

Research on Evaluation of Furniture Usability

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Abstract: Furniture can be designed and produced for various purposes and this depends on how well it serves in use, and contributes to efficiency, effectiveness and satisfaction for final users. For furniture there are different standards that prescribe minimum requirements that a product must have. Those requirements are mainly related to the dimensions and technical quality.

Even so, most users, designers, constructors and producers never perform evaluations of their furniture performance. The purpose of this paper is to discuss some factors and aspects important for evaluation of furniture usability. Analysis was performed on the example of 80 beds at the Croatian market. The results indicate that usability cannot be evaluated only by parameters defined and listed in standards. This proves the need for proposition to increase the number of factors, which define furniture usability.

Keywords: anthropometry, design criteria, sustainable development, furniture usability, evaluation

1 Introduction

The solution to furniture systems usability is defined not only by the research, but also by the important need for production evaluation. On a similar note, although conventional knowledge challenge is regularly addressed by the regular surveys, we believe that a different method is necessary.

International quality requirements put demands on quality products that have to satisfy customers expectations. They also have to meet a well-defined need, use or purpose, but most important they have to comply with applicability and other requirements of society. Along with this they also have to be available at competitive prices, but in same time the production have to generate yield profit.

The concept of usability was first developed in the 1950's, for ICT and software development, Leaman (2000). Usability means the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use. Early and continual focus on users is recommended by Gould and Lewis (1985) as an important principle in user-centred design, were the users need to be directly involved from the beginning of the design process.

2 Present raw model of furniture production

The good furniture design must answer to the main objective of effective creative design in various ways such as simplicity of use, Archarry (2007).

Factors that affect furniture design are: art (art, style, form), function (the strength and durability, area, place, using), material (appropriate function, mechanical properties), costs, safety and social responsibility.

Nowadays there are following steps of product planing definition:

1. Style - What should it look like?
2. Location - Where will it be placed?
3. Proportion - What size it will has?
4. Function - How used this furniture will be?
5. Customer - Who will use it?

order that is not necessarily correct.

All of above mentioned terms are part of the design process and all of them have its own importance. But in reality some of them have a larger role than they really deserve, while others are discriminated. According to performed research, TRENDS AND FASHION today have too much importance.

Also it is important to note what visual impact should it have (to complement or contrast with the surrounding furniture), is it a main, most notable piece of furniture or it will blend in with surroundings or should it enclose (hide) or showcase its content.

There are several examples of the relevant dimensions that are not in compliance with the furniture standards.

One of the examples is the coffee table, having the height in range from 14 to 25 cm, which is too low and not usable for older people (Fig.1)

Measurements included height table are not functional, and their shape and size are a reflection of fashions and trends.

The next one was sofa, where anthropometry measurements of height and depth of the sofa were examined, and it was determined that the seat was too low and too deep (Fig.1).



Figure 1. Unsuitable dimension of sofa and Coffee table for people 65+

The third example, bed, will be presented in more details, where the height of the bed was measured.

These examples indicate the need to design according to the principles of inclusive design. The ultimate goal is to develop products that can meet the needs of the whole population Paulson (2006).

3 Materials and methods

The target group of researched objects were mass production double beds which are common at the Croatian market, and in compliance with the standard dimensions and needs for people 65+.

Sample group consists of 50 beds. The dimensions and details which are not suitable for customer 65 + were observed, together with the material and price.

Beds were divided by material characteristics. The beds were made from solid wood, veneered particleboard, particleboard with foil, from metal or they have been upholstered.

Distributions by price show that most of the beds are produced in low price range (Fig 2). These are generally beds from particleboard with foil (Fig.3).

