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Practice vs. theory: Short-term financials trumps long-term value creation

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Purpose: This paper presents findings from the research project "Oscar – Value for Users and Owners of Buildings", and investigates two research questions: i) What in early phase planning of real estate projects and facilities management creates value for owners and users of buildings? ii) Do respondents in private enterprises, public administrations and hybrid organizations have different priorities during early phase planning of buildings and facilities management concerning which factors creates value for owners and users of buildings?

Design/methodology/approach: This study is based on a national online survey (N = 837) among Norwegian owners and users of buildings where the respondents report their emphasis on economic, social, environmental and physical aspects during early phase planning of buildings. The data have been analysed through descriptive statistics, ranking of means and one-way ANOVA supplemented with bootstrapping.

Findings: Many Norwegian owners and users of buildings emphasize short-term financials and seem to overlook recent research concerning what creates long-term value such as life-cycle planning and the buildings' elasticity, flexibility, generality. Respondents employed by private enterprises seem to have a shorter time horizon and a stronger financial orientation than respondents employed by hybrid organizations and public administrations.

Practical implications: Increased emphasis during early phase planning of buildings on aspects creating long-term value can significantly increase the buildings' long-term value creation for owners and users.

Originality/value: This is an empirical study with a significant number of respondents. Further empirical research in Norway and other countries based on large N random samples of respondents is needed to establish whether it is possible to generalize this study's findings.

Paper type: Research paper

Keywords: Elasticity, Facilities Management, Flexibility, Generality, Life-cycle planning, Norway, Ranks, Real Estate, Survey, Value creation.

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1 Introduction

Corporate Real Estate Management (CREM) emphasizes Real Estate (RE) as 'physical and economical assets utilized by an organization'. Facilities Management (FM) on the other hand has 'a wider service focus' according to Jensen, van der Voordt and Coenen (2012b). How do RE and FM, and particularly early phase planning of RE and FM contribute to value creation and enhance people and business in different categories of organizations? This study has investigated these questions in three categories of Norwegian organizations, namely private enterprises, public administrations and hybrid organizations.

In Norway the average use phase for non-residential buildings is approximately 60 years. Choices made during the planning and construction phases thus significantly influence a building's usability and life cycle costs, and thereby also the building's contribution to the owners and users' value creation during the building's use phase.

Private enterprises can usually rely on the market and shop for the best premises and services. Inappropriate RE can be sold, and tenancy agreements can be renegotiated or abandoned. Many private enterprises that invest in RE or RE development projects are so-called "hit and run investors", with a short time horizon that buy, and/or develop and sell off. Commercial third party service providers usually take care of private enterprises' FM-tasks. This is particularly the case for private enterprises located in multitenant office buildings.

Public administrations often have less room for manoeuvre than private enterprises. The public administrations' locations and annual budgets are usually results of political processes. Public administrations often have a far longer time horizon than private enterprises when it comes to RE investments. But there is an increasing tendency even in Norway that public administrations rent offices and change location and premises according to the public administrations' actual needs. In-house service providers usually take care of FM in Norwegian public administrations.

Hybrid organizations are current or former public administrations fully or partly owned by other public administrations (government, counties, municipalities, etc.) that often operate almost as private enterprises. Some of the most prominent examples of Norwegian hybrid organizations are the health regions and the hospitals, railroads, postal services, telephone operators, and water and sewage infrastructures and services. Most Norwegian hybrid organizations, except the hospitals, buy facility services from third party service providers (Boge, 2010). Hybrid organizations usually have to find a balance between public sector and market logics. Hybrid organizations often have to manage a large number of stakeholders with divergent interests.

This paper presents some preliminary findings from the research project Oscar 'Value for owners and users of buildings', which was established in 2014, and is conducted by 22 project partners from academia, and private and public sector organizations in Norway, Slovenia, and Germany. The aims of Oscar are among others to bridge the gap between academia and the industry, and to develop knowledge, methods and tools that enable optimization of the building design given the owners and users' needs. The basis for Oscar is an assumption about the early phase's (pre-construction) importance for how buildings and other infrastructures create value for owners and users during the buildings' life-cycle. Hence, the life-cycle as well as the life-cycle cost (LCC) aspects are essential both as inputs in early phase planning, and during the entailing construction and use phases.

Oscar's value contribution map is based on two of the European FM standard EN15221's (CEN, 2006), main concepts, namely 'space and infrastructure' and 'people and organization'. In the research project Oscar value creation is understood as a result of the interaction between 'space and infrastructure' and 'people and organization' as well as value contributions from planners, architects, consultants, contractors, deliveries, facility managers and service providers. According to a Norwegian definition (NOU: 22:2004) 'good property management is to give the users satisfactory and efficient buildings at the lowest possible costs/use of resources. In addition to this a government white paper Meld. St. 28 (2011-2012) emphasise the sustainability element in properties and concludes that 'sustainable

properties create the best usability for the core business over time and meet the demands of the owners, property managers and society'.

The vast majority of former research about RE and FM in Norway has been based on small N case studies. The research project Oscar investigates the project's research questions through a combination of literature reviews, workshops with representatives for the project partners and other stakeholders, a large number of small N case studies, and two national large N surveys. Oscar's first survey in 2015, addressed what during early phase planning of buildings contribute to value creation for owners and users. Oscar's second survey in 2016, addressed the construction phase and how different project models and contracts contribute to value creation for owners and users of buildings. These two explorative surveys are supposed to give a better idea of the big picture concerning Norwegian RE and FM professionals' prevailing views, while the small N case studies are supposed to provide contextual knowledge and details.

This paper investigates two research questions:

- What in early phase planning of RE projects and FM creates value for owners and users of buildings?
- Do respondents in private enterprises, public administrations and hybrid organizations have different priorities during early phase planning of RE projects and FM concerning which factors that creates value for owners and users?

