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The Role of Product Design in Product Related Consumer Judgements

Ph.D. Dissertation

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Table of contents

<i>Table of contents</i>	1
<i>List of tables</i>	4
Introduction	5
1. <i>The role of product design in our lives</i>	5
2. <i>Importance of the study of product design from a marketing perspective</i>	6
3. <i>Objectives of the research</i>	6
4. <i>Scientific and practical contribution of the research</i>	9
6. <i>Overview of the research</i>	10
1. The phenomenon of industrial design – manifestation of product form	12
1.1. <i>An Applied artistic perspective – a process approach</i>	12
1.1.1. Characteristics of the creative process	12
1.1.2. Characteristics of industrial design	15
1.2. <i>Result of the creative process: product design</i>	17
1.2.1. Successful product forms: societal innovations	18
1.2.2. Two aspects of the impact of product form	19
2. Manifestations of product design – conceptual model and theoretical constructs	21
2.1. <i>Product design</i>	21
2.2. <i>Individual differences</i>	23
2.2.1. Materialism	23
2.2.2. Information processing preferences	25
2.3. <i>Contexts: choice vs. usage</i>	28
2.3.1. Context of Choice	28
2.3.2. Context of Use	29
2.4. <i>Product related consumer judgements</i>	29
2.4.1. Judgement of functionality, utility	30
2.4.2. Product experience: experiential, hedonic, aesthetic experiences	30
2.4.3. Communicative, expressive power	31
2.4.4. Private meanings	32
2.5. <i>Conceptual model</i>	34
3. Hypotheses	35
3.1. <i>The impact of the characteristics of product design</i>	35
3.2. <i>The impact of consumer characteristics</i>	37
3.3. <i>The impact of the context: choice vs. usage</i>	38
4. Measurement instruments	39
4.1. <i>Measurements applied in the research</i>	39
4.1.1. Independent variables	39
4.1.2. Dependent variables	41

4.2. Preliminary tests of measurement instruments, adaptation of applied scales	43
4.2.1. Product related consumer responses – exploratory qualitative research	43
4.2.2. Tests of applied scales	51
5. Description of the empirical research	57
5.1. Circumstances and background of research	57
5.2. Research object (stimuli): mobile telephones	60
5.2.1. Context of choice	61
5.2.2. Context of usage	64
5.3. Participants of the research	65
5.4. Questionnaire design	66
5.4.1. Consumer attitudes about product design in general	66
5.4.2. Product related consumer responses in the context of usage	66
5.4.3. Product related consumer responses in the context of choice	67
5.4.4. Individual differences	67
5.5. Execution of the research	68
5.6. Applied methods of data analysis	69
5.6.1. Characteristics and structure of applied scales – factor analysis	69
5.6.2. Consumers’ view about design in general – correlation analysis	69
5.6.3. Role of design in the choice context – cross tabulation and analysis	69
5.6.4. Product related consumer responses in the context of choice and usage – analysis of variance	70
5.6.5. Modifying factors of product related consumer responses – linear regression	70
5.6.6. Product related consumer responses and their relation – generalisation of results	71
6. Description of the sample used in the research	72
6.1. Social and demographic characteristics	72
6.2. Relation of social and demographic characteristics and individual differences relevant in the judgement of product design	76
6.2.1. Individual materialism and social demographic characteristics	76
6.2.2. Information processing preferences and social demographic characteristics	83
7. Consumer evaluations of aspects of product design	85
8. The role of product design in choice decisions	88
8.1. First product and consumer encounter	90
8.2. Role of the characteristics of product form	91
8.3. Idealised choice context	92
8.4. Judgement of functionality	93
8.5. Intention of purchase	94
9. The role of product design in the context of choice	96
9.1. Product design preferences and individual differences	96
9.1.1. Gender	96
9.1.2. Ownership of own mobile phone	97
9.2. Product design preferences and materialist orientation	98
9.3. Factors determining product related consumer judgements: the impact of past experience	102
9.4. The role of product design in product judgements	105
9.4.1. The structure of product related consumer judgements	105
9.4.2. Product related consumer judgements with respect to preferences for product design	109

9.4.3. Consumer evaluations of the different aspects of product design	113
9.5. <i>Past experience and product design preferences</i>	115
9.6. <i>Determining factors of product related consumer judgements</i>	117
9.6.1. The impact of product design and individual differences	117
9.6.2. The impact of information processing preferences	121
10. The role of product design in the context of usage	123
10.1. <i>Structure of product related consumer judgements in the context of usage</i>	124
10.2. <i>Factors influencing product related consumer judgements</i>	125
10.2.1. Factors that influenced the choice of current phone and product judgements	125
10.2.2. Willingness to repurchase and product judgements	131
10.2.3. Evaluations of the aspects of product design of own phone and choice criteria	132
10.3. <i>Role of product design in product related consumer judgements</i>	134
11. Differences between the contexts of choice and usage	137
11.1. <i>Structure differences in product related judgements between the two contexts</i>	137
11.2. <i>Evaluating of aspects of product design in the two contexts</i>	139
12. Product related consumer judgements	144
12.1. <i>Product related consumer judgements in the choice context</i>	145
12.2. <i>Impact of product related consumer judgements in the usage context</i>	152
13. Possible directions of extension of the research	157
13.1. <i>Direct extension of the research</i>	157
13.2. <i>Relating corporate research</i>	158
13.3. <i>Possible directions of consumption research</i>	158
14. Conclusions	160
14.1. <i>Methodology of the research</i>	160
14.2. <i>Major results and contribution of the research</i>	161
14.2.1. Product design determines consumer choices	161
14.2.2. Impact of individual differences on preferences for product design	162
14.2.3. Impact of product design on product related consumer judgements	164
14.2.4. The role of design in the context of usage	166
14.2.5. Differences in the nature of choice and usage contexts	168
14.2.6. Product related consumer judgements	169
15. Relating publications	171
16. Bibliography	173
Appendix	184

List of tables

Table 2.1. Previous studies of consumers' information processing preferences	27
Table 4.1. Independent variables and their measurement	40
Table 4.2. Dependent variables and their measurement	42
Table 4.3. Respondents' materialist orientations – means	51
Table 4.4. Respondents' materialist orientation – factor structure	52
Table 4.5. Cronbach alphas in the original SOP scale and the adapted scale	53
Table 6.1. Distribution of gender in the sample	72
Table 6.2. Distribution of age in the sample	72
Table 6.3. Distribution of age in the sample after classification	73
Table 6.4. Distribution of permanent address in the sample	73
Table 6.5. Distribution of employment in the sample	74
Table 6.6. Distribution according to year of studies in the sample	74
Table 6.7. Distribution preferred future positions in the sample	75
Table 6.8. Distribution of preferred sector and industry of operation in the sample	75
Table 6.9. Gender differences in respondents' materialist orientation	77
Table 6.10. Respondents' materialist orientation and their social-demographic characteristics	82
Table 6.11. Information processing preferences and gender differences	84
Table 7.1. Consumer evaluations of the different aspects of product design in general	85
Table 7.2. Consumer evaluations of the different aspects of product design of mobile phones	86
Table 7.3. Relation of the consumer evaluations of the different aspects of product design in general and mobile design in general	87
Table 8.1. Primacy effects in the different decision frames	90
Table 8.2. Choices based on product design exclusively	91
Table 8.3. Idealised choices with respect to preferences of design	92
Table 8.4. Purchase intentions	94
Table 9.1. Respondents' product design preferences and gender	96
Table 9.2. The fact of ownership of own mobile phone and choice preferences	97
Table 9.3. Materialism and preferences of design in the case of mobile telephones	101
Table 9.4. Fact of owning a mobile phone and product related consumer judgements	104
Table 9.5. Factor structures of consumer judgements in the case of different product designs	108
Table 9.6. Expressiveness - characteristic responses and illustrations; uncompleted sentence: „ <i>This mobile telephone is able to tell about its owner that ...</i> ”	111
Table 9.7. Crosstab: Type of own mobile phone and chosen mobile phone	115
Table 9.8. Summary of scales used in the regression analyses	117
Table 9.9. Determining factors consumer judgements, results of regression analyses	118
Table 9.10. Impact of information processing preferences on preferences for product design and Product related consumer judgements	121
Table 10.1. Type of respondents' own mobile telephones	123
Table 10.2. Factor structure of product related consumer judgements in the context of usage	124
Table 10.3. Aspects determining the choice of own mobile phone	125
Table 10.4. Factors determining the choice of own mobile phone, means and quartiles	126
Table 10.5. Aspects of choice of own phone and relating product judgements	127
Table 10.6. Willingness to repurchase current telephone and relating consumer judgements	131
Table 10.7. Product design as an /un/important factor in the choice of own phone and evaluation of the design of the phone	132
Table 10.8. Categories and characteristic responses	135
Uncompleted sentence: „ <i>My mobile telephone tells about me to my environment that</i> ”	135
Table 10.8. Categories and characteristic responses; uncompleted sentence: „ <i>My mobile phone means to me that</i> ”	136
Table 11.1. Average evaluations of aspects of product design in four frames of reference	139
Table 11.2. Consumer evaluations of the different aspects of own mobile telephone	140
Table 11.3. Consumer evaluations of the different aspects of chosen mobile telephone	140
Table 11.4. Aspects of design in the two contexts related to product design in general	141
Table 11.5. Aspects of design in the two contexts related to mobile telephone design in general	142
Table 11.6. Aspects of product design in the two contexts related to each other	143

Introduction

Industrial design is not the planning of the surface, but the expression of all functions through form”

Lissák (1998)

1. The role of product design in our lives

Our lives are surrounded and facilitated with all kinds of products. We work, move, get entertained with the help of different kinds of products. Products, objects play a very important role in our lives. For completing a given task we need products: tools and machines. While choosing these products we are in a difficult and complex situation, could it be a valuable car or a simple household gadget, there are several alternatives available to us. Factors influencing our choices and decision-making are very important. However, convenient, satisfactory and enjoyable operation of these objects is also very crucial. In case a chosen tool does not operate as expected, if it does not fit our personalities, if our environment refuses this objects we ourselves will replace it, will not buy it again, will not recommend it to others. The importance of high quality operation of everyday objects, lies in that can result an enjoyable usage experience, therefore in consumer loyalty, favourable word of mouth, repurchase of forthcoming new models of the existing ones and could be subject of gift-giving.

Designers and manufacturers of new products have to consider several aspects to decide how to carry out a new product development process. It has to be decided in advance what services the product is to provide, how it should operate, how it should look like, how it should relate to its user. What are the criteria that ensure product success in market competition? These criteria is to be found in users', consumers' criteria. How do consumers make their choices, what determines whether they are satisfied with their choices? What is the criteria for consumers to judge their usage experience? When are they satisfied with their watch, car, fountain pen or coat hanger? The answer lies in whether it operates as expected, but the base of judgements could also be whether our environment appreciates it, what personal memories they evoke. All these aspects are very strongly determined by product design. It is not clear

however, what attractive power product design has, how it communicates and creates value (Bloch, 1995).

