Agile Transformation Framework in Software Project Organization

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Abstract: IT and ICT software project enterprises offer advanced business services and products to their customers and users through complex, innovative and tailored programs and projects. IT and ICT programs and projects are broadly used by different industries to deliver their services and products through advanced software, web and cloud services and a multitude of user-customized digital technologies. A powerful and unforeseeable market competition brought a lot of challenges to the complex project and program management process. The primary challenges in the program and project management stem from: the growing overall project efficiency and productivity, reduction of the time-to-market, an increasing predictability of customer deliveries, expanding transparency of project planning, stronger cooperation and communication between business and project teams, optimisation of project and program portfolio management and creating a supportive and learning organizational culture. IT and ICT software project companies evolve by going through various organizational changes related to project management methodologies in order to address most of these challenges.

The primary goal of this paper is to present the Agile transformation framework as a model of an organizational change deployed by introduction of a new project management methodology in the context of the contingency theory. The paper responds to research questions about a potential Agile adoption framework within the Agile transformation process. Following a review of the literature, the author's empirical research resulted in a multiple case study analysis of companies implementing Agile project management methodologies. It is focused on Agile adoption models in IT and ICT software project enterprises.

As demonstrated by the results of the research, the change in the project management methodology has significantly impacted the entire project organization. The research results showed that Agile transformation framework is not only a pure change in project management methodology but an uniform set of comprehensive organizational changes in governance, processes, technology, methodology, strategy, structure and organizational culture. These changes may lead to a competitive advantage gained by a software project organization. Senior executive management should analyze possible adoption models and framework prior to deciding about deployment of the transition process.

Keywords: project management, organizational change, Agile transformation framework, Agile adoption model, contingency theory.

1.   Introduction

Software project organizations are constantly looking for new methods of effective program and project management to deliver advanced IT and ICT business services and applications (Gandomani & Nafchi, 2015; 2016; Ravichandran, 2017). Digital transformation has brought both additional challenges as well as opportunities to improve existing project management methodologies (Denning, 2016b). Software project companies are undergoing organizational changes related to introduction of new and modern project management methodologies to cope with strong market competition, changing customer expectations, dynamic marketplace and to enhance their organizational business agility (Gurd & Ifandoudas, 2014; Cegarra-Navarro et al., 2016; Ravichandran, 2017).

In recent years, many software project enterprises have applied or moved to Agile project management methodologies to better cope with planning and execution in complex software development project management (Laanti et al., 2011; Dikert et al., 2016; Moe & Dingsøyr, 2017). However, the Agile transformation process does not simply change the project management methodology, but it brings about some complex and evolutionary organizational changes related to management, leadership and governance at all levels of enterprise (Gandomani et al., 2013; Gurd & Ifandoudas, 2014; Gandomani & Nafchi, 2015; 2016; Dikert et al., 2016; Hoda & Noble, 2017; Moe & Dingsøyr, 2017). The Agile transformation concept can be found under different terms known as agile transition, agile deployment, agile adoption or simply agile organizational change and in co-occurrence with software development projects, large-scale and distributed software development and with agility assessment (Gandomani & Nafchi, 2015; 2016; Dikert et al., 2016; Solinski & Petersen, 2016; Hoda & Noble, 2017; Moe & Dingsøyr, 2017). Although the term "Agile" relates to many aspects of the organization, the most important is a mindset as only its complete acceptance mitigates the risk of an unsuccessful transformation process (Denning, 2016a; 2016b).

The empirical research presented herein expanded the knowledge about the transformation framework (Gandomani & Nafchi, 2015; Hoda & Noble, 2017) as a model of extensive organizational change and about the process details from the contingency theory perspective. The key findings identified in this paper might serve as a valuable feedback for management practitioners, consultants and management executives to assess decision about deployment readiness in given software company or to tune the whole process to be more effective in cost, time and effort as well as to proactively mitigate a risk of issues and obstacles.

The primary goal of the empirical research in this paper is to respond to the two research questions about the Agile transformation framework in software project organization, namely: What is the transformation framework as a model of comprehensive organizational change resulted from the introduction of new project management methodology? What are the major steps of the transformation process together with their sequence and potential actions? The additional goal of this research study is to present the contingency theory as a theoretical perspective to analyse transformation process details in the context of the environment of software development companies.

The research results showed that the transition process to the new project management methodology is a model of an organizational change comprising several different areas: processes, methods, tools, communication, customer cooperation, organizational structure, organizational strategy, organizational culture, technology, financial accounting, law and governance. The major steps of the transformation process depend on the environment in which a company operates. While the main steps may differ in each case, strategic, tactical and operational phases form part of a generic approach what was found in the presented research study. Governance was identified as the key aspect of the presented research results.

Quantitative and qualitative analyses of multiple case studies of the companies implementing the new project management methodology were applied as research methods. The basic limitation of these research results is the source of the majority of multiple case studies. They were accessed through the Web repositories which covered only a limited number of valuable descriptions from the research study perspective. Several open research items for a future detailed study have been identified i.e.: a hybrid solution of adoption scenarios, some unsuccessful transformation cases, a quantitative metrics of transition process and tools for company assessment of deployment readiness.

