

Contribution of Facilities Management to Value creation

Svein Bjørberg, Norwegian University of Science and Technology/Multiconsult, Norway

Anne Kathrine Larssen, Multiconsult, Norway

Knut Boge, Oslo and Akershus University College of Applied Sciences, Norway

Alenka Temeljotov-Salaj, Oslo and Akershus University College of Applied Sciences, Norway

ABSTRACT

R&D project “OSCAR- Value for users and owners of buildings” has now reached a point in its period from 2014 – 2017 where results starts to come.

This study is based on a national survey among Norwegian owners and users of real estate, private as well as in public sector. There has been to identify which elements in real estate and facilities management that creates value for owners and users. Through SPSS descriptive statistics and one-way ANOVA data are analyzed.

Data from the survey confirm there are a number of common items and their relative importance for private enterprises, public administrations and hybrid organizations. Ranking of the items gave somewhat surprising results. Many owners and users of buildings seem to overlook recent research concerning value creation.

The methodology and tools, including questionnaire, so far is a result of research and development projects including bachelor -, master - and PhD studies in Norway and Slovenia.

Keywords: Facilities Management, value creation, owner, user.

1. Introduction

Seen from a sustainable point of view it is important to obtain long lifetime for our buildings, in public as well in private sector. In addition, it is also well known that there is coherence between design and how we operate and maintain our buildings. All decisions made in early design phase will have a consequence in the user phase such as LCC (Life Cycle Costs) for the buildings with technical installations and for the core business effectiveness and users satisfaction. Satisfied users make good organizations (core business) and owners.

In Norway LCC was put on the agenda in 1978, (Bjørberg, 2005), first Norwegian standard on LCC came in 1988 (Norwegian Standardization Body, 1988). From that time until today guidelines for LCC calculations, procurement law and computer aided tools has been developed and revised due to experience (Listerud et al, 2012).

Neglecting proper management, operation and maintenance (MOM) will cause decreasing quality level of the building and accumulated need for maintenance, which can lead to negative emotions among users. To avoid this there has to be good definition on lowest acceptance level of quality and performance.

In addition to the technical condition, there has been an increasing focus on how buildings affect the core business effectiveness over time. Changes and new needs in the core business, especially in the hospital sector, will lead to new performance requirements. Buildings are a deciding factor for continuous efficient operation of the core business.

Experience from last decades shows more often changes in core business itself due to new ways of working, new ways of organizing, new technology etc. This lead to decreasing building

performance and core business economy, there is need for enhancement. To minimize enhancement costs adaptability is crucial in a life cycle perspective (Bjørberg and Verweij, 2009).

According to Norwegian Government’s White Paper, Stm 28 (2011-2012) “Good buildings for a better society – A future looking policy” gives aims for a good built environment. Sustainable buildings should satisfy core business demand over time. When demand change, building shall adaptable. Buildings are a deciding factor for continuous efficient operation of the core business.

Adaptability will then be crucial in a life cycle perspective, in order to maintain the functionality and thereby contribute to a positive value over the life cycle, and will more important in the future. The term “adaptability” is defined (Bjørberg et al., 2004), as a function of:

- Flexibility (F): Possibility to change layout (space distribution)
- Generality (G): Possibility to change function (type of core business)
- Elasticity (E): Possibility to change volume (vertical and horizontal addition)

Period between needs for enhancement is often called “service life period” (SLP). If SLP is long, need for adaptability is less than with short SLP (Bjørberg and Verweij, 2009) as illustrated in figure 1.