2 Value and value creation

In the RE and FM field value creation goes in line with added value ability of real estate decisions, processes and inputs to create shareholder's wealth (Jensen et al., 2012a; Lindholm, 2008). Value creation is of great importance in business to business (B2B) marketing (Menon et al., 2005). Coenen et al. (2012) propose FM as a 'Value network' - network of relationships, which creates perceived value amongst key stakeholders (clients, customers and end users). Hjelmbrekke and Klakegg (2013) consider value as a multidimensional concept, both as nouns (use value and exchange value), as a process (value creation), value propositions and captured value. Coenen et al. (2012) prepared a list of multiple dimensions of FM value: exchange value, use value, environmental value, relationship value and financial value, and emphasized that key stakeholders are seen as an integrated economic system to co-create value in FM. Through the literature review we found various value elements that assure the increasing value contribution of RE and FM both to the built environment, and to organizations and end users.

From the user perspective, the value elements are connected with better living condition, like: sustainability, adaptability, reliability, flexibility, and perceived benefits (Sarasoja and Aaltonen, 2012; Støre-Valen et al., 2014; Haynes, 2008; Menon et al., 2005; Thomson, 1990; Zeithaml, 1988). For business the focus concerning value elements is harmonization of resources and provision (Coenen et al., 2012; Jensen et al., 2012a; Boge, 2012; Huovila, 2012). These authors present a number of different definitions and focus points on added value of FM, depending on academic field and area of application. Different research perspectives in combination provide a holistic view by integration of an external market-based view (aimed output) and the internal resource-based view (input from FM and RE).

In the field of FM there have typically been more discussions about value creation seen through the lenses of conceptual models rather than substantial and empirical studies or evidence-based research. Most empirical studies have been small N cases with special focuses. However, Jensen and van der Voordt's (2015) review of research papers submitted to EFMC 2013, 2014 and 2015 indicate a growing number of empirical studies, hereunder some studies based on large N surveys and quantitative methods. This paper is an empirical study based on a large N survey and quantitative methods.

From the effectiveness of property asset management an interesting research is presented by Ngwira at al. (2012) with the focus on best value approach. It is stated that best value is about securing value for

money in the use of assets and that the optimum combination of cost and benefits to an organization is 'the relationship between economy, efficiency and effectiveness'. The listed outcomes are 'more effective use of capital resources', 'efficient and effective use of property assets' and 'improvements in service delivery', and they found many reducing indicators (for example: rationalising property holdings, reducing the level of required maintenance, reducing annual operating costs etc.). Through several years of work with strategic analyses, development planning and feasibility studies for RE portfolios and existing buildings, Bjørberg et al. (2012) found that a 'Reducing strategy' often leads to unfortunate detailed design, technical solutions and use of inferior materials. Hence, reducing strategies in many instances leads to unnecessarily high operating and maintenance cost, increased replacement rate and negative impact on core business, and in the worst cases HSE (Health, Safety, and Environment) related issues. A large proportion of the buildings (31%) are assessed as ill-suited and/or inefficient seen from an operational perspective, and with poor usability (Larssen and Bjørberg, 2013). In many instances these shortcomings are too costly for adjustments, and substantially reduce the buildings' functional life. The present research investigates the economic, social, environmental and physical dimensions to see how important they are for the owners and users of buildings, especially in the Norwegian RE market that hardly was affected by the economic crises.

In Norway during the recent years, especially after revision of the public procurement law, there has been increasing interest in and focus on Life Cycle Cost (LCC) (Listerud et al., 2012). The revised public procurement law requires calculations of the net present value (NPV) of the consequences of the investments over a defined period of time. NPV calculations may facilitate better decisions, because the NPV make different alternatives of investments comparable. The tool was estimated as good, but it wasn't enough for the wider group of occupants to use it. The results of the Nordic project 'Sustainable refurbishment' (2013-2015) show that building adaptability in terms of possible reconstruction/refurbishment for changed use is one of the most important measures for achieving an effective long-term environment for the business. Thompson and Ke (2012) found that occupiers place environmental legislation as the second most important factor affecting the future of offices. At the same time, they found a difference between the potential occupiers' opinion and real data – while opinion was abundant about the occupiers' willingness to pay more for sustainability, actual data haven't supported that. As we have learned, it is not enough to establish the regulations. The aim of the present research is to find which environmental characteristics are of interest for owners and users. One of the positive project cases is presented by Graebert and Fischer (2014), using the Energy star portfolio manager tool to identify underperforming buildings. Balslev Nielsen at al. (2016) stated the sustainable FM (SFM) literature remains limited and scattered, especially when SFM is defined according to a strategic perspective on building, process and management practice as a whole.

Kaczmarczyk and Murtough (2002) propose innovative officing as a new approach for delivering productive environments with holistic integration of people, space and technology to consider well-being and morale of employees, work settings, cost effectiveness and sustainability. Good discussions about value creation (and the opposite) were raised by Gorgievski et al. (2010) on post-occupancy evaluation of new ways of working, by Maarleveld et al. (2009) on a working environment diagnostic tool, and by Zalejska-Jonsson (2014) on interior environment as a value for users of buildings. Göcer et al. (2015) show the requirements for buildings, what creates value. Junnila (2004) stressed the importance of facility activities in the environmental strategy of companies. Arditi et al. (2015) discuss capturing of value through construction of so-called smart buildings. From the hospital sector it is often seen that neglecting the adaptability perspective can lead to higher long-term costs for core business (Støre-Valen et al., 2014). Building adaptability can also affect the possibility for differentiated modifications and therefore also the organization's efficiency. Tolman and Parkkila (2009) found that physical factors such as temperature and humidity are key indicators for condition monitoring, and maintenance and energy consumptions are the main components in the use phase – both directly related to user comfort and services. This paper also investigates the respondents' perception of the relative importance of different characteristics in the buildings' physical dimension.

3 Methodology

Cohen et al. (2000, p. 79) recommends use of case studies if the aim is to get a better understanding of local situations and unique instances and to catch the 'complexity and situatedness of behaviours'. However, Cohen et al. (2000, p. 78) recommends use of surveys if the aim is to collect large scale context free data, to get a better understanding of opinions and ratings. The purpose of this paper is to get a better understanding of Norwegian RE and FM professionals' views concerning what in early phase planning of buildings creates value for owners and users, and whether respondents in private enterprises, public administrations and hybrid organizations have different priorities concerning which factors that creates value for owners and users of buildings. Hence, given the paper's research questions, all other things equal, a large N survey was more adequate than several small N case studies.

