement for the change agent role among Qs34-44, the variables „Q44" and „Q44_change_sponsor_Y_N" are identical, the latter name is used for consistency in variable labels.

Cramer's V-square value indicated that there was a mid-strong associative connection between the two variables. Consequently, H5b was accepted.

Based on the above, the following thesis was formed:

Thesis 5

Based on empirical evidence it can be demonstrated that performers of the role of the project manager (PM role) also perform the activities of a change agent (CM role) in the common domain of CM and PM (i.e., in the case of second-order changes that are also projects).

Related publications: Pádár et al. (2011, 2016, 2017, 2019) and Sebestyén et al. (2012)

2.3 *RQ3: How can the complexity of RTC be described in a more informative way than the concept of resistance to change is able to do so?*

Chapter 3 of the dissertation shed light on a connection point between CM and psychology as it addressed the third RQ of this work, namely 'How can the complexity of RTC be described in a more informative way than the concept of resistance to change is able to do so?'. The review of relevant literature revealed that numerous publications dealing with RTC put the emphasis mainly on resistance, in most cases, even without giving a precise definition of the concept, merely supposing that it is palpable. Even those who defined resistance, interpreted it in different ways. However, thinking merely of resistance is not enough when dealing with RTC as the whole spectrum of negative, neutral, and positive reactions should be considered if one wants to identify, understand, and handle the complexity of RTC in their entirety. Therefore, the following hypothesis was formed:

H6: The complexity of reactions to changes can be described in a more informative way via a multidimensional attribute vector than how the concept of „resistance to change" is able to depict the phenomenon.

Section 3.4 of the dissertation suggested a model (Figure 25) that contains the cognitive (C), emotional (E), intentional (I), overt actional (A_o), and covert actional (A_c) aspects, which together give a fuller and clearer picture of the complexity of RTC than one-, two-, or three-dimensional models. Additionally, the model distinguishes communication (c) and actual

participation (p) within the actional dimension. Furthermore, it was also pointed out that a clear distinction should be made between reactions to the transition process and those to the new (planned or implemented) state. Marquitz et al. (2016, p. 2) claimed that "[c]oncrete tools are needed to help manage reactions to change, and the emotions which often accompany it," and this new model can serve as a useful tool for clearly and precisely representing RTC in its complexity, both in theory and in practice.
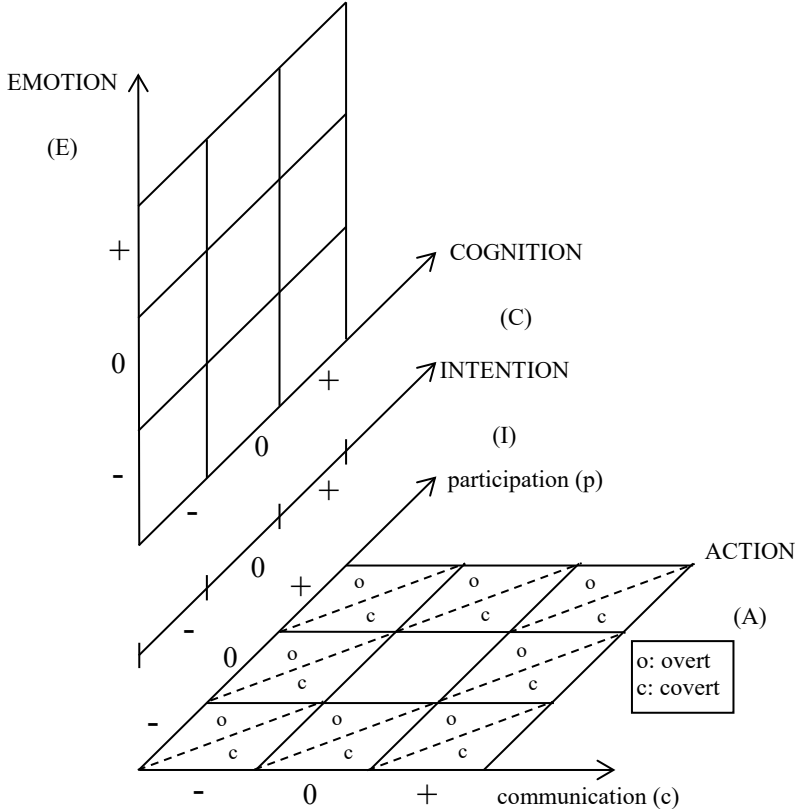