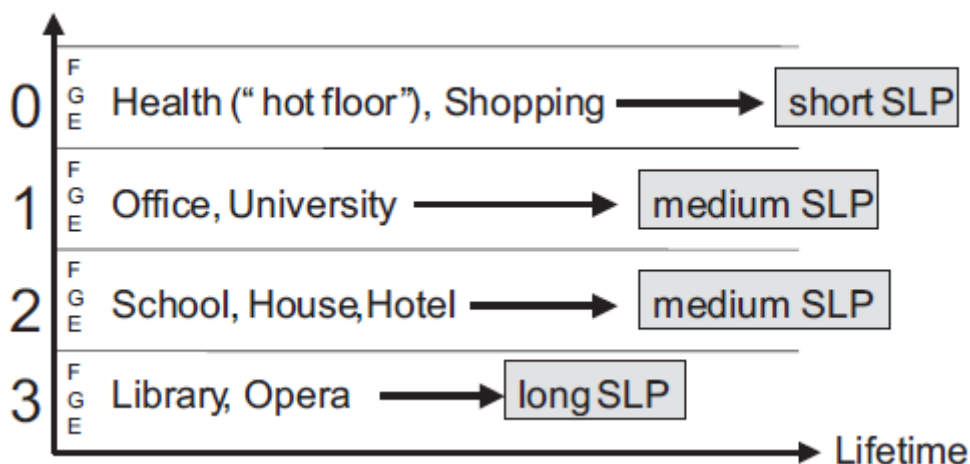


Fig.1: Level of adaptability

As mentioned the total life cycle should be as long as possible seen from a sustainable point of view. Planning, early design, design and construction period will become a short period compared with user phase. However, all decisions made in early design have an important impact for the rest of lifetime where facility management (FM) plays an important role to obtain value for owners, users and society. FM is, according to EN 15221, responsible for Space & Infrastructure (hard FM) and “People & Organisation” (soft FM) and should have an impact on all decisions up front. Decisions should also be based on owners strategy for the project, but often there are lack of strategies and goals from owner, lack of attention to FM in the core business strategy and information.

Research about value is subjective on individual base. Stakeholders involved in a project, which can be person, group of persons or a business, get different roles and tasks, and they are bearer of own interests, values, competence and resources which they bring into the project they are going to create (Eikeland, 2001). All this will influence on the value creation throughout design and construction period, which is a short part of project total lifetime. In the long part of lifetime, the users are stuck to the result of the project. Therefore, it is important to coordinate various stakeholders values (Shen, 2013).

2. Methodology / approach

The research project “OSCAR – Value for User and Owner of Buildings” with the main intention ‘to develop competences, methods and analysis tools for optimizing building design in a way to contribute to value creation for owner and end-user throughout its life time’ started in 2014. The intention is, in addition to reports from work packages, and guideline on how to create value and a wordbook to avoid misunderstanding different words definition/content.

The project takes into consideration a clear connection between the design and operation of the buildings and values for the owners and users. To achieve value creation processes, it is necessary to have competent actors who have good tools for decision and communication through projects and processes. Life Cycle Aspect is essential as an input in Early Design Phase, and the processes through the following phases have to assure its inclusion in a way that value creation is complied with the user phase.

The research findings in Oscar project are a result of cooperation with 17 project partners from three countries from academic, private and public sector, representing all stakeholder groups. It present how it is possible to achieve more buildings that are efficient by collaboration of stakeholders from the early beginning with the same goal to maximize value for owner and user over building’s lifetime. Oscar lifetime phase plan, including refurbishment and demolition is shown, also decision gates, in figure 2. In accordance with findings from literature review and purpose of the project, the relevant stakeholder groups for Oscar project are owners, users, planners/designers, consultants, FM providers and contractors, FM providers and society.

