

Cooperation model between the management accounting system and the design system

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ABSTRACT

A large number of global innovative projects have become implemented nowadays. This article is devoted to the initial stage of testing us the proposed hypothesis existence of an optimal interaction model between the management accounting system and the design system of the innovation project. Such research methods as formalization, hypothetical-deductive method, abstraction, idealization, analysis, synthesis, system approach, specialized survey, document analysis, dialogue was used at the first stage of exploration. The results were received studied in the participation of a representative group of three enterprises. Indirect confirmation of the proposed hypothesis was obtained in addition. It found some problems of cooperation between the management accounting system and the engineering system at the considered enterprises. These cases have become low-level business processes and bad project management. The first stage results allow us to make a guess about the possibility of a further test of the proposed hypothesis to prove it. Output data obtained in accordance with proposed method of allow us to make an assumption, about possibility of implementing subsequent stages of study in order to fully test of hypothesis.

KEYWORDS: *Management, mechanical engineering, cooperation.*

I. INTRODUCTION

The machinery building industry has been characterized by a tendency to implement large-scale international innovative projects in the civil and the defense sphere in the most economically developed countries currently. And the planned budget became exceeded sometimes. Like the project F-35 Joint Strike Fighter (JSF), Lockheed Martin Corporation (USA) Gertler which is the most indicative of innovative projects (Gertler, 2018) in this case. Analyzed information about the Gertler project (Gertler, 2018) shows us, that possibility reasons for exceeding planned budget of the project (van Helden & Jan Alsem, 2016) become exactly the problem of interaction between the management accounting system and design system in the company. This problem had considered in our article. This problem became also relevant to the draft at the stages of implementation of investment and operational phases (García-Canal, Guillén, Fernández & Puig, 2018; Xihui Liu & de Bont, 2017). Project's investment phase, in this case, refers to the phase of final list's formation of technologies used, detailed design, formation of a pool of suppliers, formation of administration and

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recruitment. The operational phase is characterized by first production samples commissioning, achievement of the production's design capacity and repayment of investment obligations.

The main innovation project's goal is to bring high-tech products to the international market. This, in turn, highlights the issue of competitive prices of products, and it is a consequence of presence of a relevant interaction model between the management accounting system and product design system during the implementation of the above-mentioned phases of the project.

An empirical observe was conducted from 2018 to 2019 involving such study objects as five enterprises of civil transport machinery building, with the profile is development of innovative products and manufacture of prototypes (pilot production). It should be noted that the possibility of applying the results of this research to enterprises involved in the process of mass production requires a separate study. In 2018, article's authors, as well as a group of their colleagues, launched a non-commercial research project "COSTENGINEER.RU" (Rogulenko et al., 2018), which aims to analyze current state of the management accounting system and design system used in implementation of innovative projects of civil transport machinery building. While the project "COSTENGINEER.RU" (Rogulenko et al., 2018) analysis of an existing model of interaction between the management accounting system and the design system was carried out. Was developed practical testing of the methodology analyzing current both systems state by the authors of this article. The main elements of this technique have represented below in the form of abstracts and involving such stages as:

1. preliminary analysis;
2. in-depth analysis;
3. development of practical recommendations for management.

This article will consider the possibility of using the described technique in the framework of following problems and study hypotheses at preliminary stage of analysis.

During the implementation of the project "COSTENGINEER.RU" (Rogulenko et al., 2018) it was established a need to analyze and reform the system of management accounting and systems design at the different phases of innovation project. Also, analysis of interaction between these systems becomes necessary at the stage of launching project and selecting the base enterprises to implement it. The study results allowed us to formulate the problem of research more accurately: today there is absent a proven methodology of analyzing the interaction systems model, depending on the phase of a project, which can be applied in practice by the enterprises' specialists, despite the fact that currently, a significant number of mechanical engineering enterprises are actively carrying out a set of measures to reform the management accounting system (Pasch, 2019) and design system. We can hypothesize, that the optimal model of interaction between these two systems for each stage of the innovation project has existence. We were abstracted from the practical conditions of project implementation and considered the ideal case when the management accounting system and the design system of innovative project were identical to similar systems of enterprise on the basis of which it was implemented, within the framework of consideration of this hypothesis. Thus, further in the text, the mention of management accounting system (Gatti, 2018; Hiebl & Quinn, 2018), and the enterprise's design system is equivalent to the mention of these innovation project systems. Individual background for consideration of interaction problems between the management accounting system and design system in the framework of the innovative project considered in the publication (Lendel, Hittmar & Siantova, 2015). The problems arising in connection with the lack of preparation for the introduction of innovations (de Souza et al., 2016) are presented as one of the consequences of imperfect training of the company's management. The conclusions are obtained, indicating that the main effectiveness indicator of management is