Figure 25: Components of the proposed, multi-dimensional model of reactions to change
Source: Pataki et al. (2022, p. 12)

Based on the suggested model (Figure 25), the different kinds of RTC can be characterized systematically, using the following two proposed Change Reaction Descriptors (CRDs):

- CRD_{tp} for the reactions to the transition phase/process; and
- CRD_{ns} for the reactions to the new state.

Both vectors consist of five components, representing the cognitive (C), emotional (E), intentional (I), and both the overt and covert actional (A_o and A_c) dimensions of reactions. These are all categorial variables which lead to the vectors having a qualitative meaning. The CRD, either for the transition process (CRD_{tp}) or for the new state (CRD_{ns}), can be formulated in the same way, as in the general syntax below:

$$CRD = (E, C, I, A_o(c, p), A_c(c, p)) \tag{11}$$

This means change reactions can be described in the emotional (E), cognitive (C), intentional (I), overt actional (A_o) and covert actional (A_c) dimensions. Furthermore, both A_o and A_c are functions of communication (c) and participation (p).

An example to describe a reaction in the transition phase could be the following:

$$CRD_{tp} = (E: -, C: +, I: 0, A_o(c: 0, p: +) , A_c(c: -, p: 0)) \tag{12}$$

This means that the emotional reaction (E) is negative, the cognitive reaction (C) is positive, for instance, in a case when the targets agree with the well-developed change plans (C: +) but hate the agent's irritating leadership style (E: -). These two reactions with opposite signs can approximately equilibrate each other and can result in a neutral behavioral intention (I), namely a hesitation whether to actively take part in the change or not (I: 0). However, if the targets fear the agent and do not dare to express their indignation to the agent openly, then when the agent is present, their overt actions (A_o) are c: 0, p: + (i.e., neutral communication and active participation), they obediently do what the agent tells them to do. But their covert actions (A_c) are c: -, p: 0 (i.e., negative communication and no participation): in the absence of the agent, they complain about their indignation to their peers and stop doing what they have been told to do.

These descriptors help agents or managers notice and handle RTC and ambivalences between and within the examined (sub-)dimensions and determine where the point of necessary interventions might lie.

Serving as a conceptual framework, the proposed new model and the descriptors make more precise detection and interpretation of (ambivalent) reactions become possible. Hence the real, underlying causes of RTC are identifiable more efficiently and accurately, which results in a more precise determination of the optimal focus, target, and method of handling reactions to change.

Based on the above, H6 was regarded as true, acceptable; therefore, the following thesis was formed:

<div style="border: 1px solid black; padding: 10px;">

<u>Thesis 6</u>

Resistance is not the most appropriate concept to express the complexity of reactions to changes. At the same time, change reaction descriptors (CRDs), which describe reactions to changes, have the capability to synthesize the emotional, cognitive, intentional, and actional (including communication and participation) dimensions of reactions to changes. Hence, CRDs are capable of providing a more complete picture of the reception of changes.

</div>

Related publication: Pataki et al. (2022)

Please note that the discussion of results and relevant theoretical and practical implications were presented in sections 2.3 and 3.6 of the dissertation.

3 Limitations and Future Research Avenues

3.1 Related to the Examination of Change Management and Project Management

Part of this work examined of the connections of CM and PM based on RQ1 and RQ2; however, role theories mean only a small fraction of the potential points for connection or cross-fertilization (Davies et al., 2018). Furthermore, the focus was on how the aforementioned change roles can be matched to their project-related counterparts. The aim was to explore the connections between them and not to provide an exhaustive overview of various instances of different stakeholders and roles throughout the literature. This, however, could mean an interesting thread of future research.

