

WHAT IS THE VALUE OF GREEN FM FOR OFFICE TENANTS? AN APPLICATION OF KANO'S MODEL OF ATTRACTIVE QUALITY

MÄÄTTÄNEN EEVA¹, JYLHÄ TUULI and JUNNILA SEPPO

Aalto University

ABSTRACT

Sustainability and green issues have become strategic guidelines for many real estate operators such as constructors, developers, service operators and property and facilities managers. Organizations and building occupants have increasing demands for green or sustainable services in all areas of real estate. This study focusses on a green service concept for facilities management that was tested in a pilot multi-tenant building. The data for the study was collected by a questionnaire for the tenants based on the Kano model of attractive quality. Using the Kano model, the study aims to analyse more deeply the quality dimensions of value of green facilities management for the tenants. The results show that building occupants are starting to value the green attributes of services, but they not yet expect it in the standard operations. In particular, it seems that value of environmental effectiveness is increasing as long as no extra effort or expense is required on the tenants' part.

Keywords: green facilities management, office tenants, customer satisfaction, attractive quality, Kano model

INTRODUCTION

Sustainability and green issues have become strategic objectives for many real estate operators such as constructors, developers, service operators and property and facilities managers. Organizations and building occupants have increasing demands for green or sustainable services in all areas of real estate. Environmental efficiency has become one of the value adding elements in real estate business. The majority of climate impacts of buildings are generated during the operational phase of building life cycle, thus, the way the buildings are managed, maintained and operated holds much potential for environmental protection. Newer buildings have been found to cause lower carbon emissions than older buildings (Wilkinson & Reed 2006), as can be expected as building codes have become more strict in the course of years. This means that the challenge and importance of making older, existing buildings more sustainable increases. Furthermore, in some studies facilities management has been recognized as the driving force of making operational buildings more sustainable (e.g. Junnila 2004; Hodges 2005; Roper & Beard 2006; Wood 2006; Kyrö et al. 2010; Aaltonen et al. 2013).

Green building takes into account environmental and resource efficiency throughout the building life cycle (EPA 2012). Academic research has to date mainly focused on the owner or investor point of view on green building. A lot of discussion has revolved around the costs of going green (e.g. Miller et al. 2010; Kats et al. 2003), or the higher value of going green, for example the potential for higher rental levels, selling prices, and higher occupation rates or faster leasing process (e.g. Miller et al. 2008; Fuerst & McAllister 2009; Wiley et al. 2010). As Karhu et al. (2012) state, the higher values are often based on higher customer satisfaction, in this case the building occupants.

Miller and Buys (2008) noted in their study that for public and larger corporate tenants sustainability was the norm and critical in building selection. However, for smaller organisations sustainability was just emerging as a consideration when location and costs were the dominant criteria. Similar conclusions were found also in Nousiainen and Junnila (2008) study of end-user requirements for green facility management. Karhu et al. (2012) studied the green preferences of office tenants on the organisational level and found that they are location (connections), energy efficiency, video-conferencing possibilities and recycling possibilities, in order of importance. It should be noted that preferences are defined as "issues that cause happiness and satisfaction, but which are not necessarily needed to perform a task" (Rothe et al. 2012).

The majority of Finnish enterprises are small organisations employing less than 10 people. Small companies are thus at the centre when trying to make the existing building stock more sustainable. More information of small companies' green demands is needed as many studies have focused on large corporate organisations. This research studies the occupiers' perceived value of green service attributes. The aim of this study is to gain an understanding of what kind of green attributes the tenants value in their office buildings, the focus being on facility services. Facility services have the

¹ eeava.maattanen@aalto.fi

potential to make sustainability more realistic in the daily operations of offices. The purpose is to find out which green attributes are important for occupiers and to understand more thoroughly the characteristics of the most favourable green attributes. The study utilizes the Kano model of attractive quality.

