
Towards to Agile Management Control Systems at the University: Preliminary Research

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Abstract:

Purpose: Little is known about the agile management control systems at public universities, their effects, and limitations in different contexts. This preliminary study addresses this research gap through an empirical study of the management control systems required at Polish universities.

Approach/Methodology/Design: This paper's insights have emerged iteratively by considering both theory and the empirical case based on Agile Manifesto and management control systems' requirements at the universities.

Findings: A study revealed a need to use Agile concept framing to develop and implement management control systems at public universities. Lack of managerial and employees' self-assessment focused on Agile issues leads to the potentially radical suggestion that decision-makers should change their current approach to management control systems if they want to avoid poor outcomes in different levels and areas of university activity. The findings make two main contributions. First, they contribute to grounding the Agile approach within public management by showing how Agile may use across contexts; Second, this study can form a source for an inquiry process at any university, thus contributing to a better contextual diagnosis of the stage where the university is building the quality of its research, managerial and financial process.

Practical Implications: The article brings several valuable pieces of information and provides practical tips.

Originality/Value: There are several studies on Agile, management control systems, and university issues; however, the research question – whether the legal framework of the university's management control systems favors agile was without an answer. It is the first such research.

Keywords: Public economics, public management, public finance, corporate culture, universities.

JEL Code: H4, M10, M14.

Paper Type: A research study.

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1. Introduction

Universities operating in a turbulent and ever less predictable environment face many challenges. One of them is a noticeable improvement in the scientific position in the world ranking of universities. Unfortunately, this is not possible immediately, even if scientists are administratively forced to undertake specific projects. Besides, any attempts at limiting scientific freedom may reduce innovative efforts and results. Not all universities can count on excellent state support or cooperation with entrepreneurs who are thriving and open to research. This situation applies to universities from developing countries.

Meanwhile, preparing the next generation of scientists and creating an ongoing and favorable environment for developing creative research activity requires adequate funding and openness based on trust and the ability to react to stakeholder needs. Universities influence the development of societies and economies, and their contribution consists of creating and transferring knowledge resources and shaping appropriate attitudes and skills of individuals creating a university. One of them is agility, which can maximize the utility of the university.

There are many studies on agile (Williams *et al.*, 2000; Moe *et al.*, 2009; Chuang *et al.*, 2014; Mergel *et al.*, 2020), and there is pointed out that Agile methods are created based on critiques of formalized methods (Baskerville *et al.*, 1992; Wang *et al.*, 2012). Despite the conducted research, there is still a gap in the range of customizing university management control systems to agile requirements and the research problem - whether the university's management control systems' legal framework favours agile.

This research conducted using methods and techniques appropriate for the discipline of management sciences. The paper proceeds as follows: First, the previous research on agile and management control was reviewed. After that, the research method is discussed. Based on study results, one may offer the potentially radical suggestion that universities should change their current management control process; otherwise, it will be useless for the State, firms, and society in long period; This paper ends the conclusion and opportunities for further research. Although the research refers to Polish universities' case, their results are universal enough to apply to any public university in the world.

2. Literature Review

2.1 Agile Concept

The development of agile methodology following the Manifesto for Agile Software Development published in 2001 has brought about significant software engineering changes (Boehm, 2002; Chuang *et al.*, 2014; Agile Essentials, 2021). This concept's success, measured by the companies' results that implemented it, resulted in the scientific community's great interest in the agility concept. The research focuses on

issues related to the way agile is used in various types of organizations (Boehm, 2002; Nerur *et al.*, 2005; Erdogmus *et al.*, 2005; Janzen and Saiedian, 2005; Chuang *et al.*, 2014; Potdar *et al.*, 2017; Masood *et al.*, 2018), effectiveness in achieving the assumed goals (Williams *et al.*, 2000; Sarkis, 2001), the influence of trust and communication on agile (Moe *et al.*, 2009; McHugh *et al.*, 2012), the impact of agile on project management (Hodgson and Briand, 2013). Attention is also drawn to the possibility of applying the agile concept in the public organization (Soe and Drechsler, 2018; Mergel *et al.*, 2018; Ribeiro and Domingues, 2018; Mergel *et al.*, 2020; Greve *et al.*, 2020).

