



APPLICATION OF AGILE METHODS IN PROJECT MANAGEMENT: ASPECTS OF PLANNING AND ACCOUNTING

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ABSTRACT

The article sets the task of investigating the effectiveness of using Agile methods in enterprises' accounting, based on the secondary analysis of publications for the period of 2001-2019. The article defines the role of the concept and Agile philosophy in the system of bookkeeping, financial and management accounting. The evolution of Agile philosophy implementation in the enterprises' accounting system of different

spheres of activity has been determined. The analysis of methods and the software implementation results on the basis of methodology of Agile philosophy in the enterprises has been carried out. The basic advantages of Agile philosophy in enterprise's accounting subsystems have been assessed. The efficiency of Agile philosophy methods in providing flexibility, adaptability, transparency of enterprises' accounting systems has been determined. The problem solving of accounting system's limited flexibility due to the implementation of Agile concept and methods has been proved. The efficiency of Agile methods' application in accounting project management in subsystems of financial results, costs and revenues management has been proved. The accounting system is automatically transformed under the influence of business processes' changes in the production subsystems (transition from mass to flexible), relations with customers (from mass marketing to personalization), suppliers and staff. As a result, the need for the transition of companies and integration into the Agile philosophy accounting system has been proved.

JEL Classification: M40; M41; L86.

Key words: Agile methods, accounting system, control system, flexibility, adaptability, management system

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1. INTRODUCTION

The Agile philosophy provides flexibility in management, accounting and the structure's changes of enterprise accounting. Business operating models undergo a digital transformation: management accounting, as an integral part of planning, decision making, control, plays an important role in the strategic flexibility of an enterprise. The trend towards flexibility in operating business models sets the requirements for flexibility and transparency in management accounting and bookkeeping (Taipaleenmäki, J., 2017). In the practice of enterprises, aimed at ensuring the flexibility of processes, Agile methods are implemented to provide autonomy, the formation of a trust culture and reasonable decision-making (Taipaleenmäki, J., 2017).

The turbulent environment, where accountants carry out their activities, necessitates the acquisition of skills in strategic, operational control. According to the study data of the Risk Survey of the Association for Financial Professionals (AFP) in 2017, 49% of financial professionals noted an increase in uncertainty in the companies' income; 84% of respondents noted difficulties connected with the forecasting and planning risk; 52% consider the influence of geopolitical events on the company's growth as a significant factor (loss of customers - 53%, current risk of volatility - 49%, interruptions in the supply chain - 30%). The above mentioned necessitates the introduction of Agile in accounting to improve the quality of elements of behavioral, individual, technical and operational accounting aspects.

The accounting system is defined by frameworks and active constraints, as it is regulated by international, national and local regulations, respectively. This leads to a low level of the accounting system's flexibility in conditions of growing uncertainty of profitability. Agile philosophy eliminates the problems of cost-based unproductive accounting processes; the financial system becomes flexible and controlled at the same time.

The purpose of the article is to study the effectiveness of Agile methods' application in the enterprises' accounting, based on the secondary analysis of publications for the period of 2001-2019. This article seeks to correct the research imbalance concerning the limited use of previous assessments' results of the application of Agile methods in different sectors.

The sphere of application of the article's results is a system of accounting for modern enterprises that integrate the concept of flexibility in order to optimize costs, increase revenue and improve financial results.

2. LITERATURE REVIEW

The search for new approaches to solving the specified problems of flexibility, scaling in management, bookkeeping and financial accounting has led to the development of the concept of transparency, openness, lateral communication and trust of cross-functional teams, creating a benchmark for rapid feedback and adaptation. Agile philosophy has been established as a concept of organizational flexibility, in particular in the costing system in production control and operations management (Hooper, M.J., Steeple, D. and Winters, C.N., 2001). In the scientific literature, Agile is also studied from the perspective of ensuring the supply chain flexibility in systems of organizational structure formation, relations with suppliers, operational management, personnel management, product design, integration and improvement of processes, application of information technology and relations with customers (Rahimi, A. et al., 2019). Considering that accounting applies to all components of the enterprise; Agile philosophy provides a comprehensive implementation in bookkeeping, financial and management accounting. Financial planning is no longer perceived as a limitation in project development (Sirkiä R., Laanti, M., 2015). Agile-based indicators and metrics provide measurement flexibility in accounting and control (Hartmann D., Dymond, R., 2006).