AN OVERVIEW OF THE THEORY OF ATTRACTIVE QUALITY

Professor Noriaki Kano introduced the model of attractive quality for evaluating customer satisfaction in the 1980s (Kano et al. 1984). The model is used to discover the influence certain characteristics of the product or service have on the customers' satisfaction. The Kano model recognizes five quality dimensions that represent the value of the characteristic to customer satisfactions (Figure 1). The five quality dimensions are:

- *Attractive attributes (A)* are not expected by the customer. They bring high level of customer satisfaction when achieved, but do not cause dissatisfaction when not fulfilled. They can be called surprise and delight attributes as well.
- *One-dimensional attributes (O)* result in satisfaction when fulfilled, and dissatisfaction when not. They could also be called 'the more the better' attributes. The customer expects these attributes to an extent.
- *Must-be attributes (M)* are regarded as self-evident or basic attributes that the product or service must include. They do not increase satisfaction but cause dissatisfaction when they are not fulfilled. They describe the minimum level of quality that a product or service must have as the customer expects them.
- *Indifferent attributes (I)* have no impact on customer satisfaction.
- *Reverse attributes (R)* are considered the opposite of one-dimensional attributes. They cause dissatisfaction when fulfilled and satisfaction when not.

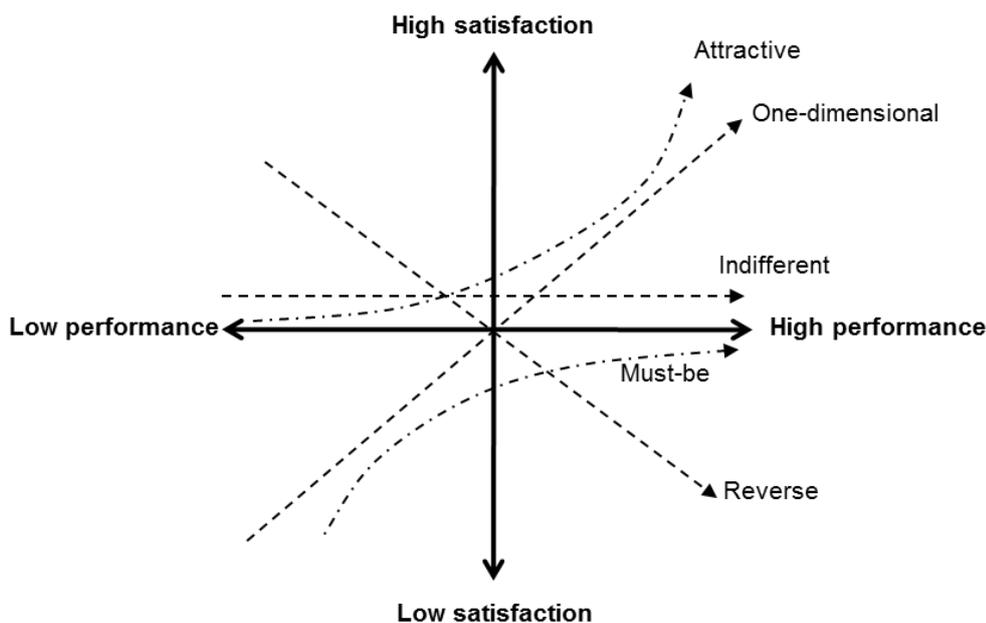


Figure 1 The Kano model with five quality dimensions (Kano et al. 1984; Löfgren & Witell 2005)

The quality attributes are classified using a structured questionnaire, that consists of a duo of questions (Kano et al. 1984). The first question, called a functional question, asks about the respondents feeling if the attribute in question is fulfilled. The second question, dysfunctional question, asks about the non-fulfilment of the attribute. The answer alternatives are the same in both cases. The data are then analysed with an evaluation table, presented in Figure 2.