Attempts to define the concept of agile seem to draw from their origins in manufacturing, and from the perspective of management science, the need to adapt organizations to changes in the environment and provide flexibility in action has been perceived for a long time. Reminiscences of agile can be found in Taylor, Fayol, and other researchers' assumptions, pointing to efficiency and effectiveness (Dobrowolski, 2019).

Agility is understood as an organization's ability to adapt to changes in the environment and develop and modify processes (Henderson-Sellers and Serour, 2005). Other researchers also emphasize agility's value (Chuang *et al.*, 2014; Lee and Xia, 2010). Conboy (2009) makes a distinction between organizational agility and leanness. While leanness emphasizes cost reduction by eliminating waste, the concept of agility treats thinness as reducing costs by eliminating unnecessary activities (Agarwal *et al.*, 2006; Lyytinen and Rose, 2006). Conboy states that organizational agility goes beyond the current understanding of flexibility and leanness.

Agility is constant readiness to quickly initiate and implement changes, acquire knowledge and skills because of the introduced changes, and at the same time create added value for the client resulting from savings resulting from the introduced solutions, their quality, simplicity, and organizational benefits from its relationship with the environment (2009). In this perception of agile, one can find a reference to kaizen or total quality management. It should be noted that the need to ensure flexibility and speed in the operation of the organization was emphasized by Cushman and King (1995), whose postulates apply to enterprises but undoubtedly may also be applied to other organizations. Therefore, the concept of agile is not something new, but it arises from the rich achievements of management theory and practice (Dobrowolski, 2019).

Some methods are related to the Agile concept, the most notable being eXtreme Programming (XP), Scrum, the Dynamic Systems Development Method (DSDM), Crystal, Feature Driven Design and Lean Software Development (LSD) (Schwaber and Beedle, 2002; Wang *et al.*, 2012). On the other hand, they also use methods developed in the classical context: Adaptive Case Management (ACM) and software for business process management (BPM). The methods are based on automated process processes. On the one hand, consideration is given to the specificities of the activities of universal organizations. The relevance of these solutions is limited

(Osuszek and Ledzianowski, 2020). A significant example is the combination of two methods, which invite the automation of activities to increase the organization's elasticity and externality (Osuszek *et al.*, 2016).

The literature also raises the issue of using agility in the didactic process. The emphasis on early prototyping, quick feedback, and gradual development of a specific product resulting from the agile concept creates opportunities for research reflection and quick modification of processes or technical solutions, which has a positive effect on the cognitive abilities of students (Grimheden, 2013). Agility enables the elimination of errors at an early stage of operation. It enables much more beneficial than removing deficiencies *ex-post*, creating a multiplicative effect. Applying the agility concept requires teams' involvement, and this seems impossible without an organizational culture that promotes open views and communication, which in turn is a consequence of high trust in the organization's management (Dobrowolski, 2019).

2.2 Guidelines for the Agile Concept in University Activities

Based on the Agile Manifesto, several generalizations can be made regarding public universities. Firstly, the highest priority is customer satisfaction, which translates into student satisfaction in terms of university conditions, the educational offer, development opportunities, as well as the satisfaction of stakeholders with the effective and efficient commercialization of research results, considering the requirement of the flexibility of the research offer for the business community and other stakeholders. Secondly, it means accepting a change in the current way of operating to provide better services to customers. It can be challenging to make fast changes in large organizations with some inertia, unlike in smaller organizational units. Even late in developing certain studies or programs to obtain a competitive advantage, requirements change possible, if they do not lead to a waste of already committed public funds.

Guidelines on how an organization prefers shorter delivery times seem to be applicable in a public university setting. The requirement of ongoing cooperation of administrative, scientific, or didactic teams requires coordination of activities. Creating projects requires motivated people, and therefore there is a need to use incentives, including financial and, above all, create an atmosphere of mutual trust. Agile processes promote sustainable development. Continuous attention to technical excellence, improved quality of services, and monitoring undertaken activities increase the organization's agility (Dobrowolski, 2019; Agile Essentials, 2021).

