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VALUE CREATION IN THE MULTI-PROJECT ENVIRONMENT

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ABSTRACT

In this study, the author assumes that the value created by multi-project structures significantly affects the financial performance of an organisation. Currently available studies focus on the creation of the expected outputs of project portfolios, the author assumes, however, that the construct of other multi-project structures that is similar in conceptual terms (i.e. project chains and networks) justifies the generalisation of conclusions included in such studies. An analysis of the available literature on the subject in the context of requirements of a knowledge-based economy (KBE) makes it possible to distinguish some key factors affecting the value created by multi-project structures. These include: appropriate allocation and balancing of resources, transfer of knowledge within such structures, as well as development and maintenance of positive relationships with stakeholders. In the opinion of the author, these factors create value within the framework of multi-project structures, as they generate and accumulate the added value and intangible assets. The second assumption made in this paper is that the level of value created by multi-project structures has a significant impact on the financial performance of an organisation. This approach is different from the few previously employed, as it assumes that the added value and intangible assets generated within multi-project structures significantly contribute to such performance.

Keywords: Value, Multi-project structures, Value creation, Multi-project environment, Financial performance of an organisation

1. INTRODUCTION

The central concept behind this article is the assumption that the value created by multi-project structures significantly affects the financial performance of the organisation in which such projects are initiated and implemented. Multi-project structures are understood here as project portfolios, chains and networks. On the other hand, the level of value created within these structures is significantly influenced by the following factors: allocation of resources, effective mechanisms for knowledge transfer and positive relationships with stakeholders. Until now, a preferred approach has been the one in which the results created as part of the structures concerned referred, on the one hand, to effectiveness, and on the other, to broadly defined efficiency. The contribution of the first component to the desired portfolio performance has been

quite thoroughly investigated and described, whereas the impact of the second aspect has been poorly diagnosed from the theoretical perspective, while empirical studies in the field were qualitative and declarative in nature. In the opinion of the author, in a knowledge-based economy, a comprehensive understanding of the value that multi-project structures should create ought to be somewhat different. The value understood in this new way should comprise support for the organisation's strategy, maximisation of efficiency and creation of unique assets by which the organisation will consolidate its competitive advantage. This study demonstrates, from the conceptual point of view (in the form of a research model), how the above-described factors affect the value created within the framework of multi-project structures, and how that value, in turn, translates into the financial performance of the entire organisation.

2. THE ESSENCE OF THE VALUE CREATED BY MULTI-PROJECT STRUCTURES

In the available literature on the subject, one can find information on various types of multi-project structures. These include project portfolios, chains and networks. The portfolio of projects is understood as a cluster of projects, groups of projects and programs (Patanakul and Milosevic, 2009). On the other hand, clusters of projects whose life cycles occur in a sequence are referred to as project chains (Gareis, 2002; Maylor *et al*., 2007). Within a project chain, deliverables are sequentially transferred to subsequently commenced and implemented projects. The literature on the subject also mentions a slightly different formula for implementation of numerous projects, namely project networks. The network is defined as a cluster of projects that are performed simultaneously and are related to one another in terms of the technology applied, a target client, supplier or partner, or a geographic region (Gareis, 2004; Manning, 2005). The main objective behind the creation of structures in the form of project networks is to create synergies and ensure an effective management of communication among dispersed project teams. The project network structures are mainly observed in high-tech enterprises and electronic media.

An analysis of the literature on the subject makes it possible to identify the studies which describe the impact of single-project management in achieving portfolio management efficiency (Martinsuo and Lehtonen, 2007). Generating the expected outputs is defined in the literature on the subject as the portfolio success (Cooper *et al*., 1997). We will find such an understanding of the concept in most of the available studies that characterise portfolio success determinants (Meskendahl, 2010; Heising, 2012; Voss and Kock, 2013). It should be noted, however, that the concept is rather vague and covers a conglomerate of strategic, economic and financial benefits, which describe the desired outputs to be generated by the project portfolio. The situation is similar in the studies describing the idea of measuring project program success. (Shao *et al*., 2012). It should be also mentioned that the cited studies focus largely on creating the expected outputs of project portfolios. However, as already mentioned, the author of this study assumes that a

conceptual similarity behind the construct of other described multi-project structures, i.e. project chains and networks justifies generalisation of the conclusions contained in such studies.