The structure of the paper is as follows: chapter two presents its theoretical underpinnings, chapter three presents methodology approach, chapter four covers the empirical research results and, finally, chapter five discusses the results and presents the summary conclusions. What is more, chapter two offers a review of the existing literature divided into two subchapters presenting an Agile transformation literature review and the contingency theory as a theoretical perspective.

2. Theoretical underpinnings

2.1 Agile transformation

Software project organizations have started to explore new modern approaches in project and programs management in order to improve organizational agility (Sherehiy et al., 2007; Gurd & Ifandoudas, 2014; Cegarra-Navarro et al., 2016; Gren et al., 2017; Ravichandran, 2017) and to improve their position on the dynamic and unpredictable marketplace (Gandomani & Nafchi, 2015; 2016). An Agile transformation is a process of transiting from traditional project and program management methodologies to Agile project methodologies and it affects almost all levels of project organization (Laanti et al., 2011; Gandomani et al., 2013; Gandomani & Nafchi, 2015; 2016; Moe & Dingsøyr, 2017). As a mindset, Agile is much more important than any management methodology itself and only its full adoption may lead to a successful Agile transformation process (Denning, 2016a, p. 13-14). However, the transition process is a complex, long and evolutionary one mainly due to the scope and scale of organizational changes requiring synchronization, tailoring and adoption to the given software enterprise context (Laanti et al., 2011; Gandomani et al., 2013; Dikert et al., 2016; Moe & Dingsøyr, 2017). The Agile transformation process is constrained by number of unique issues, barriers and challenges, thus it requires a substantial effort in terms of cost and resources in a long time frame as well as engagement and cooperation among different business units of project organization (Denning, 2016b; Dikert et al., 2016; Gandomani & Nafchi, 2016; Nuottila et al., 2016; Hoda & Noble, 2017; Paterek, 2017). Law, legislation and contracts challenges were identified as obstacles to Agile transition, in particular in public and government organizations (Mergel, 2016; Nuottila et al., 2016). Process complexity and scalability, its difficult integration with the existing governance, quantitative measurement and long period of observation are main reasons of a limited number of empirical research focused on transforming large-scale software project organizations (Laanti et al., 2011). The potential cost of transition in terms of money,

disrupted operability and impact on quality of development requires developing a quantitative measurement of its impact (Olszewska et al., 2016; Gren et al., 2017; Laanti, 2017).

Several research papers presented different theoretical frameworks of an Agile adoption (Sherehiy et al., 2007; Gandomani et al., 2013; Laanti, 2017), others were based on single enterprise case study (Gurd & Ifandoudas, 2014; Mergel, 2016); however, only few papers presenting the Agile transformation model on an organizational level based on a wide research study of the software development practice (Gandomani & Nafchi, 2015; Solinski & Petersen, 2016; Hoda & Noble, 2017). Hoda & Noble (2017, p. 141) depicted the adoption process *as a network of on-going transitions across five dimensions: software development practices, team practices, management approach, reflective practices, and culture*. The transition and adoption framework presented by Gandomani & Nafchi (2015, p. 209) included structural characteristics (value-based, iterative, continuous, gradual) as well as key activities (practice selection, adaptation, assessment, retrospective, adjustment), while Solinski & Petersen (2016, s. 459) showed various transformation scenarios depending on the adoption strategies of Agile practices over the time.

Source: Elsevier (2017)

Figure 1: Subject analysis of Agile Transformation concept

A subject analysis of an Agile Transformation concept (Figure 1) by search on terms: "Agile Transformation", "Agile Transition", "Agile Deployment" and "Agile Adoption" in Scopus database (Elsevier, 2017) revealed the high importance of this topic in the computer science and engineering fields (e.g. for software project enterprises). The same query on Scopus database (Elsevier, 2017) indicated T.J. Gandomani as the top author of research papers (14 documents).

Source: made by the author, based on Elsevier database (2017)

Figure 2: Agile transformation concept – the network of co-occurrence with author keywords

Bibliographic data from Scopus database (Elsevier, 2017) was used to construct a map (Figure 2) with VOSviewer software tool. The map was generated based on the network data of co-occurrence with the author's keywords. The network part related to the Agile transformation concept was brought forward while the rest of the network was moved to the background in order to highlight the Agile software development, software engineering and distributed software development as important links for the research study on Agile projects in software development companies.