2.3 Management Control Systems

Based on the Agile Manifesto, one may argue a link between the agile concept and management control systems. Besides, based on Anthony and Govindarajan's (2007) and Merchant and Van der Stede's (2007) research, one may generalize that management control is defined as the process, ensuring that resources are acquired to achieve the organization's goals effectively. It includes but is not limited to any

organization's strategies and operational plans. Authors aptly point out that management control systems are not just about control. They are focused on, among others, reward, administrative and cultural controls (Malmi and Brown, 2008). Management control systems influence the organizational culture, facilitating cooperation and management advantage (Flamholtz, 1983; Flamholtz *et al.*, 1985; Langfield-Smith and Smith, 2003; Henri, 2006), they influence empowerment (Otley, 1994; Simons, 1995).

Based on the new institutional economics, management control results from formal and informal institutions and affects these two institutions. Management control is an element of both new public management and public governance. The implementation of management control system's objectives helps to reduce environmental uncertainty, which depends on three variables: complexity, and therefore the number and diversity of elements of the environment, the pace of changes, and the relativism of the perception of reality by decision-makers resulting from limited rationality (Dunkan, 1972; Dobrowolski, 2019).

Cultural controls showed by Malmi and Brown (2008) lead to the protection of unique resources. One of them is the image of the organization, linked with trust. One may generalize that management control systems should protect trust in the organization. The importance of trust is undisputed. Trust is a central factor in all transactions, enabling cooperation, decision making, creating an atmosphere of openness, transparency, improving communication, and motivating people (McAllister, 1995; Dobrowolski and Dobrowolska, 2020).

The creation of a public trust is realized by all the management control objectives, including ensuring the credibility of financial statements and human resources management, including a reliable process of assessing and promoting employees, and protecting resources, including intangible assets. The university as an organization should apply a management control system, which facilitates the implementation of the agile concept, and at the same time, the agile concept should be included in the structure of the university's management control systems (Dobrowolski, 2019).

3. Material and Methods

Analysis of legal framework of public university management control systems, and observation of the Polish universities' functioning, enriched through literature study leads to identifying the following research gap - the range of customizing university management control systems to agile requirements and the research problem - whether the legal framework of the university's management control systems favors agile. Analyzed legal requirements apply it to all Polish public universities. The research includes the year 2012-2020. Consistent with an abductive approach (Lukka, 2014; Lukka and Modell, 2010), this paper's insights have emerged iteratively based on reviewed theory and the empirical case.

4. Research Results and Discussion

Following the provisions of article 68 of the Act of August 27, 2009, Polish public universities on public finances [Journal of Laws No. of 2019, item 869] are required to apply management controls in their activities. This Act includes the legal definition of such management control. It is the totality of activities undertaken to ensure the university's objectives and tasks in a legal, practical, economical, and timely manner. The objectives of management control, under this Act, include:

- 1) Compliance with the law and internal procedures. It includes but is not limited to compliance with contracts, work regulations, remuneration, and employee promotion procedures; 2) Effectiveness and efficiency of the university's operation in all its areas, including the commercialization of research, undertaking cooperation with other research units, but also the effectiveness of using cooperation; 3) The credibility of reports, including budget reports; 4) Protection of resources, including tangible and intangible assets; 5) Compliance with and promoting the principles of ethical conduct; 6) Efficiency and effectiveness of information flow both inside the university and between the university and its environment; 7) Risk management. However, the risk concept is not defined, which is puzzling, considering that this concept appears in the Public Finance Act.
- 2) The construction of the provision of article 68 of the Public Finance Act indicates that the objectives of management control do not constitute a closed catalog. Compliance with and promoting ethical conduct in the university's activities helps create trust, which is necessary for applying the agile concept in an organization. Building an ethical environment should serve one's proper self-assessment of management control carried out. It should also promote employees' integration, modify their behavior, analyze and modify procedures and processes. The self-assessment of management control can catalyze the bottom-up initiatives that are valuable from an organizational agility perspective (Dobrowolski, 2019).

