Contradictions of interests in early phase of real estate projects – What adds value for owners and users?

Marit Støre-Valen,
Department of Civil and Transport Engineering,
Norwegian University of Science and Technology (NTNU Trondheim)
Email: marit.valen@ntnu.no

Knut Boge,
Oslo Business School,
Oslo and Akershus University College of Applied Sciences
Email: knut.boge@hioa.no

Margrethe Foss,
Multiconsult, Skøyen
Email: margrethe.foss@multiconsult.no

Abstract

In the last decades, Norwegian real estate projects have traditionally focused on cost minimization rather than value optimization. The main intention of the research project "OSCAR – value for Owners and Users of buildings" is to develop competences, methods and analysis tools that makes it possible to optimize the design that creates value for owners and users throughout the buildings' lifetime. This paper aims to elucidate what adds value for owners and users as well as looking at what are the main contradictions of interests in early phase planning of buildings. The research is approached by a literature review and a questionnaire survey among a wide range of stakeholders (N = 799) in the Norwegian building Industry. The survey focus on the four dimensions of sustainability, namely social, economic, environmental and physical aspects of the building. In this paper, we focus on the economic and social value aspects, and look at how these contribute to value creation for owners and users of buildings. The literature points towards need for increased competence in value management and new co-creative collaborative working models as a continuously part of the building process. We suggest using a structured network role to better understand and safeguard the owner, user and FM needs, and to improve the users' influence on the decision process in early phase of constructions projects. We believe this this is a successful way of finding innovative designs and technical solutions. Exploratory principal component analysis (PCA) of the responses gave many interesting findings. The owners and users have significantly different views concerning financial issues and efficient operation of buildings in the use phase. These findings are topics for further research.

Keywords: Early phase involvement, owner, user and Facilities Management involvement, co-creation models, value management, building process

1. Introduction

This paper aims at elucidating contradictions of interests between owners and users of buildings. Equally, it examines how co-creation and co-collaboration models can be useful to ensure better building quality and usability, and to increase the owners and users' involvement in the early-phase of real estate projects.

This paper includes the main findings of a survey conducted among a broad range of stakeholders within the construction industry in Norway. Norwegian real estate projects during the last decades have had more focus on cost minimizing than value optimization. The main ambition of the survey is to find out what in the early phase planning process and what in buildings add value for owners and users. The survey is a part of a Norwegian research project OSCAR.[1] We discuss how user involvement is handled and how collaboration models can improve the quality of buildings and add value for both owners and users.

In order to address this general query, this paper search to answer the following questions:

- What contradictions of interests are there among owners and users in an early phase of real estate projects?
- How is user involvement in the early phase of real estate projects handled today?
- How can co-creation and co-collaboration improve the adding value processes in early phase of real estate projects and solve some of the contradictions?

The first question is addressed through both the literature review and by the survey (examined in the theoretical framework section and the findings section respectively). Question 2 is covered by the survey and examined in the findings section. Question 3 is discussed according to a theoretical point of view and from experiences in practise.

2. Theoretical framework – How do buildings add value?

A building creates economic and social values in many ways. For an owner the building creates a positive or negative cash flow. For the user the building works both as a social arena and a place for production and value creation. Depending on the personal and organizational values we talk about, which values are important to the core business, and how can the building be supportive to the organizations' values and help them to achieve their goals? For the actors involved in the construction process focus rather on the value creation than what adds value for the user. The concept of *value* is complex and varies depending on the perspectives taken. Value is exceptionally difficult to measure. Drevland and Lohne (2015) talk about nine tenets of the nature of value while Haddadi et al (2015) explores the concept of value in different context and points out the need of change of value perspective in FM and Real Estate. They present a

1 OSCAR – Norwegian research project "Value for User and Owners of Buildings" (www.oscarvalue.no)

simplified image of the involved actors but an easy way to understand the drivers and ambitions that the actors are striving to reach in order to create value.

Figure 1 Real estate projects main roles and their values to to be fulfilled in order to enhance value creation (Source: Haddadi et al, 2015).