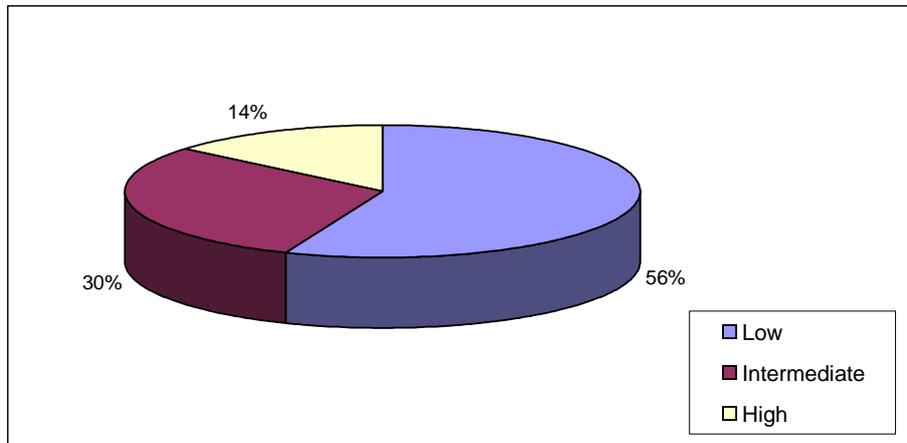


Figure 2. Distribution by price

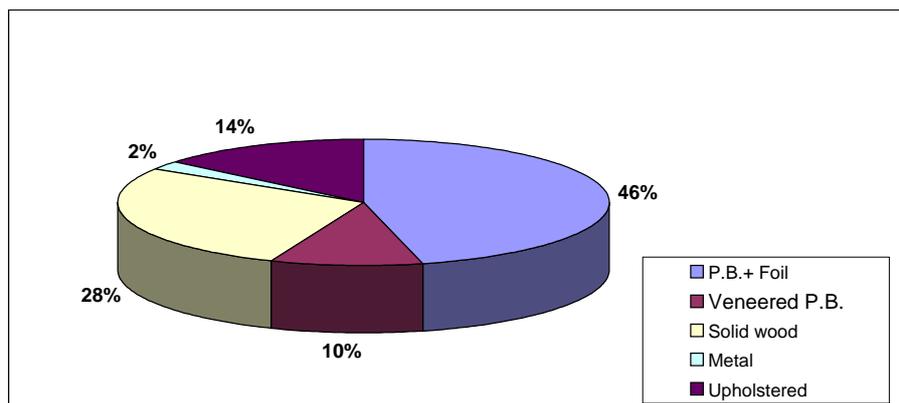


Figure 3. Use of materials

Materials used are related to price range. The largest number of beds is made of particleboard with foil, followed by solid wood, veneer and upholstered beds. The share of metal beds is negligible.

Even at 12% of the bed, height of bed is not in accordance with the prescribed standards (Fig.4). The percentage is even bigger if the frame width, height, leg height and sharpness of frame corner will be taken in account (Fig.5) were are:

1. A- Frame width
2. A1 – Oversized length and width
3. B - Height of the bed frame
4. C - Leg height
5. D - Sharp frame corner

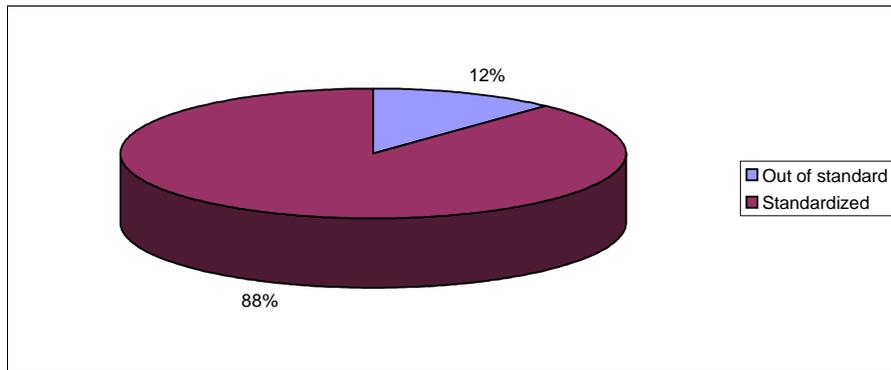


Figure 4. Compliance of dimension to the standards

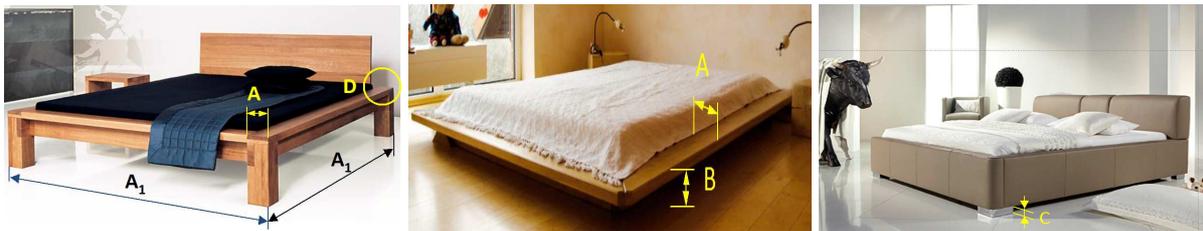


Figure 5. Dimensions and details that are not suitable for people 65+

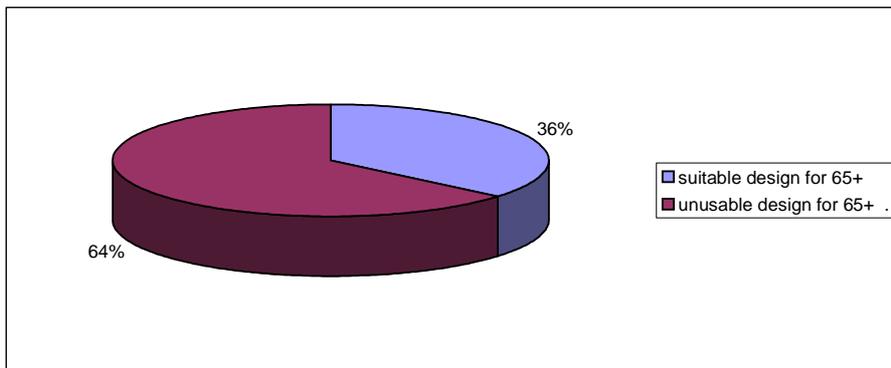


Figure 6. Dimension in compliance to the standards and design details

The design details of results shown in Figure 6 indicate a large increase from 12% to 64% in almost unusable beds for older people.

4 Conclusion

Most of beds (88%) are according to standards, but there is significant share of beds on market which are not (12%).

Dimensions that are controversial for use in the older population are: Overboard bed frame and, therefore, increased overall dimensions of width and length of the bed which is a problem in small bedrooms. These beds are too big for most bedrooms. Height of beds was too small. The space under the bed is hardly available, so it is difficult to clean.

It can be concluded that it is very important to use available standards which have to be adjusted for furniture production in future, so we have to make a new paradigm of design by setting the priorities of quality as a first one in line of decision and planing.

The most important are final users and their needs.

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