2. Importance of the study of product design from a marketing perspective

Product differentiation is a very important tool for companies that operate in competitive environments. Several studies have justified that one powerful tool for differentiation is product design (Bloch, 1995; Rassam 1995). Product design can build favourable consumer associations, and is also a major tool for building brand personalities and for creating characteristic product and company images (Kotler, 1996). This image can be a basis for product and corporate differentiation, which can become a competitive advantage. This decision however is difficult to integrate for companies among their other functions. Bauer et al. 2000 showed that for companies operating tasks like product development and product design were perceived as separate factors from other marketing tasks. Furthermore, the research also showed that there is a group of companies that consider product development and design tasks as important marketing tasks and disregards other marketing tasks like distribution for example.

As a result of continuous growth of competing products in several industries, the role and impact of product design extends to product communication and this tendency is part of successful company performance. Focusing on the emotional impact and social communicative roles of products has become very important as it is where competition takes place today (Margolin & Buchanan, 1996, Lissák, 1998).

3. Objectives of the research

Objective of our study is to explore the impact of product design (mobile-phone design) on the buyer decision making process, and product related judgements and attitudes. In our study we measure consumer evaluations of competing product designs, where we show that product

related consumer judgements differ as a result of different product designs. The research seeks to give an answer to the following research questions:

The first encounter of the product and user: choice

Product design can be studied from the perspective of serving consumers' needs, therefore identifying areas of groups of products that could be successfully sold (Bauer & Berács, 1998). This is to investigate market exchanges and the goods exchanged in this process. This suggests to study product design from the perspective of consumer choices, consumer decision making. From this perspective we formulate the following starting research questions:

- ?? **Which aspects of product design influence consumer choices?**
- ?? **Which aspects of product design influence consumer judgements about the product and anticipations of the future product usage experience?**
- ?? **How are consumer choices influenced by consumers' individual characteristics?**

These questions focus on the first user – product encounter: when the potential buyer can look at, touch the product. This product by its appearance and aesthetic qualities can convince him / her about the rightness of the choice. At the point of purchase the potential consumer can partly try out the product and if its price is found to be acceptable he or she may buy it. Product design can play a very important role in consumer choices as it very much determines this first encounter.

Interaction of user and product: the usage experience

It is a very important role of product design to differentiate the product in the market competition and contribute to successful sales results, however its primary task is to make a particular function possible. The designer's task not only to create an attractive product that sells, but it is also important how it fulfils its functions: what experience its user, owner has with it, whether it is easy, convenient and enjoyable. The product and its user could connect through personal experience, the particular product communicates about its user, but also invokes meanings that are only important to its owner.

From this perspective our starting research questions focus on whether product design plays a role in product judgements that are based on users' experiences with the product:

- ?? **How does product design contribute to the usage experience? Which aspects of product design influence usage experiences?**
- ?? **Which aspects of product design influence consumer judgements from the perspective of the usage experience?**
- ?? **How are these consumer judgements influenced by consumers' individual characteristics?**

These research questions can further be elaborated which are the areas present research seeks to give an answer to:

1. Which aspects of product design influence consumer judgements and how? How does the level of prototypicality of a product influence product related judgements (in the context of choice and usage)? How do the overall relational properties (unity) of a product influence product related judgements (in the context of choice and usage)?
2. How do individual consumer characteristics moderate product related consumer judgements? Are these consumer judgements explainable by consumer characteristics?
 - 2.a. How do consumers' materialist or not materialist orientation influence consumer choices and product related judgements?
 - 2.b. How do information processing preferences (visual and verbal processing styles) influence consumer choices and product judgements?
 - 2.c. What other consumer characteristics influence consumer choices and product related judgements?
3. How does context (choice vs. usage) influence product judgements? Do product related consumer judgements differ in the choice context and the context of use? What does the role ownership play in the formation of product related judgements?

4. Scientific and practical contribution of the research

Our research has both scientific and practical contributions. While the power, significance of product design is widely acknowledged in the Hungarian and international marketing literature as a differentiating tool or a competitive weapon etc., "the topic of product design is rarely if ever encountered in marketing journals." (Bloch, 1995; p. 16.)

Scientific contribution

The marketing literature approaches product design as a tool for determining the final form, shape of the product, so these research are more focused on the aspects of product appearance, likeability, and as a factor in the selling success of a product. These research do not take into account the characteristics of the creative process, and do not focus on aspects of the success of use, decisive role of the product experience.

Until now, the marketing literature has assessed product design mainly as a decisive element of consumer choice: its role of attraction in the potential consumer and product encounter, therefore as *determinant of product appearance*. However, even ordinary objects through their form or design determine the *quality and nature of their usage or consumption experience*. Studies on consumption and usage experience nevertheless have been more focusing on particular contexts, situations, occasions and on objects that were more special in their nature like the aesthetic products, the arts or extraordinary activities.

Present research approaches the impact of product design in the case of ordinary objects in both perspectives: in forming preferences, in the context of making choices and its influence on the usage experience.

The quality and nature of the consumption experience is not only determined by the type and application of its object itself and its context, but *also by the quality of the execution of this object: its form or design*. This form communicates to and persuades potential and actual consumers to make choices, but the *quality and nature of the usage experience* is also determined by this form. Furthermore, ordinary objects also serve as tools for communicating about and to users.

Current research builds on a definition of industrial design which not only considers product form, but extends the investigation of product design to the context of use. Contrary to previous research in present research real, existing products are used for the assessment of consumer judgements. Responses in the context of use and choice are recorded and compared.

Results of the research could give an input for product redesign, in the planning of second and third generations of product redesigns. As a result of the research approach, it allows to incorporate usage experience into the product redesign process.

The usage of internationally used scales, visual and verbal information processing preferences (SOP), materialism scale, HED/UT scales contributes to their further test of reliability and validity. Further, Hungarian adaptation of these scales makes cross-cultural comparative studies possible.

Practical contribution

Practical contribution of the research is that it gives a system of criteria and a method of analysis for supporting new product design, redesign. The measurement instruments and the suggested steps of the research makes the forecasting of future product successes possible by recording consumer judgements and preferences of switching among alternative products. We give an answer to which aspects of product design are important for consumers when they make choices and which aspects are important in the ownership and usage of a product. Replication of the study within several product categories could identify independent, universal characteristics of product design that are decisive in choice situations.

6. Overview of the research

The dissertation starts with a description of product design from an applied artistic point of view, summarises the major points of how industrial designers consider the process of product design with respect to market success. We reconcile the characteristics of the artistic creative process with the marketing thinking of industrial design (chapter 1.). Based on the

interpretation of the phenomenon of industrial design, product design we propose a conceptual model, and describe each of its components (chapter 2.).

Based on the conceptual model hypotheses of the research are formulated (chapter 3.). Then we explain measurement instruments applied in the research and give a short summary of their adaptation in the Hungarian environment (chapter 4.). Chapter 5. describes circumstances, background, research objects, participants, applied questionnaire and applied methods of data analysis of the empirical research.

Third part of the dissertation presents the research results. We start with the description of the applied sample (chapter 6.), this is followed by consumer evaluations of product design in general (chapter 7.). Chapters 8. and 9. describe the role of product design in the context of choice and chapter 10. presents the same type of consumer judgements in the context of usage. In chapter 11. we compare and contrast the characteristics of the two contexts with respect to consumer evaluations and judgements. Finally we analyse product related consumer judgements and their relations (judgements of utility, aesthetic and hedonic value) (chapter 12.).

Chapter 13. describes possible directions of the extension of the research. We close the dissertation with a summary of results, acceptance and rejection of hypotheses, presentation of scientific and practical contribution of the research results (chapter 14.) In chapter 15. we list relating publications to the research.

1. The phenomenon of industrial design – manifestation of product form

The discipline of design is approachable as a new form of rhetoric suited to an age of technology (Buchanan, 1995). Design is a liberal art of technological culture, concerned with the conception and planning of all of the instances of the artificial or human-made world: signs and images, physical objects, activities and services, and systems or environments. (Margolin and Buchanan 1995, p. xiii). These authors also stressed that the three great expressions of design thinking in the twentieth century - engineering, marketing, and the forms of graphic and industrial design - are distinguished by the modality or qualification of their arguments: (1.) engineers argue from necessity, (2.) marketing experts argue from contingency, and (3.) graphic and industrial designers argue from a vision of possibility.

Deforge's (1995) new humanistic approach to design implies that consumers may be more involved in the conception of products so that a new possibility may emerge: the *engineer-designer-consumer*. Frascara (1995) and Papanek (1995) point toward the need for the discipline of design to find ways of incorporating the practical consequences of knowledge gained from the social sciences. *“The designer’s centre of attention from the interrelation of visual components to that between audience and the design, recognising the receiver as an active participant in the construction of meaning.”*

1.1. An Applied artistic perspective – a process approach

1.1.1. Characteristics of the creative process

“All men are designers.... Design is composing an epic poem, executing a mural, painting a masterpiece, writing a concerto. But design is also cleaning and reorganising a desk drawer, pulling an impacted tooth, baking an apple pie, choosing sides for a back-lot baseball game, and educating a child.” (Papanek, 1971, p. 3-4.) Design is the *conscious effort* to impose

*meaningful order*¹. In doing so, the artist has to *envision* his or her solution in operation (Dahl-Chattopadhyay, 1999), therefore not only needs to understand the core idea of the given purpose in general, but also user requirements, the nature and circumstances of use as well.

Papanek (1997) stresses that instead of excessive emphasis on aesthetics, excessive emphasis on “high tech functionalism that disregards human psychic needs at the expense of clarity.

The core of the design thinking remains the ability to conceive, plan and present ideas about products. Knowledge may be a source of inspiration, practical constraint, or criteria for evaluation, but knowledge is useless unless it is transformed in the designer’s imagination into ideas and images, visions of the world that may be effectively communicated to others. “Design is a discipline of vision, both literally and metaphorically. (p. 6.)

“The art of *design, which chooses that the things we use shall look as they do*, has a very much wider and more sustained impact than any other art.” (Pye, 1978, p.11.) One character however, which sharply distinguishes useful design from such arts as painting and sculpture, is that *the practitioner of design has limits set upon his freedom of choice*².

"Yeah! It is a good industry to work in. Industrial design takes a lot of discipline. You cannot fall in love with your first idea. You have to be able to explore and take input from many different people with different talents and fields of expertise. It is very important to be flexible. Many young designers go into industrial design thinking to get their own line of something. It is good be ambitious, but you should always remember that most often a designer is more a part of the orchestra than a conductor. If you want personal expression only, then become an artist. As designer, you will almost always be a part of a team, as in fact I am.” Frank Nuovo³

Arnheim (1996) who writes about the psychological process of the act of creation in design stresses that the core of the design thinking remains *the ability to conceive, plan and present ideas about products. Knowledge* may be a source of inspiration, practical constraint, or

¹ The order and delight we find in frost flowers on a window pane, in the hexagonal perfection of a honeycomb..., reflect man’s preoccupation with pattern, the constant attempt to understand an ever-changing, highly complex existence by imposing order on it - but these things are not the product of design. They possess only order we ascribe to them. They lack conscious intention. (Papanek, 1971, p. 4.)