Agile philosophy ensures efficient accounting (Tan, F. T. C. et. all, (2017). Companies, implementing the Agile philosophy in accounting, ensure global competitiveness (Vinodh, S., et. al., (2008). Implementation of the Agile concept has a positive impact on financial results; managers have the opportunity to track and eliminate process inefficiencies. As a result, Agile concept ensures the efficiency of managerial functions, in particular in the accounting system: increasing profitability and reducing costs (Mistry, J. J., 2005).

Agile methodologies are implemented in performance measurement systems to meet the needs of adaptability and flexibility of management accounting, improving the quality of organizational functions (Stormi, K.T., Laine, T., Korhonen, T., 2019). Agile philosophy provides integration of knowledge management concepts, company's flexibility and dynamic capabilities as a result of the introduction of information technologies in accounting (Oliva, F.L., Couto, M.H.G., Santos, R.F. and Bresciani, S., 2019). Stormi, K.T., Laine, T., Korhonen, T. consider that "Agile methodologies are a methodological way to respond to the inevitable change and to enhance management accounting adaptability" (Stormi, K.T., Laine, T., Korhonen, T., 2019).

An analysis of the literature and publications has revealed a gap regarding the limited research of the authors towards application of Agile philosophy and Agile methods in project management in accounting of various industries. There is a systematic limitation in publications for different periods, that is the research methodology is based on the study and analysis of case studies. This leads to the inability to scale research results to other industries and companies. That is, the effectiveness of Agile methods in project management towards accounting falls on case studies of 1-2 companies of a particular industry. This article aims to systematize investigations based on a secondary analysis of research on the effectiveness of Agile methods' implementation in accounting.

3. DATA AND METHODS

The study is based on Agile concept and philosophy, the theoretical foundations of which have been formed in the investigation of Taipaleenmäki, J. (2017) and most fully reflect the principles and consequences of the methodology in the accounting system. Based on the qualitative-empirical approach of Fuchs, C. (2019) the analysis of Agile methods' efficiency in the accounting has been carried out. The study is formed on the results of publications' secondary analysis for 2001-2019. The basic hypothesis of the study centered around Agile methods' implementation by enterprises in the accounting system indirectly through its integration into the systems of production, supply, marketing. Accordingly, the effects of Agile methods' application automatically refer to the accounting system of enterprises. The conducted analysis of publications made it possible to conceptualize the effects of using Agile methods in the management of accounting projects and in the accounting system. The methods of studying and summarizing the results of studies for 2001-2019 allowed to highlight the quantitative and qualitative effects of Agile methods' application in the accounting system.

4. RESULTS AND DISCUSSION

Under the influence of environmental factors, enterprises are implementing new resource management methodologies, using core capabilities as a competitive advantage (Figure 1). Consequently, the breakthrough innovations, management accounting systems and management control systems come into existence, based on the concept of flexibility (Coller, G., Frigotto, M. L., Costa, E., 2018). This provides accounting systems' transformation when changing the strategies of enterprises, cost optimization.

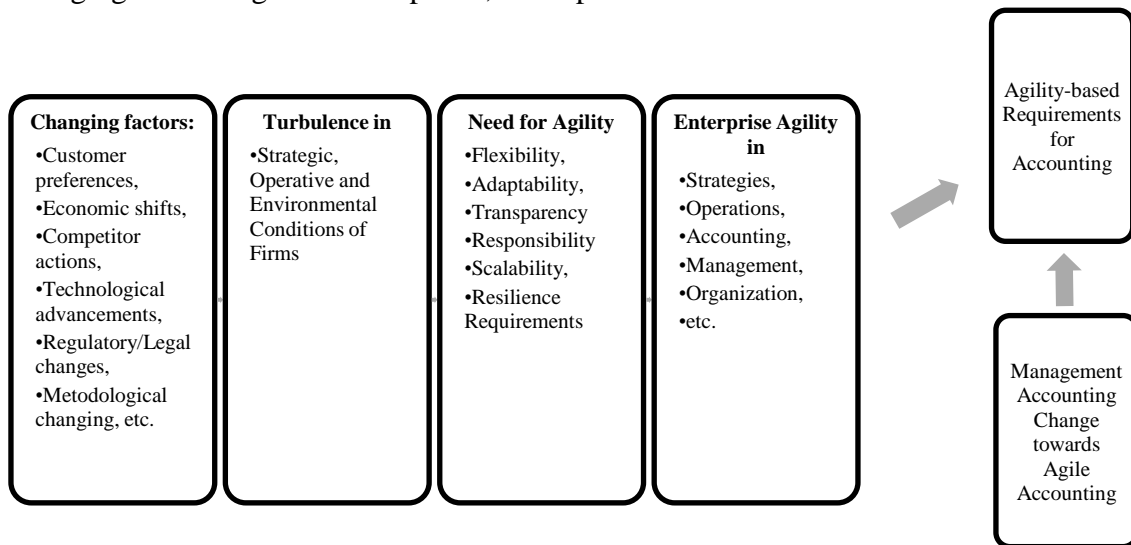


Figure 1 Transformational path to the implementation of Agile concept in accounting.