2.2 Contingency theory as a theoretical perspective

The contingency theory as a theoretical perspective was applied to present a model for introducing the new project management methodology (an independent variable) on comprehensive change (a dependent variable) in the entire software project organization in the context of the third variable – some unique environmental contingency factors impacting this organization (Joslin & Müller 2015, p. 1382; Paterek, 2017, p. 194). A project management transition from the traditional governance to the Agile governance is an example of a comprehensive change aligned to specific environment context factors of each software project organization (Joslin & Müller 2015). Both external and internal contingency factors had an impact on the transition process itself, while their analysis offered a clearer picture of the impact of project methodology change from the positive theory perspective and proposed some practical enhancements from the normative theory perspective (Joslin & Müller 2015). Cegarra-Navarro et al. (2016) and Moe & Dingsøyr (2017) highlighted knowledge management processes and continuous learning activities as driving context factors towards adoption of business agility on organizational level.

Sherehiy et al. (2007) presented a number of conceptual frameworks in terms of agility manufacturing on the organizational level while applying the contingency theory perspective. They claim that *organizations cannot be considered and analyzed in isolation of the environment* (Sherehiy et al., 2007, p. 446). Furthermore, organizations should adapt their characteristics and practices to these contingency factors to maintain their effectiveness (Sherehiy et al., 2007; Denning, 2016a). Gurd & Ifandoudas (2014), in turn, recognized the theory of constraints (TOC) approach as an improvement of the organizational agility in the short term. TOC provides a system of ongoing improvement to optimize the performance of a whole system by managing constraints (Gurd & Ifandoudas, 2014, p. 2). At the same time, they proposed to use a modified balanced scorecard based on the agility principles to address some important strategic challenges, enable a more agile environment and shift towards agile organizational culture as long-term organization goals (Gurd & Ifandoudas, 2014).

3. Methodology

The primary goal of the empirical research presented in this paper is to show a proposed transformation framework for an Agile adoption process in the context of the contingency theory. The research population is specified as the IT and ICT software enterprises deploying, transitioning or adopting to the modern project management methodology in order to deliver their advanced business services and products to customers in much more effective way. The research focused on IT and ICT software development programs and projects whose planning and execution are often very complicated. It is mainly due to constantly changing the scope of the developed product as it is more customer's vision than a detailed list of requirements to cover by new software implementation and due to lots of dynamically changing sources of technical knowledge.

A quantitative and qualitative analysis of multiple case studies was used as a research method. The main purpose of the explorative and explanatory multiple case studies (Kozarkiewicz, 2012, p. 202; Czakon, 2015, p. 201) were to find the detailed answers to the two following research questions about:

- What is the transformation framework of comprehensive organizational change caused by introducing a new project management methodology?
- What are the major steps of the transformation process together with their sequence and a practical example of potential actions?

The triangulation method (Luczewski & Bednarz-Luczewska, 2012, pp. 182-183; Kozarkiewicz, 2012, pp. 202-203) has been applied to reinforce and validate the achieved empirical research results. The triangulation method resulted in multiple case studies sources – various enterprises, consultants and authors and with a diversity of methods applied to collect all of these 110 case studies. By means of exploration of miscellaneous Web repositories 107 different enterprise case studies were found. These multiple case studies were written by a number of authors and consultants (informant's triangulation). They came from 12 different groups (source's triangulation). Two subsequent case studies have been acquired by standardized and unstructured interviews with an experienced Agile coach (method's triangulation). The last case study was a result of an

author's own observation. The result of quantitative and qualitative analysis of all multiple case studies gave 9 single-valued variables (industry, headquarter, number of employees, scalability level and model, old and new project management methodology, duration, approach) and 9 multi-valued variables (issues & challenges, long-term goals, supporting and non-supporting conditions, major process steps, organizational changes, transformation issues, knowledge management actions, organizational method changes) investigated for each case study. Then, major process steps and organizational changes variables were used for further analysis in terms of results presented in this paper.