²When any useful thing is designed the shape of it is in no way imposed on the designer, or determined by any influence outside him. His freedom in choosing the shape is a limited freedom. The limitations arise only in small part from the physical nature of the world, but in a very large measure from considerations of economy and of style. Both are matters of purely of choice.

³ Frank Nuovo is the designer of the research objects of current research, Nokia mobile phones. Source: <http://www.Nokia.com>

criteria for evaluation, but knowledge is useless unless it is transformed *in the designer's imagination into ideas and images, visions of the world that may be effectively communicated to others.*

Krippendorf (1996) emphasises that the designer as the *maker of meaning*. The way a designer makes meaning is the way a user will reconstruct meaning. However, he also addresses that “noone can assume that form (the designer’s objectified meaning) and (the user’s) meaning are the same; there is need for product semantics to study how they relate.” “Designers are part of a broad ecological process, but their success depends upon their ability to understand the hidden governance of collectively shared archetypes and mythologies whose meanings must be respected, grasped, tapped, and drifted with.” (p. 161.)

While the marketing approaches to product design are *result-oriented* - consider the characteristics of the created product: its function, appearance, aesthetics, ergonomics. The artistic approach on the other hand investigates that result (product) from *a process point of view* and asks the question how to interpret, understand and know products so that they will be functional and further aesthetic and ergonomic, in that process the role of the designer is concerned. It is clear however, that the two approaches complement each other and the process of the product design, the interpretation of the product, the relation, portion and role of its function, aesthetics and ergonomics is important from present perspective as well.

Design as a problem-solving activity can *never, by definition, yield the one right answer*: it will always produce infinite number of answers, some “righter” and some “wronger.” Purely functional designs are hardly possible to make (Pye, 1978). It is these characteristics of design that are substantial to identify. Product form cannot be evaluated on single, separate compositional elements, it is a combination of compositional elements that are chosen and blended into a *whole* to achieve a particular sensory effect (Bloch, 1995).

Despite the best efforts of designers to determine the precise nature of products, the career of products in human experience depends as much on the ability of human beings to make sense of the artificial world as it does on the intentions of the designer. (Margolin, Buchanan, 1996). Consumers’ relation to product form is dependent on their personal characteristics, their personal relations to surrounding products (Richins & Dawson 1992), but also their preference, proneness to considering visual qualities (Childers, Houston & Heckler, 1982).

The notion of design consists of several layers. (Rassam, 1995.) *Engineering design* involves the research, development of new products, and their sufficient production technologies. *Industrial design* gives the final form of product function, appearance, aesthetics and ergonomics in accordance with market requirements. Bloch (1995) proposes to identify product design with product form. He defines product form as a representation of ‘a number of elements chosen and blended into a whole by the design team to achieve a particular sensory effect.’ (Bloch, 1995, p. 17)

Corporate identity design makes the company capable to communicate through its logo, house style, advertising etc. Present research proposal is concerned with the second, industrial design. However, a definition of that branch of design is still to be constructed that *reconciles the definitions of the artistic design and the marketing literature.*

1.1.2. Characteristics of industrial design

Design as a problem-solving activity can *never, by definition, yield the one right answer*: it will always produce infinite number of answers, some “righter” and some “wronger.” The “*rightness*” of any design solution *will depend on the meaning* which we invest in the arrangement. Therefore, design must be meaningful⁴.

“The mode of action by which a *design fulfils its purpose is its function.*” (Papanek, 1971, p. 5.) For that Papanek proposes the concept of the *function complex*, which shows the dynamic actions and relationships that make up the function complex:

Method: interaction of tools, processes and materials.

Use: fulfilling product’s primary function.

Need: the economic, psychological, spiritual, technological, and intellectual needs of a human being are usually more difficult and less profitable to satisfy than the carefully engineered and manipulated “wants” inculcated by fad and fashion.

⁴ And “meaningful” replaces the semantically loaded noise of such expressions as “beautiful,” “ugly,” “cool,” etc. ... In all of these we respond to that which has meaning. (Papanek, 1971, p. 5.)

Telesis: the telestic content of a design must reflect the times and conditions that have given rise to it, and must fit in with the general human socio-economic order in which it is to operate.

Association: associated aspect of the function complex. There are two basic design approaches: a clear-cut decision as to what the meaning of an object should be - e.g.: automobile, sports equipment, transportation etc., or allowing a greater variety of product sub-types

Aesthetics: is a tool, one of the most important in the repertory of the designer, a tool that helps in shaping his forms and colours into entities that move us, please us, and are beautiful, exciting, filled with delight and meaningful (p. 20.)

Pye argues *whether purely functional designs are possible to make*. Whenever humans design and make a useful thing they invariably expend a good deal of unnecessary and easily avoidable work on it which contributes nothing to its usefulness. Furthermore, all useful devices have got to do useless things which no one wants them to do. (Pye, 1978, p. 12 - 13) Never do we achieve a satisfactory performance. (Pye, 1978, p. 14.) When any useful thing is designed the shape of it is in no way imposed on the designer, or determined by any influence outside him. His freedom in choosing the shape is a limited freedom. The limitations arise only in small part from the physical nature of the world, but in a very large measure from considerations of economy and of style. Both are matters purely of choice.

According to Pye the six requirements for design in order to achieve a particular result are:

- ?? It must correctly embody the essential principle of arrangement.
- ?? The components of the device must be geometrically related.
- ?? The components must be strong enough to transmit and resist forces as the intended result requires.
- ?? Access must be provided (these four embody the *requirement of use*)
- ?? The cost of the result must be acceptable (*requirement of economy*)
- ?? The appearance of device must be acceptable (*requirement of appearance*) (Pye, 1978, p. 23.)

Bloch (1995) states that good design has the capacity to attract consumers, to communicate to them and to add value to the product by increasing the quality of the usage experiences associated with it. It is not clear however how design attracts, communicates and adds value. One approach to assess design is through its contribution to its success:

- ?? its ability of gaining consumer notice;
- ?? its capability of communicating information to consumers;
- ?? its potential to affect the quality of our lives;
- ?? having a long lasting effect;
- ?? its capability of attracting consumers;
- ?? its capability of adding value.

The above discussion suggests the following key points in the construction of the *concept of goodness of product design, quality of product design*:

1. There is no only right product design solution. It is the interaction of the product and its user that create the final evaluation of the goodness of its product design. Furthermore the above fact implies the requirement of maintaining product diversity.
2. The designer's creative choice is limited as a result of the common influence of the design, engineering and marketing disciplines and as a result of production, market, consumption requirements and constraints. Successful product design, therefore, must come from the interaction of the maker (designer) and user (consumer). Present research approach incorporates this interaction.
3. The content, quality, value added by design is to be constructed *of pairs of opposing, supplementary notions*: its usefulness vs. its unnecessary, but unavoidable aspects (Pye, 1978.); functional vs. aesthetic/attractive aspects (Pye 1978, Papanek 1971, Bloch 1995, Cova et al. 1993, 1996.); primary objectives vs. additional values (Pye 1978, Papanek 1971.) The operationalisation of these opposing pairs and their controlled manipulation in experiments is still to be elaborated.

1.2. Result of the creative process: product design

Understanding the nature of industrial design and the impact of its product: *form, product design*, lies in the understanding its process. The designer's task is to *express an abstract purpose* - for example providing a stable hold, facilitating a comfortable handling - *in a*

tangible, material form. The result of the industrial designer's work is a *final form* of a given purpose: *entirety* of product function, appearance, aesthetics and ergonomics *in accordance with market requirements* (Pye, 1978). The primary aim of this final form, is not only to attract consumer attention, but also to assist and facilitate use. Therefore, the way a designer makes meaning - interprets a given purpose - is the way a user will reconstruct meaning - interpret and use the object (Krippendorf, 1996).

Overall it is the designer's task to express a given purpose in a meaningful and *distinctive form that sells*. Nevertheless, it is also core nature of product form that it can only be *wholly explored* by the users only through and *during usage*. Setting the objective of investigating industrial design, product form requires the investigation of all of its manifestation: its power at the point of choice and its impact on the usage experience as well.

1.2.1. Successful product forms: societal innovations

Product design can be approached from the perspective of such design successes such as Harley Davidson motorcycles, Citroen 2CV, VW Beetle, Zippo lighters, Thonet chairs, some Parker pens or today's new iMac computers. Those products that have very powerful design properties; not only fulfil the functions for which they were intended, they also possess an *aesthetic and societal dimension* that builds up entirely new relations between themselves and their users. They are classified as *societal innovations* by Cova (1996). "A societal innovation should be understood as the process by which new meanings are introduced into the social system. Although these innovations may seem like lucky accidents", ... that there is a "design process that leads to such discontinuous innovations." (Cova, 1996, p. 32.)

On the other hand, products with weaker design properties have to fulfil requirements of freshness and novelty (Bloch, 1995). While increasing exposure to a particular product design may make consumer reactions more positive; after a wide acceptance of a given design it may *lose* its appeal if it becomes too common.

1.2.2. Two aspects of the impact of product form

The role of product design is twofold: from one hand it determines the first encounter of the potential buyer with the product, the moment of choice, on the other hand, it has a major influence on the quality of the usage experience. This way product design determines appearance and experience, trial and feelings with the product, choice and usage.

The two roles are equally important and derive from the essence of industrial design: “industrial design is not the planning of surface but the expression of all functions through form.”(p. 145., Lissák, 1998). There is no separate utility and beauty. What is useful is beautiful. It is the **utility of the products that induce aesthetics**. (Lissák, 1998). As a result of successful product design products’ high usability can become a source of aesthetics. Aesthetics in industrial design is not for its own sake, it is a result of user focus: **experience of aesthetic value can be best realised during the functional usage of the product** (Holbrook & Zirlin, 1985).

Facilitation of market exchange

“Design is to be extended to the perception and interpretation of the product.” (p. 161., Lissák, 1998). The process of industrial design not only to make a product functioning, but it is a differentiating tool. Product design as a tool of creating a differentiating form has a significant role in market competition: communicates and positions, influences choices: attracts consumers, communicates to them by being eye catching and providing information (Bloch, 1995).

Influence on the usage experience

The most essential role of industrial design, product design is to make a particular function possible: determining the relation of the object and user.

Design increases the value of the product by improving the quality of the usage experience, quality of our lives, it can be durable and influential (Bloch, 1995). “Psychological function

can be seen, read from the product, however it can be revealed by multiple sensory experiences.” (Lissák, 1998., p. 160).