Source: Taipaleenmäki, J. (2017)

Agile philosophy changes the management system based on bookkeeping, financial and tax accounting. As a result, Agile Accounting is created, which is not defined in the literature in terms of terminology formation and essence. The conducted analysis makes it possible to formulate a definition of Agile Accounting as a concept, philosophy of flexibility of accounting system, based on the principles of transparency, adaptability, responsibility of elements, scalability, taking into account the requirements for system stability in the conditions of environmental uncertainty.

Table 1 The effectiveness of Agile methods' application in enterprises' accounting.

Author, year	Sector of the enterprise's activity	Agile methods	The result of Agile methods' application in accounting	Research limitations
Hooper, M.J., Steeple, D. and Winters, C.N. (2001)	High-volume production	Agile manufacturing, introduction of an alternative costing system to provide flexibility	The increase of operating expenses' calculation flexibility has been proved	Research, based on one company, does not allow the generalization of results.
Mistry, J. J. (2005)	An electronics company	An integrated 'lean' and 'agile', Just-in-time (JIT) lean	Performance indicators have been increased. Cost saving of the enterprise. Financial results have been improved	
Vinodh, S. et al., (2008)	Company - manufacturer of electronics	Development of Agile innovative total quality function deployment (agile ITQFD).	A financial accounting system based on the flexible Agile ITQFD system has been introduced	The results of the successful implementation of the Agile ITQFD pilot project cannot be scaled in the global environment of all sectors.
Taipaleenmäki, J. (2017)	Cross-sectoral analysis in different sectors of activity	Technical, organizational and behavioral methods of Agile concept	Adaptation of the hybrid roles of accountants: strategic and operational ones. Implementation of advanced analysis in the accounting system. Expansion of skills and competences.	There is no quantitative analysis of Agile methods' effectiveness; specific case studies of Agile implementation have not been considered. The study is focused on the conceptualization of Agile philosophy.
Busco, C., Giovannoni, E. and Riccaboni, A., (2017)	Company in the sphere of brain-computer interface technology.	It has not been specified.	By applying Agile innovative methods, accounting and control ensure the company's materialization of innovations. Accounter acts as a mediator in the implementation of innovations.	The business scope of the company is unique, which does not provide comprehensive coverage of the effectiveness of Agile in such sectors.
Rahimi, A. et al., (2019)	Defense industry of Iran	62 practices of implementing Agile methods to increase the level of process flexibility	41 Agile methods have improved and integrated accounting processes in all subsystems: suppliers, customers, staff.	Confidentiality of information did not provide the investigation of Agile effectiveness in different sectors of defense: land, sea, air.
Stormi, K.T., Laine, T., Korhonen, T. (2019)	It has not been specified.	Agile Scrum Methodology	Integration of Scrum into the performance measurement system. Adaptability and flexibility of management accounting.	The organizational functions of management accounting, which have been improved as a result of Scrum integration, were not specified.

Source: author research.

The enterprise's accounting system complies with the principles of Agile philosophy, and accounting processes become flexible due to the company's need to make quick decisions. The study results of Agile methods' application effectiveness in the accounting of enterprises indicate the implementation and integration of the concept in different subsystems of the accounting system (Table 1). The accounting system is automatically transformed under the influence of changes in business processes in the production subsystems (the transition from mass to flexible), relations with customers (from mass marketing to personalization), suppliers and personnel. The control system is transformed through a personalized and flexible enterprises' approach in working with suppliers and customers as a result of Big Data, Internet of Things concepts. The large flow of data necessitates the need for flexibility. As a result, enterprises move from data management to knowledge management: data about customers, suppliers, staff. Start-ups, "agile organizations" are created (Oliva, F. L., Couto, M. H. G., Santos, R. F., Bresciani, S., 2019); their services center around solving the enterprises' problems in the system of knowledge management and integration of Agile philosophy into the activities of companies. An increasing number of companies are being transformed into knowledge-based companies (Gupta, K. M., Gunasekaran, A., 2005); an evolution of costs and performance indicators is carried out; management accounting systems, based on the cost of assessment system and efficiency evaluation. Agile concept provides value formation, in particular in the accounting system of enterprises, which is considered not from the standpoint of cost management, revenue and financial results, but from the standpoint of a flexible knowledge system for decision-making in management. Intellectual capital is being formed to ensure value creation and sustainable development (Al-Htaybat, K., Hutaibat, K. and von Alberti-Alhtaybat, L., 2019). Bookkeeping accounting has become a form of intellectual capital, in particular through Agile methods and technologies.