The major limitation of the presented research study analysis is the Web sources of the acquired multiple case studies. Consultants and authors presented mainly a description of success stories observed, lessons learned from their prospective view or some positive marketing details of the transformation and adoption process instead of informing about the real issues, barriers, dark sides and encountered challenges. This problem was partially addressed by applying the triangulation method. Author's interviews with the Agile coach and author's own observation allowed to confirm or fill the gaps in observations in other cases. The author's professional project management experience made it possible to interpret case studies based on its wider context. For future reference, it will be interesting to have the same case studies analysis repeated by other researchers as well as to add some new case studies coming from different sources. In particular, some new cases collected during interviews or from practitioner's observations could offer an interesting and valuable comparison with presented results.
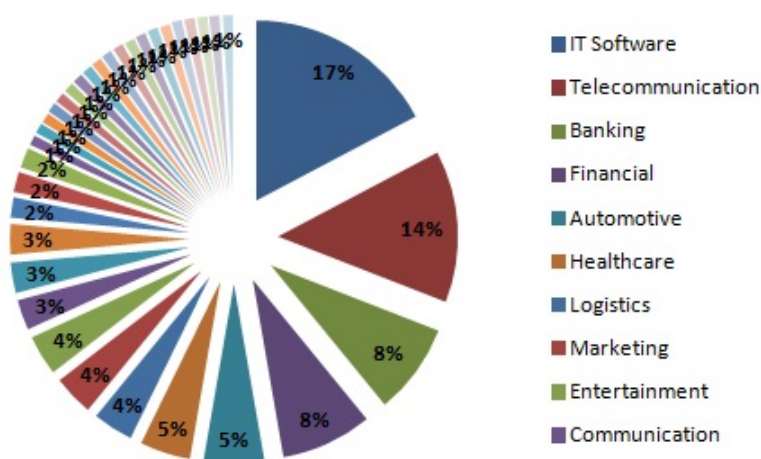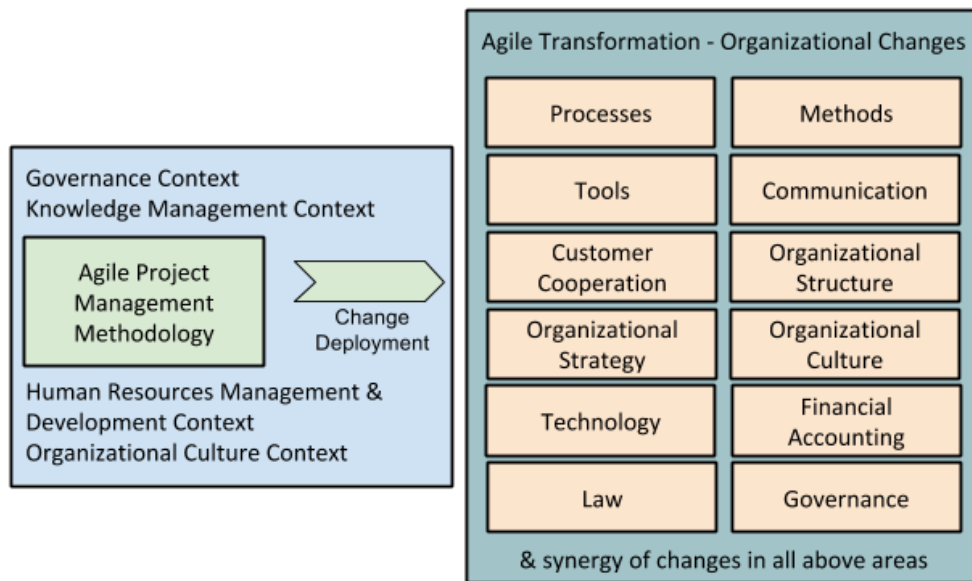

Source: made by the author

Figure 3: Industry area of the analysed multiple case studies

The Agile transformation process was primarily (31%) conducted in enterprises of the IT software and telecommunication industries (Figure 3). A deep research study of all cases showed that the majority of transformation cases were connected with IT and ICT software development projects, either in IT and ICT companies or in the IT department in other industries.
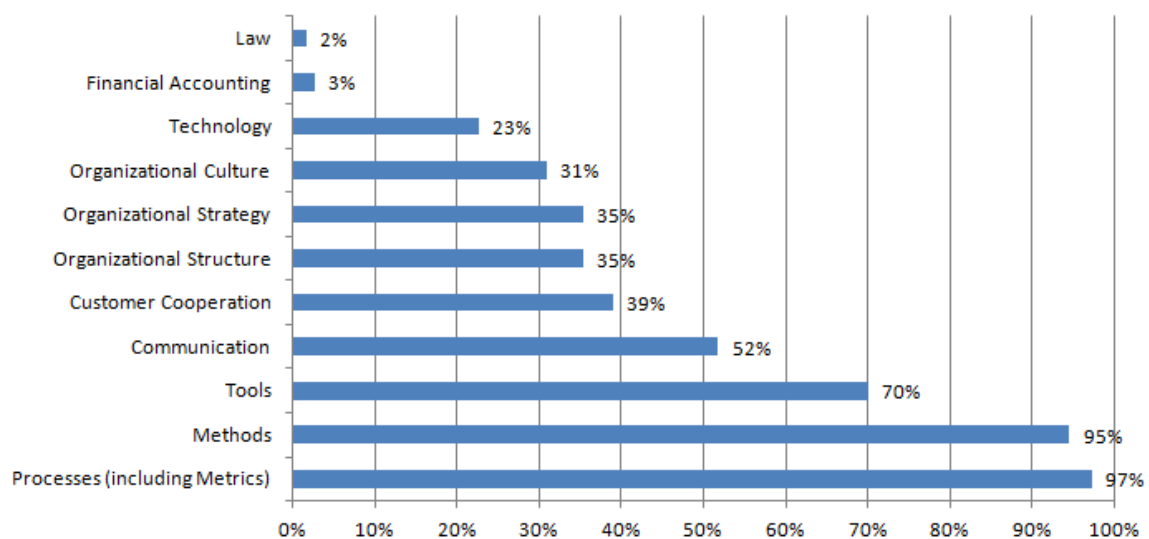
4.   Results