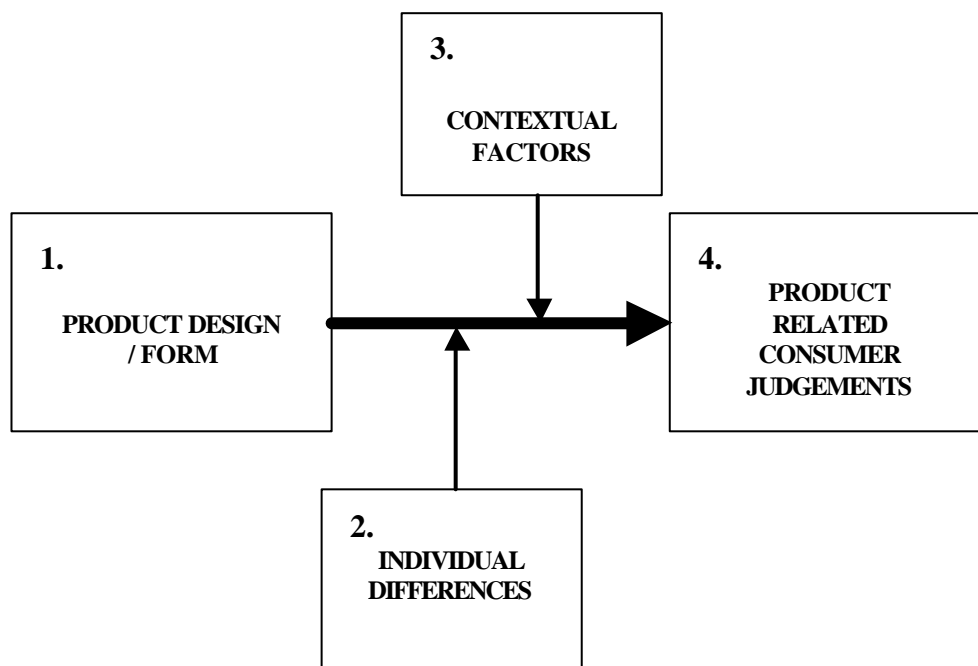
While marketing approaches to industrial design are result oriented, consider the end result of the planning process: product features: functions, appearance, aesthetics and ergonomics. Artistic approaches to industrial design approach the results (the marketable product) from the point of view of the creative process: how to interpret products in order to make functioning appropriate, usage enjoyable. In this process the designer artist has a decisive role.

It is clear however that the two approaches supplement each other and the process of industrial design, product design, interpretation of product, the importance of functionality, aesthetics and ergonomics strongly relate. Final result of the process is to be investigated empirically with the consideration of the characteristics of the creative process.

2. Manifestations of product design – conceptual model and theoretical constructs

Based on both, industrial design literature and relating marketing research the following conceptual model can be formed, that provides a framework for investigating product form. This model strongly relates to the conceptual model of Bloch (1995) (see Appendix 2.1.).

Figure 1. Conceptual Model



2.1. Product design

"Design is the arrangement of parts, details, form, colour, etc. so as to produce a complete and artistic unit; artistic or skilful invention." (Webster's New World Dictionary, 1991) From the perspective of marketing design is concerned with the construction and making shape of a product according to potential customers' needs and tastes.

The quality of product appearance may be the only differentiating tool, the only distinctive aspect in fierce market competition. Products of the same or similar quality and price may be

judged and chosen upon the consumers' visual and aesthetic impression. This fact explains the reason why design and its role in developing product appearance is crucial.

A product is composed of physical, aesthetic and symbolic characteristics and attributes that are to satisfy the consumers' needs. (Bauer-Berács, 1992) When we buy a product we not only buy a simple object, but in many cases we buy something more: convenience, safety, good taste, individuality, stylishness, trendiness, etc. are possible examples.

According to Levitt (1983)⁵ an overall product concept constitutes the following⁶: basic function /generic product/; the product must be capable of solving the desired problem at the right place, time, price etc. /expected product/; further, the product may be able to supply additional benefits that are beyond the primary function of the product (extended product), however, there is always a possibility for the manufacturer to add something to the product that will increase the benefits provided by the product /potential product/.

Another possible categorisation of products is through the types of benefits they can potentially provide. Function benefits involve physical benefits, the function that the particular product fulfils. Products have the potential to express the needs that come from the personality of the user, these are the psychological benefits. Products are also able to satisfy needs that derive from needs of relationships with other people, these are social benefits. (Becker-Kaucsek, 1996.) These aspects are influenced by product design.

Prototypicality and Unity

Product form cannot be evaluated on single, separate compositional elements, it is a combination of compositional elements that are chosen and blended into a *whole* to achieve a particular sensory effect Bloch (1995). Studies of *empirical aesthetics* provide possible dimensions for describing the relation of visual design qualities, these are: *prototypicality* and *unity* already investigated in the context of products with the application of line drawings. (Veryzer-Hutchinson, 1998). The phenomenon of industrial design suggest (Margolin, Buchanan, 1996) *extending the definition of unity and prototypicality to the relations of appearance, shape and manner of fulfilment of purpose*. In this sense, unity is defined as the

⁵ quoted by Bauer-Berács, 1992

⁶ The following words and expressions are translated back from the Hungarian language, therefore, they may not be identical with Levitt's original wordings.

level of congruity among the elements of form as well as the level of congruity of the purpose of the given object and its material expression. The concept of prototypicality refers to how the given object is representative of its category not only in the sense of its appearance and shape, but also its purpose.

2.2. Individual differences

Despite the best efforts of designers to determine the precise nature of products, the career of products in human experience depends as much on the ability of human beings to make sense of the artificial world as it does on the intentions of the designer. The meaning of products is constructed through personal interactions, and user - object interactions that are not entirely within the control of designers (Margolin & Buchanan, 1996). Consumers' relation to design, product form is dependent on their personal characteristics, their personal relations to products that surround them, but also their preference, proneness to considering visual qualities such as product appearance. The meaning of products is constructed through personal interactions that are not entirely within the control of designers. (Margolin, Buchanan, 1996.)

2.2.1. Materialism

The importance consumers attach to products plays a role in their choices and judgements (Csíkszentmihályi & Prochberg-Halton, 1988; Holt, 1995; Richins & Dawson, 1992). Investigating consumers' relations to products, the importance they attach to them Richins - Dawson (1992) differentiate among materialist and not materialist consumers.

Importance attached to products can be approached as a kind of consumer orientation (Csíkszentmihályi & Rochberg-Halton, 1981), as a consumption style (Holt, 1995) and as a base for consumer evaluations (Richins & Dawson, 1992). This phenomenon is labelled with the expression materialism. This expression especially in the East European context of application has some negative connotations therefore later on the expressions "materialism" and "importance attached to products" are used as synonyms. Meaning of "materialism" used

in the marketing literature (and here) is according to the meaning of “2c” in Oxford English Dictionary: “Devotion to material needs or desires, to the neglect of spiritual matters; a way of life, opinion, or tendency based entirely upon material interests.”⁷

Products can be both objectives to be reached and instruments (Csíkszentmihályi & Rochberg-Halton, 1981). Based on this approach materialism can be approached from these two perspectives:

- ?? *Instrumental materialism* implies that objects serve as tools, instruments in achieving personal goals. Therefore, products and possessions are used as tools for accomplishing something.
- ?? *Terminal materialism* is the phenomenon of consumption that furthers no goals beyond possession itself.

According to Holt (1995) materialism is a kind of consumption style. In this approach the role of objects in the process of consumption and usage is investigated. Materialist style of consumption involves consumer evaluations where the value of the product derives from the object of consumption itself, not from the experience or human relations.

Materialist consumption style is involved by integrating social elements of consumption, usage, but not aspects of the usage experience. Consumption is a source of social integration which results in making the particular object part of personality of the user, it becomes a tool for expressing the user’s identity. Consumer classification implies that consumers use objects in order to communicate through them, to identify themselves with them or differentiate themselves.

⁷ **materialism**

1. Philos. The opinion that nothing exists except matter and its movements and modifications; also, in a more limited sense, the opinion that the phenomena of consciousness and will are wholly due to the operation of material agencies. Often applied by opponents to views that are considered logically to lead to these conclusions, or to involve the attribution to material causes of effects that should be referred to spiritual causes.

2. Transferred uses.

a. Applied in reproach to theological views (e.g. on the operation of the sacraments or the nature of the future life) that are supposed to imply a defective sense of the reality of things purely spiritual.

b. In art, the tendency to lay stress on the material aspect of the objects represented.

c. Devotion to material needs or desires, to the neglect of spiritual matters; a way of life, opinion, or tendency based entirely upon material interests.

3. concr. The system of material things; the material universe.
(Oxford English Dictionary)

Not materialist consumption style means that the source of value lies in the consumption experience. The role of products is to create valuable experiences.

Materialism is a source for creating consumer value: the value that users, owners attribute to their possessions. Value that is created by the objects can emerge through three ways:

- ?? Through acquisition – *acquisition centrality*. For materialist consumers possessions and their acquisition is especially important, for them acquisition itself is an objective.
- ?? Acquisition itself can become the *pursuit of happiness*. For materialist consumers the acquisition and ownership of material objects can become a source of personal satisfaction and happiness.
- ?? Possessions can *define personal success*. Materialist consumers regard others' and their own success on the basis of what amount and quality of goods they have.

For materialist consumers it is products' utilitarian benefits, their potential to express personal success (Mick, 1996), enjoyment of their acquisition that is important; product appearance and qualities of form determine their choices. On the contrary, non-materialist consumers appreciate their possessions, for them, enjoyment lies in their use and also memories they evoke (Richins, 1994a). According to level of materialism consumers are more receptive to different manifestations of product design, materialists' are more concerned about aspects of appearance, while non-materialist are likely to be sensitive to the quality and nature of operation.

2.2.2. Information processing preferences

Several studies have been dealing with consumers' affective and cognitive responses to product related verbal or visual stimuli. Relating research, where visual stimuli are used and individual processing styles are assessed vary according to research objectives, research objects and subjects. Several of the researches offer measurement instruments to assess visual processing styles (Childers 1985; Bamossy, Scammon and Johnston 1983; Hirschman 1986; Veryzer 1993) and / or estimate underlying design dimensions of research objects (Veryzer 1993, Henderson & Cote 1996).

Relating research, where visual stimuli are used and individual processing styles are assessed vary according to research objectives, research objects and subjects. Several of the researches offer measurement instruments to assess visual processing styles (Childers 1985, Bamossy et al. 1983, Hirschman 1986, Veryzer 1993) and / or estimate underlying design dimensions of research objects (Veryzer 1993, Henderson, Cote 1996). Research objects take the form from paintings (Bamossy et al. 1983), logos (Henderson, Cote 1996) and to products (Hirschman 1986, Veryzer 1993). Research objects also vary according to being constructed according to selected dimensions (Veryzer 1993), or being an existing, real construction (Bamossy et al., Hirschman, Henderson and Cote). In related researches respondents are either considered as a homogenous group (Veryzer; Henderson and Cote), or their differences in visual processing is assessed (Childers; Hirschman; Bamossy et al.) The role of formal visual (or art) education is studied by Bamossy et al., while the contribution of experts in setting up research dimensions (expert naive paradigm) is used by Bamossy et al. and Henderson and Cote. Present research uses real products, based on the expert naive paradigm and assesses individual perceptual differences according to differences in visual processing styles. (Table 2.1.)

Gould (1990) has shown that there is a relationship between involvement with different types of products and individual processing styles. Consumers with visual processing preferences are more involved with products that are more visual oriented in their use i.e. cameras, clothes. As a result of higher involvement in these, they are more concerned about all product characteristics that are a result of their own form or design.

