



University of HUDDERSFIELD

University of Huddersfield Repository

Tillmann, Patricia, Ballard, Glenn, Tzortzopoulos, Patricia and Formoso, Carlos

How integrated governance contributes to value generation : insights from an IPD case study

Original Citation

Tillmann, Patricia, Ballard, Glenn, Tzortzopoulos, Patricia and Formoso, Carlos (2012) How integrated governance contributes to value generation : insights from an IPD case study. In: 20th Annual Conference of the International Group for Lean Construction : Challenging Lean Construction Thinking: Are we near a Tipping Point?, 18-20th July 2012, San Diego, California, USA. (Unpublished)

This version is available at <http://eprints.hud.ac.uk/21073/>

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

<http://eprints.hud.ac.uk/>

HOW INTEGRATED GOVERNANCE CONTRIBUTES TO VALUE GENERATION – INSIGHTS FROM AN IPD CASE STUDY

Patricia Tillmann¹, Glenn Ballard², Patricia Tzortzopolous³ and Carlos Formoso⁴

ABSTRACT

Past research has found many drawbacks in the conventional approaches to managing projects. Among the criticisms is the traditional understanding of value generation primarily focused on product creation, while the industry struggles to meet the expectations of different groups of stakeholders about the benefits that these projects are supposed to generate. In the pursuit of projects as means to achieve agreed goals and the fulfilment of a purpose, alternative approaches have been suggested. Integrated Project Delivery (IPD) is structured to deliver greater value from projects by aligning stakeholder expectations through integrated governance. This allows the major players to develop a much higher level of common understanding of the project, its purpose, and work towards value generation collaboratively. A case study was carried out in an IPD project to understand how integrated governance affects value generation. The findings suggest that IPD enables an environment in which value can be co-created, as it shifts the customer versus supplier relationship into a customer plus supplier relationship. Customer expectations and supplier assumptions are challenged in a dynamic and collaborative environment. While this can represent great improvement in generating value from construction projects, the increased managerial challenges of such interactions should also be noted. To establish and maintain focus in such environments is more challenging and this paper suggests that more research should be carried out on the role of techniques and tools in supporting people to focus on what is important.

KEYWORDS

Integrated Project Delivery, Project Governance, Value Generation

¹ PhD Candidate at Civil Eng. Dpt. Universidade Federal do Rio Grande do Sul (UFRGS), Osvaldo Aranha, 99, Porto Alegre, Brazil. patriciatillmann@gmail.com

² Professor, Civil and Environmental Eng. Dept, Director of the Project Production Systems Laboratory (P2SL), 214 McLaughlin Hall, Univ. of California, Berkeley, CA 94720-1712, USA, ballard@ce.berkeley.edu

³ Senior Lecturer, School of the Built Environment (BUHU). Maxwell Building - 5th floor (500c), University of Salford, The Crescent, Salford, M5 4WT. p.tzortzopoulos@salford.ac.uk

⁴ Professor, Civil Engineering Dept. UFRGS. Brazil. formoso@ufrgs.br

INTRODUCTION

The importance of generating value through projects has been increasingly discussed in the project management literature, e.g. Thiry (2002), Winter and Szczepanek (2008). Winter and Szczepanek (2008) argue that organisations are facing the challenge to shift from the delivery of products to the generation of value and benefits. The main concern now is no longer the capital asset, system or facility, but increasingly the challenge of linking business strategy to projects, maximizing revenue generation and managing the delivery of benefits in relation to different stakeholder groups.

However, for long it has been argued that the theoretical assumptions of traditional project management approaches in construction are too simplistic and insufficient to cope with current project management reality (Koskela and Howell 2008). According to the same authors, such traditional view considers that projects have pre-defined objectives which are achieved through a group of sequential activities. As a result, the role of project management is mainly to control these activities and remove or reduce uncertainty that may affect the achievement of expected objectives. Ward and Daniel (2006) such focus on improving the certainty of delivering a working technical solution is the main reason for projects to fail delivering the expected benefits of investments. It has been widely suggested in the literature that such traditional view should be reviewed and greater attention should be given on how projects support the strategic intent of organizations, generating value for different stakeholder groups (Thiry 2002; Zwikael and Smyrk 2011).