The questionnaire was developed during the fall 2014 and spring 2015 based on literature reviews accomplished during the research project's early phase. One of the major questions in surveys is the results' validity; i.e. whether the 'particular instrument in fact measures what is purports to measure' (Cohen et al., 2000, p. 105). The questionnaire was validated through several expert reviews that significantly improved the questionnaire's face validity, internal validity and content validity (Cohen et al., 2000, p.107, 109; Field, 2013, pp. 12-13), by improving the likelihood that the questionnaire actually captured the topics under investigation, and by reducing possible ambiguities. The questionnaire was also piloted on several respondents in the Oscar consortium to test the framing of questions and the time it took to answer the questions. Cohen et al. (2000, p. 128-129) claims that questionnaire-based surveys may produce more reliable results than interviews, because surveys are anonymous, which may encourage greater honesty from the respondents. Hellevik (1994), who is one of Norway's leading researchers concerning surveys, found an increased tendency to 'yeasaying' among respondents with low level of education compared to respondents with medium and high education.

The questionnaire begins with demographic questions about the respondent. Q1 employer (type of organization), Q2 gender, Q3 age, Q4 education, Q5 main role in RE projects, Q6 which phases in RE projects they usually have been involved in, and Q7 what kind of buildings the answers are based on. In Q8 the respondent is asked about their perspective (owner or user) when answering the remaining questions concerning Q9 the economic dimension (11 items + open question), Q10 the social dimension (11 items + open question), Q11 the environmental dimension (9 questions + open alterative) and Q12 the physical dimension (11 items + open question). The questionnaire also includes questions about performance measurement and perceived obstacles for value creation, but these topics are not discussed in this paper.

This paper emphasizes the four value dimensions Q9, Q10, Q11 and Q12. The respondents were asked about their emphasis on the 42 items in the four value dimensions Q9-Q12. These 42 items (variables) have a four item Likert scale ranging from 1 = 'No emphasis' to 4 = 'Very high emphasis, and 'Don't know/Not relevant'. The 'Don't know/Not relevant' answers were coded as missing.

One of the other major questions when doing research is sampling; i.e. sample size, representativeness, access to the sample and sampling strategy (Cohen et al., 2000; Baker et al., 2013). Probability samples; i.e. where the respondents are randomly drawn from the population, and with a known probability for being selected is usually considered the "gold standard", both because probability sampling reduce the risk for bias, and because probability sampling makes it possible to generalise findings from the sample to the wider population (Cohen et al., 2000, p. 99 ff.). However, probability sampling is not always possible or feasible, for instance because of time and resource constraints, or because the 'sampling frame'; i.e. the exact composition of the wider population in question is not known (McDaniel and Gates, 2010, p. 330-332). The alternative when probability sampling is not possible or feasible is some kind of non-probability sampling. Non-probability samples are far less costly than probability samples and can produce 'perfectly adequate' results if the aim is not to generalise the findings to the wider population, but only to 'represent itself or instances of itself in a similar population' (Cohen et al., 2000, p. 102). There are different kinds of non-probability samples. The most common methods are convenience sampling (accidental or opportunity sampling), snowball sampling (the informants identify other possible informants), quota sampling (the non-probability equivalent of stratified sampling to mirror the

wider population), dimensional sampling (a further refined and segmented version of quota sampling), and finally purposive sampling where the researcher more or less 'handpick' respondents based on the researcher's evaluation of their representativeness (Cohen et al., 2000, 102-104).

Non-probability sampling has become far more common, both because of the probability samples' costs and particularly because of the increasing prevalence of online surveys (Baker et al., 2013). Baker et al. (2013), which summarised the American Association of Public Opinion Research's (AAPOR) task force's evaluation of survey designs not based on probability samples, concluded that 'Black box methodologies must be opened up and made transparent'.

Given the research project Oscar's time and resource constraints, it was not possible to establish the wider population or the sampling frame; i.e. to identify every Norwegian RE and FM professional in private enterprises, public administrations and hybrid organizations. The research project's time and resource constraints also made it very difficult to get first hand access to high quality e-mail address lists to large numbers of RE and FM professionals. The target group of respondents was not end-users of buildings but owners and decision makers and building users on strategic (client) and tactical level (customer). The research project Oscar had to find an alternative route to these respondents. The sampling strategy therefore became a combination of dimensional and purposive sampling. The e-mail invitation to participate in a national online survey was distributed indirectly to RE and FM professionals through business sector and professional organizations in the RE, construction and service industries, and directly on e-mail to the employees in the organizations participating in the research project Oscar's consortium who also were encouraged to disseminate the invitation to their connections. Unfortunately, this approach makes it impossible to determine the survey's exact response rate, but the survey program was configured so it only accepted one questionnaire from each respondent.

The online survey took place from ultimo May 2015 to mid-October 2015. A total of 837 respondents (N = 837) answered the survey. Approximately 90 per cent of the respondents are employed by other organizations than those participating in Oscar's consortium. Hence, the chosen sampling strategy, a combination of dimensional and purposive sampling gave a fairly representative sample of Norwegian RE and FM professionals on strategic and tactical level, hereunder a large number of managers and employees from the major actors in the Norwegian RE industry, in the government, counties and municipalities, and internal and third-party FM service providers.

The survey data have been analysed with IBM SPSS version 22 and 23, through use of descriptive statistics (frequency, mean, cross tables, etc.), ranking of the means to identify the items' relative importance and one-way ANOVA. One-way ANOVA is a common method for testing whether two or more groups have significantly different means (Iversen and Norpoth, 1987). Those groups that have been subject to one-way ANOVA analysis of particular questions have first been through Levene's test to verify whether the groups have equal variance. A Levene's test with significance less than 0.05 indicates different variance, which means that testing of different means has to be based on SPSS' robust test of equality of means (Field, 2013, p. 472).