Agile methods change supply and procurement systems, providing support for business strategies (Drake, P.R., Myung Lee, D., Hussain, M., 2013) and reducing operating costs (Mistry, J. J., 2005), increasing the flexibility of calculating operating costs (Hooper, M.J., Steeple, D. and Winters, C.N., 2001). Consequently, the most common effects of Agile implementation in the accounting system are the optimization of costs for financial results. Qualitative effects of the concept implementation include the integration of accounting processes in all subsystems: suppliers, customers, personnel, materialization of innovations in the company; accounting acts as a mediator in the implementation of innovations, as a link that documents innovations, reflects the material side of innovations; introduction of a flexible financial accounting system; adaptation of hybrid roles of accountants (strategic and operational); implementation of advanced analysis in the accounting system; expanding the skills and competencies of accountants; Agile methodologies provide improvements to organizational functions that increase the adaptability of management accounting.

The implementation of Agile methods in management accounting provides:

1. Increasing the speed of decision-making. Scrum teams are responsible for analyzing the problem based on accounting information systems and accounting data. The teams have been working on the basis of the cross-functional approach, implementing various concepts, monitoring business subsystems and improving control measures.

2. Data alignment. One of the problems that come up when making quick decisions is the lack of confidence about the value and correctness of the information. Agile methods provide a solution to this problem through the work of teams of financiers, accountants and IT on data aggregation. The detailed and thoroughly tested IT infrastructure is used in the process uses; it creates a single set of data, containing documented facts.

3. Simplicity. Simplification of processes is provided, accordingly flexibility of information accounting systems increases. Agile methods are one of the ways to save time in

decision-making and increase the transparency of decision-making processes, which provides automation of decision-making processes.

4. Creation of financial leaders. Advanced technologies, based on the optimal use of cloud technologies and ERP-systems, facilitate the centralization of various processes in order to improve the management of accounting information, subordinates and the knowledge system. Accounting processes gravitate towards general service centers, reduce the burden on the business and increase focus on the real goals of the accounting system.

5. Effective resource management. Flexibility requires quick and accurate response to opportunities and threats with the relevant resources. These processes are especially complex in large companies. By virtue of flexible methods, it is possible to keep track of information sources about resources and the speed of checking resources to respond to threats.

6. Expanding the set of skills and competences. Traditional members of the accounting and financial team incur an obligation to improve skills in a changing environment. In addition to traditional methods of professional development, they study other technologies: IoT and automation of robotic technical processes (RPA) for the most efficient use in their activities.

The work of the accounting department involves assessing the cost of innovation and the value of new processes and methods. For instance, an accountant measures the costs of introducing new technologies. Automatically, the accountant integrates into the team, providing cost flexibility, optimizing expenditures, participating in the financial decision-making process (Goncalves, M., Heda, R., 2010). Accordingly, the accountant becomes the person, responsible for the financial strategy of enterprises in combination with traditional operational objectives.

5. CONCLUSIONS

The conducted study confirms the hypothesis of the indirect impact of Agile methods' introduction in the accounting system through its integration into the systems of production, supply, marketing. The accounting system is automatically transformed under the influence of business processes' changes in the subsystems of production (transition from mass to flexible), relations with customers (from mass marketing to personalization), suppliers and staff. The control system is transformed through a personalized and flexible approach of enterprises while dealing with suppliers and customers as a result of emergence of Big Data, Internet of Things concepts. As a result, the most common effects of Agile implementation in the accounting system are the optimization of costs for financial results. Qualitative effects of the concept implementation include the integration of accounting processes in all subsystems: suppliers, customers, personnel, materialization of innovations in the company; accounting acts as a mediator in the implementation of innovations, as a link that documents innovations, reflects the material side of innovations; introduction of a flexible financial accounting system; adaptation of accountants' hybrid roles (strategic and operational); implementation of advanced analysis in the accounting system; expanding the skills and competencies of accountants.

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