As a result of the quantitative and qualitative analysis of multiple case studies following Agile transformation, a framework was developed to present the details of this comprehensive organizational change. The key finding of the empirical research study is a model of comprehensive organizational change associated with application of new project management methodology. The introduction of a new Agile project management methodology impacted the entire project organization and resulted in number of organizational changes along with the synergy of all the changes (Figure 4). Governance, knowledge management, human resources management & development and organizational culture (Figure 4) were identified as internal contingency factors. The industry sector and macroeconomic factors as external contingency factors are associated with: the digital transformation, rapid IT & ICT trade development, pervasive computing, big data, globalization, IT outsourcing and offshoring. The key role of the contingency theory in the Agile transformation process is visible in all governance areas, e.g.: selection and application of the project management methodology, changes of the organizational structure, knowledge management approach and organizational culture. Each software project organization should adapt its management practices to their own context (Denning, 2016a).

Figure 4: The Agile transformation framework as a model of comprehensive organizational change

The governance is the key organizational change in the Agile transformation framework, taking priority over any other changes which are pointed out directly in the analysed case studies (Figure 4 and Figure 5). Complexity of transformation process requires mature organizational governance with a strong leadership support and leadership engagement.

Figure 5: Organizational changes introduced by Agile transformation process – quantitative results

Research results showed that transition to the new project management methodology worked as a "trigger" stimulating holistic organizational changes in processes, methods, tools, communication, customer cooperation, organizational structure, organizational strategy, organizational culture, technology, financial accounting and law (Figure 5).

The Agile transformation process has challenged both the new way of project and programs lifecycle governance and the method followed in contract creation (Figure 6). In particular, the relation between project lifecycle governance and contract creation has been challenged in case of software project organization delivering products, services and customized solutions for government, public institution or B2B sector. As the transformation process is an evolutionary one, Agile Governance (understood as a full

deployment of Agile mindset) and some types of contracts called "pseudo-agile" are a common practice in most of the cases (Koehnemann and Mayner, 2017).
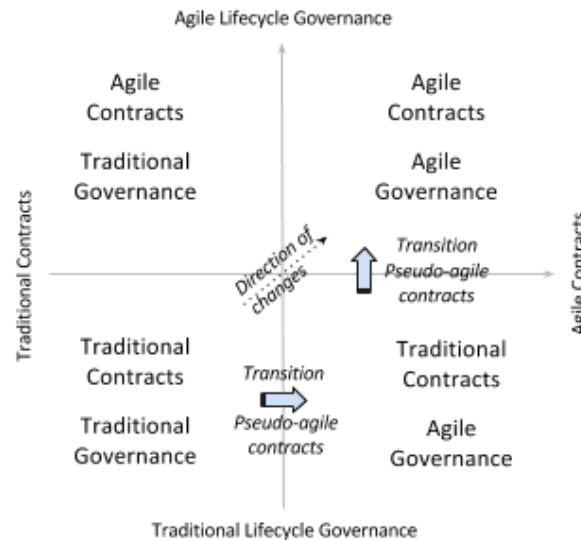
Source: made by the author, based on Koehnemann and Mayner (2017)

Figure 6: Agile contracts and lifecycle governance transition challenges

As a long-term strategy, the old way of contract creation should be replaced with full Agile Contracts approach. This aspect confirmed complexity of the transition framework – in case of contracts, three areas were interfering, i.e.: governance, strategy and law. In Agile Contracts, cost, schedule and quality should have a fixed value and the only scope should be flexible to deliver a customer value as a solution best fitted to one's needs and expectations. The major steps of the transformation process together with their sequence presented as a transition flow were the second significant finding of the qualitative analysis of multiple case studies (Figure 7).
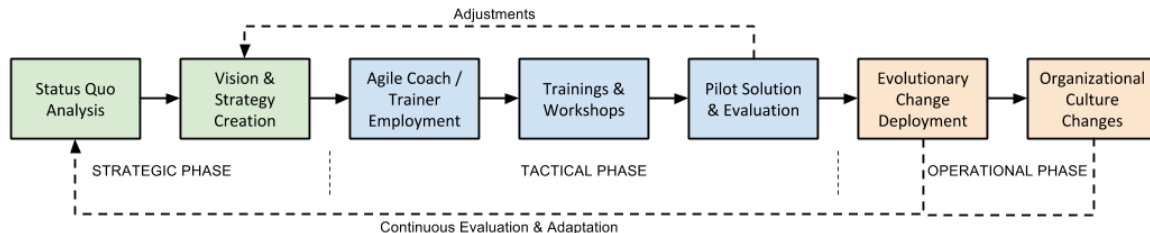
Source: made by the author

Figure 7: Major steps of the Agile transformation process

The transition process flow is an essential part of the Agile transformation framework. On the high level, it responded to the second research question about the know-how of the transition flow (Figure 7).