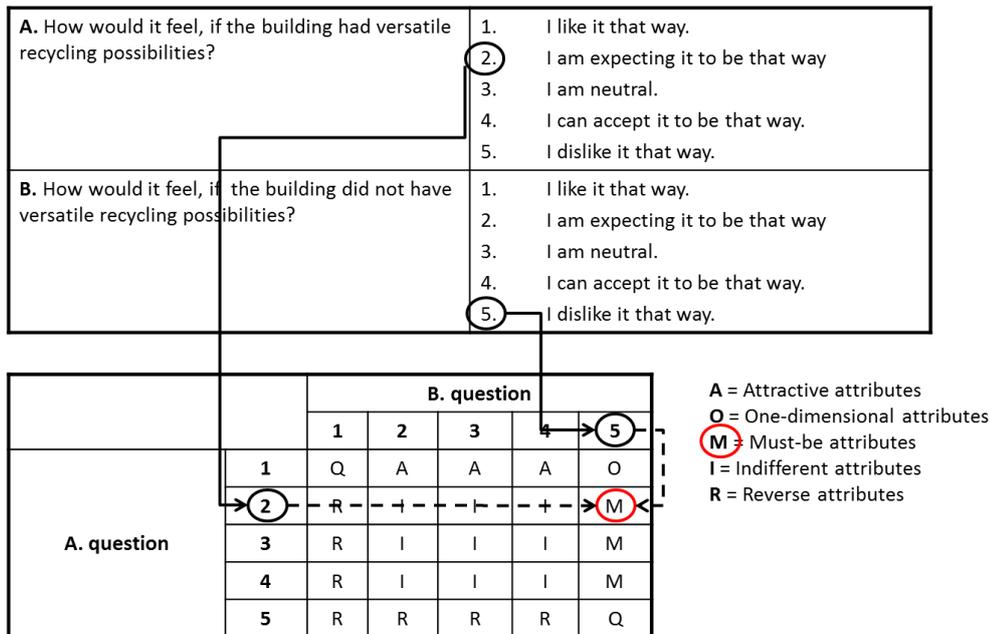


Figure 2 Evaluation table of the attributes (adapted from Löfgren & Witell 2005; Jylhä & Junnila 2012)

METHODOLOGY

The study was conducted as a part of a research project related to green facilities management concepts. In the project concepts for green facilities management are evaluated, analysed and developed a for a property management company to be used in office building management. According to the developed green facilities management concept, property management company provides all the supporting services for the tenants either by own personnel or as outsourced services that they manage. The concept was tested in a pilot case, which was a business park with multiple tenants in the Helsinki Metropolitan Area. The building had first been developed for a single owner-user, but had been modified to a multi-tenant business park previously and the green concept was added to the management of the building. Table 1 presents the building parameters of the pilot building.

Table 1 Building parameters

Building Parameter	Value
<i>Location</i>	<i>Espoo, Southern Finland (Northern Europe)</i>
<i>Construction year</i>	<i>1978</i>
<i>Gross floor area</i>	<i>15 697 m²</i>
<i>Volume</i>	<i>50 023 m³</i>
<i>Structure</i>	<i>7 floors with basement</i>
<i>Tenants</i>	<i>59</i>

The research was conducted using a case study methodology. The case under investigation is the suggested green service concept of the pilot building. Data was collected by qualitative semi-structured interview method and a structured questionnaire based on the Kano model. The interviews were held in June and July 2012 with the pilot building tenants. The tenants who had published their contact details in the pilot building website were approached (via e-mail or telephone). 14 tenant companies were reached and 13 companies agreed to the interview, i.e. 22% of the

tenants were included in the study. Two persons were interviewed from 4 companies, one person in the rest, totalling in 17 interviews. The interviews lasted approximately half an hour including filling the structured questionnaire. The organisations represented the majority of Finnish companies personnel sizes as 94% of all companies are small companies, employing less than 10 people in 2010 (Official Statistics of Finland 2011). Of the interviewees, 13 represented the tenant organisation and four their employees. Seven companies had a regular office lease, six were serviced office leases. The companies' personnel size varied from one to 40 employees; four companies had one to two employees; five companies had 3-10 employees and four companies had more than 10 employees. The titles of the interviewees included e.g. CEOs, office managers, local office directors and executive assistants.