Building upon the work of Sapountzis et al. (2010), the authors of this paper attempted to understand how the use of alternative techniques to project planning and evaluation could contribute to improve value generation (Tillmann et al. 2012). Complementary, the research presented in this paper focus on the contributions of project organizational aspects, specifically integrated governance, for improving value generation.

WORKING HYPOTHESIS AND SOURCE OF EVIDENCE

The hypothesis tested in the work was: *“Integrated governance improves value generation because it enables the co-creation of value by creating a shared understanding of expectations and assumptions between those involved in strategic and operational decisions (customer x supplier relationship)”*.

Evidence to support such hypothesis was gathered through a case study on an IPD project in the US. The analyzed project involves the construction and operation of medical facilities for a not-for-profit healthcare foundation in California. The foundation is one of over 30 affiliates of Sutter Health. Sutter Health is a support company that provides its affiliates with financial and managerial support for the development of healthcare facilities.

The project is divided into 2 phases: phase 1 is a full operating clinic and phase 2 is its transformation into a hospital. The division of this project into 2 phases enabled an unusual situation: the opportunity to review and learn lessons from phase 1, improving for phase 2. During the development of this case study, the researchers were able to follow this transition phase and data was gathered through interviews and participant observation. The study began in the end of pre-construction for phase 1, mainly through observing the Core Group (architects, general contractor, owner-

project manager – Sutter Health, and owner-users – Sutter’s affiliate) and interviewing different team members. The outcome of this phase was a map of current decision-making process. The researchers were then able to work together with the team in three workshops to review lessons learned from pre-construction phase 1 and plan for improvements for pre-construction phase 2, which starts in April/2012.

THEORETICAL FRAMEWORK

REVIEWING THE ASSUMPTIONS OF VALUE GENERATION

Malcolm Gladwell made a presentation in a TED (Technology, Entertainment, Design) conference in 2004, entitled “Malcolm Gladwell on spaghetti sauce”, which is available online⁵. In his presentation, Gladwell challenges the traditional assumptions regarding the nature of choice and happiness by telling the story of food industry’s pursuit of the perfect spaghetti sauce. Gladwell’s argument is that we, as consumers, don’t really know what we want. When asked about our preferences, we are very limited in our answers. The chances of choosing something completely different from our stated preferences are very high if someone offers us an option with characteristics we haven’t even thought about and yet are preferred over those we consciously listed.

This story has an implicit argument about value generation that challenges the traditional assumption that the clients know what they want and all we need to do is to discover these pre-existing requirements to be able to supply a product according to their needs. Such discussion is not new in the construction management literature, and was brought up by Koskela and Ballard (2006). The same authors argue that the task in project management during project definition phase is to challenge self-understanding about requirements, reveal conflicts between client constituencies, confront desire with its consequences and explore alternatives not previously considered. As suggested by Whelton (2004), the project definition process can be seen as a complex adaptive process, through which project purposes emerge from group collaboration and learning.

In the manufacturing literature, the idea of value co-creation has been discussed for a longer period of time. Normann and Ramirez (1993) point out that some companies changed their focus to value-creating systems, within which different economic actors work together to coproduce solutions. By reconfiguring roles and relationships among actors, it is possible to mobilize new forms of value creation by new players. In IKEA, for instance, assembling and transporting tasks are passed on to customers so the focus can be on differentiation and low prices. Winter and Szczepanek (2008) reviewing Normann’s logic of value creation, state that a similar idea should be adopted in project management: the goal of a project is not to create value for customers but to mobilize customers to create their own value from the project or program’s various offerings.

⁵ Video available at:
http://www.ted.com/talks/lang/en/malcolm_gladwell_on_spaghetti_sauce.html

The literature on construction management is focusing on two types of incentives to improve value generation. One view stresses the emergence of new types of procurement methods that aim to integrate companies with different capabilities to provide a combination of facilities plus supporting services throughout long contractual periods (e.g. Barlow and Köberle-Gaiser 2008). Another perspective are the different types of contracts being used to improve value generation through better integration and early involvement of the supply chain, yet within the traditional scope of construction projects (e.g. Forgues and Koskela 2009). It is this latter perspective that this paper is focused on.