A more sophisticated model (CRISP in Spencer and Winch, 2002) shows the complexity of stakeholders involved in the whole building process. This model categorizes the factors according to different key performance criteria and points out that the stakeholder´s view point, power and value systems influence the decisions. The stakeholder's viewpoints and values has a tremendous effect on the product and the users and the way they can create value in the operational phase.

2.1 How buildings add value for owners and users?

A building adds value when it facilitates value creation for the user organizations during the building´s lifetime. Therefore, the building should function according to its appropriated need Based upon our own experience we find that owners and users focus on various issues and aspects of a building's performance, presented in Table 1.

Table 1: What properties and factors are of importance for the buildings' value creation (authors' experience)?

Sustainability	*Economic issues*	*Social issues*	*Environmental issues*	*Physical issues*
Owner	*Investment cost* *LCC and FM costs* *Profit*	*Tenant relationship* *Market*	*Energy, water and waste*	*Operational and Maintenance* *Total adaptability*
User	*Rental cost* *FM costs*	*Facilities services* *Market*	*Indoor environment*	*Location* *Flexibility of space*

			Profile and branding	

In this paper, we focus on the *economic and social dimension.* We look at how these factors are affecting the buildings' value creation for owners and users, further explored in the survey partly presented in section 3.

2.2 Stakeholder involvement in early phase planning

Stakeholders in a real estate project can be both internal and external. Who are involved in the decision process and who are the stakeholders in the surrounding environment that are affected by a new building? Since the involvement process can be complex, it requires leadership and facilitation skills. Sometimes important groups are excluded due to lack of knowledge or experience with new technology, or because they not necessarily know or are not able to articulate what they want. The management of the process is therefore of huge importance (Heitel et al., 2015; Storvang and Clarke, 2014). Jensen and Maslesa (2015) developed a tool suitable for big projects for systematically involvement of stakeholders in the project. This is an interesting tool that is relevant to be tested in the OSCAR project. Artto et al. (2015) maintain that increased involvement of the stakeholders that actually are users of the building has vital importance for the usability. They suggest to initiate a stakeholder network in early phase of the building and to start a value management process early due to the stakeholder's different values and attitudes. This will require a change of the building and work process of particularly the early planning and design phase, but also challenge the traditional way of executing real estate project. Such a network can easily fill the "Structural Role" as suggested in the CRISP model (Spencer and Winch, 2002)

The researchers discusses user involvement widely and conclude with that this is important but very complexed. Some good examples from the Norwegian context of user involvement that have resulted in buildings with high usability is the Power house of Kjørbo in Sandvika[2], and the Sparebank 1 building[3], a bank quarter in Trondheim. The owners state that they succeeded because of their clear and ambitious goal, namely involvement of a broad competence in the design phase, hereunder users and facilities managers (Meistad, 2015).

A view from researchers and practitioners involved in construction of Norwegian hospitals is that the tradition has been broad user involvement from both the hospital units and patient groups. The trend is now going towards a more specialised involvement of the clinics and hospital units rather than patient groups. In the hearing process, the patient groups involved have possibility to respond with views and statements as they are represented by their patient organizations (Sintef Helse[4]). The Norwegian Heath authority [5] developed for early phase planning that describes the processes and decision gates of the early phase in hospital projects.

[2] Kjørbo Powerhouse (http://www.powerhouse.no/en/prosjekter/kjorbo/

[3] Sparebank 1 (http://www.arkitektur.no/sparebank-1-smn?tid=158202)

[4] Dialogue with senior researcher Marthe Lauvsnes, Sintef Helse Nov 30, 2015

[5] The Norwegian Health authority (www.helsedirektoratet.no)

Several large hospital projects have used this guideline but it does not say anything about the involvement of user groups. In a revised version that is to come, user involvement will be an important issue, we hope.

2.3 Co-creation and collaborative models

Co-creation is a popular concept of innovative thinking, more precisely how business and clients can cooperate to develop new products that can create mutual value. This concept has been recognized especially when developing new products. The mind-set however, is highly relevant for real estate projects today. In the construction context, we do not only promote co-creation in order to obtain a sustainable building with good use qualities. We do believe that co-creation processes have a huge potential to increase the understanding of the users' needs and owners concerns. It has successfully been used to processing involvement of several stakeholders and necessary competences. Frow et al. (2015) presents a framework for a structural approach when doing co-creation processes that includes diagnosing needs, designing solutions, organizing the process, managing conflicts and implementation. The framework aims to facilitate the questions: What are the critical resources? What are the roles in the joint activities? The need for a more collaborative approach in order to achieve a sustainable practise with high a degree of user satisfaction is also emphasised by others (Meistad, 2015, Støre-Valen et al., 2014, Gemser and Perks, 2015). This is highly relevant in the early design phase.