Further testing of whether respondents with owner and user perspective have different means on their answers to the questions in the four value dimensions have been run as planned contrasts. The contrast is the weighted sum of the group means. The SPSS report of planned contrast tests provide answers both for assumed equal and different variances (Field, 2013, p. 445-458, 469-470). Further testing of whether respondents from private enterprises, public administrations and hybrid organizations have different means to the questions about the four value dimensions have been run as post hoc procedures. Post hoc tests of groups with equal variance were made with Hochberg's GT2 because of very different sample sizes in the three categories. Hochberg GT2 also provides reasonably good control of the Type I error rate (false positive). Post-hoc tests of groups with different variance were made with Games-Howell's test which also provide good control of the Type I error rates (Field, 2013, pp. 458-459, 472). In the present research, different means for the groups are only reported in those instances where ANOVA and planned contrast or post hoc tests agreed about statistically significant different means.

To safeguard against possible problems in case of deviations from normally distributed data, the one-way ANOVA analyses have been supplemented with bootstrapping. Bootstrapping is one of several so-called robust methods to manage "irksome data" (Field 2013, p. 198). Bootstrapping means that SPSS draws a random sample with replacement (bootstrap sample), in the present research 1000 stratified bootstrap samples from the respondents' answers to the relevant questions (Field 2013, p. 199). The bootstrap samples have been through the same tests as the respondents' answers. In the present research, statistically different means have only been reported when the statistical tests of the bootstrap samples supported the findings in the tests of the respondent's answers.

4 Results

This section first provides an overview of the respondents (N=837). The next subsections present the results concerning the questionnaire's four value dimensions, namely the economic, social, environmental and physical dimensions.

4.1 The respondents

Table 1, 2 and 3 provide an overview of the respondents.

< Insert Table 1 – The respondents' employer and gender - approximately here >

Almost 87 per cent of the respondents are employed by private enterprises and public administrations. Almost 80 per cent of the respondents are men, which fairly well reflect the actual situation among RE and FM professionals in Norway. Most female respondents are employed by private enterprises and public administrations.

The respondents' age (N = 832) ranges from 22 to 83 years. The mean age is 49.71 years, and the median age is 50. Most respondents are in their forties and fifties. RE and FM in Norway is often considered as the grey-haired persons' industries, and this is clearly reflected by the present research's respondents.

< Insert Table 2 – The respondents' education - approximately here >

Table 2 shows the respondents' education, sorted in diminishing order. The great majority of respondents is engineers. Other common educations are business administration, architecture, other educations (craftsmen, etc.), and finance, investment and law. Thus, the vast majority of the respondents have high or medium educations, which according to Hellevik (1994) reduce the tendency to 'yeasaying', compared to respondents with low level of education.

The respondents' two most common roles are property and land owner (N= 198, 23.7 per cent) and consultant engineer (N= 170, 20.4 per cent). The third most common role is property manager (N =149, 16.1 per cent). Only 27 of the respondents (3.2 per cent) represent tenants or users. 19 (2.3 per cent) represent FM service providers.

425 (51.0 per cent) respondents have been involved in early phase development of RE. 472 (56.6 per cent) have been involved in the construction phase. 284 of the respondents (34.1 per cent) have been involved in the operation and FM-phase. Many of the respondents have been involved in more than one of the phases in a building's life-cycle.

What kind of RE projects have the respondents been involved in? Many have been involved in several kinds of RE projects. 437 (52.5 per cent) have been involved in commercial premises and offices. 305 (36.7 per cent) have been involved in housing projects. 249 (29.9 per cent) have been involved in schools. 217 (26.1 per cent) have been involved in facilities for assisted living. 167 (20.1 per cent) have been involved in facilities for higher education. 149 (17.9 per cent) have been involved in cultural facilities. 129 (15.5 per cent) have been involved in hospitals. 115 (13.8 per cent) have been involved in sports facilities. 103 (12.4 per cent) have been involved in other projects, such as for instance military installations. Finally, 25 (3.0 per cent) have been involved in prisons. The respondents have thus been involved in most kinds of RE projects.

< Insert Table 3 – The respondents' perspective - approximately here >

Which perspective have the respondents chosen for the items in the four value dimensions? 569 (69.9 per cent) have chosen the owner perspective, and 245 (30.1 per cent) have chosen the user perspective. 164 respondents from private enterprises, 64 from public administrations, but only 17 from hybrid organizations have chosen the user perspective. Thus, most respondents who have answered the questions about the four value dimension items with a user perspective are employed by private enterprises. It is also important to be aware that very few respondents who answered the value dimension items with user perspective represented the common end users of buildings. The vast majority of respondents have positions at strategic (client) or tactical (customer) level.

4.2 The economic dimension

Table 4 provides an overview in descending order of the respondents' mean answers concerning their emphasis on the 11 items in the economic dimension. The answer alternatives range from 'No emphasis' (1) to 'Very high emphasis, (4). Table 4 also provide standard deviation (SD), rank within the economic dimension and the total ranks in the four value dimensions.

< Insert Table 4 – The economic dimension - approximately here >

The two most important items, according to their means and total ranks, are Investment costs (1st of 42 items) and Effect on core business (2nd of 42) and Energy cost (6th of 42). However, Life cycle cost (21st of 42), Cost efficient cleaning (30th of 42) and Cost-efficient services (36th of 42) are less important. Market value in case of sale is least important (39th of 42). The items in the economic dimension have larger SD than in the other value dimensions. Large SDs indicates more variation in the respondents' views concerning the items in the economic dimension than in the three other value dimensions.

Do owners and users have statistically significant different means on some of the items in the economic dimension? Yes, one-way ANOVA and contrast tests revealed that owners (3.49) have significantly higher mean than users (3.15) on Investment costs (DF = 1, 140,915, Welch's F = 11,236, p = .001), and owners (the reference groups) also have .30 higher contrast than users (p = .001). Owners (3.01) also have significantly higher mean than users (2.64) on the Building's economic life-span (NPV of cash flow) (DF = 1, 166,897, Welch's F = 15,941, p < .001), and .37 higher contrast than users (p < .001). Owners (2.88) also have significantly higher mean than users (2.67) on Life-cycle costs (DF = 1, 477, F = 4,718, p = .030), and .21 higher contrast than users (p .030). However, users (2.69) have significantly higher mean than owners (2.33) on Total cost per workspace in the operational phase (DF = 1, 477, F = 12,110, p = .001), and users also have .36 higher contrast than owners (p < .001). Finally, owners (2.49)

have significantly higher mean than users (2.21) on Yield (DF = 1, 197,656, Welch's F = 6,375, p = .012), and .27 higher contrast than users (p = .012). These findings indicate that respondents with owner perspective compared to respondents with user perspective have more emphasis on financial issues, while respondents with user perspective seem to be more concerned with the operational costs during the building's use phase.