The increasing recommendation of more integrated approaches to construction projects is triggering the development of new types of contracts and approaches to support collaboration. Lahdenperä (2012) presents three methods currently predominant in the industry: (a) project partnering, emerging in the US in the late 1980s and then used in the UK and Australia; (b) project alliancing, emerging in the UK in the mid-1990s and disseminated to Australia; and (c) integrated project delivery, emerging around 2005 and mostly popular in the US. Although there is widespread belief that such approaches are the route for better projects, there is still little discussion on how such changes in industry contribute and require a revision of the traditional assumptions regarding value generation.

THE ROLE OF INTEGRATED GOVERNANCE IN GENERATING VALUE

Having in mind that value generation is a collective and creative process and that the design process is the main driver of potential value, the role of integrated project governance on steering such process in the context of IPD projects can be discussed.

A project usually involves a significant amount of work and a large number of people, hence some sort of management and administrative framework is required to organise all of those who are involved. Such a framework is called a project governance model (Zwikael and Smyrk 2011). The same authors argue that the way that typical business projects are organized suggests that many of the organizational structures adopted in practice are largely ad hoc with poorly defined roles leading to gaps/overlaps of responsibility, conflict amongst participants, inadequate processes and unreliable decisions. Thus, a governance model should be not only theoretically sound, but also have predictable behaviors to support project success (Zwikael and Smyrk 2011).

On Integrated Project Delivery (IPD) type of projects, an Integrated Governance Model is used. The American Institute of Architects - AIA (2007), defines IPD as: “a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste and maximize efficiency through all phases of design, fabrication, and construction”. AIA’s definition envisions a quite idealistic future, but pursuing such ideals is the main role of the Core Group in IPD projects, which plays the role of integrated governance. The Core Group is composed at least by the owners, the architects and the general contractors, but sometimes can also include consulting engineers or trade partners. The Core Group operates on a consensus basis and is responsible for coordinating and managing the project, while pursuing the project’s purpose and improving teams’ performance. Among the responsibilities of the Core group are:

reviewing and stimulating the progress of the project and developing and pursuing the Project Evaluation Criteria.

The way IPD projects should be organized (into cluster groups, core group and senior management), the financial incentives and the appropriate managerial perspective that should be adopted are all established in the Integrated Form of Agreement (IFOA). The IFOA is a type of relational contract developed specially for this type of projects in the US. Integrated agreements strive to raise quality by insisting that design fees be supported by a resource-loaded work plan. The general contractor is compensated on a cost-plus fee basis with an estimated maximum price (EMP). An EMP operates as a pain and gain sharing threshold, but limits the potential losses to the IPD team at their collective profit, keeping with the owner the risk of more significant cost overruns. EMP proposals usually are based on drawings submitted for permit, reducing the need for added contingency (Lichtig 2010).

The IFOA creates a system of shared risk, with the goal of reducing overall project risk, rather than shifting it. In part, this goal is supported by investing significant efforts in up-front collaboration, with the owner funding early involvement of the project team in an effort to eliminate ambiguity in the documents and maximize the collective understanding of the project's conditions of satisfaction.

Such agreement, which was first used by Sutter Health also specifies the use of lean principles and methods in the contract, such as: increasing the relatedness of members of the IPD team; collaborating throughout design and construction with all members of the IPD team; planning and managing the project as a network of commitments; optimizing the project as a whole, rather than any particular piece; and tightly coupling learning with action (promoting continuous improvement throughout the life of the project). In addition, Sutter Health developed a document entitled "Sutter Health's Lean Project Delivery System", which is a guideline for Sutter's project managers. Thus, it is also a role of the Core Group to make sure the adequate lean techniques and methods are used in practice to achieve an expected Lean model.

An increasing number of clients using IFOA in the US is demanding a shift on how things are being done in the construction industry in that country. This indicates that owners are also concerned with at least two things apart from project's end results: (a) how efficient the industry is in delivering a built facility, and (b) how capable the industry is to work as a team helping clients generate and maximize value for themselves.

The industry is witnessing a change towards more strategic-oriented project management. Contractual incentives are being increasingly used as well as techniques that support the planning and evaluation of projects focusing on different stakeholders' values. Within that context, integrated governance models are enabling decisions to be made by consensus based on the complimentary knowledge of suppliers and consumers; it is opening the channels for value co-creation and also clarifying the responsibilities of each party for contributing to value generation.