3. Research approach and methodology

This research is based on a comprehensive literature review and a national online survey among a wide range of stakeholders (N=799) in the Norwegian building industry. The survey was conducted from May to September 2015.

The literature search was based on search in databases like Google scholar, Iconda and Scopus with the search words like "Value management", "Stakeholder involvement" and "Early phase planning". The literature review looked for obstacles and barriers concerning which factors that add value for various owners and end-users of buildings. The literature review also examined what the literature says about involvement of stakeholders in the early phase of real estate projects.

The aim of the national survey was to identify which aspects of a building provide value for owners and users. The questions in the survey are based on extensive literature studies. The questions and the questionnaire was pretested on various stakeholder groups before the final version of the survey was sent to professional associations that organize stakeholders in private enterprises, public administrations and non-profit organisations involved in planning, construction, and provision of parts, services, and owners and users of real estate. The survey measures four dimensions of sustainability, namely the economic, social, environmental and physical dimensions. The analysis presented in this paper focus on the two aspects: namely *economic and social aspects*. The respondents were asked to score the statements from one to four (1 = none weight, 2 = some weight, 3 = strong emphasis and 4 = very strong emphasis).

The respondents' answers have been analysed through descriptive statistics and exploratory principal component analysis (PCA) with IBM Statistics SPSS version 22. The general purpose of exploratory PCA and other kinds of exploratory factor analysis is to summarise the information in a number of questions (variables or items) into fewer (latent) composite dimensions with the smallest possible loss of information to identify the fundamental or theoretical constructs underlying the survey questions (Hair et al., 1998:95).

In PCA and other kinds of factor analysis, it is common to rotate the matrix in order to achieve a simpler and more meaningful solution. The rotation is a mathematical manipulation of the factor axis. VARIMAX rotation (orthogonal rotation) often gives a clear separation of the factors (Hair et al., 1998:89-90, 107-111). Our exploratory PCA is based on VARIMAX rotation. Barlett's test of sphericity and Kaiser-Meyer-Olkin's (KMO) measure of Sampling Adequacy are two commonly statistical tests used for the data's appropriateness. KMO for our data are 0.665 or better, and the p-value for Bartlett's test is 0.000 for all of the categories.

The respondents answer from an owner or a user perspective. They also answered from whether or not they had been involved in early phase planning of real estate projects. The aim of our statistical analysis is to elucidate whether owners, users and those who have or have not been involved in early phase development of buildings answer different on questions concerning the economic and social dimensions.

4. Results from the Statistical analysis

In this section, we first present the findings from the descriptive statistics of the respondents and thereafter the findings from the exploratory PCA of the answers about the questions concerning the economic and the social dimension from respondents with an owner or user perspective. We distinguish between those respondents who have been or not have been involved in early phase planning of building projects. Interestingly enough, both those with an owner and user's viewpoints indicate that financial issues and cost efficient operational services has most value. More details will be discussed in the forthcoming section.

Table 2 shows the number of respondents distributed on their employment role, from an owner and user perspective as well as their role in the early phase development of real estate projects.

Table 2: The respondents' perspectives, employer and roles in early phase development

		Owner				User			
		Early phase - development				Early phase – development			
		No		Yes		No		Yes	
		Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
Respondents' employer	Public sector owned enterprise	36	54.5%	30	45.5%	5	45.5%	6	54.5%
	Privately owned enterprise	116	41.4%	164	58.6%	76	50.0%	76	50.0%
	Public authority	40	58.8%	28	41.2%	26	63.4%	15	36.6%
	Municipality or county municipality	73	52.9%	65	47.1%	15	65.2%	8	34.8%
	Total	265	48.0%	287	52.0%	122	53.7%	105	46.3%