It also has to be noted that there can be some confusion about project roles to be performed when stakeholders become uncertain about their expected roles (Sense, 2013). This is undoubtedly an important issue, but the examination of this phenomenon was also outside the scope of this work. Furthermore, the focus was on key, internal project stakeholders, thus the detailed discussion of program and/or project portfolio-specific roles (e.g., Blomquist & Müller, 2006; Filippov et al., 2014; Korhonen et al., 2014) was outside the scope of this work.

Findings are also backed with empirical data, however, expanding the sample size as a whole or focusing on various currently underrepresented groups (e.g., people a higher average age that usually also translates to different roles and experience) involving perhaps performers of a wider variety of roles could provide added value to the scientific communities and also practitioners of the two fields. Furthermore, the questionnaire was in English, which was supposed not to be the mother tongue of the majority of respondents. It would be interesting to have data regarding which the language of the data collection is not a constraint by any measure for participants, however, it has to be also acknowledged that it is rare if a quantitative content analysis solution is available in Hungarian.

This interdisciplinary research exploring adjacent scientific areas has laid important foundations for future joint exploration of CM and PM, be it in regard to roles or any other specific (sub)field. Further exploration of what knowledge from the other field would be the most useful in given roles could be of high value for practitioners in either of the two fields.

A possible opportunity for further research avenue would be the analysis of "not single" project-related entities, program-related roles and entities, or other, directly program-related participants and their comparison to CM roles.

Based on professional experience, so-called 'can be' pairings (Table 10) also happen in real life; for instance, when agents (CM) find themselves being project sponsors (PM) or vice versa or when project managers (PM) end up being change sponsors (CM) as well. The development of a framework or a checklist that could help guide the steps taken in such situations would be an easily justifiable aim for any further research.

Additionally, the same applies to further theoretical and/or empirical findings regarding the suggested role refinements (see sections 2.2.2.1 and 2.2.2.2 of the dissertation). For instance, determining the important differences in handling transition targets and new state targets would be beneficial not only for change agents but also for project managers—provided that they are in domain D.

Furthermore, in today's more-than-ever globalized world, the examination of the problems and findings (described throughout this work) would also be quite timely in interorganizational settings (see, e.g., Pádár et al., 2015; Szalkai et al., 2018) as the pace and complexity of organizational changes have been extremely accelerated recently (Barratt-Pugh et al., 2013). This often also holds true for changes involving more than one organization as competition is stronger and stronger in today's increasingly interconnected world, in which even a minor event can create the so-called "butterfly effect" in a wide interconnected network of companies (Annarelli & Nonino, 2016). Identifying the most crucial typical problems as well as their potential solutions in cases, for instance, when sponsors of a change project come from two, previously distinct organizational entities owing to a merger or an acquisition, would be highly valuable for all of the stakeholders involved in the process.

The point has been made already that making representatives of different functional fields realize that 'their' reality is 'a' reality, not 'the' reality is crucial. However, 'change' and 'project' are not the only problematic expressions. Further exploration of these differences could result in valuable information for all the involved fields.

The examination of the success of projects has long been a subject of research in PM, and this trend is greatly reflected in the latest relevant literature (e.g., Daniel & Stewart, 2016; Lindsjørn et al., 2016; Marzagão & Carvalho, 2016; Rodríguez-Segura et al., 2016). Researchers are constantly looking for the causes of project success from various aspects. Based on this study, a potential research direction might be the analysis of whether any correlation exists between the application of CM knowledge and project success in domain D. Exploring in which industry the supposed relationship exists, and in what project types the CM knowledge hiatus is valid, could also be potentially interesting lines of further research.

Managing change requires not only PM-type dynamic organizational capabilities (resilience, flexibility, nimbleness, or whatever term is used), managerial tools, and skills, but CM-type capabilities as well. Furthermore, changes are often carried out with the help of (external) consultants, who also perform certain types of roles (Canato & Giangreco, 2011). Hence, examining the cross-section of projects that are second-order changes and also involve external change consultants could also be an interesting research avenue with potentially valuable findings.