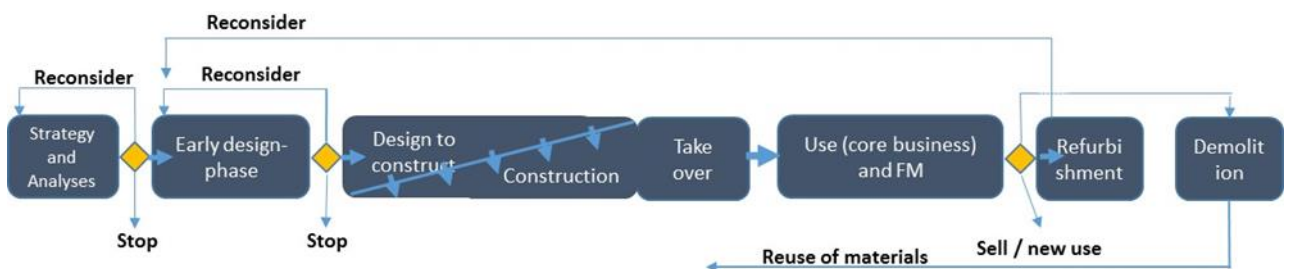


Fig. 2: Oscar phase plan throughout lifetime

To obtain main goal in Oscar project, which are “to develop competences, methods and analysis tools for optimizing building design in a way to contribute to value creation for owner and end-user”, four working packages (WP) are defined, namely;

1. WP1: Early phase planning: to define the knowledge how to contribute to value in user phase as input in Early Design Phase (focus on characteristics which contribute on value creation)
2. WP2: Execution process: to define models which execute contribution to value creation, and
3. WP3: Methods and tools: to design methods and tools (focus on cost benefit evaluation simulation model and information to user phase so value can be obtained) as an interactive guideline
4. WP4: Implementation of results: continuously implementation throughout OSCAR period in all partner organizations, academia and building industry by lectures.

Up to now, WP1 and WP2 has been in focus with help from lot of students (project -, bachelor – and master thesis) with different topics. All results are gradually taken into WP4 for presentations and implementation.

To get an overview of all results, information is structured in our “value contribution model”, see figure 3. WP1 have main elements in sustainability: economy, social, environment supplied with physical situation. Bad physical situation will affect the other three aspects. For WP2 it is chosen elements as contract, economic incentives, knowledge and processes for quality assurance. These elements will follow into all phases from early design phase (EPP), design (D), construction (C) and operating (O). WP3 shall be the catalyst to bring decided characteristics from EPP into value creation process throughout the lifecycle.

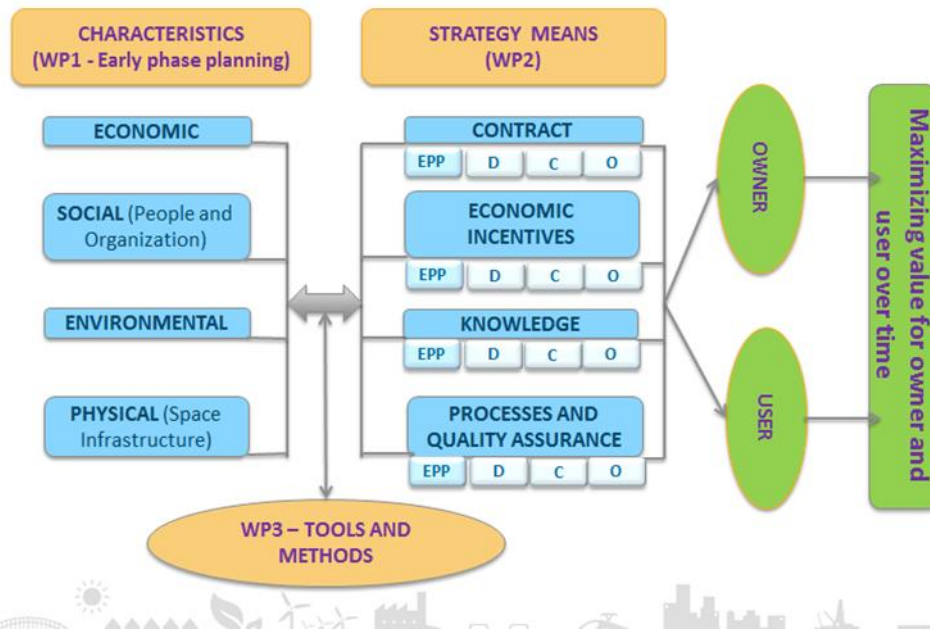


Fig. 3: Value contribution model

Based on the European standard, EN 15221 and the 4 elements in WP1 as a value contribution model, a value contribution mind map where sat up to show the impotence of interaction between building and social aspects to achieve value for user and owner, see figure 4.