Among the 779 respondents in the survey who answered the questions about their employer and perspective 552 or 70.9 percent answered the survey with an owner perspective, while 227 or 29.1 percent answered with a user perspective. Among the owners 52.0 percent have been involved in the early phase of real estate projects. 46.3 percent of the 227 respondents with a user perspective have been involved in the early phase. Table 2 also provide a detailed overview of the respondents' employers. 77 (10 percent) of the respondents are employed by enterprises owned by the public sector. 432 (56 percent) respondents are employed by private enterprises. A public authority employs 109 respondents (14 percent). A municipality or county municipality employs 161 respondents (21 percent). Table 2 shows that a majority of the respondents employed by enterprises owned by the public sector have answered with an owner perspective. Table 2 also shows that the majority of respondents employed by private enterprises have answered with an owner perspective, and that a majority of these have been involved in early phase development. Table 2 even show that a majority of those employed by public authorities have answered with an owner perspective, but the majority of these have not been involved in early phase development. This is also the case for the respondents employed by municipalities or county municipalities.

Table 3 and 4 show the results of exploratory PCA of the respondents' answers of the questions concerning the economic and social dimensions.

Table 3: Main findings from PCA (VARIMAX rotation) of the data concerning the economic dimension (Cronbach's alpha > 0.6)

	Component with items and factor loadings	***Explained-total variance (%)***	***N***	***Reliability (Cronbach's Alpha)***
Owner perspective – Respondents who have been involved in the early phase	***#1: Cost efficient operations*** *Cost efficient cleaning (.749), Life cycle costs (.736), Energy costs (.663), Cost efficient services (.653), Total costs per workplace (.630), The building's economic life span (NPV of cash flow) (.564), The building's effect on core business (.554)*	*27.8*	*209*	***0.788***
	#2: Financial issues *Yield (.886), Economic risk (.839), Investment costs (.487), The building's market value in case of sale (.851)*	*25.2*	*207*	***0.797***
Owner perspective – Respondents who not have been involved in the early phase	***#1: Cost efficient operation*** *Cost efficient cleaning (.808), Cost efficient services (.777), Energy costs (.715), Life cycle costs (.704), The building's economic life span (NPV cash flow) (.600), Total costs per workplace (.529)*	*28.5*	*181*	***0.823***
	#2:Financial issues *Yield (.906), The building's market value in case of sale (.873), Economic risk (financial and market risk) (.846)*	*26.9*	*185*	***0.877***
User perspective – Respondents who have been involved in the early phase	***#1: Financial issues*** *Yield (.890), Economic risk (financial and market risk) (.887), The building's market value in case of sale (.799), ,Investment costs (.408)*	*24.6*	*58*	***0.797***
	#2: Cost efficient operations *Cost efficient cleaning (.820), Cost efficient services (.783), Total cost per workplace (.774), The building's effect on core business (.510), Life cycle costs (.433)*	*22.9*	*69*	***0.751***
User perspective – Respondents who not have been involved in the early phase	***#1: Financial issues*** *The building's market value in case of sale (.833), The building's economic life span (NPV of cash flow) (.792), Yield (.680), Life cycle costs (.642)*	*25.0*	*51*	***0.800***
	#2: Cost efficient operations *Cost efficient services (.847), Cost efficient cleaning (.844), The building's effect on core business (.653), Total cost per workplace (.550)*	*23.2*	*65*	***0.754***

Table 3 shows that PCA of the answers from the respondents with an owner perspective who had been involved in early phase came out with two reliable components, namely the first, which we denote; *cost efficient operations*, and the second one, which we denote, *financial issues*.

PCA of data from the respondents with owner perspective who not had been involved in early phase development gave similar results This was also the case for respondents who answered with a user perspective that had not been involved in the early phase. The Bartlett's test of sphericity indicates sufficient correlation between the questions; the constructs derived through PCA are thus acceptable with regard to both sampling adequacy and reliability.

A tentative conclusion concerning the economic dimension is that respondents who answered the survey with owner and user perspectives have different opinions concerning the economic dimension. The findings are somewhat contra-intuitive, because those who answered with an owner perspective seems to be more concerned with cost efficient operations than financial issues, while those who answered with a user perspective seems to be more concerned with the financials issues than cost efficient operations. These findings are actual for further studies.