Table 1: Major process steps coupled with practical example of actions in each phase

Process steps	Aim of phase	Practical actions example
Status Quo Analysis, Vision & Strategy Creation	Create a climate for change	1. Establish a sense of importance 2. Create a guiding alliance 3. Develop a change vision and strategy
Agile Coach/Trainer Employment, Training & Workshops, Pilot Solutions & Evaluation	Engage and activate entire organization	4. Communicate the vision to get buy-ins 5. Execute a broad set of actions (eg. training and learning) 6. Generate and highlight short-term successes
Evolutionary Change Deployment, Organizational Culture Changes	Deploy and sustain a change	7. Maintain evolutionary approach of introducing changes and persist in completing it 8. Incorporate the change into the culture

Source: made by the author, based on Kotter (2012)

Depending on the individual environmental context of each organization, adoption scenarios and execution flow steps may differ; however strategic, tactical and operational phases should be addressed, as found in research study (e.g. see Table 1). The transformation process is an empirical one, so any adjustments are continuously possible based on evaluation and assessment results, either from pilot or final deployment solution.

Both elements of transformation framework, namely the model of a comprehensive organizational change as well as the transition process flow depended heavily on external (industry sector and macroeconomics) and internal (strategy, organization, culture and technology) contextual variables in a specific type of enterprises –software development enterprises introducing changes in the project management methodologies. Each unique large-sized enterprise should adjust its practices to their own context (Denning, 2016a). Thus, the governance in the Agile transformation process is related to the contingency theory and it is visible in: the adaptation scenarios of the new project management methodology, knowledge management processes and actions, new organizational structure and changes in organizational culture. A learning organizational culture as the key antecedent of evolutionary change deployment should be addressed from the beginning during the strategic and tactical phase and fixed in the operational phase.
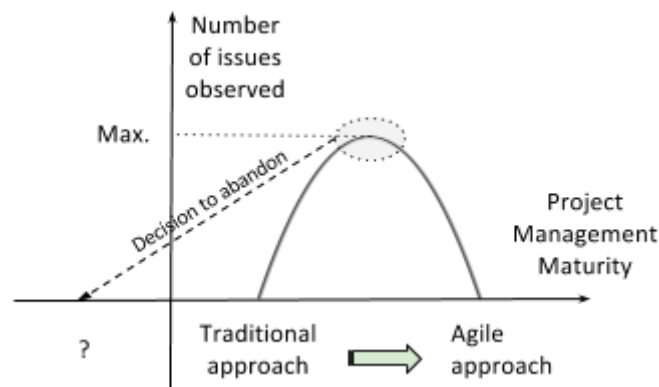
Source: made by the author

Figure 8: Risk of a sustained transformation change

As the Agile transformation process was perceived in research study as a complex, evolutionary and long-lasting process, in particular in operational phase, there was often a high risk of the transformation change sustainment (Figure 8). In the process of transitioning from traditional to modern project management, there was a risky period characterised by a large number of issues observed and a very high risk of abandoning the transition change. However, the number of case studies was insufficient to conclude the state of enterprise was in case of an unsuccessful or abandoned transition. It may be a hybrid solution, but it requires more future research in this area.
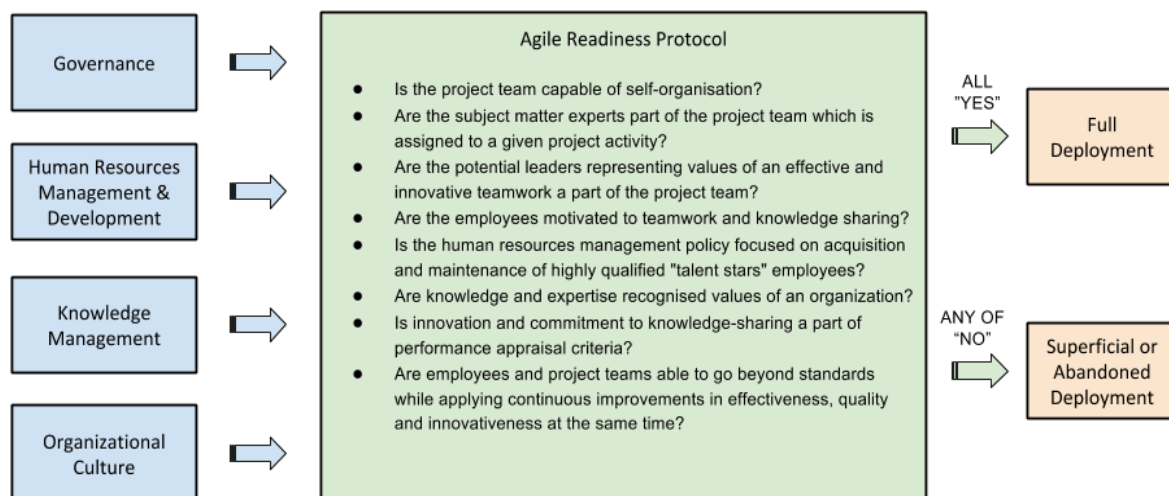
Source: made by the author, based on Panasiewicz and Paterek (2017)