Table 2.1. Previous studies of consumers' information processing preferences

Author	Research questions	Research subjects	Research objects	Involvement of experts (artist, designers)	Data collection method
Childers, 1985	development of a scale to measure the differences between visual and verbal processing	263 undergraduate collage students	no	no	22-item, four point Likert-type summated rating scale; statements about visual vs. verbal processing
Hirschman 1986	measuring the degree to which an object arouses one's emotions and is perceived as being attractive and desirable	college students	all verbal vs. all visual ads (14 products examined)	no	five-item, seven-point semantic differential summated ratings scale
Bamosy, Scammon, Johnston, 1983	new instrument that measures aesthetic judgement ability using a cognitive-developmental perspective	subjects with all in the formal operational stage of cognitive development, extent of formal art training (convenience sample, graduate students in arts)	colour slides of three paintings, real paintings	expert naive paradigm	10-9-10 statements for each painting, responses from personal interviews; statements representing lower or higher aesthetic worth; 4 point Likert type of scale
Veryzer , 1993	proposition of design principle internal processing algorithm - conceptualisation of aesthetic response	24 undergraduates	colour scanned images of three products: - microwave oven - suntan lotion bottle - natural sound machine not real products	for the construction of product images	Product aesthetics manipulated: Proportion: high - low Unity: high - low (? 12 products) 9-point semantic differential + explanation why
Henderson - Cote, 1996	identifying underlying dimensions of design that differentiate logos	- 3 judges for choosing logos; - students on average 56 students evaluated each logo	existing, but foreign logos to eliminate confounding effects of repeated exposure, product assoc., etc.	expert naive paradigm, choice of logos by experts	- single rating of trained expert - average rating of the logo taken from a large sample: 5 seven point scaled measures of affective response; and 2 seven point scaled measures of logo characteristics

2.3. Contexts: choice vs. usage

Products of the same function and prices, but of different product designs are preferred by different groups of people. The role of products in users' lives have an impact on the criteria they make their evaluative judgements according to. Products offering emotional commitment, links to previous experience and memories (high involvement products) will be judged differently from those that do not provide these links (low involvement products.)

By the purchase of a certain product consumers not only seek its basic function, but seek further contents and values. Consumption is itself a creative process, source of difference and identity. *'Consumption is not just a personal act of destruction by the consumer, but very much a social act where symbolic meanings, social codes, and relationships, in effect, the consumer's identity and self, are produced and reproduced'* (Baudrillard, 1975; Poster, 1975 cited by Firat and Venkatesh, 1993.) Product functions can be taken for granted today. It is not only its function, excellent quality, but its aesthetic (Cova and Swanfeldt, 1993) that also distinguishes. Therefore aesthetics, not only technology can become a source of innovation.

The quality and nature of the consumption experience is not only determined by the type and application of its object itself and its context, but *also by the quality of the execution of this object: its form or design*. This form communicates to and persuades potential and actual consumers to make choices, but the *quality and nature of the usage experience* is also determined by this form. Furthermore, ordinary objects also serve as tools for communicating about and to users.

2.3.1. Context of Choice

Product form determines the first potential consumer and product encounter, the moment of making choices, purchase decisions. "Industrial design is *to be extended to the act of the interpretation, perception* of the product." (Lissák, 1998, p. 161). Design is not only for giving a tangible, physical form of an abstract function, but it is to give a *distinctive* form (Rassam, 1995). Design as the tool of expression plays a crucial role in market competition:

communicates and positions, influences choices, attracts consumers, users and is capable of communicating with them - catches attention, provides information (Bloch, 1995).

2.3.2. Context of Use

The use, consumption of products does not simply imply their primary functional use, but they also serve as sources of expression, self-expression, enjoyment and hedonism. When buying a particular product consumers not only seek its primary function, but further contents and value. Consumption and product use is a kind of creative process, source of individuality and difference (Hirschman & Holbrook 1982; Holbrook & Hirschman 1982; Richins 1994a; 1994b, Solomon 1983, Belk 1988, Firat & Venkatesh, 1995). It is *through use that a product can wholly be explored and therefore the impact of product form be investigated* (Margolin & Buchanan, 1996; Lissák, 1998). Anticipation of future experience with a given product may not be as expected, may not be correct.

One of the primary roles of product design is distinction in market competition, but its core essence lies in giving an abstract function a tangible format. The designer's task is not only the creation of an attractive object, which sells well, but it is also of great importance *how it does fulfil its function*: what the users' experiences are: whether it is enjoyable, useful, satisfying or aesthetic. The user and product may be linked with each other as a result of personal experience. A given product communicates about its user on the one hand, but conveys meanings as well that are only relevant to its owner, user on the other (Holbrook - Hirschman, 1982, Hirschman - Holbrook, 1982, Holbrook, 1994).

2.4. Product related consumer judgements

There are two supplementary concepts of consumption, that can be related to the quality, value added by design, utilitarian vs. hedonic consumer behaviour. Utilitarian consumer behaviour can be described as ergic, task related and rational (Babib, Darden, Griffin, 1994), while hedonic behaviour/experience results more from fun and playfulness, reflects potential entertainment and emotional worth. "Increased arousal, heightened involvement, perceived

freedom, fantasy fulfilment and escapism all may indicate a hedonically valuable shopping experience.” (p. 646.) “We use goods in two ways. We use goods as symbols of status and simultaneously as instruments to achieve some in end-in-view” (Hamilton, 1987, p.1541, cited by Spnagerberg et al, 1997).

Contrasting the information processing approach of Bettman, Holbrook and Hirschman (1982) state that *while products have tangible benefits that perform utilitarian functions they also have symbolic meanings of more subjective characteristics*. The criteria for successful consumption are essentially aesthetic in nature and hinge on an *appreciation of the product for its own sake, apart from utilitarian function that it may or may not perform*.

2.4.1. Judgement of functionality, utility

A given form contributes to the fulfilment of the product’s purpose and function. It determines whether this purpose is fulfilled in a comfortable and efficient way, whether it advances the quality of the users’ life. (Margolin & Buchanan, 1996; Spangenberg, Voss & Crowley, 1997).

2.4.2. Product experience: experiential, hedonic, aesthetic experiences

Product form determines the *quality and nature* of fulfilling a given purpose, it is capable of creating enjoyable activities, sensual pleasure, aesthetic experience. (Richins 1994a; Holbrook & Hirschman 1982; Spangenberg, Voss & Crowley, 1997). As Selle (1997) describes in relations with a pocket computer: it does not only calculate but the touch of its buttons, their sound gives an aesthetic experience and pleasure:

“For weeks I’ve been playing with an Olivetti tabletop calculator⁸ ..., something unusual took place that had not occurred to me until now. It was not the insight that forms are convertible worldwide....It was not even the consideration of how obvious these forms are for many users. It was, rather, *the unexpected discovery of the pleasure created by touching the thing*. I understand nothing about electrical equipment; this calculator was not even working. I played around with it and found, to my surprise, *that handling the thing was not bound to its function, that it was free from any goals*. The instrument had tangible weight,

⁸ Olivetti tabletop calculator (Divisuma 18) (design by: Mario Bellini)

plasticity, and an extraordinary haptic quality, *which functioned sensually with no hidden agenda but merely as a material body that "serves" playfully*. Is it an object for esthetic pleasure, freed from all the goals of necessity? A person can feel it, stroke it, lift it, weigh it, even compose on it; for it is also a musical instrument. I recall the slight pressure of sensitive, warm skin on tangible, rubber-covered keys and buttons, which offered a slight resistance; then the apparatus made a delayed and attractive clicking noise, without causing any dismay and which was similar to the spontaneous pressure that produces playful rhythmic patterns on a percussion instrument. And I remember how increasingly amazed I was by the forgotten process approach and negotiation between the machine and my hand." p. 241.
Gert Selle: Untimely Options (An Attempt to Reflect on Design)

This group of reactions describe the quality of experience of usage. Whatever task it is that our objects are to fulfil we have a determinate opinion about the quality of its functioning: its convenience, pleasantness and enjoyment.

The difference between judgements of utility and quality of experience can be explained by whether particular tasks is fulfilled with the product well (utility) and the way, nature it fulfils this particular function (experience).

2.4.3. Communicative, expressive power

Objects fulfil an important role in the expression and symbolisation of personal roles and influencing personal relations. Most products hold messages that are meaningful to a particular group, and that *its owner wants to communicate about him- or herself (public meaning)* (Richins 1994b). Furthermore, objects are assimilated into personal, private lives and are given symbolic meanings as expressions of the order of private experiences. Objects take on symbolic value, *private meanings with reference to one's own personal history* (Csíkszentmihályi & Rochberg-Halton, 1981).

The key is more meaning: "today's buildings, design objects *afford more than* privacy, shelter, or simple extension of the human body." (Krampen, p. 95) According to Gibson's (referred to by Krampen) theory of affordances, products that provide the possibility of more meaning, understandable are likely to be attractive to more people.

2.4.4. Private meanings

Objects are assimilated into personal, private lives and are given symbolic meaning as expressions of the order of private experiences. Objects take on symbolic value with reference to one's personal history. "The meaning of our private lives is built with these household objects" Yet public art and design also perform an analogous function for society as a whole: "The high art helps create order the thoughts and feelings a given society has about itself."

Csikszentmihályi (1984) in his research showed that artefacts to which owners were strongly attached lacked aesthetic value, but were charged with meanings that conveyed a sense of integrity, purpose. He defines homes with a network of objects that referred to meanings that gave sense to the lives of those who dwelt there.

To be effective in conveying meanings the owner had to be personally involved with the artefact; to be significant, the owner had to enter into an active symbolic relationship with it. The objects were rarely aesthetic, formal syntactic qualities were mentioned as a reason for liking. Formal qualities alone almost never made a picture valuable to its owner.

Those sensitive to formal qualities recognised aesthetic value, but by actively appreciating the object, "the owner joins in the act of creation and it is this participation, rather than the artist's creative effort that makes the artefact important" (Csikszentmihályi, 1996).

Visual values are created in society, there are no natural responses to colour and form, there are meanings attached to configurations of colour and form, of which people of a given culture agree... (In each culture public taste develops as visual qualities are eventually linked with values. "Good design is a visual statement that maximizes the life goal of the people in a given culture that draws on a shared symbolic expression for the ordering of such goals...") Design comes into full existence when the communication with the audience takes place (Frascara, 1996). Krippendorf (1996) states that people do not perceive pure forms, but meanings.

According to Margolin and Buchanan the career of a product depends on the ability of human beings to make sense of it, as well as making sense of the artificial world around them. Human beings are not passive recipients of product messages, but *active participants in shaping meaning*.

“No one can presume *that form (designer’s objectified meaning) and (the user’s) meaning* are the same.” (Krippendorf, 1996) There is a need to *study how they relate*.

Csikszentmihályi (1996) asks if there are objective (visual) qualities at all that add up to good design, as subjects in his study gave symbolic meanings to products that lacked either quality or aesthetic value, but were references to one’s own personal history. Csikszentmihályi also gives empirical evidence of the lack of universal understanding of either elementary forms / shapes or colours. However, in each culture public taste develops as visual qualities are eventually linked with values.

