USABILITY OF SHOPPING CENTRES:
Components of Usability Rating Tool

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ABSTRACT

Usability of workplaces is a research theme in an international CIB 111 series of case studies. Usability of shopping centres is part of this theme and at the same time a research project conducted in Finland as a joint effort with shopping centre managers, designers and construction companies. The theoretical framework for exploring usability has been developed in the previous studies (Rothe 2006). Usability of shopping centres research has two perspectives: how do consumers experience the usability of shopping centres and how do customer organisations, tenants experience the efficiency, effectiveness and satisfaction of using the shopping centre. This paper describes the components which are important in a usability assessment of shopping centres. The structure of a derived usability rating tool is illustrated and methods to use the tool are presented. The paper will also give an overview how the tool is used in the Finnish shopping centre context. The results of the study are significant for both design and maintaining phase of shopping centres and contribute to the continuing process of assessing and developing usability of workplaces.

KEYWORDS
Usability, Shopping Centre, Rating Tool, Finland

INTRODUCTION

The shopping centre industry is an increasingly competitive and complex marketplace. In literature, a shopping centre has been defined e.g. as a "concentration of shops and other commercial establishments which are in individual ownership" (McGoldrick and Thompson 1992). New shopping centre formats and a changing consumer environment are challenges for shopping centre management. Shopping centres provides a physical, social, and virtual interface for different actors. It should be usable for consumers as well as for tenant organisations. A shopping centre is a workplace for tenant organisations and for consumers it is a consumption and entertainment environment. As part of the research project on the usability of shopping centre this study concentrates on both user groups. Its intention is to find a way to assess usability and create usability profiles of shopping centres.

The purpose of the Usability Rating Tool is to provide a method for managers, owners and designers to assess and develop the usability of different places. It can provide information, which can be used in different phases of the building lifecycle: design and planning, construction and finally operation, using and developing. The tool analyses relevant usability attributes. The attributes are specified with different parameters identified during the research. These parameters create profiles of usability from user-perspectives.

This paper first sets out to describe the components which are important in usability assessments. Initially usability is described both in on general level and in the context of shopping centres. Then it is presented how the structure of usability rating tool has been derived from the usability framework. In the following, the empirical part describes how the tool has been applied. Conclusions provide an overview on the tool and its opportunities.

USABILITY FRAMEWORK

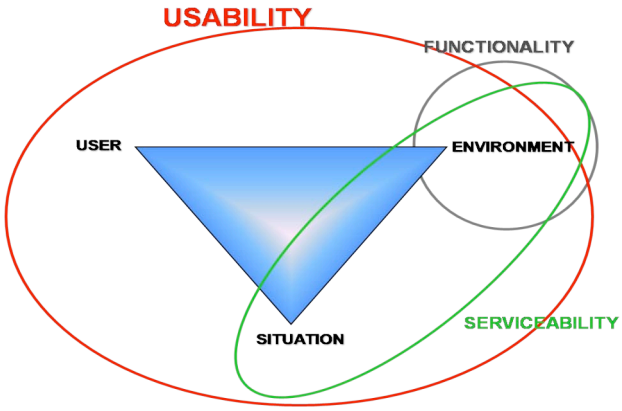
The usability of the workplaces has been identified to influence the work performance, thus impacting on the overall organizational success (Alexander *et al*. 2005). However, usability is much easier to notice in its absence and it is not at all easy to investigate. According to the ISO 9241-11:1998 standard usability is: *"[...] the effectiveness, efficiency and satisfaction with which a specified set of users can achieve a specified set of tasks in a particular environment."* Standard indicates that there is a general level of usability, which has been often captured by analysing different kind of usability attributes. The application of attributes from product usability is developed further for workplace usability.

Even though, usability is affected by different attributes in the environment, these attributes alone do not create usability, as it is then mainly a matter of functionality. Secondly, usability is a matter of situation and context. Lindahl and Granath (2006) argue that usability depends on the situation in which the artefact is used as well as the context the artefact is designed. Nevertheless, the capability of a facility to provide a range of performances for which it is designed does not guarantee usability either and, as Granath and Alexander (2006) argue, might indeed never be able to achieve it.

Usability is also a matter of the user perspective; the overall usability of a workplace is by definition depended on the user. Additionally, all users are different; they have a different background, different knowledge and know how, different culture and habits (Sinkkonen *et al.* 2002). Mäntylä (2001) describes usability as a phenomenon that has three characteristics: A) the user and his or her knowledge; B) the product, its characteristics and the functions it provides; C) the situation, the tasks and the goals in which the product is used.

Rothe (2006) suggests a usability framework for work environments that integrates Mäntylä's (2001) views. Based on her framework it is suggested that in order to assess the usability of a certain entity, one must know from which user's point of view usability is assessed and what kind of goals the user holds. The different aspects of usability are illustrated in the Figure 1.