the possibility of effective innovation, as part of the consideration of this issue in that article (Serrano-Bedia, López-Fernández & García-Piqueres, 2018). We can make the assumption after research described in our article, that one of the indicators of innovation effectiveness is the efficiency of interaction between the management accounting system and the design system of the company. Project research "COSTENGINEER.RU" (Rogulenko et al., 2018) has shown, that the problem of different perception of innovation process by management (Zhao, Teng & Wu, 2018) and specialists of design areas exists and can be formalized in the construction of a model of their interaction.

We have used the method developed by the authors in the process of the research hypothesis testing. It is the method of analysis of the interaction of the management accounting system and the design system, the first stage of which is considered in this publication.

II. METHODS

The first stage of a method includes formalization of interaction scheme between the management accounting system and the design system, by forming a common list of control parameters, on the basis of which conclusions can be drawn on each of systems, in particular, its current state, the need and ways of reform. The proposed method of interaction analysis between the management accounting system and the design system is based and includes elements of such disciplines as: theory of organization, theory of accounting (management, financial) accounting, theory of decision making, theory of systems, design theory and project management theory. Therefore, choosing research methods possibility of using research methods specific to these disciplines was considered in the first place (Table 1).

Table 1. Stages of creating an interaction model between the management accounting system and the design system

Stage	Purpose and description of the stage	Methods	Input data	Output data
Stage 1	<i>Purpose:</i> to identify main problems of the project in the management accounting area and the design, a set control parameters formation and formalization of the management accounting systems and the design data, formation of intermediate conclusions.	<i>Theoretical:</i> formalization, hypothetical-deductive method, abstraction and idealization; <i>General logic:</i> analysis, synthesis, system approach;	General information about the company, information about management accounting systems and the list of used methods, information about organizational structure and cost	Set of control parameters of the existing management accounting system and the design system, test set results, conclusions of the preliminary analysis stage.

		<i>Description:</i> establishing contact with the studied company, analysis of general information about the company and documents provided, meeting with management and employees.	<i>Interdisciplinary:</i> an expert survey, analysis of documents, dialogue.	accounting system.	
2	Stage	<i>Purpose:</i> to determine actual capabilities of the project team in the interaction area of the management accounting system and the design system through the implementation of a conceptual mini-project, the construction of the current model of interaction; <i>Description:</i> implementation on the basis of the preliminary mini-project company with the participation of specialists and management, processing of the results.	<i>Empirical:</i> observation, comparison; <i>General logic:</i> analysis, synthesis, generalization, induction, analogy, modeling, system approach; <i>Interdisciplinary:</i> an ideographic method.	Output of stage 1, information about previously implemented projects.	Formalized data of mini-project execution, the current model of cooperation management accounting system and design system.
3	Stage	<i>Purpose:</i> assessment of costs and risks because of changes in the interaction model of the cooperation of the management accounting system and the design system in case	<i>General logic:</i> analysis, synthesis, generalization, induction, analogy, modeling, system approach.	Output of stage 2.	Report in form of a presentation, a new cooperation model between the management accounting system and the design

	preservation of current model, management decision to change the model of interaction. <i>Description:</i> formation of report on the work performed, presentation of report to company's management, support formation of a new cooperation model between the management accounting system and the design system.			system, reorganization plan, reorganization report.
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Application of the proposed authors method involves three stages of the study. Table 1 lists the stages of the study and the methods used in each of them.