Table 4: Main findings from PCA (VARIMAX rotation) of the data concerning the social dimension (Cronbach's alpha > 0.6)

Category of respondents	***Component with items and factor loadings***	***Explained total variance (%)***	***N***	***Reliability (Cronbach's Alpha)***
Owner perspective – Respondents who have been involved in the early phase	***#1: Workplaces facilitation social interaction*** *Workplaces facilitating flexible ways of working (.831), Promoting pride (the organization's cultural values) (.744), Areas facilitating formal and informal meetings (.728), Architectonic qualities (.637), Interior qualities promoting well-being and tidiness (.607), Facilities for physical exercises (.556), Individual management of sun screening, lights, temperature, etc. (.491)*	*27.8*	*196*	***0.816***
	#2: *Safety and security (protection against unwanted incidents) (.830), orientability (intuitive signs, etc.) (.798), user involvement (.514), corporate governance (.395)*	*21.2*	*218*	***0.652***
Owner perspective – Respondents who not have been involved in the early phase	*#1 : Interior qualities promoting well-being and tidiness (.740), Promoting pride (the organization's cultural values) (.699), Workplaces facilitating flexible ways of working (.693), Areas facilitating formal and informal meetings (.664), Safety and security (.661), Architectonic qualities (.615), User involvement (.601), individual management of sun screening, lights, temperature, etc. (.595), Facilities for physical exercises (.568), Corporate governance (.470)*	*41.2*	*182*	***0.859***
User perspective – Respondents	***#1: Workplaces facilitation social interaction*** *Workplaces facilitating flexible ways of working (.863), Areas facilitating formal and informal*	*33.8*	*63*	***0.858***

who have been involved in the early phase	*meetings (.823), User involvement (.603), Facilities for physical exercises (.602), promoting pride (the organization's cultural values) (.598), Safety and security (protection against unwanted incidents) (.598), Interior qualities promoting well-being and tidiness (.581), Individual management of sun screening, lights, temperature, etc. (.562)*			
User perspective – Respondents who not have been involved in the early phase	***#1: Workplaces facilitation social interaction*** *Areas facilitating formal and informal meetings (.855), Workplaces facilitating flexible ways of working (.831), Interior qualities promoting well-being and tidiness (.782), Safety and security (protection against unwanted incidents) (.713), User involvement (.652), Promoting pride (the organization's cultural values) (.630), Facilities for physical exercises (.600), Safety and security (protection against unwanted incidents) (.598), Individual management of sun screening, lights, temperature, etc. (.583), Orientability (intuitive sign, etc.) (.551)*	*40.2*	*66*	***0.882***

Table 4 shows the factor loadings of the PCA of the answers for the social dimension. Even these data are found adequate for PCA. The respondents who answered the survey with an owner perspective who had participated in the early phase

The component that is found reliable (Cronbach's alpha > 0.8) for both respondents with owner and user perspective is denoted *workplaces facilitating social interaction*. The principal component analysis uncovered also a common factor with acceptable reliability for those respondents with owner perspective who not had been involved in the early phase, namely the entire battery of questions concerning the social dimension (11 items).

A tentative conclusion concerning the social dimension seems to be that most respondents in our study prefer well-designed workplaces that facilitate social interaction and various ways of working, no matter whether they have answered the questions with user or owner perspective and whether or not they have been involved in the early phase of building projects.

5. Discussion

5.1 Literature review

Based on the literature review, we maintain that the CRISP model is an interesting framework for processing complexity of the stakeholder involvement. The model shows how different stakeholder's interests, value systems and power influence the decisions and choice of solutions. In sum, these factors influence the final product, time and money spent as well as the final usability of the product. The CRISP model suggests using a structural role and sophisticated measures for the social impact to handle value management and user involvement. This is in line with other findings from the literature review, suggesting using broad network groups and broad competence involved in early phase (Spencer and Winch, 2002, Frow et al., 2015, Gemser and Perk, 2015).