The research process

The research process began with gaining a general understanding of green facilities management and finding out the service specific environmental attributes that could be supported with facilities and property management. After deciding on how each service should or could take environmental efficiency into account the green facilities management concept was developed. Many environmental attributes were already included in the services management, e.g. energy monitoring, but additional criteria and indicators were added to the scope. The aim of the concept was that each service, both in-house and outsourced, would take material- and energy efficiency into account and would have green criteria including indicators to be followed.

In the pilot building, the green service concept commenced in early 2012 for applicable parts of services. In-house actions, particularly reception services were included first. The reception service acts as the driving force for green management. The personnel for example perform weekly rounds in the building to evaluate and check green performance. The reception service is also responsible for managing the user services and informing tenants of current issues in the building, including issues concerning energy and environmental efficiency. The property management company also discussed the green criteria with outsourced service companies such as cleaning and maintenance.

Data collection

The interviews started with general background information questions, such as the company's personnel size, size of the premises, how long they had been tenants in the building and the interviewees' role in facilities matters. Following this the questionnaire was filled. It was deemed necessary that the Kano based questionnaire was filled in the presence of the researcher as Kano model involves special characteristics that the interviewee may not be familiar with. This way the researcher can explain and instruct the interviewee efficiently and the interviewee can ask for clarifications and guidance. Perhaps surprisingly, the interviewees did not ask that many questions and were quite comfortable with the questionnaire. The questionnaire was divided into two sections; property services and user services. The aim was to find out tenants views on the green aspects of the services. It should be noted, however, that while the green service concept had commenced in the building not all of the green details of the services that were in the questionnaire were in use in the building. This is why Kano model fitted the study best; the tenants didn't need to have experience of the topics, they were asked how they would feel if they were in place. The detailed attributes of the Kano questionnaire are presented in the Results-section in the order of the questionnaire.

After the questionnaire, the semi-structured interview continued. The topics included the organizations view on the importance of energy and environmental issues of premises, how well they know their energy costs and how significant they were, cooperation with the management company, and how their employees were included in environmental matters of their company.

In this study, the Kano based questionnaire forms the primary data. The interviews provide secondary supporting data for analysis.

RESULTS - QUALITY ATTRIBUTES OF GREEN FACILITIES MANAGEMENT

A summary of the data from the Kano model is presented in table 2. Attractive and indifferent dimensions received the most responses and almost equal amount of answers as well, each totalling roughly 40%. One-dimensional dimension received one tenth of responses and must-be a close 6%. Reverse attributes received the least responses; 5%.

Table 2 Summary of the responses

	Must-be	Attractive	One-dimensional	Indifferent	Reverse
Responses	26	162	42	158	20

Per cent share	6%	40%	10%	39%	5%
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The following Tables 3 and 4 show the detailed data from the questionnaire. The tables show which dimensions received the most responses in relation to each quality attribute. The dimensions that received three quartiles or more ($x \geq 75\%$) related to each quality attribute are highlighted in dark grey. The dimensions that received at least half but less than 75 per cent ($50\% \leq x < 75\%$) are highlighted in light grey. White indicates the dimension that received less than half of the responses ($x < 50\%$).

Table 3 Data from the questionnaire - property services

A		O		M		I		R		Total	Attribute
Responses		n									
n	%	n	%	n	%	n	%	n	%	n	
5	29 %	2	12 %	4	24 %	6	35 %	0	0 %	17	Minimizing energy consumption to decrease costs
10	59 %	1	6 %	2	12 %	4	24 %	0	0 %	17	Minimizing energy consumption to decrease environmental impacts
1	6 %	1	6 %	0	0 %	4	24 %	11	65 %	17	Additional charges for green property and user services
13	76 %	0	0 %	0	0 %	4	24 %	0	0 %	17	Green image of the office building
6	35 %	1	6 %	1	6 %	9	53 %	0	0 %	17	Regular information of premises electricity consumption
5	29 %	5	29 %	3	18 %	4	24 %	0	0 %	17	Optimizing existing systems to save energy
11	65 %	1	6 %	0	0 %	5	29 %	0	0 %	17	Saving energy with energy saving investments
8	47 %	3	18 %	0	0 %	5	29 %	1	6 %	17	Influencing employees' behaviour to save energy
4	24 %	3	18 %	6	35 %	4	24 %	0	0 %	17	Versatile recycling possibilities
7	41 %	4	24 %	2	12 %	4	24 %	0	0 %	17	Environmentally friendly agents and materials in cleaning services (g. Eco labelled cleaning detergents)
12	71 %	2	12 %	0	0 %	3	18 %	0	0 %	17	Water saving techniques in cleaning services
10	59 %	2	12 %	0	0 %	5	29 %	0	0 %	17	Eco-labelled tissue papers and hand towel systems
5	29 %	0	0 %	2	12 %	10	59 %	0	0 %	17	Comparing buildings energy efficiency to similar buildings
7	41 %	1	6 %	0	0 %	9	53 %	0	0 %	17	Regular communication of buildings