CASE STUDY

In October 2006, the owners, architect and general contractor (GC) entered into an agreement for a broader scope of the project than is now contemplated. Design and pre-construction services proceeded until mid-2009, when the Project was partially suspended due to capital funding constraints. At that time, portions of the project

were in varying stages of design completion. During the summer of 2010, the IPD team was challenged to deliver the clinic component of the project within the owner's funding constraints. The team underwent a project validation effort to recommence the project and a validation study was prepared, addressing the programming, scheduling and expected costs for a reduced scope of the project, consisting of only the medical clinic, commons/welcome center, garage, and site work (Phase 1). Capital funding for the anticipated hospital building and associated site work (including a possible central utility plant) was deferred to a future date (Phase 2).

ANALYZING DECISION MAKING IN THE DESIGN PHASE

Observation of the team's process for generating, evaluating, and selecting design options revealed a great deal about how integrated governance affects value generation. The close relationship among the owner-users, the architects and the contractors and trade partners led to the development of a design that reflects users' strategic intent and yet considers the owner's constraints and technical issues such as constructability and maintainability. The IPD team was able to accommodate a very participative design process traditionally carried out by the owner-users (Sutter's affiliate). The architects were able to come up with a design solution to improve the flow of patients and medical staff within the building, complying with the owner-users intent to improve operational efficiency. Then, working together with trade partners and the general contractor, architectural solutions could be improved by exploring different means to achieve the same desired result, for instance, different solutions for wall partitions to achieve the same acoustic performance at less cost-within what the owners were able and willing to spend.

This structure also created an environment of learning and constant improvement, in which the technical team could challenge owner's requests and technical solutions could be challenged by the owners or by other parties (e.g. constructive discussions between architects and contractors regarding the performance of different water proofing solutions).

The development and evaluation of solutions were strongly driven by the need to provide the best possible options within the owner's constraints. The team was keen to find more efficient ways to reach the desired performances, as their profit was at risk. This was also seen as very beneficial for the owner's project managers, who were able to comply with the affiliate requests, while maintaining the project within the allowable cost.

It was also observed that when a problem emerged the team would work together to find solutions. The owners were relying on the IPD team to come up with the best technical solution for the problems and were periodically informed about the status of their development, being able also to give their inputs on this process, when appropriate. The conditions of satisfaction for the design solutions were constantly brought up during the development of options by the IPD team and during their evaluation by the Core Group. The criteria observed included: maintainability, constructability, durability, costs to design and build, compliance with owner's most recent standards, and familiarity of solution based on previously built hospitals or other hospitals.

Increased collaboration also generated a perception of increased iteration. Such negative iteration was mainly due to lack of proper communication among different

parties. The owner-user decision-making process involved many users (doctors, nurses and consultants) in the process. Such users were not engaged in the lean methods, which were enabling improved teamwork within the IPD team. Managing the interface between client and the IPD team was a challenge for the team.

The use of lean techniques such as Target Value Design, Planning based on commitments, Pull scheduling and the extensive use of A3 reports, increased engagement among team members by creating a shared understanding of the important things that should be considered in the project, not least an understanding of how things should be done. When new partners joined the project, they learned the culture, what others were expecting from them and what they could expect from others. The use of Building Information Modelling (BIM) also supported the communication between owners and the IPD team as well as within the IPD team, improving visualization of problems and the solutions being developed. The contractor also played a role of helping owners to get the most out of their investment in BIM by presenting different ways that such tool could be used.

EXPLORING OPPORTUNITIES FOR IMPROVEMENT

The intent of the lessons learned workshops was to facilitate team discussion and improve empathy among the different partners. Three one-hour workshops were carried out. The Core Group was asked to list what worked well and what didn't work well in the first phase of the project and to build on the groups empathy, they were asked to report that with changed roles (the owner-user being the owner-project manager, the architects being the owner-user, the contractor being the architects and the owner-project manager being the contractor). The workshops that followed were focused on discussing why certain things worked well and why others didn't work so well, and also analyzing how things could be done differently. Two lessons were extracted from this process: (a) team members became more aware of how others expected them to contribute to the project, and if they were meeting such expectations or not; and (b) the reasons for difficulties were analyzed and how each team member could contribute to overcome them.