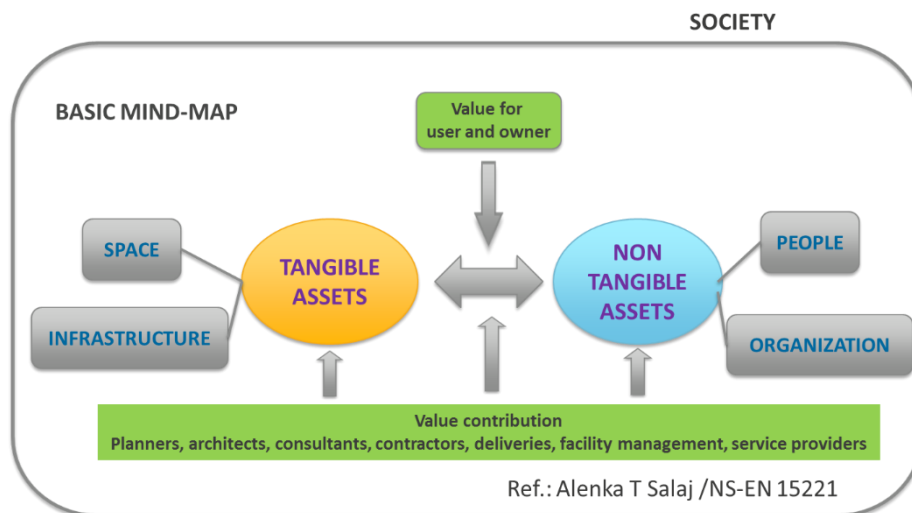


Fig. 4: Value contribution mind map

Literature review gave a massive input to prepare questionnaires. Totally approximately 3000 responded, so far, of whom approximately 2700 users, gave their opinion on value creation for

owner and user in several questionnaires. All other stakeholders was represented (owners, planners and designers, consultants and contractors, and FM providers). Questionnaires were structured in 3 sustainable (economy, social, environment), supplied with physical situation and obstacles for not achieving successful projects.

The research is led by Anne Kathrine Larssen, Multiconsult, Norway. Methodology used in this project is based on both qualitative and quantitative research methods such as literature review, case studies, questionnaire, interviews and workshops.

3. Findings

Since “value” is one of main words in the project, it was necessary to find a usable definition. From literature review about value aspect, there is a lot of different definitions depending on value for who, situation etc. based on that it was concluded to use OSCAR definitions as:

- Value: the project value should be a result of owner’s strategy for the project.
- Value creation: process needed to achieve value.
- Added value: innovation and possibilities throughout the project process which can increase value outcome.

Value for the owner of the project, the client, will be a part of the strategy and must be communicated to the stakeholders. Hjelmbrække et al. (2015) concludes that many projects become a motherless child due to three perspectives:

- client does not manage to translate his strategy into tangible project requirements
- project team are torn between loyalties throughout project period and
- user requirements rarely comes to prevail.

To avoid negative consequences when changing project program it is important to have a system for change management and make a ”maneuverable area for successful project”, Hartmann (2016), established in early design phase as a part of project framework, which is a balance between dimension (needs, technology), project finance (sustainable economy) and politics (strategy, value, future changes).

Sødal (2014) concluded that there is a lot of advantages and no disadvantages with contractors involvement in early design. But there is some challenges such as conflict interests, establish trust and mutual respect, and involving subcontractors at the right time. FM can be one of those.

PPP models with good specifications is not necessary synonymous with owners value creation, but an open constructive dialog has an positive effect on value creation, Aamodt et al (2015). Urdal and Aarseth (2015) has some of the same conclusion for schools operating in PPP contracts and they emphasize special competences on client / owner side. This kind of models are strong incentives regarding time, costs LCC) and quality. Munthe-Kaas (2016), has examined PPP projects that has been in user phase for several years and concludes better maintenance regime with better standard due to good SLA’s (service level agreements) and indoor climate. Result of all this is improved learning environment for students and working environment for teachers.