								environmental and energy matters from manager				
1	6 %	0	0 %	0	0 %	16	94 %	0	0 %	17	Hourly-based information of the buildings energy consumption	
10	59 %	2	12 %	0	0 %	5	29 %	0	0 %	17	Organic or local food in restaurant services	
5	29 %	2	12 %	4	24 %	6	35 %	0	0 %	17	Using only durable dishes in restaurant services	

	x < 50%
	50% ≤ x < 75%
	x ≥ 75%

Table 4 Data from the questionnaire - user services

A		O		M		I		R		Total	Attribute
Responses											
n	%	n									
3	18 %	1	6 %	0	0 %	5	29 %	8	47 %	17	Favouring so called eco-cars in dividing parking places (eg. Lower prices or better locations)
8	47 %	2	12 %	0	0 %	7	41 %	0	0 %	17	Environmentally friendly materials in mailing services
6	35 %	0	0 %	0	0 %	11	65 %	0	0 %	17	Green messenger services (e.g. bicycle messenger)
5	29 %	7	41 %	0	0 %	5	29 %	0	0 %	17	Security services performing energy saving actions
12	71 %	0	0 %	0	0 %	5	29 %	0	0 %	17	Tele and video conferencing facilities
3	18 %	0	0 %	1	6 %	13	76 %	0	0 %	17	Personal consulting for premises environmental and energy efficiency form reception services
5	29 %	2	12 %	1	6 %	9	53 %	0	0 %	17	Support for organizations environmental goals from manager

	x < 50%
	50% ≤ x < 75%
	x ≥ 75%

Findings

For the most part, there were no strong united opinions regarding the quality attributes. As illustrated in Table 1 most attributes have higher shares in attractive and indifferent dimensions. Next the dimensions with more than 50% shares are categorized to illustrate their business potential.

The attractive attributes could be interpreted to offer *business potential* through specialization. They are not expected and will increase satisfaction if included in the scope. The following attributes can be categorized as such:

- Green image of the office building (76%)
- Water saving techniques in cleaning services (71%)
- Tele and video conferencing facilities (71%)
- Saving energy with energy saving investments (65%)
- Minimizing energy consumption to decrease environmental impacts (59%)
- Eco-labelled tissue papers and hand towel systems (59%)
- Organic or local food in restaurant services (59%)

These attributes bring more customer satisfaction, but do not cause dissatisfaction in nonfulfillment. Green image of the building would be something extra that is not expected. Green cleaning practices, i.e. saving water and environmentally friendly papers, is not yet regarded as standard practice, but would increase satisfaction. Tele and video conferencing facilities would increase satisfaction, indicating similar results as in Karhu et al. (2012). Saving energy with investments is an attractive option, also if the aim is to decrease environmental impacts (not costs). Organic or local food would also increase satisfaction.

As stated above, saving energy with investments is regarded as an attractive attribute, with a 65% share of responses. However, when combining attractive and one-dimensional dimensions, both of which increase satisfaction, additional energy-saving actions can be highlighted. Optimizing existing systems to save energy would increase satisfaction for 58%, energy saving investments would bring more satisfaction for an increased 71% and influencing employees' behaviour would increase satisfaction for 65% of the respondents. As such, the tenants would appreciate such services and satisfaction would grow.