One-way ANOVA similarly revealed that respondents in private enterprises (2.99) and hybrid organizations (2.41) have significantly higher mean on Economic risk than respondents in public administrations (2.07) (DF = 2, 476, F = 49,772, p < .001). The mean differences according to the post hoc tests are private enterprises vs. public administrations .918 (p < .001), private enterprises vs. hybrid organizations .578 (p < .001), and public administrations vs. hybrid organizations .341 (p = .031).

Respondents in public administrations (2.69) have significantly higher means on Cost efficient cleaning than respondents in private enterprises (2.48) (DF = 2, 476, F = 4,476, p = .012). The mean differences are public administrations vs. private enterprises .218 (p = .026), hybrid organizations (2.71, N = 70) vs. private enterprises .239 (p = .094), and hybrid organizations vs. public administrations .021 (p = .997). The post hoc test only confirms significant mean differences between public administrations (N = 163) and private enterprises (N = 246), even if hybrid organizations (N = 70) with the smallest sample have the highest mean.

Respondents in private enterprises (2.54) have significantly higher mean than respondents from hybrid organizations (2.20, N = 70) on Total costs per workspace in the operational phase (DF = 2, 476, F = 4,796, p = .009). The mean differences are private enterprises vs. hybrid organizations .337 (p = .029), private enterprises vs. public administrations (2.31, N = 163) .230 (p = .097), and public administrations vs. hybrid organizations .107 (p .810).

Respondents in private enterprises (2.83) have a significantly higher mean on Yield than respondents in public administrations (1.93) (DF = 2, 476 F = 44,158, p < 0.001). The mean differences are private enterprises vs. public administration .907 (p < .001), private enterprises vs. hybrid organizations (2.16, N = 70) .676 (p < .001), and hybrid organizations vs. public administrations .231 (p = .279).

Finally, respondents in private enterprises (2.79) have significantly higher means than respondents in public administrations (1.76) and hybrid organizations (1.97) concerning Market value in case of sale (DF = 2, 184,643, Welch F = 60,744, p < .001). The mean differences are private enterprises vs. public administrations 1.032 (p < .001), private enterprises vs. hybrid organizations .821 (p < .001), and hybrid organizations vs. public administrations .211 (p = .321).

These findings indicate that respondents from private enterprises have a somewhat stronger financial orientation than respondents from hybrid organizations and public administrations.

4.3 The social dimension

Table 5 provides an overview in descending order of the respondents' emphasis on the 11 items in the social dimension.

< Insert Table 5 – The social dimension - approximately here >

Many of the items in the social dimension have higher means and smaller SD than the items in the economic dimension. The social dimension's three most important items given their means and total ranks are User involvement (8th of 42 items), Security and safety (9th of 42) and Workplaces facilitating flexible ways of working (10th of 42).

Do owners and users have statistically significant different means on some of the social dimension's items? Yes, owners (3.04) have significantly higher mean than users (2.87) on User involvement (DF 1, 192,106, Welch's F = 4,429, p = .037) and .18 higher contrast than users (p = .037). Users (3.12) have significantly higher mean than owners (2.93) on Workplaces facilitating flexible ways of working (DF = 1, 512, F = 5,214, p = .023) and users have .19 higher contrast than owners (p = .023). Owners (2.90) have significantly higher mean than users (2.66) on Owner governance (DF = 1, 202,075, Welch's F = 9,086, p = .003) and .24 higher contrast than users (p = .003). Users (3.01) have significantly higher mean than owners (2.75) on Interior qualities facilitating well-being and tidiness (DF = 1, 512, F = 11,454, p = .001), and also have .26 higher contrast than owners (p = .001). Users (3.05) also have significantly higher mean than owners (2.71) on Areas facilitating formal and informal meetings (DF = 1, 512, F = 18,910, p < .001), and .34 higher contrast than owners (p < .001). Users (2.81) also have significantly higher mean than owners (2.63) on Promoting pride (organization's cultural values) (DF = 1, 512, F = 4,319, p = .038), and .18 higher contrast than owners (p = .038). Finally, users (2.49) have significantly higher mean than owners (2.18) on Facilities for physical activities (gym, wardrobes, etc.) (DF = 1, 202,269, Welch's F = 12,374, p = .001), and .31 higher contrast than owners (p = .001). These findings indicate that respondents with an owner perspective emphasize project management, while respondents with a user perspective emphasize qualities that improve the buildings' value creation for users during the use phase.

One-way ANOVA similarly revealed that respondents in hybrid organizations (3.29) and public administrations (3.15) have significantly higher means on User involvement than respondents in private enterprises (2.80) (DF = 2, 212,870, Welch's F = 18,187, p < .001). The mean differences according to the post hoc tests are hybrid organizations vs. private enterprises .492 (p < .001), public administrations vs. private enterprises .348 (p < .001), and hybrid organizations vs. public administrations .144 (p = .292). Finally, respondents in private enterprises (2.76) have significantly higher mean than respondents in public administrations (2.56) concerning Promoting pride (organization's cultural values) (DF = 2, 511, F = 3,170, p = .043). The mean differences are private enterprises vs. public administrations .206 (p = .036), private enterprises vs. hybrid organizations (2.67, N = 75) .095 (p = .776), and hybrid organizations vs. public administrations .111 (p = .712). These findings indicate that respondents in hybrid organizations and public administrations emphasize user involvement while respondents in private enterprises and partly also hybrid organizations emphasize early phase planning of buildings as an opportunity to foster organizational culture.

4.4 The environmental dimension

Table 6 provides an overview in descending order of the respondents' emphasis on the 9 items in the environmental dimension.

< Insert Table 6 – The environmental dimension - approximately here >

The most important items in the environmental dimension according to the means and total ranks are Energy efficiency (3rd of 42 items) and Indoor climate and comfort (4th of 42). The least important are Environmental certification (41st of 42) and Use of recycled/recyclable materials (42nd of 42).