Figure 1. The Usability Triangle (Rothe 2006)



The different factors affect the way the user experiences the usability of the work environment – shopping centre is work environment but also an entertainment and consuming environment. The basic groups in the shopping centre include tenant organisation and consumers. Latter include a variety of customer segments, which is challenging for usability studies. The challenge is that different users, who are completing similar tasks, might consider the usability of the environment significantly different. Therefore, cultural differences for example are seen to effect on the usability experience (Lindahl and Granath 2006). Hence, the investigation of usability attributes of a shopping centre should be done from a specific user's point of view while also taking the context into account.

As describe in the framework (Figure 1), functionality does not take the user and the situation for which the shopping centre is being used into consideration. Serviceability on the other hand has been described to focus on the capability of a facility to provide a range of performances for which it is designed (Alexander *et al.* 2005), so it covers the object and the context, tasks and goals in which the object is being used, but it does not take the user in to account. Since the overall usability is influenced by the environment and the user as well as the context, all three components need to be considered. This way usability can be improved not only by making changes in built setting, but also in the context and user settings. (Rothe 2006.)

USABILITY RATING TOOL

Components of usability rating tool

The usability rating tool is generated from the usability framework taking all three aspects, user, environment and the situation into account. The rating tool includes following three components *Environment Profile*, *User Profile* and *Weighted Usability Attributes*.

The first component, *Shopping Centre Profile*, is about indentifying the place, build environment, interface, which provides a platform for activities. It is defined as physical, social and virtual places. Physical places are tangible, built environments. Social place is an environment for interactions and virtual environment supported by information and communication technology.

The aim of the component is to profile the environment in focus. This means classifying all significant variables of the environment effecting on the usability experience of the users. The variables within this component are both building and concept related. Typical variables are size, occupancy rate, location, layout etc.

The second component is *User Profile.* Understanding the users' is essential in usability rating. User characteristics, knowledge, personality, age and surrounding culture etc. have an impact on the usability experience. In addition to demographical and psychographical data, the user groups should be created in order to understand the context, the situation, why and how the place is used by the users. The recent study by Giuseppe Riva (2005) has highlighted the impact of context in the usability experience. According to him, the focus should be on the context rather than on the environment. As a result of the component, clear profile of the user groups and the situations they are using the environment should be determined.

The third and final component is *Weighted Usability Attributes.* Firstly, the aim of the component is to select accurate group of usability attributes for the rating tool. Depending on the objectives of the rating, users and environment in focus, relevance of the usability attributes will vary. Completion of components 1 and 2 are strongly supporting this selection process. Also lists of various usability attributes already identified in the previous studies are useful in the selection process (Hansen 2004, Nielsen 1993 etc.).

Once the set of relevant usability attributes have been determined, measurable parameters for each of these attributes will be defined. As the attributes are usually very complex, each of the attributes consists of multiple parameters. To measure accessibility, number of entrances, number of available transportation systems, and availability of website for further information for example could be used as parameters.

Some attributes are valued more than others by the users. Therefore, interrelations of the attributes must be explored and weightings for each attribute based on the users preferences identified. To complete the third component, a list of the weighted usability attributes including related parameters is established.

Methodology used in usability rating

The usability rating tool is in the format of a survey and checklist. After broad literature review, components 1 and 2 will be carried out by undertaking customised user surveys and through interviews. Once the first two phases are completed, the rating itself is conducted by using standardized usability checklist based on the usability attributes determined in component 3. Each usability attribute includes a variety of measurable parameters, which are evaluated by using the set criteria.

Usability appears in a different way in different phases during the users' journey in environment. Therefore, the rating checklist including all the identified measurable parameters should be structured to follow the logic of the real journey of the user. User Journey thinking is based on the customer experience approach. Instead of focusing only on the outputs of the customer experience, all the touch points between the customer and the environment during the whole customer experience are in the focal point (Smith, 2003). Users' journey is divided into phases. For example following five general phases, Orientation, Approach, Action, Depart and Evaluation, could be used to structure the rating

process. Phases are adopted from the Customer Journey model introduced by Alexander and Kaya (2003).

Relevant usability parameters are listed under each of these phases. For example parameters related to accessibility will effect on the user when approaching the built environment, whereas functionality effects mainly in Action phase, when the user is already using the environment.