Still, there can be a relation between a product and its user that is only meaningful to this user, and is strongly determined by product design. As Pirsig states:

“The machine itself receives some of the same feelings. With over 27,000 on it it’s getting to be something of a high-miler, an old-timer, although there are plenty of older ones running. But over the miles, and I think most cyclist will agree with this, *you pick up certain feelings about an individual machine that are unique for that on individual machine and no other*. A friend who owns a cycle of the same make, model even same year brought it over for repair, and when I test rode it afterward it was hard to believe it had come from the same factory years ago. You could see that long ago it had settled into *its own kind of feel and ride and sound, completely different from mine*. No worse, but different.” p. 38.

(Robert M. Pirsig: Zen and the art of Motorcycle Maintenance)

2.5. Conceptual model

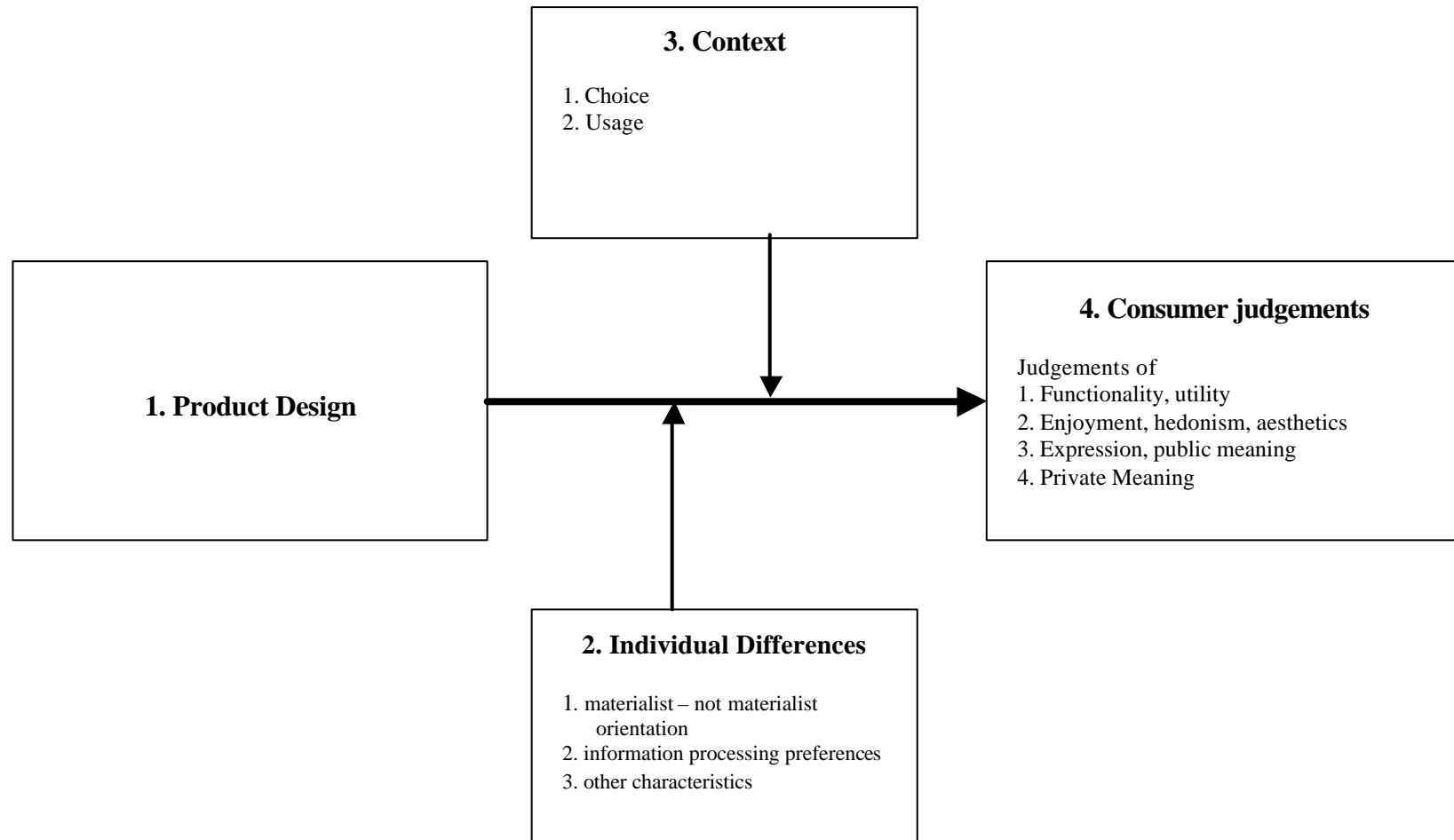


Figure 2. Summary of theoretical concepts used in the empirical study

3. Hypotheses

Research hypotheses describe the relations of the conceptual model and accordingly we formulate three groups of hypotheses. Our starting points are the following: Characteristics of product design have an influence on choice and usage. Consumer characteristics determine choices, and product related consumer judgements. Contexts of choice and usage differentiate consumer evaluations.

3.1. The impact of the characteristics of product design

The industrial design literature suggests that product design is to guide and facilitate use. Product design on its own is to express all about itself (Margolin & Buchanan, 1996, Papanek 1971, Lissák, 1998). Consistency in appearance and consistency between the fulfilled purpose supports choice and use, therefore consumers' product related responses. Veryzer & Hutchinson (1998) in their research showed that higher level of unity in the composition of product design entails more positive product related consumer responses, especially in aesthetic responses.

H1:

Characteristics of product design have an impact on product related consumer judgements. In the case of those products that differ in their design, but identical in their services and value bring about different consumer judgements. Nature, characteristics of product design whether it is novel and unusual or usual, namely typical determine how much utility, aesthetic and hedonic value consumers attribute to different products.

- H1/a) The more usual, typical a given product design is, the more functional, useful it is perceived by the consumers. The more novel and unusual a given product design is, the less functional and useful it is judged in the context of choice.
- H1/b) The more novel, unusual a given product design is, the higher its aesthetic and hedonic features are considered. On the contrary, in the case of very usual, typical product designs consumers regard aesthetic and hedonic values of lower importance.
- H1/c) The more usual, typical a particular product design is, the more expressive power is attributed to it. The more novel, unusual a given product design is, the more expressive power is attributed to it. Product designs that are not clearly novel, unusual or usual, typical do not invoke definite judgements about the product expressiveness, communicative power.

When a product is more prototypical, more representative of its category, this involves that it is better known, more familiar (Loken-Ward 1990, Veryzer-Hutchinson, 1998), therefore better liked in its appearance and better understood in its operation. It is the information value of a prototypical object that can create positive product related judgements. On the other hand, common designs already existing in the market-place can become boring, and old-fashioned and less appreciated. Therefore, the systematic alteration of these common designs can reserve the information value of prototypicality and bring in the sense of newness, freshness as well. However the opposite is also true. For those consumers who seek variety, not prototypical, even atypical products are also liked for their exclusive novelty and distinctiveness (Meyers Levy - Tybault, 1989). Product designs' commonness or very unusual forms communicate about their users. Research has also shown that moderate familiarity, moderately incongruent products with their category stimulate processing and are more favourably evaluated (Bloch, 1995).

3.2. The impact of consumer characteristics

H2a:

The importance consumers attach to their material possessions, their level of materialist orientation influences product related judgements:

1. Consumers who attribute greater importance to their own possessions (materialist orientation) give more emphasis to the expressive and communicative characteristics of preferred products in their choices and usage.
2. Those consumers who attach less importance to their material possessions (less materialist orientated) consider the experiential, hedonic aspects of preferred products and their design decisive.

According to the level of materialism (Richins – Dawson, 1992) consumers are more receptive to different manifestations of product form. Richins (1994a, 1992) showed that for materialist consumers it is products' utilitarian benefits, their potential to express personal success, enjoyment of their acquisition that is important; product appearance and qualities of product design determine their choices. On the contrary, non-materialist consumers appreciate their possessions, for them enjoyment lies in their use and also memories they evoke.

H2b:

1. Consumers who prefer visual information processing are concerned about the appearance of products, their expressive and aesthetic characteristics.
2. Preference for verbal information processing does not relate to preferences of design and product related judgements.

Gould (1990) has shown that there is a relationship between involvement with different types of products and processing styles. Consumers of visual processing preferences are more involved with products that are more visual oriented in their use i.e. cameras, clothes. As a result of higher involvement in these, they are more concerned about all product characteristics that are a result of their own product design.

3.3. The impact of the context: choice vs. usage

H3:

Different product judgements are made in the context of choice and the context of usage. Evaluations of functionality, experience, enjoyment of use and expressive characteristics differ in the two contexts as a result of the learning process of usage. Responses given in the context of usage are more expert judgements, they are more consistent.

It is *through use that a product can wholly be explored and investigated* (Margolin-Buchanan, 1996, Lissák, 1998) therefore consumer judgements from the two perspectives will differ. Anticipation of future experience with a given product may not be as expected, may not be correct.

4. Measurement instruments

4.1. Measurements applied in the research

Theoretical constructs that are described in the conceptual model are measured by adopted scales from the international literature, with the record of the circumstances of the research (choice vs. use; choice of product design) and questions and statements established in the exploratory phase of the research.

4.1.1. Independent variables

Objective of the research is to study, record the impact of product design. The research involved research objects (an every day product type) that were identical in their function, services, brands but were different in their product design and form. Characteristic of this research object that its product design plays a significant role in market competition, determines consumer choices.

The design intensive sector and product group that present research investigates are mobile telephones. Research objects are products (models) of the most popular and well known manufacturer in Hungary. In the context of choice two very popular and widely used models are under investigation, while in the context of choice four unknown models (not yet introduced to the Hungarian market at the time of the research) - that differ in their product design – are applied (detailed description of the telephones is in Chapter 5.2.).

In accordance with the conceptual model two contexts are measured. Usage context is measured by the record of respondents' experience with their own telephone. Choice context is measured and investigated by the choices of the four pre-selected models of mobile phones.

Individual differences are also recorded. Consumers' relation to material possessions is measured by the Hungarian adaptation of the Richins et al (1992) materialism scale. As product design is a visual and aesthetic phenomenon respondents' information processing

preferences are recorded by the Childers et al (1985) Style of Information Processing (SOP) scale. Respondents major demographic characteristics are also recorded.