It also seems that in a knowledge-based economy (KBE), a comprehensive understanding of the value that multi-project structures should create ought to be different. This concept has been defined as the value in order to distinguish it from the currently used concept of success, which is associated with generally understood expected outputs created by the project portfolio. This value should be considered from three points of view. The first aspect is the coincidence between the portfolio strategy and objectives with the strategic objectives of the parent organisation, known as the strategic fit (Meskendahl, 2010). The second aspect is about multi-project structures generating the expected added value (understood as the achievement of the assumed volume of the margin, return on investment or cash flow). This aspect significantly affects the domain of the profitability of the organisation in which such structures are initiated and implemented. The third aspect refers to the multi-project structures generating some unique intangible assets (human, relational and structural capital) and accumulating such assets within the organisation. This aspect of the value created by multi-project structures determines the organisation's capacity for a long-term development and consolidation of its present competitive advantage. If we understand the value in this way, we look at the outputs of multi-project structures in a comprehensive manner, which comprises support for the organisation's strategy, maximisation of efficiency and creation of unique assets by which the organisation re-configures its adopted business model or consolidates its present competitive advantage. If we move to the issue of value creation mechanisms in multi-project structures, it can be stated that the analysis of the available literature on the subject allows for distinguishing three factors that significantly affect the ability of such structures to create the value in this sense. These factors are described in the subsequent sections of this study.

2.1. Allocation and Balancing of Resources and Their Impact on the Outputs of Multi-Project Structures

Misallocation of resources and wrong optimisation of scheduling for elements of the portfolio can lead to problems with its proper implementation (Pennypacker and Dye, 2002). An important issue is also the competition for key resources of the organisation by persons managing various elements of the portfolio (Payne, 1995). Furthermore, early studies in this area suggest that the proper balancing of resources is a key factor to maximise the portfolio efficiency by minimising the risk associated with its implementation (Cooper *et al.*, 2002). A similar phenomenon is also invoked by later studies that are cited here. It can therefore be concluded that an appropriate allocation and balancing of the portfolio resources has a twofold positive impact on the portfolio outputs. Firstly, it is assumed that by an appropriate allocation and balancing of resources, it is possible to significantly reduce the level of operational risk. Secondly, it is assumed that a suitable allocation and balancing of resources has a positive effect on the creation of the portfolio's value

by exploiting synergies and economies of scale (Blichfeldt and Eskerod, 2008; Teller, 2013). Available studies indicate that the problems with an appropriate allocation of resources can be aggravated by the emergence of other financial and non-financial factors reflecting negatively on the creation of value in the project portfolio (Lock, 2000). Therefore, at the level of the organisation in which multi-project structures are initiated and managed there should be mechanisms to optimally allocate human and material resources (Bourgeon, 2007). Opinions also surface that such mechanisms should provide for an integrated way to manage the available resources and element schedules, which will allow maximisation of the portfolio-generated outputs (Anavi-Isakow and Golany, 2003; Laslo, 2010). This integrated approach helps improve the resource use efficiency and has a positive impact on the level of the added value, including the value generated by other structures of a multi-project nature. As already mentioned, the added value created by such structures may take the form of a desired volume of the margin or profit, a specific return on investment (ROI) or an expected level of cash flows (NPV). Summing up the above considerations, it can be concluded that a suitable allocation and balancing of resources can maximise the added value that is created within the framework of multi-project structures by generating synergies and exploiting economies of scale on the one hand, and by minimising operational risk on the other. Therefore, based on the above considerations, the following research hypothesis can be formulated:

H1 – Allocation and balancing of resources is a factor that significantly and positively influences the level of added value generated by multi-project structures

2.2. The Impact of Knowledge Management on the Value Created By Multi-Project Structures

An analysis of the available literature on the subject indicates that issues related to knowledge management in the organisation involve many aspects. The vast majority of available studies describe the mechanisms for the management of knowledge which is created during implementation of projects and following their completion (Reich *et al.*, 2008). Other studies complement the topic by situating knowledge management in the context of human capital, and more broadly, within the concept of human resource management (Bellini and Canonico, 2008). There are also studies that take up the knowledge management topic by considering it in a broader perspective, i.e. in the context of the organisational learning processes (Koskinen, 2012). Some studies can also be found that deal with issues related to the transformation of the organisation's current knowledge into intangible assets, and to the efficiency of such efforts (Skrzypek and Hofman, 2007). Typically, the consequence of these activities is the conversion of other than tangible assets into intangibles so as to eliminate their unauthorised outflow outside the organisation. Some authors also advocate the idea that performance of knowledge management functions and transformation of knowledge into intangible assets should be the

responsibility of support units, i.e. PMOs (Desouza and Evaristo, 2006; Müller *et al.*, 2013). The range of support functions in such cases depends on the model adopted for PMOs' operation (Hofman, 2014). On the other hand, the available literature on the subject misses the studies that would provide a comprehensive description of mechanisms whose task is to ensure the flow of knowledge within multi-project structures and showing the impact of the mechanisms' correct operation on the value created by such structures.