Meanwhile, the analysis of the minister of finance guidelines regarding the self-assessment of management control system (published in Announcement No. 3 of the Minister of Finance of February 16, 2011, on detailed guidelines for self-assessment of management control for public finance sector units, Journal of Laws of the Ministry of Finance No. 2, item 11) showed that they do not refer to agility outright. Their design is more appropriate for offices of public administration than for universities with different specifics. For example, in the guidelines mentioned above, the Minister of Finance proposes the following questions: Does a particular employee participate in training to a sufficient degree to effectively carry out the assigned tasks? Have the knowledge, skills, and experience requirements for performing tasks at individual positions (e.g., job scopes, job descriptions) been defined in writing in the organizational unit where a given person is employed? Does a particular manager periodically evaluate the work of Her/His employees from a managed organizational unit? (Announcement No. 3 of the Minister of Finance).

Based on the agile manifesto, the university's management control systems' self-assessment should aim to determine whether the university's highest priority is to satisfy its customer through early and continuous delivery of the valuable product? Does the university identify any threats in the implementation of public programs?

Are any individuals from the university open to changing requirements? Do employees deliver their products with a preference for the shorter timescale? Is research project build around motivated individuals? Senior researchers are responsible for giving research staff the environment and support they need and trust them to get the job done. The realization of this postulate requires the implementation of the theory of expectations (Vroom, 1964).

The most effective method of sharing information within a research team is face-to-face conversation. Therefore, there is a need to organize day-to-day to provide face-to-face contact between researchers using e-tools. However, there should be a requirement to secure such a conversation against unauthorized access and reveal intangible assets. Are such solutions and requirements implemented?

The agile processes promote the sustainable development of the university and its staff. This principle means that there is a need to prepare a plan for personal development, including training. Is this requirement fulfilled? The continuous attention to business excellence and good design enhances agility. Does the university continuously develop and improve research software and methodology to meet the stakeholder's needs better?

The Agile principle states that the best research may emerge from self-organizing teams. Is this principle fulfilled? Do the research team reflect on how to become more productive, then tune employee's behavior accordingly? The last sentence can refer to the Kaizen concept, well known in management sciences and practice, which one may define as continuous improvement. All employees should be involved in a constant search for ideas to improve all areas of the organization. Such an approach aims to eliminate current problems, prevent their occurrence in the future, and create innovative solutions. Are the employees engage in continuous improvement of its operations and processes? All these questions formulated based on the Agile assumptions available in the Agile Manifesto are not reflected in the questions prepared in the minister of finance guidelines on the self-assessment of the management control system (Announcement No. 3 of the Minister of Finance; Agile Essentials, 2021).

5. Conclusion

A detailed analysis revealed a need to use the Agile approach to develop and implement management control systems at the university. Lack of managerial and employees' self-assessment focused on Agile issues leads to the potentially radical suggestion that decision-makers should change their current approach to management control systems if they want to avoid poor outcomes, measured among other by the

worldwide Academic Ranking of World Universities or Shanghai Ranking's Global Ranking of Academic Subjects.

This research contributes to the existing literature. It extends theory about how Agile can be used to manage control systems at public universities. Besides, practical tips are formulated. In the context of research goal and the study of Polish universities, this research showed that the Agile approach is a value because it can persuade all stakeholders to the organization's ongoing improvement its processes and particular employees' tasks.

This article can be useful for practitioners. This study can form a source for an inquiry process at any university, thus contributing to a better contextual diagnosis of the stage where the university is building its quality. The author conducted research mostly based on legal provisions related to Polish public organizations, including universities. Due to the lack of detailed information on how other universities follow the management control systems' requirements, the author needs to show modesty towards the generalizability of findings and encourage future researchers to test whether research findings hold in other public universities.

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