3.2 Related to the Examination of Change Management and Psychology

The other part of this work examined of the connections of CM and psychology, more precisely resistance to change and RTC based on RQ3. The proposed model (Figure 25) focuses on the role of the components of the attitude, but it is important to note that some other factors also influence actual actions. As it was mentioned in section 3.4 of the dissertation, external factors can modify the actors' intended behavior, making them act differently than how they would have intended to do without such constraints. These "non-volitional factors" do appear in Figure 24 of the dissertation as their importance is acknowledged, but their examination was beyond the scope of this research.

However, the examination of these factors can also open up interesting new research avenues. Some examples of such non-volitional factors (from the viewpoint of any of the involved actors of the change) are listed in Table 16 of the dissertation.

Additionally, besides examining the viewpoint of the targets, the exploration of the sponsors' or the agents' attitudes could add further insights.

Responses to change are not static, they evolve: sometimes even negative and positive responses alter over time (Akarsu et al., 2018; Balogun et al., 2015; Castillo et al., 2018; Huy et al., 2014; Khurshid & Imran, 2011; Lahtinen et al., 2015; Moran & Brightman, 1998; Rafferty & Jimmieson, 2017; Sherman & Garland, 2007) sometimes only due to factors outside the control of the involved actors (e.g. Feldman, 2004). Therefore, it is not enough to examine RTC only transversally, on one occasion, but the process should be repeated from time to time again, longitudinally, throughout the same change initiative (Chreim, 2006; Giæver & Smollan, 2015; Rafferty & Restubog, 2010; Sackmann et al., 2009; Vakola, 2016). There are several different models, works dealing with such alterations of RTC in time—see, for instance, Adams, Hayes, and Hopson (1976); Binci, et al. (2012); Borgen and Amundson (1987); Carnall (1986, 2007); Conner (1993); Dallavalle (1991); Isabella (1990); Kets de Vries and Balazs (1998); Kim et al. (2011); Lipitt (1982); Rashford and Coghlan (2006), Smollan (2011).

However, the coexistence of so many different models can indicate uncertain points in knowledge about this kind of behavior. The significant differences and contradictions between the existing models can be considered as signs of the need for further research in this field. Supposedly, the differences between these models may ensue (among other things) from the differences between the dimensions of RTC (i.e., cognitive, emotional (affective), behavioral intention and action) considered, so the different curves on the graphs or lists of stages may refer to (partly) different dimensions. The new model (Figure 25) demonstrated in this work integrates the different important dimensions; consequently, it could be a useful tool for further research along the above-described avenue as well.

Another interesting factor somewhat related to how RTC change over time is how people remember having lived such experiences and how these affect their RTCs. Do and Lyle's (2022) work has taken a step in this direction, which would be worth further pursuing.

Assessing RTC along the different dimensions of the suggested model (Figure 25) and scaling the axes of these measurements are further important research topics. The simple scales used in this work (-, 0, +) were good enough for conceptual purposes, but practical assessments might require scales with higher resolution and practical measuring tools (e.g., questionnaires, scorecards). The development of such tools can also be an interesting subject of valuable future research.

Furthermore, the suggested model (Figure 25) (and consequently, the change reaction descriptors introduced in section 3.5 of the dissertation) are not fully comprehensive; there can be further characteristics of RTC worth considering when examining one given case—for example, the conscious (deliberate) vs. unconscious (not deliberate) or the rational vs. irrational nature of the reaction (Smollan, 2011). For another example, Stouten et al. (2018) examined eleven different factors related to RTC on three levels: on micro or individual level (four factors); on the meso or interpersonal, group, intergroup level (three factors); and on the macro or organizational level (four factors). These factors and distinctions are all important and useful concepts; however, the aim was not to incorporate every possible characteristic of RTC found in the literature into an overcomplicated model but to concentrate on the most critical aspects that have a close connection to attitude.

A further option for extending the current knowledge on RTCs would be to examine in which direction does the knowledge or availability of the necessary information (none/partial/overwhelming/full) cause a shift in any of the dimensions of the CRDs.