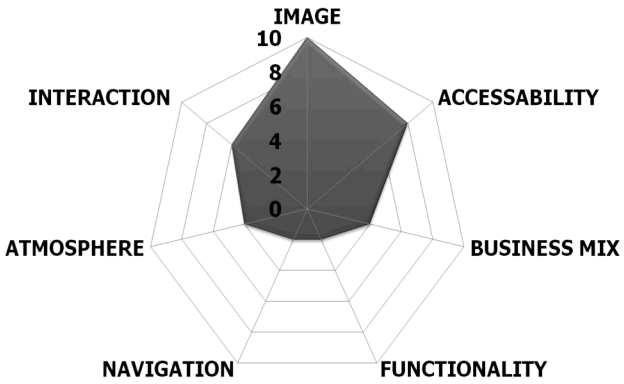
As the usability rating checklist is standardised including set evaluation criteria, the rating exercise could be undertaken by one auditor or the group of auditors. The suggested way to conduct the rating is to use usability walkthrough method, as an adapted form of the generic evaluation process described by Kernohan et al. (1992). The walkthrough is a way to gather data about the use of an environment while physically being in the environment in question. Beside the proximity to the physical object of the investigation, a walkthrough is a social activity. (Nenonen and Nissinen 2005; Riihiaho 2002.) Walkthroughs involve representatives from user organisations and other stakeholders like facility management, property developer and usability research etc, thus enabling an understanding of the usability for a multitude of users. Within the auditing group results can be discussed and verified.

Whether undertaking the rating exercise by the single auditor or a group, not only undertaking the user journey and filling in the usability rating checklist is important, but also observations are significant to add richness to the assessment. Therefore using a recorder and/or taking notes are highly recommended.

Result: Usability Profile

By processing the data collected during the rating process, a usability profile of the shopping centre is created. The results of the assessed usability parameters are first fed into an automated template, calculating firstly the final result of related usability attributes and secondly drawing the usability profile of the environment in focus. Once the ratings have been calculated the tool will give a usability profile similar to the one shown in Figure 3.

Figure 3. Example of Usability Profile



In addition to the general overall usability profile, the tool will also provide more extend information on the usability. The tool will give the usability profile for each of the customer journey phases or each individual usability attribute including all parameters if required. As the results are visually presented, it is easy to indicate recommendations for improvements. Furthermore, the results can be used for comparative studies and benchmarking.

APPLICATION OF USABILITY RATING TOOL IN SHOPPING CENTRES

Identification of Environment

Firstly in component one, shopping centres were studied to understand a shopping centre as a platform effecting usability experiences of the user. The definition of shopping centres by Finnish Council of Shopping Centre was used in the research project to identify and select appropriate centres. According to the Council, a shopping centre consists of a commercial building in which retail outlets and services open inwards onto a walkway or concourse. The gross leasable area (GLA) is generally at least 5.000 sqm. Shopping centres have at least ten retail outlets. A shopping centre has one or more anchor tenants and a number of key traders as well as other retailers and services. The services may be either commercial or public. A single trader may not exceed 50% of the total commercial space. Shopping centres have also joint management and marketing." (KKY 2006).

Nine centres out of 50 Finnish Shopping Centres were selected for the study through the business partners funding the research project. Four of the centres are located in the capital region, two in Western- Finland, two in Central Finland and one in Eastern Finland. Only North Finland is not represented. The nine centres area comprehensive sample, representing well Finnish shopping centres in concept and location. The sample included local and regional centres and likewise centres located in downtowns. Also in geographically centres covered well all the main areas in Finland geographically.

An extended literature review was undertaken to understand the nature of the shopping centres as a physical, social and virtual platforms. According to previous studies, the number of characteristics, location, size, shape, and layout for example were identified to be vital for the success of shopping centres (Carter and Vandel 2005; Howard 2001).

The shopping centres selected to participate in the project were ask to provide secondary data on the centre including these key characteristics. Also layout and floor plan of each centre was explored. In order to complete the particular component, profile of the selected shopping centres were created by using following parameters: micro location, macro location, size (sqm), number of visitors, number of tenants and occupancy rate (% or sqm).

Identification of user groups and context

Two different methods were used to complete the second component, profiling the users. Firstly, former shopping centre related consumer researches were analyzed to understand consumers visiting shopping centres. (Kim 2006; Pitkaaho *et al*. 2005; Ruiz *et al*. 2004 etc.) It was found that various customer characteristics, lifestyles, values, demographics etc. had been used to describe different customer types. Also tenant related literature was reviewed. (Skogster 2007, Fenker 1996, Kautto, 2007.)

Through the literature review process, user surveys for both user groups, consumers and tenants, were provided. Consumer survey was undertaken between mid October 2007 and January 2008. The tenant survey was conducted as online survey in the same shopping centres in the first quarter of 2008.

The consumers were randomly intercepted while they were inside the shopping centre and invited to participate in the survey either by filling a paper questionnaire or online-survey through laptops. To insure that the survey results are not concentrated on specific group of shoppers based on the timing of their visit, the questionnaire was spread out over different times of the day. The business partners of the project were asked to point the survey date, therefore surveys have also been undertaken different days of the week.