In campus projects, such as universities and colleges, Both Hulbak (2015) and Spiten (2015) emphasize the important of user involvement in early design. This can improve the daily experience using the campus. Especially ground floors, including areas between buildings, should be a total social zone with all kind of services, meeting – and working spaces. Students work today continuously on computer and there is a lack of outlets in this areas to day. This is a small detail but have big impact for student wellbeing and –working. Hareide (2015),

conclude value in hospital campuses is buildings, which makes optimum conditions for health treatments. Affecting factors are logistics, functionality, efficient operation of the buildings and infrastructure. To obtain this there are three strategies; i) adaptability, ii) life cycle planning and costs and iii) involvement of FM.

For office buildings, Ravik (2016) concludes high value for users is accessibility to suitable areas for different work, good indoor climate and –comfort. Results from questionnaire underpin literature findings about challenges with balance between privacy and interaction for office concepts.

In table 1 main results from all questionnaires are ranked, 4 highest and for lowest rank, are listed in 5 aspects mentioned.

Tab. 1: Ranking of aspects with high and low interest

Aspects	Highest importance	Lowest importance
Economy	<ul style="list-style-type: none"> Investment costs Effect on core business Energy cost Cashflow (NPV) incl LCC 	<ul style="list-style-type: none"> Market value in case of sale Cost efficient services (soft FM) Yield Workplace cost in us
Environment	<ul style="list-style-type: none"> Indoor climate / comfort Energy efficiency Long life materials / components Renewable energy resources 	<ul style="list-style-type: none"> Recycled / recyclable materials Environmental certification Greenhouse gas emissions Efficient waste handling facilities
Social	<ul style="list-style-type: none"> User involvement Security and safety Architectural qualities Owner governance 	<ul style="list-style-type: none"> Facilities for physical activities Individual operation (sun, temp, light) Promoting pride (org. cultural value) Orientable (intuitive signs)
Physical	<ul style="list-style-type: none"> Accessibility and universal design Area use (logistics, movements) Suitable materials with life span Technical condition / flexibility 	<ul style="list-style-type: none"> Generality (possibility change function) Innovation Life cycle planning / <u>intergrated design</u> Parking facilities
Obstacles	<ul style="list-style-type: none"> Adequate / clear project order Competence on user phase / need Multidisciplinary understanding Sufficient project organization 	<ul style="list-style-type: none"> Dominant technical professions Too much emphasis on technic and cost Insufficient use of digital decision tools Dominant role of architect

4 Conclusions

From literature review, it was found that there are many definitions on value, value creation and added value. Because of this, it is concluded to use OSCAR definitions as:

- Value: the project value should be a result of owner’s strategy for the project.
- Value creation: process needed to achieve value.
- Added value: innovation and possibilities throughout the project process which can increase value outcome.

Early design phase team should have stronger participation and competences from facility management and core business area (user involvement), in addition to integrated architecture and technology, that user’s needs and value creation perspective is secured. The defined value for the project must not suffer because of other stakeholder’s value concept.

FM as a competence is the partner with longest contribution to value creation due to the long user phase with changing demands and needs. All experiences from FM must be an active in

early design phase with special emphasize coordination of users need. FM should set up premises for adaptability, especially for core businesses with short service life periods between necessary refurbishments, and accessibility for efficient operation and maintenance of building and infrastructure and LCC budget. Throughout the possesses of the project, FM should be a part of quality assurance activities to assure that decided characteristics from early desig phase follows the project.

Further more, FM should also look into alternative solutions regarding LCC and core business cost due to materials, systems, components and space distribution. All this put a demand on FM competencies regarding actual type of core business.

Totally, projects has to develop from choosing lowest investments cost to look into life cycle economy where investment together with LCC and core business costs has impact value creation. In this game FM can take a leadership and develop Value Management.

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