Findings related to RQ3 are conceptual; however, further empirical research testing the model, the descriptors, and related findings (including mixed-method approaches, which can

be grounded in live data) could add valuable insights, and thus means an important future research avenue. Borges and Quintas' (2020) work, which analyzed individual RTC including some antecedents of it based on empirical data, took a step in the direction of incorporating the multidimensional theoretical approach of RTC in empirical works—partially building on Piderit (1999, 2000) and Szabla's (2007) scales. Zayim Kurtay and Kondakci (2021) also took a multidimensional approach but primarily investigated both positive and negative change-related affect with antecedents, attitudes, and change implementation behaviors in their study. Another recent empirical work adopting a multidimensional view but of resistance to change based on Piderit's (1999, 2000) and Oreg's (2006) instruments was Pallotti et al.'s (2023) article. This empirical line of research—but based on the finding of this work—should be further explored as well.

Moving beyond the level of the individuals and exploring the relationship of different levels of resistance (e.g., individual and organizational) is a direction already of interest of the most recent publications (see, e.g., Pallotti et al., 2023; Sverdlik & Oreg, 2022). Whereas further investigating components of the "micro-level" might also lead to interesting discoveries (see, e.g., Brandes & Lai, 2022).

3.3 Future Research Avenues Related to the Intersections of RQs and Beyond

While RQ1 and RQ2 dealt primarily with certain connection points CM and PM, RQ3 linked CM to psychology via the concepts of resistance and reaction to changes. It has to be noted that even though it was out of the scope of this work, there is a growing scientific interest regarding the intersection of these separately handles parts, namely resistance to projects that carry out changes. B. C Lines et al. (2015), for instance, identified change management factors that were instrumental in minimizing the resistance encountered during change implementation of projects, while van Marrewijk (2018) aimed to understand how change and resistance were shaped in interorganizational projects.

Therefore, exploring and better understanding the manifestation and nature of resistance in projects as well as introducing the notion of reactions to changes instead of the over-simplifying concept of resistance could open research avenues with potentially valuable contributions—theoretically and empirically as well. Furthermore, the extension of these questions to the inter-organizational level also appears to be a research path that is quickly gaining scientific interest (see, e.g., Haniff & Galloway, 2022; Polova & Thomas, 2020; van Marrewijk, 2018; Yang et al., 2022; D. Zhang et al., 2022). Martinsuo and Aloha (2022) have

already developed propositions and recommended future research viewing these matters from a PM standpoint.

Similarly, in the case of potential knowledge transfer between role players of CM and PM, it would be important to examine in more detail what skills, for instance, a project manager needs to acquire in the context of the challenges of the modern business environment when given a CM role and vice versa. The theoretical and/or empirical investigation of this matter could be the subject of a different dissertation.

Finally, a look at Arazmjo and Rahmanseresht's (2019) work, in which they built a multi-dimensional meta-heuristic model for managing organizational change by combining qualitative methods (content analysis and Delphi Technique) and Artificial Neural Networks (Fuzzy Theory and Genetic Algorithm), would demonstrate it perfectly that the potential contribution of emergent scientific fields or technologies including the application of AI, for instance, to any of the issues this work touched upon seems to be limitless.

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Appendix

Appendix 1 *List of Publications*[12]

Daruka, E., Finna, H., Gyökér, I., Marcsa, A., Pataki, B., Pádár, K., & Szabó, T. (2015). A menedzsment alapjai. In J. Kövesi, G. Andor, J. Erdei, H. Finna, I. Gyökér, N. Kalló, T. Koltai, J. Topár, & Z. E. Tóth (Eds.), *Menedzsment és vállalkozásgazdaságtan: üzleti tudományi ismeretek* (pp. 111–198). Typotex Kiadó.

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Daruka, E., & Pádár, K. (2018). Talent Management: A Systematic Review on its Conceptualizations. *26th Ebes Conference - Prague Proceedings*, 243–1257.

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Pádár, K. (2013a). Innovative Recruitment of High Potentials: The potential benefits of organising student competitions: Results of a Cross-National Study. *International Journal of Sales, Retailing, & Marketing, 2*(1), 34–49.

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* Pataki, B., Pádár, K., & Krasz, K. (2022). Toward a More Comprehensive Model of Reactions to Change: A New Framework and Change Reaction Indexes. *Change Management: An International Journal*, *22*(2), 1–27. https://doi.org/10.18848/2327-798X/CGP/v22i02/1-27

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