Table 4.1. Independent variables and their measurement

Theoretical constructs, variables	Measurement
1. PRODUCT DESIGN	
context of choice ??	Models of the most well-known and wide-spread mobile telephone brand
??	Mobile phones only differ in their characteristics of product design
??	Evaluation and positioning of the telephones by the manufacturer ⁹
context of usage ??	Models of the most well-known and wide-spread mobile telephone brand
??	Mobile phones only differ in their characteristics of product design
??	Evaluation and positioning of the telephones by the manufacturer
2. INDIVIDUAL DIFFERENCES	
materialism, importance attributed to material possessions	Richins-Dawson (1992) – “materialism scale” adaptation; 5 point likert type of scale (see. Appendix 5.2. /Q2)
style of information processing (visual and verbal information processing preferences)	Childers et al. (1982) “SOP” scale, adaptation; 4 point likert type of scale (see. Appendix 5.2. /Q4)
demographics and other personal characteristics	age, gender, income, school year, permanent residence, individual interest, future orientation
3. SITUATION	
choice context	record of the situation, evaluation of chosen phone
usage context	record of the situation, evaluation of own phone

⁹ The Role of Expert Judgements: In present research experts’ judgements will serve as objectified benchmarks in assessing consumers’ responses. It is not consumers’ capability of giving appropriate judgements on these characteristics, but it is the quality of the interaction of the product and its user, consumers’ responses that is important to investigate.

4.1.2. Dependent variables

Major research question of current dissertation is showing the differences of product related consumer judgements as a result of different product designs. Both marketing approaches to the study of product design (Bloch, 1995; Kotler & Armstrong, 1996) and artistic approaches (Pye, 1978; Margolin & Buchanan, 1996) suggest three major types of relevant product related consumer responses: 1.) judgements of utility and functionality, 2.) judgement of the quality of the usage experience, judgement of hedonic and aesthetic value and 3.) expressive and communicative capabilities of the product and its design.

For the measurement of judgements of utility and functionality two internationally used scales were adopted: Spangenberg & Voss, 1997 HED/UT scale and Hirschman & Solomon, 1984 product aesthetics scale. Products' expressiveness, communicative capabilities ("what does it say about me to my environment" were recorded by open questions suggested by Richins (1994). For recording expressiveness respondents considered "My mobile tells about me to my environment that ..." uncompleted sentence. Private meanings were recorded by the "My mobiles telephones means to me that ..." uncompleted sentence.

The differences in responses by different product designs indicate the impact of product design, therefore consumers' appreciation, like and dislike is measured indirectly.

We measured consumers' evaluations of product design directly as well. The four dimension that were considered by the respondents were constructed on the basis of a preliminary qualitative research. In the research, respondents considered the following uncompleted sentences: "Characteristics of good product design that ..."; "Characteristics of good mobile telephone design is that ..." Responses are classifiable around the following four dimensions:

- ?? *Functionality* - function the object is to fulfil, usability, practicality, etc.
- ?? *Nature, characteristics of form* - size, form, colour – e.g.: big-small, square-round, red-blue, etc.
- ?? *Expressiveness* - capabilities of expressing the owner's / user's personality, quality of appearance, style, aesthetics, trendiness, modernity, elegance, etc.

?? *User – object interaction* - how harmonic is the connection / interaction between user and the object, convenience, pleasantness, pleasure of usage, etc.

Respondents distributed 100 points among the four dimensions with respect how much importance they attributed to each.

Table 4.2. Dependent variables and their measurement

Theoretical constructs, variables	Measurement
CONSUMER PREFERENCES OF PRODUCT DESIGN	
choice	record of choices in different decision frames (Appendix 5.2. /Q7e-Q7h)
PRODUCT RELATED CONSUMER JUDGEMENTS	
judgement of functionality and utility	Spangenberg - Voss (1997) HED/UT scale, “utilitarian items”, adaptation; 7 point semantic differential scale (Appendix 5.2. /Q6i,Q7j)
judgement of hedonic value, enjoyment, experience	Spangenberg - Voss (1997) HED/UT scale, “hedonic items”, adaptation; 7 point semantic differential scale (Appendix 5.2. /Q6i,Q7j)
expressiveness, communicative capability	Hirschman - Solomon (1984) “product aesthetics”, adaptation; 7 point semantic differential scale (Appendix 5.2. /Q6i,Q7j) Richins (1994) “public and private meanings”, uncompleted sentences (Appendix 5.2. /Q6b,Q6c,Q7i)
EVALUATION OF PRODUCT DESIGN	
Functionality	Distribution of 100 points among the four dimensions with respect to importance attributed to each (Appendix 5.2. /Q3,Q5,Q6j,Q7k)
Nature, characteristics of form	Distribution of 100 points among the four dimensions with respect to importance attributed to each (Appendix 5.2. /Q3,Q5,Q6j,Q7k)
Expressiveness	Distribution of 100 points among the four dimensions with respect to importance attributed to each (Appendix 5.2. /Q3,Q5,Q6j,Q7k)
User-object interaction	Distribution of 100 points among the four dimensions with respect to importance attributed to each (Appendix 5.2. /Q3,Q5,Q6j,Q7k)

4.2. Preliminary tests of measurement instruments, adaptation of applied scales

4.2.1. Product related consumer responses – exploratory qualitative research

We conducted two exploratory studies. The objective of the first one was to find a research object (product type) that involves high consumer involvement with respect to product design. In the second part of the exploratory study we studied where groups of product judgements indicated by the literature (judgements of functionality, hedonic and aesthetic value) existed in the case of mobile telephones and were present as a result of product design.

Part 1.: Mobile phones as research objects

A preliminary qualitative research was conducted among a group of 177 third year university students both owners of mobile phones (27 %) and non-owners (73 %) in order to explore their selection criteria of mobile phones and the role, meaning of mobile phones they either experienced or anticipated. Responses gave the following insight:

- ?? In their descriptions of choosing a mobile telephone 79 % of non-owners explicitly expressed their preferences of design qualities as an important aspect of their choice, even such subtle qualities as the "sense of the touch of the buttons" were mentioned.
- ?? Owners in describing their experiences expressed the importance of the quality of the operation, sense of freedom and emotional bonds, feeling of deprivation when the telephone was out of battery, but also stressed the expressive power of the form, design of the mobile telephone.
- ?? Several of the respondents, who mentioned the importance of form - both owners (49 %) and non-owners, emphasised the *preference of a modest and delicate, but state-of-the-art form, which was not a representation of a status symbol*. It is also very interesting to note that neither owners nor non-owners hardly mentioned the importance of brands.

The answers suggest that in the case of mobile telephones form plays an important role for owners and non-owners in the formation of choices, but also product related responses such as the quality of the experience of use, expressive, communicative power of the telephone.

Part 2.: Influence of mobile telephone design: product judgements and their contents

Objective of the research was to discover whether the impact of product design can be reflected in spontaneous consumer associations, whether there are associations that relate to the quality of form, design, operation, expressiveness of the product. The usage of sentence completion technique gives the opportunity to gain a deeper insight of general attitudes and associations about mobile phones, and discovering differences among the various responses (Móricz, 1992; 1999). Uncompleted sentences related to respondents' view about the utility, usefulness; experience, enjoyment of use and communicative power of mobile telephones.

368 third year students participated in the research of which 33 % own and 67 % do not own a mobile telephone. Special about the students of the university of economic sciences as respondents is that they are to fill in managerial positions, become decision makers, even opinion leaders in the near future, of which they are already aware of, behave and hold attitudes accordingly already. This special position is reflected in the responses.

First we used very general statements were used in order to allow any kind of associations relating to mobile telephones, (also for the avoidance of leading statements.) In this phase of the research main objective was to explore the direction and nature of mobile-phone related consumer judgements and attitudes and furthermore to record whether the impact of product design, mobile design is reflected in these responses. Below a summary of the major insights of the qualitative study is given. The relating uncompleted sentences are included and the most characteristic answers are quoted for illustration.

The uncompleted sentence "*Someone without a mobile telephone is like...*" shows owners and non-owners ultimate concern of mobile telephones' meanings to themselves and consequences of the telephones' form.

The most characteristic associations express the *relation, connection of things*, which reflect the characteristics and nature of the tool (mobile telephone) and user interaction, namely that they are to match each other.

Respondents mentioned things that are closely related, belong to each other implying that the mobile telephone is a possession that is close to its owner, and is also close to the body. Respondents admitted that the telephone and its user strongly relate and interact:

“... *dishes without salt*¹⁰”

Here non-owners more strongly acknowledged that the mobile telephone is a tool that belongs to people in everyday life:

“*box of matches without matches*”; “*goat without cabbage*¹¹”, “*coat without buttons*”.

The mobile telephone can be an extension of one’s own capabilities, its lack is notable for both groups. A group of respondents strongly expressed their sense of the mobile telephone being close to themselves, to their body, not having the mobile telephone implies the feeling that there is something missing from the owner, expresses the experience of the lack of certain personal capabilities. These associations further underline the *user – possession relatedness and their interaction*:

“*without hands and ears*”; “*bird without wings*”; “*naked person*”(owners);

“*one handed giant*; “*hand without plaster*” (non-owners).

These responses underline the role and importance of product design in the case of mobile telephones. Associations relating to the closeness to the body stress the importance of the quality of product form.

All respondents, owners with more notable emphasis, expressed their feeling of dependence, lack of connection, sense of deprivation being without the mobile telephone. The need of control, keeping contacts, and its enjoyment comes through these answers:

“*being in a dark room*”; “*hitchhiking at night*” (owners);

“*snail without house*”; “*fish out of water*” (non-owners).

Associations also express phenomena that are related to the loss of capabilities as a result of the lack of some kind of *technical gadget*:

“*horse without saddle*”; “*sailor without compass*”; “*conductor without baton*”;

“*secretary without computer*” (owners);

¹⁰ reoccurring motive in Hungarian folk tales

¹¹ common Hungarian folkloristic motive

“soldier without guns;” “blind person without white stick;” “playing on the stock exchange on the basis of out-of-date information” (non-owners).

Associations of closeness to the body reflect the *close interaction of user and the tool*, on the other hand the presence of a technical device in the responses implies that respondents acknowledge the mobile phone as a technical tool.

Also notable those answers of non-owners that hold a two-sided perspective and admit the necessity of mobile telephones on the one hand, but indicate circumstances (e.g. plain reasons of fashion, wanting to be hip) where it is not at all necessary, but could be nice to have at the same time:

“depends on, a person without a cap in the winter, it would be better having a cap”; “depends on the importance, lack of one hand in case it is important, otherwise not”.

Respondents acknowledge that the mobile phone communicates about itself and its user simply by its presence already. Responses again relate to the closeness to the body, which are aspects that are to be considered during the process of designing new models.

Responses to the uncompleted sentence, *“The future mobile telephone will be...”* also further underlines users’ and potential users’ direct feeling, sense of the impact and importance of a mobile telephone’s form, design. Associations given to this uncompleted sentence gave the richest and most colourful associations. Responses also reflect the social and economic background and knowledge of the respondents: full-time undergraduate students of the university of economics.

Respondents anticipate continuous functional development and the increase of existing functions in the future as well as the application of a more advanced and state-of-the-art technology, which involve expectations related to the design, form as well: smaller size, easier handling, simplification:

“every function will be integrated: browser, agenda, palmtop;” “miniature, easy to use;” “just like a toy” (owners);
“personal computer in small”; “like a computer chip” (non-owners).