The following *indifferent* attributes (not influencing customer satisfaction) were found:

- Hourly-based information of the buildings energy consumption (94%)
- Personal consulting for premises' environmental and energy efficiency from reception services (76%)
- Green messenger services (e.g. bicycle messenger) (65%)
- Comparing buildings energy efficiency to similar buildings (59%)
- Regular information of premises electricity consumption (53%)
- Regular communication of buildings environmental and energy matters from manager (53%)
- Support for organizations environmental goals from manager (53%)

Many of these indifferent attributes seem to require some involvement from the tenants. For example, support for environmental goals, communication of environmental and energy efficiency issues and personal consulting assumes that the tenant organization has environmental goals or would use the information in their own daily operations or management. Also, the interviews insinuated that the companies do not have interest in green management unless it brings direct cost benefits. Energy and environmental efficiency had not been taken into account in the managerial level for most companies, they are more important at a personal level. Most of the companies were so small that they did not feel that their operations matter much in the greater scheme of things. Some companies' head office (situated for example in the USA or Canada) had more critical environmental goals, but these small side offices do not matter for them. Though these companies do execute normal operations that discourage wastage (for example recycling, turning off lights and devices, double-sided printing etc.), this considered as common sense and not outstandingly green.

Green messenger services being not important may have its roots in the location of this office, Helsinki city center is 10 km away which may seem too far away to fully appreciate green messenger services, even if the current operations should not have mattered in the questionnaire. Information of the electricity consumption is maybe surprisingly an indifferent attribute. This may be because for most of these tenants electricity bill is based on the square meters or a

fixed price. Most of the tenants do not even know the size of the energy bill or they feel the cost is insignificant. Electricity metering is not always easy to arrange in an older building with many small tenant spaces that constantly change. Most of the tenants do feel that follow-up data would be good to have but they do not wish to put effort into it. Comparing energy efficiency to similar buildings is not important for the tenants; even when it is standard practice in for example green building certification (e.g. LEED for Existing Buildings). Hourly-based information of the buildings energy consumption is becoming more and more important for energy management and maintenance practices; however, for the tenants it is not important.

Reverse attributes will cause *dissatisfaction*; they need to be considered carefully:

- Additional charges for green property and user services (65%)

The extra costs would clearly cause dissatisfaction for tenants. Many of the interviewees were CEOs, office managers or local office directors and as such have profit responsibilities, so these results may be expected at a general level. One additional attribute touches upon this category. Favouring the so called eco-cars (i.e. cars that have lower emissions, are fuel-efficient, use alternative fuels and carpooling) received 47% responses to reverse dimension. Even if attractive and indifferent dimensions received similar amounts, and as such this attribute cannot be categorized fully, this is an important attribute to consider. Many green building certificates, e.g. LEED for existing buildings (USGBC 2009) and Green Star (GBCA 2013) appreciate alternative transport models, such as these, so this result brings an interesting viewpoint to consider when developing green buildings.

The rest of the attributes were unable to be categorized as these attributes' quality dimensions have divided so strongly, that they do not represent a single dimension with more than 50% of the responses. However, there are a few attributes that need to be discussed as they bring some new interesting viewpoints.

Versatile recycling possibilities received 18 % one-dimensional and 35 % must-be responses. When combined, it means that 53% of the respondents expect this service at least to an extent and would be dissatisfied if this service was unfulfilled. Other studies have also found that that recycling is one of the most important green preferences for tenants (Nousiainen & Junnila 2008; Karhu et al. 2012). Recycling is one of the most concrete actions of environmental protection for individuals. Also, when people are used to recycling at home, they bring their habits into the working environment as well.