Figure 9: Readiness protocol of Agile transformation deployment

Panasiewicz and Paterek (2017) developed their proposal of Agile readiness protocol to come up with an organization assessment tool to verify transformation deployment readiness (Figure 9). This tool can be complementary to the transformation framework developed in this research study. It allows for assessing four areas of project organization: governance, human resources management & development, knowledge management and organizational culture in terms of transition or deployment readiness. If all answers to readiness protocol questions (Figure 9) are positive then risk of an unsuccessful or abandoned transition (Figure 8) is low; otherwise senior executives have to consider two potential scenarios prior to making decision about transition. The first one is superficial deployment – it is "pseudo-agile" as all artefacts are indicating a new approach, but the mindset remains unchanged. The second one is abandoned deployment – both the old way of governance and the old mindset are maintained.

5. Discussion and conclusions

The empirical research results presented in this paper answered two research questions about the Agile transformation, namely about the transition's framework as a model of comprehensive organizational change resulted from the introduction of new project management methodology (Figure 4 & Figure 5) and about the major steps of the transformation process together with their sequence and a practical example of potential actions (Figure 7 & Table 1). The analysis of multiple case studies responded to the knowledge gap presented in theoretical research papers on the transformation framework and process itself (Sherehiy et al., 2007; Gandomani et al., 2013; Laanti, 2017). It also increased and complemented findings presented in empirical papers (Gandomani & Nafchi, 2015; Solinski & Petersen, 2016; Hoda & Noble, 2017). The primary finding about the transition to the new project management methodology is a complex and comprehensive set of organizational changes in several governance areas such as: processes, methods, tools, communication, customer cooperation, organizational structure, organizational strategy, organizational culture, technology, financial accounting and law. The major steps of the transformation process depend on the individual environmental context of each enterprise; however, strategic (e.g. status quo analysis, vision & strategy creation), tactical (e.g. Agile coach employment, training, workshops, pilot solutions) and operational (e.g. evolutionary deployment, organizational culture changes) phases should be addressed as it was established in the presented research study. Governance was identified as a common denominator of the research results presented in the paper (see Figure 4, Figure 6, Figure 7 & Figure 9) and it is in line with other observations about transition process (Gandomani et al., 2013; Dikert et al., 2016; Hoda & Noble, 2017; Moe & Dingsøyr, 2017) as well as about the impact of project governance on the relationship between the project management methodology and project success (Joslin & Müller 2015). The contingency theory as a theoretical perspective (Sherehiy et al., 2007; Joslin & Müller 2015; Paterek, 2017) helps to achieve a better understanding of the details of research results in context of organizational environment of the transformation process; however, it may be worth to consider other theories in order to assess short and long-term goals and company strategy (Gurd & Ifandoudas, 2014). The research results may be important for practitioners or consultants exploring new project management methods in software development companies with a view to increasing their organizational agility (Sherehiy et al., 2007; Gurd & Ifandoudas, 2014; Cegarra-Navarro et al., 2016) and who are looking for the details of this complex process.

The major limitation of the research study is the Web source of multiple case studies descriptions. Consultants and authors focused mostly on success stories and lessons learned from the adoption process and not on the information about the details and challenges encountered. The second limitation is the very process complexity which requires an in-depth research study in the organizational practice and specific methods to collect this data. The research results have generated many open and interesting questions for further detailed studies, including: hybrid solution as a result of different adoption scenarios (e.g. in case of contracts), failed or half-way transformation cases and their impact on software companies' operability, quantitative metrics to monitor progress, risk and final results of a transition process or the tools used for assessment of company's readiness for process deployment. The Agile readiness protocol (Panasiewicz & Paterek, 2017) presented in Figure 9 is an example of a tool addressing the last open issue and, indirectly, it also contains a set of research questions for future empirical studies in the Agile transformation process area.

References

Cegarra-Navarro, J.-G., Soto-Acosta, P. and Wensley, A.K.P. (2016) "Structured knowledge processes and firm performance: The role of organizational agility", *Journal of Business Research*, Vol. 69, No. 5, pp. 1544-1549.

Czakon, W. ed. (2015) *Podstawy metodologii badań w naukach o zarządzaniu*, Wolters Kluwer, Warszawa, PL.

Denning, S. (2016a) "How to make the whole organization 'Agile'", *Strategy & Leadership*, 44 (4), pp. 10-17.

Denning, S. (2016b) "Agile's ten implementation challenges", Strategy & Leadership, 44(5), pp. 15-20.

Dikert, K., Paasivaara, M. and Lassenius, C. (2016) "Challenges and success factors for large-scale agile transformations: A systematic literature review", *The Journal of Systems and Software*, Vol. 119, No. 9, pp. 87-108.

Gandomani, T.J., Zulzalil, H., Ghani, A.A.A., Sultan, A.B.M. (2013) "Towards Comprehensive and Disciplined Change Management Strategy in Agile Transformation Process", *Research Journal of Applied Sciences, Engineering and Technology*, Vol. 6, No. 13, pp. 2345-2351.