It should be noted that the technique proposed by the authors, on its principle, is a common cause of modeling, where the preliminary analysis – nothing more, than a stage of formalization, in-depth analysis (implementation of preliminary mini-projects) – stage of direct modeling, formation of recommendations – stage of interpretation of simulation results. Thus, we can conclude that central method used in our research was modeling.

It was noted above that the proposed by the authors' method involves three stages of the study. In this article we consider the first stage of the study and the methods used in it.

So, the test results were analyzed in accordance with the following methodology (specialized survey), as the first research stage. This allows creating a preliminary model of the cooperation in the management accounting system and the design system. Consider the order of application of each research method used at this stage in more detail.

Initial step in implementation of first stage of study was an analysis of the companies' pool working in area of civil transport mechanical engineering and selection of research group, taking into the criterion account of involvement in the innovative projects. Method of formalization (comparative table) took into the account such parameters as: list of projects, capitalization (for non-state companies), availability of contact information, etc. Preliminary pool was narrowed down to twenty companies. Official letters had been sent to the companies on the project manager behalf. The feedback was received from three companies. On basis of general information on the management accounting and the design systems obtained during the dialogue with representatives of those three companies. The hypothetical-deductive method was used to formulate the research hypothesis, that is, the possibility of forming a complex system of the highest basis level of existing separate systems of the management accounting and the design. Method of abstraction and idealization was used to those companies, which did not give feedback, due to the lack of the possibility of obtaining information. According to all companies result similar in a number of personnel, level of capitalization and other parameters to

companies with the feedback were assigned to companies without a comprehensive the management accounting and the design system. It was mentioned above the basis company's management accounting system was accept considered identical with the management accounting system of project within framework of study. A range of the most common problems in practice was identified during the successive dialogue with the companies' representatives and analysis of company working documents. A common list for three companies was compiled by the synthesis method on the basis of analysis. List was transformed into a test task by the method of formalization, as well as taking into an account current research in area of the management accounting, the business processes, the project management and the cost design. The next research' stage has become a specialized survey with the involvement of specialists of economic and design departments.

III. RESULTS

The obtained research's results could be divided into three groups.

1. List of the main problems, which are characteristic for companies involved in implementation of the innovative projects of transport mechanical engineering in modern conditions.
2. Specialized test, which allowed to describe a company's management accounting system and to represent it in the set-form of control parameters.
3. Testing with the participation of three companies and a preliminary interpretation of the results.

Consider each group of results in more detail. As a result of preliminary interaction with enterprises' specialists, who later took part in testing, a list of issues arising in the practice of innovative projects was formed. It was divided into four groups, according to the results of analysis. The first group of questions were the most general and characterized the degree of enterprise development in case of the management accounting system, degree of this system's interaction with technical specialists, as well as level understanding of enterprise specialists of relevance costing issues, accounting and cost planning at various stages of an innovation project. The second questions group characterized the problems associated with the lack of company's proven set of business processes and approaches to the project management. The third group presented issues related to the current organizational structure and management strategy had applied at different stages of the project. The fourth group presented issues related to methods of cost design and the management in the design departments.

A list of questions arising practice of innovative projects was formed a specialized test, which was presented in Table 2.

Table 2. Specialized survey to draw up a preliminary model of the interaction between the management accounting system and the design system

Subject "Relevance of development accounting and analytical support of financial management"	Yes	No
1. Development of accounting and analytical support of financial project management is a topical issue for Your company	☐	☐