The study involves over 2000 shopping centres' consumers and 300 managers of tenant organisations. Data is not analyzed yet, but the consumer segmentation will be derived using factor analysis. As we are exploring the usability experiences and preferences, consumer groups will be identified on the basis of the situation. The questions, why customers are visiting the shopping centre, will be critical for segmentation. Other behavioural (visiting frequency etc.) and demographic (age, sex etc.) measures will deepen the picture of these segments. Once the data of consumer survey is analyzed, similar process will be followed to profile tenant organizations.

Identification of Weighted Usability Attributes

While completing components 1 and 2, marketing, consumer and shopping centre literature was reviewed. The same material was also used to identify relevant usability attributes effecting on shopping centre users' usability experience. At first, the main focus was to identify key attributes correlating with positive shopping experience and achievement of customer satisfaction. Various attributes were found and some important findings were made: Image of the shopping centre for example was considered as one of the key factors. On the other hand, some of the usability attributes identified in the earlier studies, did not seem to be relevant in the shopping centre context.

In the end of the identification process, seven relevant shopping centre related usability attributes were determined. The attributes were verified by the group of business partners, including shopping centre manager, developers, architects etc. with a strong experience in shopping centre markets in Finland.

The definitions of these attributes are:

1. **Image** is a mental picture or impression of something as well as mental conception held in common by members of a user group and symbolic of a basic attitude and orientation.
2. **Accessibility** includes micro and macro location and availability of transportation and parking. Also paths, outdoor signage and visibility are important. The aim is to achieve user experience where one can easily access the shopping centre and find way out.
3. **Business Mix** the combination of businesses represented in the shopping centres. The right mix might increase the synergies between the different companies. For customers the right business mix is playing important role to attract people to visit the shopping centre.
4. **Functionality** the variety of functions offered by the environment. This includes for example building systems affecting the working conditions and customer satisfaction.

The shopping centre layout, lifts, stairs, building materials are examples of features of functionality.

5. **Atmosphere** is created by shapes, materials, sounds etc. that have an impact on the atmosphere and ambience of the space.
6. **Navigation** signing and clues offered by the environments with regards to how to move around indoors. From a consumer perspective it will include experiences like easily finding your way around.
7. **Interaction** includes all actions that occur as two or more objects have an effect on another. Typically it is regarded as oral or written communication between people or systems. In the shopping centre context interaction includes customer service, communication between shopping centre management and tenants etc.

Weightings for each usability attribute will be determined by analyzing the survey responses. Because consumers and tenants were asked to rate defined seven usability attributes, weightings are correlating to consumers' usability preferences. Weightings can be identified in four different ways. As the sample is fairly sizeable, firstly we can get general weightings by using all collected data. These weightings will represent all shopping centre users in generally. Secondly weightings can be determined according to a specific shopping centre profile. By using these weightings, shopping centres with similar profile can be compared more easily. The third way is to determine weightings for each of the identified user segments. On the other hand, each shopping centre can also be provided with centre specific weightings.

In order to evaluate each of these complex attributes in shopping centres, measurable parameters were identified for the usability rating checklist by the researchers. Nearly 200 different parameters were identified for customer's usability checklist. Even though, usability attributes itself will be the same for consumers and tenants, parameters will vary.

Usability ratings will be carried out by using the usability walkthrough method in all shopping centres participating in the project in May 2008. By the end of June the collected data will be analysed and final usability profile for each shopping centre determined including recommendation for improvements. These ratings could be used for benchmarking purposes to find best practices in shopping centre settings.

CONCLUSION

The aim of this study was to create usability rating tool to address the potential and need to improve usability in shopping centres. At the same time the objective was to increase general knowledge of usability, generate understanding in usability preferences of the users' and explore how the situation and the objectives of the users' will affect on their usability experiences.

Usability was approached from the users' perspective and attributes enable to rate shopping centres regarding efficiency, effectiveness and satisfaction were identified. The usability rating tool was built by undertaking three components to identify shopping centre profile, user profile and weight identified usability attributes. The tool itself was based on the usability framework introduced by Rothe (2006). By undertaking all these three components, the usability profile will be provided and vital information regarding customers and tenants and their usability preferences is generated.

There are alternative uses for the rating tool. It can provide general information which enables benchmarking, but it can also be used as customized tool to provide shopping centre specific information. The tool can be used by shopping centre managers and owners to evaluate and improve usability of the shopping centre already in use. On the other hand, the tool can be used as guidance for designers and construction companies.

The tool has not been fully implemented yet, so the final rating results, user preferences and segmentations are not yet completely defined. Based on quantitative approach, extensive surveys for instance, the results will be significant and increase validity of usability research from the users' perspective. The usability rating tool and the software application will be developed further. It is also possible that the tool is used in other environments than in shopping centres. As the consumer behaviour, shopping centre expectations are changing all the time, it is also essential that the tool, including surveys, checklists and parameters is reviewed regularly.

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