The most important studies on knowledge management point to the transfer of knowledge as a key function of knowledge management (Eriksson, 2013). This applies both to the transformation of tacit into explicit knowledge and to the transfer of knowledge within the framework of multi-project structures and the entire organisation (Nonaka and Peltokorpi, 2006). It should also be added that the available literature indicates a positive effect of knowledge creation and transfer on the accumulation of intangible assets in the organisation (Bontis, 1998; Bontis, 2001). Available studies also indicate that the problems with the transfer of knowledge within the portfolio significantly increase the operational risk exposure, which negatively influences the value created within the portfolio (Pender, 2001). It can therefore be concluded that properly functioning knowledge transfer mechanisms within the framework of multi-project structures exert a positive influence on the creation of value by such structures by means of increasing the resources of intangible assets, particularly human capital. The accumulation of human capital within the framework of multi-project structures occurs by stimulating learning processes and ensuring decision-making opportunities while full access to information is granted (Martinsuo, 2013; Gutiérrez and Magnusson, 2014). In such circumstances, operational risk is minimised too. Based on the above considerations, it will be justified to formulate the following research hypothesis:

H2 – Transfer of knowledge is an important factor that positively influences the creation of value by multi-project structures by means of human capital accumulation

2.3. Stakeholders and Their Impact on the Value Created By Multi-Project Structures

The concept of stakeholders is present in the theory of management sciences since the 1990s (Clarkson, 1995; Donaldson and Preston, 1995). The available literature on the subject describes in a very thorough way how stakeholders influence the results of projects and of more complex structures, i.e. programs (Lycett *et al.*, 2004). An analysis of some older studies points to participants in the organisation, i.e. mid-level managers as significant stakeholders in project programs and portfolios (Blomquist and Müller, 2006). Other studies indicate, in turn, the key role of the portfolio manager in shaping the right attitudes of stakeholders who are understood as line managers and project managers (Dillard and Nissen, 2007). This occurs through the transfer of know-how and best practices. From yet another perspective, internal stakeholders influencing the creation of the expected outputs of the portfolio include portfolio managers, project managers,

line managers and mid- and senior level managers (Jonas, 2010; Beringer *et al.*, 2012). All available studies point out to the above-described participants in the organisation as key internal stakeholders of the project portfolio. Later studies on the topic take up the issue of internal stakeholders' attitudes and behaviours and the impact of such behaviours on the portfolio success (Beringer *et al.*, 2013). Such a relationship has also been empirically confirmed. It should be noted, however, that the cited studies, while focusing on the role of internal stakeholders, do overlook a very significant impact that is exerted on the creation of value within the framework of multi-project structures by stakeholders operating in the external environment. This is the issue that the available literature deals with in a fragmentary and sketchy manner only. For instance, the study by M. Voss and A. Kock indicates an important role of a client-stakeholder. Even if the client functions in the external environment of the portfolio, establishing and maintaining appropriate relationships with this key stakeholder has a positive effect on the portfolio success. This success is largely a consequence of the creation and accumulation of relational capital, which is in turn a derivative of establishing and maintaining positive relationships with the stakeholder and meeting their expectations (Voss and Kock, 2013). Based on the available knowledge, it can be assumed that positive relationships with stakeholders located within the organisation allow creating value within multi-project structures by generating structural capital resources. On the other hand, positive relationships with stakeholders located outside the organisation make it possible to build value within such structures by accumulating relational capital. The recapitulation of the above considerations leads to the following research hypothesis:

H3 – Satisfaction of internal and external stakeholders is a factor that positively influences the creation of value by multi-project structures by generating structural and relational capital resources