2. Problem of exceeding cost of product life cycle has been successfully solved in practice of implementing projects in Your company	☐	☐
3. Your company has created and operates a system of management accounting	☐	☐
Subject “Business processes and information technologies in system of management and financial accounting”		
1. Your company's business processes are implemented using ERP and BPM systems	☐	☐
2. Information technologies of management and financial accounting of Your company meet modern standards for ERP and BPM systems	☐	☐
3. ERP and BPM systems are used in Your company to support the following tasks:		
• costs accounting and costs management	☐	☐
• support of managerial decision-making	☐	☐
• planning and budgeting	☐	☐
4. As part of implementation of innovative projects in Your organization there are standards of project management level PMBOK	☐	☐
5. As part of implementation of innovative projects in Your company there are business process management standards level BPM CBOK 3.0	☐	☐
Subject “Types of management and organizational structure”		
1. In terms of management types, to specifics of projects implementation in Your company, you can include:		
• hierarchy principle of management levels, in which each lower level is subordinate to higher	☐	☐
• principle of matching powers and responsibilities of employees in hierarchy	☐	☐

• principle of labor division into separate functions and specialization of employees by functions	☐	☐
• hiring in accordance with qualification requirements, not subjective assessment	☐	☐
• decisions are made through discussion, not authority or tradition	☐	☐
• main integrating factors are mission and development strategy of company	☐	☐
• creative approach to work	☐	☐
• rules of work are formulated in form of principles, not guidelines	☐	☐
• distribution of work is determined not by positions, but by the nature of the problems to be solved	☐	☐
• there is a constant readiness to carry out progressive changes in company	☐	☐
2. Organizational structure of Your company is closest to:		
• linear-functional	☐	☐
• divisional	☐	☐
• matrix	☐	☐
• combined	☐	☐
3. During project implementation, most typical way to integrate organizational structure of project into organizational structure of Your company is:	☐	☐
• dedicated organizational structure (organizational structure of project is separated from company organizational structure)	☐	☐
• «built-in» organizational structure (organizational structure of project is combined with the organizational structure of company)	☐	☐

allocated dual (triple) organizational structure (organizational structure of project is separated; project is common for two (three) companies)	☐	☐
complex organizational structure (organizational structure of project is separated, the General organizational structure includes customer, contractor, etc.)	☐	☐
Subject "Cost engineering and design"		
1. Your company has implemented a system of "change management" or analogues, which provides an assessment of impact design changes on cost of product life cycle	☐	☐
2. Design decisions in Your company are made taking into account "fixation" of product life cycle cost, in particular, at stages of the preliminary design	☐	☐
3. Design decisions in Your company are made taking into account impossibility of a significant reduction in cost of product life cycle at stages of detailed design and production	☐	☐
4. Your organization's design engineers have a complete understanding of cost structure of part, assembly unit and final product	☐	☐
5. Scheme of interaction between the cost of engineers and design engineers of Your company is regulated by an internal or borrowed standard	☐	☐
6. Engineers of Your company to obtain original data for design in form of component target cost (part, assembly units)	☐	☐
7. Your company practices formation of a working group to reduce cost of product to bring it to target values	☐	☐
8. Design engineers of Your company take part in project budgeting	☐	☐
9. Your company design engineers are responsible for exceeding project budget	☐	☐
10. Design engineers of Your company use in design process system of Functional cost analysis (FCA) created by Sobolev	☐	☐
11. Design engineers of Your company use in design process theory of solving inventive problems (TRIZ) created by Altshuller	☐	☐

12. Your company's design engineers use Miles's value analysis and engineering in design process	☐	☐
13. Your company's design engineers use functional system analysis technique (FAST) in design process	☐	☐
14. Specialists of Your company use in design process modern software tools (PCM – Product Cost Management) for cost analysis and forecasting	☐	☐
15. At stage of development project design documentation (preliminary design), your company is characterized by use of functional control scheme (compliance with the management standards of 5±2 designers per team/sector)	☐	☐
16. At stage of development detailed design documentation, your company is characterized by use of process control scheme (compliance with the management standards of 15±2 designers per head of the brigade/sector)	☐	☐

Analysis of the test results showed a data resemblance for all survey participants. So the results of the first test question group obtained indicating the presence of the management accounting system at each enterprise participating in survey and enterprise specialists' awareness about the problem of accounting and cost planning. , The results of the other three questions groups were also obtained allowing to form a set of control parameters necessary for the implementation of second and third stages of research.