Concurrently, the researchers asked the Core Group team to build a shared vision for the project. In order to do that, an open question was sent by email: *Please, tell us how would you like this project to be seen from an outsider's view when it's completed? In other words, how does success look like to you? List five characteristics ranking them by importance.* By aggregating similar answers and categorizing them, it was possible to build the matrix shown in Figure 1.

	Architects	Owner user	Owner PM	Contractor		
Product	Client satisfied with building	5	5			10
	Users satisfied with building	5				5
	Benchmark for clinic facilities	4	5			9
	Sustainable design	2				2
	Landmark for the city	1				1
	Meeting targeted demand for care		5			5
Process	On time and budget	5	5	5		15
	Financial return for IPD team (fairness)	1		1	2	4
	Successful IPD teamwork	3	4	4	5	16
	Big room collaboration				4	4
	Satisfied team willing to work together	2	2			4
	Honesty			5		5
	Competent/experienced			4	5	9
	Trustworthy/Committed			3	4	7
	Resolved/knowledgeable			2	3	5
	Seamless		4			4
	Innovative in process (Lean/BIM/cont.imp)			3	4	7

Figure 1: Project vision defined by Core Group members

This matrix is far from being a faithful and complete representation of the project’s vision, however, it brings some insights about what the team understands as achieving success and value. Reading the matrix horizontally, it is possible to observe that success for the team is understood as both a result of a good product (end) and a result of a good process (means). It can be noted that this team perceives the means to achieve the expected product as an important component of achieving success, contradicting the traditional perception that project success should be measured only on the product quality, time and cost.

Five different success criteria were identified to steer the team: (a) Achieving Client/user satisfaction and high product quality; (b) Delivering the project on time and achieving a shared profit; (c) Having successful teamwork; (d) Building trust and competency among team members; and (e) Being innovative and successful in developing processes and using technology.

Reading the matrix vertically, it can be observed that the perception of success from the different partners tends to be different. The architects and the owner-users are more inclined towards the project’s end result, while the general contractor and the owner-project managers stress the importance of the process to achieve the ends. This matrix generates strong reactions in the public when it is presented, as there is a perception among practitioners in the US about the adversarial way of thinking between contractors and architects. Indeed, different team members have different perceptions based on their backgrounds, but that is the main reason why this type of delivery method is called integrated. Thus, bringing different perspectives to the table and talking about them is a way to make the most out of the benefits expected from such integrated projects.

The open discussion about things that worked, things that didn’t work so well and what the Core Team truly values in this project enabled the team to generate various insights on improvements that could be adopted for the next phase, designing and building the hospital. There was also greater awareness of key people in the IPD team that should be engaged in helping defining better processes for the next phase. Thus, the validation study for Phase 2 began with a review of all lessons that were learned from the previous phase, engaging the Senior Management Team in an effort to clarify expectations and identify who should be involved. One difference this time was the inclusion of a contractor’s lean expert on design management to take part in

the validation study effort with the intent to better engage owners-users in the process and improve the communication channels between the different parties.

DISCUSSION

Integrated governance supports value generation in different ways. On the one hand, it provides the means, the appropriate environment so that the relevant actors can work together to define and develop what they agree to be valuable. Such environment enhances project outcomes by allowing suppliers to challenge customers' expectations and customers to challenge suppliers' assumptions. The findings from this case study challenges traditional assumptions of value generation, suggesting that rather than capturing customer requirements, they should be collectively built within the project scope. As observed by Koskela and Ballard (2006) and Whelton (2004) project's ends may not be always pre-defined and clear, and can be challenged and improved. On the other hand, the increased interaction between partners can bring challenges to traditional managerial practices. Negative iterations were observed mainly due to lack of proper communication among different parties. The workshops carried out in this case study had positive results for that matter, improving the team's capability to openly discuss problems, to better understand how they could collectively improve the project to reach the desired goals and how each party could contribute to that achievement. A vision for value generation was built collectively and including the perspective of the different stakeholder group, a route that has been increasingly suggested elsewhere (e.g. Winter and Szczepanek 2008).