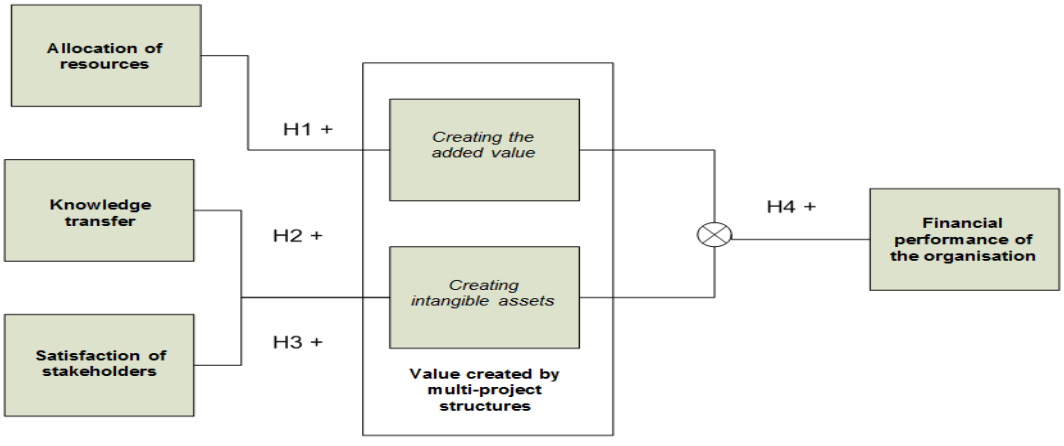
In order to more clearly demonstrate the relationships between thus formulated research hypotheses, they have been described by the model shown in Figure 1. As one can see, it is assumed that in accordance with research hypotheses H1, H2 and H3 a suitable allocation and balancing of resources, transfer of knowledge and satisfaction of internal and external stakeholders all contribute, in a positive and statistically significant way, to the creation of value within the framework of multi-project structures. This is done, respectively, by creating the added value (in the form of the margin, profit or cash flow) and intangible assets (including human, relational and structural capital).

3. THE IMPACT OF THE VALUE CREATED BY MULTI-PROJECT STRUCTURES ON THE FINANCIAL PERFORMANCE OF AN ORGANISATION

Currently, it seems legitimate to say that performance of organisations is a product of their ability to generate the added value and resources of intangible assets. This trend, as observed in a

knowledge-based economy, makes it difficult to use traditional models (such as DuPont model) in order to analyse how the value created by multi-project structures influences the financial performance of an organisation. This is due to the fact that these models are based on the approach that recognises the key role of tangible assets in the creation of financial results.

Figure-1. Diagram of relationships between the key factors influencing outputs of multi-project structures and the financial performance of an organisation



Source: own compilation

In order to investigate whether these relationships do exist, what their nature is, and whether they are statistically significant, different types of tools should be employed, namely those that will be suitable for the analysis of relationships between the capacity for the creation of intangible assets and basic categories that describe the organisation's financial performance. The appropriate tool in this respect can be the VAIC© model, which actually fulfils all the criteria mentioned above (Pulic, 2000). Based on this very model, it is possible to determine the volume and efficiency of the added value, human capital and structural created by multi-project structures, and also assess their impact on the organisation's financial performance (Pulic, 2000; Volkov, 2012). High values of these parameters, i.e. the volume of added value, human capital and structural capital are expected to significantly affect the financial performance of the organisation. In order to determine the strength and nature of such impact, the previously described parameters that make up the VAIC© model should be juxtaposed with key financial categories, i.e. the net return on sales (ROS), return on assets (ROA), return on equity (ROE) or other ratios that comprehensively reflect the organisation's financial performance (such as the Altman Z-score). This is a different approach from the few previously employed because it enables a concrete and measurable examination (based on quantitative data) how the added value and intangible assets generated by multi-project structures translate into key ratios describing the organisation's financial

performance. Therefore, based on the above considerations, the following research hypothesis can be formulated (also included in the research model shown in Figure 1):

H4 – The added value and resources of intangible assets and resources created by multi-project structures have a positive and significant impact on the financial performance of an organisation

4. SUMMARY

An analysis of the available literature on the subject in the context of requirements of a knowledge-based economy (KBE) makes it possible to distinguish some key factors affecting the value created by multi-project structures. These include a suitable allocation and balancing of resources, transfer of knowledge within these structures, and creating and maintaining positive relationships with stakeholders. These factors create value within the framework of multi-project structures by generating the added value and intangible assets.

This approach captures, in a comprehensive manner, support for the organisation's strategy, maximisation of efficiency and creation of unique assets by which the organisation is consolidating its competitive advantage. The second assumption made in this study is that the level of value created by multi-project structures has a significant impact on the financial performance of an organisation. This approach is different from the few previously employed, as it assumes that the added value and intangible assets created as part of multi-project structures significantly contribute to such performance.

In conclusion, it should be noted that innovation of the study assumptions reveals itself in three areas. Firstly, the assumptions are made for various forms of multi-project structures, or, in other words, they are not restricted to the project portfolio only. Secondly, the concept of value, as used in this study, is related to quantitatively measurable categories, i.e. the added value and resources of intangible assets. Thirdly, the applied research model relates the value created by multi-project structures to key financial categories.

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