It is also interesting to notice that minimizing energy consumption to decrease costs received strongly divided responses. Combining one-dimensional (12%) and must-be attributes (24%) gives 38% of respondents that expect this at least to a certain extent. Indifferent (35%) and attractive (29%) are also quite high. However, if the goal of minimizing energy consumption is to decrease environmental impacts, it can be categorized as attractive (59%), and fewer respondents expect this attribute. It could be interpreted and it is perhaps expected that for tenants the costs are still more important and the value of environmental protection is only something extra that they do not expect.

Regarding green cleaning, the attribute of environmentally friendly or eco-labeled cleaning agents, is divided between attractive (41%) and one dimensional (24%), must-be (12%), and indifferent (24%) attributes, so it is not able to be fully categorized. This attribute is still important as 38% of the respondents expect this service to an extent. The other parts of green cleaning; saving water and environmentally friendly tissue papers, were regarded as attractive (71% and 59%), and were not expected as much. These results may indicate that green cleaning may be becoming more standard practice first through the environmentally friendly cleaning agents and materials and then continuing to eco-labeled tissue papers and water efficiency. It is also worth noticing, that when attractive and one-dimensional dimensions are combined, it can be seen that all of these green cleaning attributes contribute highly to customer satisfaction. Environmentally friendly cleaning agents would increase satisfaction for 65%, Water saving techniques for 83% and eco-labeled tissue papers for 71% of the respondents.

Environmentally friendly materials in mailing services would increase satisfaction for 59% of the respondents when combining attractive (47%) and one-dimensional (12%) dimensions. This could be achieved relatively easily in an office building, as many materials with an eco-label exist (for example FSC-certified envelopes). However, it should be noted that many of these companies are self-sufficient in mailing activities and do not utilize the property management company's mailing service in the building.

Regarding security services, the exact question was "How would it feel, if security services would take action in unnecessary energy consuming issues (e.g. security guard would turn off unnecessary lights)?" Although the responses are too divided to be categorized, there is a relatively large portion of one-dimensional (41%) and attractive (29%) responses. This means that 41% do expect this kind of actions from security services to some extent and 70% would be more satisfied if this green service was performed. In literature, there is little discussion of security services' green characteristics or indication that this is would be included in security companies' scope.

DISCUSSION AND CONCLUSION

This study provides information on the value of green services for small office tenants, an area which may have been understudied before. Small companies represent the majority of Finnish enterprises and have a high contribution to the existing building stock. Small tenants also do not necessarily have resources for active environmental management, and they could benefit from ready-made solutions and support from the manager. However, in this study it seemed that the tenants were most uninterested on the green attributes that would require some involvement from them, including the support, consulting and communication. It could be interpreted that for small tenants the value of environmental effectiveness is increasing as long as no extra effort or expense is required on their own part. This is in accordance with a previous study that found that small companies view sustainability as an emerging factor but require more information of costs and benefits first (Miller & Buys 2008).

It is also important to notice that customer expectations are changing. If some attributes are now found attractive, they may change into one-dimensional and must-be attributes over time. For example, green cleaning could very well be changing from attractive, not expected attribute to basic standard practice that the tenants expect. The manager needs to follow the tenants changing opinions and expectations to respond to their needs properly in order to increase customer satisfaction.

It is important to notice that this study was performed only in a single office building with several small organizations and this will affect the validity of the research. External validity establishes whether the study's findings can be generalized (Yin 1994). For this study, the generalization of the results is strictly analytical and the results are applicable only in similar context.

One of the most important factors of green building was left out of this study, namely location and connections. This is because the research was done from the point of view of the property management company. Property or user services cannot influence the tenant's decision to choose a building; rather they interact only after the tenant has chosen their premises. The manager may have a limited control over parking places, and this was included in the questionnaire. Favouring eco-efficient vehicles brought a surprisingly strong response against it. This is interesting as many green building rating systems (e.g. LEED and Green Star) try to encourage the use of eco efficient vehicles. However, as this study was conducted in a single building, different results could be achieved in a different location, for example in a city centre or a by a railway, where the use of an own car for commuting might be lessened. The manager cannot influence the public transport choices of a building; though they can inform and educated building users of them. The manager could also promote walking or bicycling by providing facilities for them. These are some subjects that could be included in future research.

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