The user roles have many opinions and the users do not always clearly understand what their needs are. Spencer and Winch (2002) assume that users may under-value design of the building as they find it difficult to communicate clearly their needs and vision for a building. They do not necessarily understand the value of a good building design; find it difficult to define their organizational values and to agree upon how to measure them (both tangible and intangible benefits). Spencer & Winch (2002) suggest a structured role to coordinate network groups, balancing power and help facilitating the creative process to find the best solutions for both client/owner and customer/user. A key question is what competence is necessary in the stakeholder groups in order to optimize the benefits of the involvement. We believe this will be a sensible approach concerning how to involve important stakeholders and to define the users' needs.

5.2 Survey

Our data show that the owners are more interested in user involvement in early phase development of buildings than the users themselves. This finding indicates that the process of being involved in early phase development gives both ownerships to the decisions and opportunities to influence the decisions. This finding corroborates the literature that show positive results from use of collaborative models for involving more stakeholders in early phase development (Frow et al.,2015, Meistad, 2015, Artto et al., 2015).

In the survey, we look at how different stakeholders perceive value in real estate projects. We discuss whether there are contradictions in values among owners and users. Surprisingly the owners think that user involvement is more important than the users do. It depends on who have responded to this question and what is their understanding of how user involvement can add value or not. The respondents' educational background, how they understood the questions and what they actually believe what choices and decisions they can influence in the early phase, are probably some explanations.

The literature also suggests co-creation models for involving users in early phase and design phase s of a building project. There is a trend in the literature that recommend co-creation processes and collaborative working models in early phase. The Kjørbo project is one such a successful example on collaborative co-creation processes. This point towards a field of interest for further studies in the OSCAR project that is possible to y explore in demonstration projects. Further research will be presented in the future.

References

Artto, K. Ahola, T and Vartiainen, V (2015) "From the front end of projects to the back end of operations: Managing projects for value creation throughout the system lifecycle." *International Journal of Project Management*, (available on http://dx.doi.org/10.1016/j.ijproman.2015.05.003 [accessed on 11/11/2015]).

Drevland, F and Lohne, J (2015) ”Nine Tenets on the Nature of Value”, *Proceedings*: *Global Problems - Global Solutions”, IGLC 2015, Perth, Australia*

Frow, P, Nenonen, S, Payne, A. Storbacka, K. (2015) ”Managing Co-creation Design: A Strategic Approach to Innovation”, *British Journal of Management*, **26**:463–483. (available on DOI: 10.1111/1467-8551.12087 [accessed on 23/11/2015]).

Gemser, G and Perk, H. (2015) ”Co-Creation with Customers: An Evolving Innovation Research Field”, *Journal of Product Innovation Management* **32:5**:600-665.

Haddadi, A., Temeljotov-Salaj, A., Foss, M. and Klakegg, O J (2015) ”The Concept of Value for Owners and Users of Buildings -A literature study of value in different contexts”, *proceedings of the 29th International Project Management World congress: The way to project management in multicultural context*, 28-30 September 2015, Panama

Hair, J.F., R.E. Anderson, R.L. Tatham and W.C. Black (1998) *Multivariate data analysis*. Fifth edition. London: Prentice-Hall International

Heitel, S., Kämpf-Dern, A., Pfnür, A. & Warren, C. J. (2015) ”Integration of stakeholder interests in housing companies’ strategic management: A process model for more sustainable value creation”, *Journal of Property Management*, 33

Jensen, P A and Maslesa, E (2015) ”Value based building renovation - A tool for decision-making and evaluation”, *Journal of Building and Environment*, **92**:1-9

Meistad, T R (2015) “*Sustainable building – From role model projects to industrial transformatio*n”, PhD thesis, no (2015:270), Norwegian University of Science and Technology, Trondheim

Spencer, N C and Winch, G M (2002) “*How buildings add value for clients*”, Construction Industry Council, Thomas Telford Ltd, London

Støre-Valen, M, Larssen, A K, and Bjørberg, S (2014) ”Buildings’ impact on effective hospital services”, *Journal of Health Organization and Management*, **28(3)**:386-404

Storvang, P and Clarke, A H (2014) ”How to create a space for stakeholders’ involvement in construction”, *Journal of Construction Management and Economics*, 32: 1166-1182