In addition to information obtained in testing, explore found that system of the management accounting and cost design developed organically to most enterprises. It was formed in parallel with the enterprise development and projects implementation, without a special program of implementation and involvement of appropriate consultants. Thus, it can be assumed that the existing model of interaction between the management accounting system and the design system. It isn't optimal and therefore has potential for optimization at least.

Three tested companies participating have received official written feedback with the possibility of participation in the subsequent research stages at the moment.

IV. DISCUSSION

The general proposed by authors method of interaction analysis the management accounting system and the design system has been inherently similar to general case of modeling and repeats its stages, but it should be noted that the proposed stages of analysis methodology, considered separately, contain elements of scientific novelty. Advantages and scientific novelty of the first stage of creating a complex system in context of existing research in this area include: short preparation time for implementation, specialization in certain industries and innovative projects, minimum investment, the ability to analyze management accounting systems and design during the project, without suspending their current activities. It should be noted that specialization in certain industries and innovative projects are at the same time a disadvantage of the proposed methodology.

Disadvantages of proposed research method include narrow specialization that is the possibility of using this technique only for enterprises aimed at pilot production and research. In addition, there is a possibility of some error in results of study, due to relatively small number of enterprises involved in study.

Since study is positioned as a source of information on implementation innovative projects in Russia, taking into account the current context, it is necessary to consider relevant publications that characterize this context. In particular, one publication (Nikitin, Barykin & Slyshkin, 2016; Jin, Lei & Yu, 2016; van der Poll & Mthiyane, 2018), which discusses features of the innovative projects management in case where customer is the state structure and in this case the Ministry of industry and trade of Russia. In this case, the number of users of the information provided by the management accounting service to the management includes managers at the level of the Ministry, therefore the requirements for the information to be provided are tightened, this means that role of quality interaction between management accounting system and the design service is increasing.

Also issue of the interaction between the management accounting system and the design service is considered in Rogulenko & Smolyakov (2016). Here, the authors come to conclusion that it is necessary to form a higher-level system at the enterprise aimed at ensuring management decision-making, the management accounting system and the design system are included in it as one of the most important elements. Questions related to aspects of design and engineering decision-making (Roos, 2016) include economic and can be considered in (Buchanan, 2019; McDonnell, 2019). The following work Nikitin, Barykin & Slyshkin (2016) reflects features formation of new business processes of interaction between design and economic units.

Since above indicated that modeling is the main method in our research, which, among other things, is based on proposed study methodology, we can quote Florina & Oros (2015), which identifies similar reasons for applying modeling to accounting. The difference between this study and ours is that the modeling is not applied to a specific area of activity, and in relation to the interaction of areas of activity, namely the management accounting system and the design system.

At the first study stage was considered the question of resistance to change from the side of the management accounting system (Alsharari, 2019) and the design system. The consideration of the study hypotheses and taking into account, such feature of innovation projects as hard timing, you should consider conclusions Agoneze & Facin (2014) and compare them with the final results in further (second and third study stages).

It should be noted that one of the stages of overcoming the internal system resistance, in case of resistance not only from the management accounting system, but also from the design system, is a change in organizational culture, in connection with which it is necessary to note statement (Buchanan, 2015). The paradigm of interaction between economic and design services can be expressed in form as Whitney (2015). In general, this approach fits into the concept of interaction between the management accounting system and the design system, considered by the authors of our study.

In the context of research hypothesis, suggesting existence of an optimal interaction model of the management accounting system and the design system at various stages of the project, note quotation Tahri & Drissi-Kaitouni (2015), offering to our attention a variant of classification of levels of "maturation" of the project management system. Based on the results obtained in the implementation of the project "COSTENGINEER.RU" (Rogulenko et al., 2018) it can be assumed that the process of "maturation" of a project management takes place in parallel with change of stages of the project, and therefore, a change in the degree of "maturation" of the project management system, can serve as a sign that changes are needed in the model of interaction in management accounting system and design system. In the quotation Sitnikova (2017) conclusions about the expediency of a broader understanding of "management accounting" concept,

which indirectly confirms the hypothesis considered in our study, since the existence of an optimal cooperation model between the management accounting system and the design system for each stage of innovative project, implies an expansion of scope of consideration of both these systems, depending on degree detail of the cost structure and technical project's side. Taking into account, above arguments, indirectly confirming the correctness of considered the research hypothesis, degree of proof of the hypothesis will be considered sufficient for the transition to the second stage of study (in-depth analysis), provided by the proposed method.