Also contributing to mitigate negative iteration and facilitate collaboration is the establishment of lean processes and methods. The team's effort to adopt lean principles for project management seems to facilitate the relatedness among team members by offering a common ground that different partners can relate to. Thus, a shared understanding of processes seems to facilitate collaboration.

CONCLUSIONS

This paper presents the results of a Case Study that attempted to understand the effects of integrated governance in value generation. The paper offered insights from an organizational perspective, emphasizing the role of people on value generation and suggesting that integrated governance might be a way to improve the link between strategic planning and project implementation. This approach has the advantage that suppliers better understand what clients want, while clients better understand how suppliers can help them achieve their goals, and also how these goals can be built together, shifting the "client x supplier" relationship into a "client + supplier" relationship.

The study was able to confirm the hypothesis that integrated governance can improve value generation by enabling the co-creation of value through better understanding between customer and suppliers. However, the increased interaction, which may results in increased negative iteration, should be carefully observed, as it may represent a challenge to maintain focus on the relevant things. In this study, workshops with the team were carried out as an attempt to mitigate such issue, the outcomes indicate that focus can be built to better take advantage of the teamwork potential.

ACKNOWLEDGMENTS

Research for this paper was financially supported by CNPQ (National Council of Technological and Scientific Development – Brazil) and by gifts made to the Project Production Systems Laboratory at UC Berkeley. All support is gratefully acknowledged. The authors would also like to thank the core group from San Carlos project for their immense contribution for this research.

REFERENCES

- American Institute of Architects, (2007). *Integrated Project Delivery: A Guide*. AIA California Council.
- Barlow, J.; Köberle-Gaiser, M. (2008). The private finance initiative, project form and design innovation: the UK's hospitals programme. *Research Policy*, v.37,1392–1402.
- Forgues D.; Koskela, L. (2009). “The influence of a collaborative procurement approach using integrated design in construction on project team performance”. *International Journal of Managing Projects in Business*, Vol. 2 (3), pp. 370-385.
- Koskela, L. and Howell, G. (2008). “The underlying theory of project management is obsolete”, *IEEE Engineering Management Review*, Vol. 36, pp. 22-34.
- Koskela, L. J.; Ballard, G. (2006). “Should project management be based on theories of economic or production?” *Building Research & Information*, Vol. 32 (2), pp. 154-163.
- Lahdenperä, P. (2012). “Making sense of the multi-party contractual arrangements of project partnering, project alliancing and integrated project delivery.” *Construction Management and Economics* 30, pp.57-79.
- Lichtig W. (2010). “The Integrated Agreement for Lean Project Delivery In”, Tzortzopoulos, P.; Kagioglou, M. (Eds.) In: *Improving Healthcare through Built Environment Infrastructure*. Oxford UK: Blackwell Publishing.
- Normann R., and Ramirez R. (1993). “From value chain to value constellation.” *Harvard Business Review*, 71 (4), 65-77.
- Sapountzis, S.; et al. (2010). “Benefits Realisation: Planning and Evaluating Healthcare Infrastructures and Services.” In: Tzortzopoulos, P.; Kagioglou, M. (Eds.) *Improving Healthcare through Built Environment Infrastructure*. Oxford UK: Blackwell Publishing.
- Thiry, M. (2002). “Combining value and project management into an effective programme management model.” *Int'l Journal of Project Management*, Vol. 20 (3), pp.221-228.
- Tillmann P., et al. (2012). “A case study on benefits realisation and its contribution to achieving project outcomes.” *Proceedings of the 20th IGLC*. San Diego, CA, 17 - 22 July 2012. Walsh, K.; Tommelein, T. (eds.). San Diego State University.
- Ward, J.; Daniel, E. (2006). *Benefits Management – Delivering Value from IS & IT Investments*, Wiley: West Sussex UK.
- Whelton, M. G. (2004) “The Development of Purpose in the Project Definition Phase of Construction Projects - Implications for Project Management.” *Thesis*, Civil and Environmental Engineering Dept, University of California, Berkeley, 2004, 336 p.
- Winter M.; Szczepanek, T. (2008). “Projects and programmes as value creation processes: a new perspective and some practical implications.” *Int'l J. of Proj. Mgmt.*, Vol. 26, pp. 95–103.
- Zwikael, O., Smyrk, J. R. (2011). *Project management for the creation of organisational value*. London: Springer.