Do owners and users have statistically significant different means on some of the items in the environmental dimension? Yes, owners (2.94) have a significantly higher mean than users (2.76) on Use of renewable energy sources (DF = 1, 537, F = 4,800, p = 0.029), and .18 higher contrast than users (p = .029). This finding indicates that owners are more aware of use or renewable energy sources than users. The fact that the Norwegian government has emphasized use of renewable energy sources may also influence the future value of a building.

Do respondents employed by different categories of organizations have significantly different means on some of the items in the environmental dimension? Yes, one-way ANOVA revealed that respondents from public administrations (3.08) have significantly higher mean than respondents from private enterprises (2.87) concerning Use of materials and components with long life (DF = 2, 536, F = 4,036, p = .018). The mean differences according to the post hoc tests are public administrations vs. private enterprises .209 (p = .018), Hybrid organizations (3.01, N = 85) vs. private enterprises .145 (p = .426), and public administrations vs. hybrid organizations .065 (p = .893).

Respondents from public administrations (3.03) have significantly higher mean than respondents from private enterprises (2.78) concerning Use of renewable energy sources (DF = 2, 536, F = 5,729, p = .003). The mean differences are public administrations vs. private enterprises .250 (p = .003), hybrid organizations (2.96, N = 85) vs. private enterprises .182 (p = .188), and public administrations vs. hybrid organizations .068 (p = .887).

Respondents from public administrations (2.79) have significantly higher mean than respondents from private enterprises (2.59) concerning Use of environmentally friendly/labelled products (DF = 2, 536, F = 4,416, p = .013). The mean differences are public administrations vs. private enterprises .196 (p = .027), Hybrid organizations (2.80, N = 85) vs. private enterprises .210 (p = .093), and public administrations vs. hybrid organizations .013 (p = .999).

Finally, respondents from public administrations (2.46) have significantly higher mean than respondents from private enterprises (2.25) concerning Greenhouse gas emissions (DF = 2, 536, F = 3,798, p = .023). The mean differences are public administrations vs. private enterprises .217 (p = .030), Hybrid organizations (2.44, N = 85) vs. private enterprises .188 (p = .236), and public administrations vs. hybrid organizations .029 (p = .992).

These findings indicate that respondents employed by public administrations seem to have a longer time horizon than respondents employed by private enterprises. These findings also indicate that respondents employed by public administrations and partly also the less numerous respondents from hybrid organizations seem to be somewhat more concerned with environmental issues than respondents employed by private enterprises, or at least to be more aware of the government's emphasis on environmental issues.

4.5 The physical dimension

Table 7 provides an overview in descending order of the respondents' emphasis on the 11 items in the physical dimension.

< Insert Table 7 – The physical dimension - approximately here >

The two most important items in the physical dimension based on their means and total ranks are Accessibility and universal design (5th of 42 items) and Area use (7th of 42). Generality is least important (38th of 42). The low total ranks for Life cycle planning (32nd of 42) and Innovative solutions (33rd of 42) may indicate that recent research-based recommendations concerning how to increase organization's value creation through RE and FM not yet have trickled down to every owner and user of buildings.

The owners and users have no significantly different means in any of the physical dimension's items. Thus, the owners and users seem to agree about the items in the physical dimension.

Do respondents from different categories of employers have different means on any of the items in the physical dimension? Yes, one-way ANOVA revealed that respondents from public administrations

(3.31) have significantly higher mean than respondents from private enterprises (2.97) concerning Accessibility and universal design (DF = 2, 219,777, F Welch = 30,684, p < .001). The mean differences according to the post hoc tests are public administrations vs. private enterprises .339 (p < .001), Hybrid organizations (3.13, N = 75) vs. private enterprises .166 (p = .221), and public administrations vs. hybrid organizations .173 (p = .226).

Respondents from private enterprises (2.94) have significantly higher mean than respondents from public administrations (2.69) concerning Flexibility (DF = 2, 488, F = 4,640, p = .010). The mean differences are private enterprises vs. public administrations .245 (p = .011), private enterprises vs. hybrid organizations (2.75, N = 75) .192 (p = .234), and public administrations vs. hybrid organizations .053 (p = .956).

Respondents from private enterprises (2.77) have significantly higher mean than respondents from hybrid organizations (2.19) and public administrations (2.36) concerning Parking facilities for cars (DF = 2, 219,777, F Welch = 30,684, p < .001). The mean differences are private enterprises vs. hybrid organizations .587 (p < .001), private enterprises vs. public administrations.410 (p < .001), and hybrid organizations vs. public administrations .177 (p = .115). However, bootstrapping indicated statistically significant different mean differences concerning Parking facilities for cars between hybrid organizations and public administrations.

Finally, respondents from private enterprises (2.48) have significantly higher mean than respondents from hybrid organizations (2.17) concerning Generality or the possibility to change a building's function or uses (DF = 2, 488, F = 3,854, p = .022). The mean differences are private enterprises vs. hybrid organizations .304 (p = .038), private enterprises vs. public administrations (2.30, N = 173) .177 (p = .154), and public administrations vs. hybrid organizations .127 (p = .682).

These findings indicate that respondents employed by public administrations and hybrid organizations emphasize accessibility and universal designs, but place limited emphasis on parking facilities for cars, and seem to have noticed the government's emphasis on universal design and environmental issues. On the other hand, respondents employed by private enterprises' emphasis on flexibility, parking facilities for cars and generality may indicate these respondents are somewhat more concerned with the buildings' financial long-term value creation than respondents employed by hybrid organizations and public administrations.

5 Conclusion

This paper has investigated two research questions. Firstly, what in early phase planning of RE projects and FM creates value for owners and users of buildings? Secondly, do respondents in private enterprises, public administrations and hybrid organizations have different priorities during early phase planning of RE projects and FM concerning which factors that creates value for owners and users?