Gandomani, T.J. and Nafchi, M.Z. (2015) "An empirically-developed framework for Agile transition and adoption: A Grounded Theory approach", *The Journal of Systems and Software*, Vol. 107, No. 9, pp. 204-219.

Gandomani, T.J. and Nafchi, M.Z. (2016) "Agile transition and adoption human-related challenges and issues: A Grounded Theory approach", *Computers in Human Behavior*, Vol. 62, No. 9, pp. 257-266.

Gren, L., Torkar, R. and Feldt, R. (2017) "Group development and group maturity when building agile teams: A qualitative and quantitative investigation at eight large companies", *The Journal of Systems and Software*, Vol. 124, No. 2, pp. 104-119.

Gurd, B. and Ifandoudas, P. (2014) "Moving towards agility: the contribution of a modified balanced scorecard system", *Measuring Business Excellence*, Vol. 18, N0. 2, pp. 1-13.

Hoda, R. and Noble, J. (2017) Becoming Agile: A Grounded Theory of Agile Transitions in Practice. In: Proceedings of 2017 IEEE/ACM 39th International Conference on Software Engineering, May 20-28, 2017, ACM/IEEE: Buenos Aires, Argentina, pp. 141-151.

Elsevier B.V. (2017) *Scopus Science Library Database*, [online] available at: <https://www.scopus.com/> [Accessed 19 November 2017].

Joslin, R. and Müller, R. (2015) "Relationships between a project management methodology and project success in different project governance contexts*", International* Journal of Project Management, Vol. 33, No. 6, pp. 1377-1392.

Koehnemann, H. and Mayner, S. (2017) *SAFe for Government observations from the 2017 SAFe Summit*, [online] available at: <http://321gang.com/2017/10/27/safe-for-government-observations-from-the-2017-safe-summit/> [Accessed 25 November 2017].

Kotter, J.P. (2012) Leading Change, Harvard Business School Press, Boston, US.

Kozarkiewicz, A. (2012) *Zarządzanie portfelami projektów*, PWN, Warszawa, Poland.

Laanti, M., Salo, O. and Abrahamsson, P. (2011) "Agile methods rapidly replacing traditional methods at Nokia: A survey of opinions on agile transformation", *Information and Software Technology*, Vol. 53, No. 3, pp. 276-290.

Laanti, M. (2017) *Agile Transformation Model for Large Software Development Organizations*. In: *Proceedings of the XP2017 Scientific Workshops*, May 22-26, 2017, ACM: Cologne, Germany, pp. 1-5.

Łuczewski, M. and Bednarz-Łuczewska, P. (2012) *Analiza dokumentów zastanych*. In: D. Jemielniak, ed. (2012) *Badania jakościowe, Tom 2: Metody i narzędzia*, PWN, Warszawa, Poland. Ch. 7.

Mergel, I. (2016) "Agile innovation management in government: A research agenda", *Government Information Quarterly*, Vol. 33, No. 3, pp. 516-523.

Moe, N.B. and Dingsøyr, T. (2017) *Emerging Research Themes and updated Research Agenda for Large-Scale Agile Development: A Summary of the 5th International Workshop at XP2017*. In: *Proceedings of the XP2017 Scientific Workshops*, May 22-26, 2017, ACM: Cologne, Germany, pp. 1-4.

Nuottila, J., Aaltonen, K. and Kujala, J. (2016) "Challenges of adopting agile methods in a public organization", *International Journal of Information Systems and Project Management*, Vol. 4, No. 3, pp. 65-85.

Olszewska (née Pląska), M., Heidenberg, J., Weijola, M., Mikkonen, K. and Porres, I. (2016) "Quantitatively measuring a large-scale agile transformation", *Journal of Systems and Software*, Vol. 117, No. 7, pp. 258-273.

Panasiewicz, L. and Paterek, P. (in press, 2017) „Metodyki zwinne jako praktyki organizacyjnego uczenia się", *Ekonomika i Organizacja Przedsiębiorstwa*, (Accepted for publication September 2017).

Paterek, P. (2017) *Agile transformation in project organization – issues, conditions and challenges*. In: *Project management development – practice and perspectives: sixth international scientific conference on Project management in Baltic countries*, April 27-28, 2017, Riga: University of Latvia, Latvia, pp. 190-206.

Ravichandran, T. (in press, 2017) "Exploring the relationships between IT competence, innovation capacity and organizational agility", *The Journal of Strategic Information Systems*, (Accepted for publication July 2017).

Sherehiy, B., Karwowski, W. and Layer, J.K. (2007) "A review of enterprise agility: Concepts, frameworks, and attributes", *International Journal of Industrial Ergonomics*, Vol. 37, No. 5, pp. 445–460.

Solinski, A. and Petersen, K. (2016) "Prioritizing agile benefits and limitations in relation to practice usage", Software Quality Journal, Vol. 24, No. 2, pp. 447-482.