V. CONCLUSION

The implementation process of innovative projects in modern conditions characterizes the presence of problems in terms of intra-organizational interaction of elements of organizational structure, in particular, we considered the units of the management accounting system and the design system in Russia. The reasons for this problem are hidden not only in absence of a model of interaction between two systems, but in insufficient degree of maturity of the project management system and the imperfection of existing business processes, which were also partially considered during the testing conducted during the study. Under the imperfection of the project management and the business process, in this case should be understood not only their non-compliance with requirements of the implementation stage innovation project, but also partial non-compliance with modern international standards.

In the course of study, it was found that all surveyed enterprises do not have a clear method of changing the interaction model of structural units, depending on the stage of implementation of innovation project, on example of units the management accounting system and design system, thus the relevance of the research topic and the study hypothesis was proved. The study showed the presence of changes in internal model of individual units included in the management accounting system and the design system, which indicates a high level of professionalism at the unit level, but inconsistency of work at the level of systems that include these units, minimizes the positive effect. The results of the study showed that the management accounting system and the design system are developing in enterprises in an organic way, and, therefore, the transition to a new stage of a project is usually accompanied by a local crisis, which ultimately becomes an incentive to change the model of the interaction. With such an approach, local time losses are inevitable, leading to additional costs and risk of shifting timing of the project.

The method formation proposed by the authors allowed to form the output data of the initial stage of formation of interaction model between the management accounting system and the design system, on the basis of which it can be concluded about the efficiency of methodology and possibility of implementing the second and the third study stages in order to finally verify the proposed research hypothesis.

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REFERENCES

1. About the project. Home page. (2019). address: <http://costengineer.ru/index-eng.html>.
2. Agoneze, R., Agoneze, L. & Facin, C. (2014). Analysis of the Factors Affecting Resistance to Changes in Management Accounting Systems. *Revista Contabilidade & Finanças*, 25 (66), 214-227. DOI: 10.1590/1808-057x201410810
3. Alsharari, N. (2019). Management accounting and organizational change: alternative perspectives. *International Journal of Organizational Analysis*, 27 (4), 1124-1147. DOI: 10.1108/IJOA-03-2018-1394
4. Buchanan, R. (2015). Worlds in the Making: Design, Management, and the Reform of Organizational Culture. *She Ji: The Journal of Design, Economics, and Innovation*, 1 (1), 5-21. DOI: 10.1016/j.sheji.2015.09.003
5. Buchanan, R. (2019). Systems Thinking and Design Thinking: The Search for Principles in the World We Are Making. *She Ji: The Journal of Design, Economics, and Innovation*, 5 (2), 85-104. DOI: 10.1016/j.sheji.2019.04.001
6. Florina, S. & Oros, E. (2015). Aspects Regarding the Use of Modeling in Accounting. *Procedia Economics and Finance*, 26, 272-277. DOI: 10.1016/S2212-5671(15)00851-5
7. García-Canal, E., Guillén, M., Fernández, P., & Puig, N. (2018). Imprinting and early exposure to developed international markets: The case of the new multinationals. *BRQ Business Research Quarterly*, 21 (3), 141-152. DOI: 10.1016/j.brq.2018.05.001
8. Gatti, M. (2018). The Impact of Management Accounting Research: An Analysis of the Past and a Look at the Future. *International Journal of Business and Management*, 13 (5), 47-60. DOI: 10.5539/ijbm.v13n5p47
9. Gertler, J. (2018) F-35 Joint Strike Fighter (JSF) Program. Address: <https://fas.org/sgp/crs/weapons/RL30563.pdf>.
10. Guarani de Souza, I., Pacheco Lacerda, D., Riehs Camargo, L., Dresch, A. & Sartori Piran, F. (2018). Do the improvement programs really matter? An analysis using data envelopment analysis. *BRQ Business Research Quarterly*, 21 (4), 225-237. DOI: 10.1016/j.brq.2018.08.002
11. Hiebl, M. & Quinn, M. (2018). Management accounting routines: a framework on their foundations. *Qualitative Research in Accounting & Management*, 15 (4), 535-562. DOI: 10.1108/QRAM-05-2017-0042
12. Jin, X., Lei, G. & Yu, J. (2016). Government governance, executive networks and enterprise R&D Expenditure. *China Journal of Accounting Research*, 9 (1), 59-81. DOI: 10.1016/j.cjar.2015.09.001
13. Lendel, V., Hittmar, S. & Siantova, I. (2015). Management of Innovation Processes in Company. *Procedia Economics and Finance*, 23, 861-866. DOI: 10.1016/S2212-5671(15)00382-2
14. McDonnell, J. (2015). Gifts to the Future: Design Reasoning, Design Research, and Critical Design Practitioners. *She Ji: The Journal of Design, Economics, and Innovation*, 1 (2), 107-117. DOI: 10.1016/j.sheji.2016.01.007
15. Nikitin, G., Barykin, A., Slyshkin, V. & Tsipes, G. (2016). Engineering and Infrastructure Projects in Ministry of Industry and Trade of Russia: Balance of Governance and Management. *Procedia - Social and Behavioral Sciences*, 226, 358-364. DOI: 10.1016/j.sbspro.2016.06.199