Cohen et al. (2000) recommends use of surveys if the aim is to get a better understanding of commonly held opinions and ratings. The questionnaire is based on literature reviews in 2014 and 2015, and has been validated through several expert reviews and pilot tested on relevant groups of possible respondents. The data presented in this paper has been collected through a national online survey in Norway from ultimo May 2015 to mid-October 2015 (N = 837). The chosen sampling strategy, a combination of dimensional and purposive sampling gave a fairly representative sample of Norwegian RE and FM professionals on strategic and tactical level, which was the target group. Can we trust the findings presented in this paper? Is there a risk that respondents have answered what they think they should instead of telling the truth? According to Cohen et al. (2000), questionnaire-based surveys may produce more reliable results than interviews, because surveys are anonymous, which may encourage greater honesty from the respondents. Hellevik (1994) similarly found an increased tendency to 'yeasaying' among respondents with low level of education compared to respondents with medium and high education. In this study, the vast majority of respondents have high and medium high education. Hence, given the fact data was collected through a questionnaire-based survey, and that most

respondents have high or medium high education, it seems likely that most respondents have provided honest answers rather than what they think they should have answered. Thus, the study has acceptable validity and reliability, and there are reasons to have confidence in the findings.

Ranking of the means show the various items' relative importance. The answer to the first question, namely what in early phase planning of RE projects and FM creates value for owners and user of buildings is Investment costs (economic dimension) (rank 1 of 42), Effect on core business (economic dimension) (rank 2), Energy efficiency (environmental dimension) (rank 3), Indoor climate and comfort (environmental dimension) (rank 4), Accessibility and universal design (physical dimension) (rank 5) and Energy costs (economic dimension) (rank 6). It is worth to notice that elements which in the literature (see for instance Sarasoja and Aaltonen, 2012; Støre-Valen et al., 2014; Haynes, 2008; Menon et al, 2005; Thomson, 1990; Zeithaml, 1988) are considered very important for the buildings' long-term value creation, have relative low emphasis in early phase planning according to the present research's findings. Examples here are Flexibility (physical dimension) (rank 18), Elasticity (physical dimension) (rank 27), Life Cycle Planning (physical dimension) (rank 32) and Generality (physical dimension) (rank 38). It is often difficult to improve a building's elasticity, flexibility and generality during the use phase if these aspects not have been addressed and included during early phase planning. Hence, the present research, which is based on a national online survey among Norwegian RE and FM professionals indicate that recent years' research concerning life-cycle planning and the building adaptability's significance for providing an effective long-term environment for the business has not yet been internalised by the respondents.

The findings mentioned in preceding paragraph indicate the economic logic is clearly dominant among the respondents. Short-term financials and RE issues seem to be far more important than long-term value creation and FM issues, similarly as Ngwira at al.'s (2012) findings. This is most likely because 70 per cent of the respondents have answered the value dimension questions with an owner perspective, and 30 per cent have answered with a user perspective. An alternative explanation is that RE is far more capital intensive than FM, and FM's influence on the core business' performance is not always straightforward and easy to recognize. Hence, the conclusion is that increased emphasis during early phase planning of buildings on aspects that actually create long-term value can significantly increase the buildings' value creation for owners and users.

The present research has highlighted that respondents with owner perspective have significantly higher means than respondents with user perspective on Investment costs (rank 1 of 42), the Building's economic life-span (rank 12), Life cycle costs (rank 21), Yield (rank 34), User involvement (rank 8), Owner governance (rank 16), and Use of renewable energy sources (rank 12). Respondents with user perspective have significantly higher means than respondent with owner perspective on Total cost per workspace in the operational phase (rank 34 of 42), Workspaces facilitating flexible ways of working (rank 10), Interior qualities facilitating well-being and tidiness (rank 18), Areas facilitating formal and informal meetings (rank 20), Promoting pride (rank 25), and Facilities for physical activities (rank 40). Thus, respondents with owner perspective seem to be more concerned with out of pocket expenses and income than respondents with user perspective. On the other hand, respondents with user perspective seem to be more concerned with operational matters during the buildings' use phase. Respondents with user perspective had significantly higher mean than respondents with owner perspective on workspaces facilitating flexible ways of working, areas facilitating formal and informal meetings, and interior qualities facilitating well-being and tidiness, and these aspects are of particular importance for knowledge workers. These findings show the gap between the theory and practice. To succeed the sustainable environmental orientation (Balslev Nielsen, 2016, Arditi et al., 2015, Zalejska-Jonson, 2014, Bjørberg et al., 2012), we have to raise the awareness of the use phase problems already from the beginning of the planning process.

Do respondents in private enterprises, public administrations and hybrid organizations have different opinions concerning what and how creates value for owners and users of buildings? The present research revealed that respondents in private enterprises have significantly higher means on Economic risk (rank 29 of 42), Total cost per workspace in the operational phase (rank 34), Yield (rank 34), Market value in

case of sale (rank 39), Promoting pride (rank 25), Flexibility (rank 18), Parking facilities for cars (rank 31), and Generality (rank 38) than respondents in public administrations and partly also in hybrid organizations. These finding seems reasonable given the premise that private enterprises' long-term survival highly depends on their profitability. Yield and return on investments is evidently more important for private enterprises than hybrid organizations and public administrations. Flexible buildings which are easy to adapt to new tenants are usually more profitable than buildings difficult to adapt to new tenants. All other things equal, parking facilities for cars also increase the value of a building.

Respondents in public administrations on the other hand have significantly higher means than respondents in private enterprises concerning Cost efficient cleaning (rank 30 of 42), Use of material and components with long life (rank 10), Use of renewable energy sources (rank 12), Use of environmental friendly/labelled products (rank 24), Greenhouse gas emissions (rank 37), and Accessibility and universal design (rank 5) than respondents from private enterprises. Cleaning costs are clearly of great importance for RE and FM professionals in public administrations and hybrid organizations. Cleaning is currently one of the major operational cost items for Norwegian users of buildings. During the last decade Norwegian public administrations have spent considerable efforts developing their "green" image. This is the case even for some of the hybrid organizations.

Respondents in hybrid organizations have significantly higher mean on User involvement (rank 8 of 42) than respondents in private enterprises. Hybrid organizations include among others health regions and hospitals, and both health regions and hospitals have numerous strong professions that voice their opinions if they are not heard.