16. Pasch, T. (2019). Strategy and innovation: the mediating role of management accountants and management accounting systems' use. *Journal of Management Control*, 30 (2), 213–246. DOI: 10.1007/s00187-019-00283-y
17. Rogulenko, T.M. & Smolyakov, O.A. (2017). Organizational-economic problems of interaction systems of aviation enterprises providing the achievements of the established level of economic indicators. *Bulletin of the University*, 10, 74-79.
18. Roos, G. (2016). Design-Based Innovation for Manufacturing Firm Success in High-Cost Operating Environments. *She Ji: The Journal of Design, Economics, and Innovation*, 2 (1), 5-28. DOI: 10.1016/j.sheji.2016.03.001
19. Serrano-Bedia, A., López-Fernández, C. & García-Piqueres, G. (2018). Complementarity between innovation knowledge sources: Does the innovation performance measure matter? *BRQ Business Research Quarterly*, 21 (1), 53-67. DOI: 10.1016/j.brq.2017.09.001
20. Sitnikova, S.A. (2017). Information space for management accounting. *Bulletin of the Financial University*, 21(3), 264-272.
21. Tahri, H. & Drissi-Kaitouni, O. (2015). New Design for Calculating Project Management Maturity (PMM). *Procedia – Social and Behavioral Sciences*, 181, 171-177. DOI: 10.1016/j.sbspro.2015.04.878
22. van der Poll, H. M. & Mthiyane, Z. (2018). The Interdependence of Risk Management, Corporate Governance and Management Accounting. *Southern African Business Review*, 22, 1-30. DOI: 10.25159/1998-8125/4344.
23. van Helden, J. & Jan Alsem, K. (2016). The Delicate Interface between Management Accounting and Marketing. *Journal of Accounting & Marketing*, 5 (3), 1-5. DOI: 10.4172/2168-9601.1000179
24. Whitney, P. (2015). Design and the Economy of Choice. *She Ji: The Journal of Design, Economics, and Innovation*, 1 (1), 58-80. DOI: 10.1016/j.sheji.2015.09.001
25. Xihui Liu, S. & De Bont, C. (2017). Barriers to Strategic Design: A Perspective from China. *She Ji: The Journal of Design, Economics, and Innovation*, 3 (2), 133-145. DOI: 10.1016/j.sheji.2017.09.003
26. Zhao, H., Teng, H. & Wu, Q. (2018). The effect of corporate culture on firm performance: Evidence from China. *China Journal of Accounting Research*, 11 (1), 1-19. DOI: 10.1016/j.cjar.2018.01.003