Knowledge about the different stakeholder groups' preferences and differentiations makes it possible to develop strategies for increased value creation during early phase planning of buildings. Further research in Norway, and preferably also in other countries is necessary to investigate whether this study has identified some general patterns concerning value creation from RE and FM during early phase planning of buildings, or if these findings are site and context specific and limited to those respondents who participated in the present research.

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Tables

Table 1: The respondents' employer and gender

Employer	Female (%)	Male (%)	Total (%)
Private enterprise	82 (17.9)	377 (82.1)	460 (55.0)
Public administrations	67 (25.2)	199 (74.8)	266 (31.8)
Hybrid organizations	24 (21.6)	87 (78.4)	111 (13.3)
Total	173 (20.7)	663 (79.3)	837 (100.0)

Table 2: The respondents' education

Respondents' education	Female (%)	Male (%)	Total (%)
Engineering	96 (16.0)	504 (84.0)	600 (71.9)
Business administration	26 (30.6)	59 (69.4)	85 (10.2)
Architecture	21 (38.9)	33 (61.1)	54 (6.5)
Other educations	12 (25.5)	35 (74.5)	47 (5.6)
Finance, investment, law	12 (40.0)	18 (60.0)	30 (3.6)
Social science and humanities	5 (26.3)	14 (73.7)	19 (2.3)
Total	172 (20.6)	663 (79.4)	835 (100.0)

Table 3: The respondents' perspective concerning the four value dimensions

Employer	Owner (%)	User (%)	Total (%)
Private enterprises	280 (63.1)	164 (36.9)	444 (54.5)
Public administrations	197 (75.5)	64 (24.5)	261 (32.1)
Hybrid organizations	92 (84.4)	17 (15.6)	109 (13.4)
Total	569 (69.9)	245 (30.1)	814 (100.0)

Table 4: The economic dimension

Item	N	Mean	SD	Ranks in dimension	Ranks total
Investment costs *	653	3.39	.698	1	1
Effect on core business	652	3.28	.725	2	2
Energy costs	658	3.07	.774	3	6
The building's economic life span (NPV of cash flow) *	632	2.90	.828	4	12
Life cycle costs *	637	2.77	.886	5	21
Economic risk †	591	2.61	1.012	6	29
Cost efficient cleaning †	623	2.55	.826	7	30
Total cost per workspace in the operational phase * †	584	2.42	.978	8	34
Yield * †	548	2.42	1.083	8	34
Cost efficient services (front desk, catering, security, etc.) †	593	2.39	.823	10	36
Market value in case of sale †	590	2.30	1.111	11	39

†

Table 5: The Social dimension

Item	N	Mean	SD	Ranks in dimension	Ranks total
User involvement * †	613	3.00	.791	1	8
Security and safety (protection against unwanted incidents)	619	2.98	.802	2	9
Workplaces facilitating flexible ways of working *	597	2.96	.800	3	10
Architectonic qualities	617	2.84	.735	4	16
Owner governance *	591	2.84	.756	4	16
Interior qualities facilitating well-being and tidiness *	612	2.81	.747	6	18
Areas facilitating formal and informal meetings *	591	2.78	.780	7	20
Orientable (intuitive signs, etc.)	604	2.74	.819	8	23
Promoting pride (organization's cultural values) *†	599	2.68	.841	9	25
Individual management of sunscreens, light, temperature, etc.	608	2.67	.814	10	26
Facilities for physical activities (gym, wardrobes, etc.) *	564	2.25	.847	11	40

‡

† * Statistically significant different mean ($p < .050$) between owners and users (even with 1000 stratified bootstrap samples).
† Statistically significant different mean ($p < .050$) between respondents in private enterprises, public administrations and hybrid organizations (even with 1000 stratified bootstrap samples).

‡ * Statistically significant different mean ($p < .050$) between owners and users (even with 1000 stratified bootstrap samples).
† Statistically significant different mean ($p < .050$) between respondents in private enterprises, public administrations and hybrid organizations (even with 1000 stratified bootstrap samples).

Table 6: The environmental dimension

Item	N	Mean	SD	Ranks in dimension	Ranks total
Energy efficiency	600	3.19	.739	1	3
Indoor climate and comfort	598	3.17	.720	2	4
Use of materials and components with long life †	602	2.96	.795	3	10
Use of renewable energy sources, reduced influence on the external environment * †	597	2.90	.808	4	12
Use of environmentally friendly /labelled products †	595	2.70	.801	5	24
Facilities for efficient waste management	591	2.63	.785	6	27
Greenhouse gas emissions during the building's life-span (LCA) †	575	2.37	.895	7	37
Environmental certification (BREEAM, etc.)	572	2.17	.919	8	41
Use of recycled/recyclable materials	577	2.06	.796	9	42

§

Table 7: The physical dimension

Item	N	Mean	SD	Ranks in dimension	Ranks total
Accessibility and universal design †	587	3.13	.718	1	5
Area use (logistics, movements of persons and goods, etc.)	582	3.06	.738	2	7
The existing building's technical condition in case of transformation and upgrading	543	2.87	.777	3	14
Suitable materials for intended use and life-span	585	2.86	.794	4	15
Flexibility (the possibility to change the building's floor plan, etc.) †	581	2.81	.835	5	18
Parking facilities for bicycles	580	2.75	.807	6	22
Elasticity (possibility to change the building's volume, use, etc.)	571	2.63	.836	7	27
Parking facilities for cars †	579	2.54	.773	8	31
Life-cycle planning (integrated architecture and technology, long-term solutions, etc.)	570	2.52	.847	9	32
Innovative solutions	578	2.44	.795	10	33
Generality (the possibility to change the building's function, other uses, etc.) †	566	2.34	.937	11	38

**

§ * Statistically significant different mean (p < .050) between owners and users (even with 1000 stratified bootstrap samples).
† Statistically significant different mean (p < .050) between respondents in private enterprises, public administrations and hybrid organizations (even with 1000 stratified bootstrap samples).

** * Statistically significant different mean (p < .050) between owners and users (even with 1000 stratified bootstrap samples).
† Statistically significant different mean (p < .050) between respondents in private enterprises, public administrations and hybrid organizations (even with 1000 stratified bootstrap samples).