In relations to the admitting of the functional development respondents consider technical development to an extent that they are hardly able to word only try to reflect the tendency. These associations again imply the expectation that the form of the mobile-phones is to further improve:

“like a space walkie-talkie”; “like a computer condense into a matchbox;” “like that of James Bond’s” (owners);

“like an UFO;” “like a super-intelligent computer” (non-owners)

Respondents look for further development in size and form, so that the future mobile telephone will become more closer to the body, which will more facilitate use and wear, increasingly being moderate and modest:

“like a watch”; “like a matchbox;” “like a poppy-seed”; “like a credit-card” (owners);

“like a headphone;” “suitable at the smallest place” (non-owners).

These responses are further reinforced by those associations that admit and accept mobile telephones as being very close, even intimate devices, that of course have to achieve a good harmony with the holder, which involves several form related requirements. Respondents also imagine that future mobile telephones will increase human capabilities, will be less visible, more moderate, and very close to the owner’s body. Some respondents even imagine that *‘it will be built in your head’* Several associations go so far as the object, the telephone itself may disappear, it will increase personal communicational abilities, multiply users’ senses, which most strongly imply the consequence of need of the telephone’s harmonic interaction with the human body and the more personalized nature of the phone:

“which will be in your head”; “understands speech”; “through telepathy without buttons”; (owners);

“like a fistful brain”; “capable of transmitting human thoughts” (non-owners)

Characteristic response of non-owners is that the future mobile telephones will less occupy users’ hands. This latter characteristic is an abstract design content element that designers could directly consider in the planning process:

“as if it was not with me”; “it won’t occupy the hands during use”; “don’t have to use, still being able to communicate” (non-owners).

Characteristically non-owners anticipate that future mobile telephones will become even more nicer, even aesthetic and better designed:

“like a Mackintosh”; “like a chromium-plated matchbox.”

Non-owners also consider that future mobile telephones will be less disturbing for external observers, for those who do not participate the actual conversations.

Overall even general responses reflect the impact of design, form. Responses showed users' expectations about the quality the appearance of the form of mobile telephones, their acknowledgement of its communicative role. On the other hand the concern about the interaction of the object and user also appear in the responses and imply guidelines for planning, designing new models.

Utility, Usefulness

Sentences for completion: *“Having a mobile telephone means ...; A typical mobile telephone is ...; A mobile telephone is practical / useful if ...”*

For owners, the mobile telephone is a natural everyday communication tool, that serves the efficiency and convenience of their lives. In the answers of non-owners a narrower interpretation of a mobile telephone's function is reflected: according to them a mobile telephone is and / or should be a tool *for work*. According to them, those who own a mobile telephone

“may not use it in an appropriate way; may be rude or foul; either needs or uses it for showing off; envy them.”

Non-owners describing the utility, function of a mobile telephone already express their views on its expressive power.

In describing a typical mobile telephone owners mention good operation, primary parts or primary functions of the telephone. Non-owners are more concerned with aspects that are externally perceptible like

“the style of ringing; moderate or striking appearance”

However, majority of respondents both owners and non-owners expressed their perception of a typical telephone as being small in size, which underlines their expectation of form to serve usage, carrying, being delicate and easy to hide, but size is also an aspect that communicates about the telephone and its user.

Experience, Enjoyment of Use

Sentences for completion: *“A mobile telephone is entertaining, because ...; A mobile telephone is enjoyable, because ...”*

When explaining why a mobile telephone is enjoyable respondents explain *additional supplementary and not primary functions*. Owners mention games provided by the telephone and possibilities of sending SMS’, while non-owners mention the possibilities and enjoyment of keeping contacts with friends and others. In the case of non-owners this is a supplementary function as they already expressed that a mobile is characteristically necessary for work, otherwise unnecessary. It is also very important to note that both groups mentioned the experience of touching, pushing the bottoms of the telephone as a source of entertainment, as a source of sensory experience that quality of product form, design makes possible.

The list of uncompleted phrases contained two more sentences, that further elicited what the mobile telephone means to the owner or potential owner *himself or herself* and contained strong and unambiguous product form related implications – expectations and requirements.

Communicative Power, Expression

By completing the sentences *“A mobile telephone tells about its users ...; A mobile telephone dresses its user by ...”* both groups admit the potential of a mobile telephone to tell about itself (expensive, cheap, modern, unique) and its implications to communicate about its user,

it has many elements that are dependent on personal choice, taste (like color, ringing tone form) that are able to convey meanings.. Owners are more neutral in their attributions:

“visible”; “not visible”

Non-owners give more emotional responses:

“matches appearance”; “influences behavior;” “being important or wanting to seem important.”

Responses about the communicative nature of the mobile telephone also reflect the impact and the role of design by the attributed importance of the phone’s appearance, expectations about its being visible or unobtrusive.

Conclusions of the exploratory studies

The insights that our exploratory studies give suggest that in the *case of mobile telephones form plays a crucial role* for owners and non-owners in the formation of choices, but also product related responses such as the quality of the experience of use, expression, communication about oneself to others, but also to the user himself or herself as well.

From several perspectives in their answers both owners and non-owners have indicated their preferences *of a modest and delicate, but at the same time state-of-the-art form, which was not a representation of a status symbol*. Respondents admitting that the telephone is a very close, might even be built in the users, involves very strong user concern and high consumer expectations of mobile telephones’ form.

In the case of mobile telephones’ form, especially appearance communicates to users, forms expectations (even by such characteristics as size, external color and shape) and even the experience of use. Users and especially non-users draw conclusions upon form about functionality and even aesthetics of use.

Mobile telephones on the other hand can serve as a handy gadget that can be a sign of personal excellence, achievement or sophisticated taste, but also a tool for someone himself or herself having his/her own choice of being or not being alone, being reachable.

4.2.2. Tests of applied scales

The materialism scale

The adaptation of the Richins et al materialism scale has been used for measuring consumers' relation, attitudes towards their material possessions. Bellow table summarises means and standard deviation of scale items.

Table 4.3. Respondents' materialist orientations – means

Item	N	Mean	Standard deviation
It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	327	3,68	1,01
I like a lot of luxury in my life.	326	3,67	0,98
My life would be better if I owned certain things I don't have.	326	3,60	1,08
Buying things gives me a lot of pleasure.	328	3,47	1,09
I usually buy only the things I need.*	328	3,46	1,00
I'd be happier if I could afford to buy more things.	327	3,43	1,01
I don't place too much emphasis on the amount of material objects people own as a sign of success.*	327	3,42	1,04
I have all the things I really need to enjoy life.*	325	3,13	1,08
I like to own things that impress people.	321	3,07	0,93
I don't pay much attention to the material objects other people own*.	323	2,98	0,95
Some of the most important achievements in life include acquiring material possessions.	327	2,96	1,05
I put less emphasis on material things than most people I know.*	312	2,88	0,84
The things I own say a lot about how well I'm doing in life.	324	2,77	0,94
I admire people who own expensive homes, cars and clothes.	325	2,51	0,93
I wouldn't be any happier if I owned nicer things.*	319	2,45	1,01
I enjoy spending money on things that aren't practical.	325	2,40	1,06
I try to keep my life simple, as far as possessions are concerned.*	327	2,37 (3,63)	0,91
The things I own aren't that important to me.*	326	1,73 (4,27)	0,78

Items are listed in order of means, which shows which items respondents did and did not agree with in general. Reverse items are in the end of the list where disagreement implies agreement. As a result the last item "the things I own aren't that important to me", means that respondents attributed great importance to the ownership of their own "things", this last item: things that respondents own was most important.

The items that respondents generally agreed with were the ones that express the importance of acquiring and owning things.

Table 4.3. shows the results of the factor analysis. Results reflect a similar factor structure of the original scale, the original three factors appear: acquisition centrality (CENTR), acquisition as a pursuit of happiness (HAPPY) and possession defined success (SUCES). There is a fourth factor that can be a result of cultural differences, differences of connotations of expression. As a result, items that refer to the disregard or regard of others' opinion formed a fourth factor.

Table 4.4. Respondents' materialist orientation – factor structure

Item	1. factor	2. factor	3. factor	4. factor
M14_HAPY I have all the things I really need to enjoy life.*	-0,73	0,20	0,04	0,14
M17_HAPY I'd be happier if I could afford to buy more things.	0,72	0,34	-0,11	-0,10
M15_HAPY My life would be better if I owned certain things I don't have.	0,71	0,30	0,16	0,04
M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	0,68	0,01	-0,16	-0,12
M16_HAPY I wouldn't be any happier if I owned nicer things.*	-0,59	-0,22	0,11	0,22
M4_SUCES The things I own say a lot about how well I'm doing in life.	-0,01	0,70	-0,02	-0,16
M12_CENTR I like a lot of luxury in my life.	0,15	0,68	-0,22	-0,16
M2_SUCES Some of the most important achievements in life include acquiring material possessions.	0,33	0,66	0,05	0,06
M1_SUCES I admire people who own expensive homes, cars and clothes.	0,02	0,60	0,09	-0,22
M10_CENTR I enjoy spending money on things that aren't practical.	-0,06	-0,14	-0,67	0,06
M11_CENTR Buying things gives me a lot of pleasure.	0,14	0,23	-0,65	-0,02
M7_CENTR I usually buy only the things I need.*	0,07	0,05	0,65	0,21
M8_CENTR I try to keep my life simple, as far as possessions are concerned.*	-0,32	-0,08	0,55	0,31
M9_CENTR The things I own aren't that important to me.*	-0,11	-0,02	0,55	-0,03
M6_SUCES I don't pay much attention to the material objects other people own*.	-0,10	-0,13	-0,03	0,79
M3_SUCES I don't place too much emphasis on the amount of material objects people own as a sign of success.*	-0,10	-0,29	0,08	0,73
M13_CENT I put less emphasis on material things than most people I know.*	-0,26	-0,04	0,22	0,47
M5_SUCES I like to own things that impress people.	0,08	0,40	-0,02	-0,41

Principal component analysis, varimax rotation (KMO= 0.812; variance explained 50,5 %)

The SOP scale - visual and verbal information processing preferences

As a test for the Hungarian adaptation of the SOP scale the study of Gould (1990) was replicated in order to test whether distinct groups could be formed with respect to styles of information processing. Results of Ward's hierarchical cluster analysis and K-means cluster analysis were compared.

Participants of the research were third-year full time students of the BUESPA. 97 respondents participated in the research. The research was conducted in 1998 April.

The original SOP scale and its reliability was tested among 106 university students. Internal consistencies (Cronbach alpha) of the whole scale and its two sub-scales were estimated on the Hungarian sample for comparison (table 4.5.). According to Heckler (2000) the scale operates better in a student population than in a representative sample of the total population of the given country, as students are a lot more and more directly confronted with the problems of their own information processing.

Table 4.5. Cronbach alphas in the original SOP scale and the adapted scale

	<i>original SOP scale</i>	<i>adapted questionnaire</i>
22 item	0,88	0,6665
11 item: visual processing preferences	0,86	0,6821
11 item: verbal processing preferences	0,81	0,7296

Both methods of cluster analyses gave similar size and structure of clusters (Horváth, 1998) and their contents are according to the results of Gould.

Cluster 1.: Definite preference for verbal processing, visual processing is also considered important¹²

Members of this group like given tasks being illustrated with pictures (verb1, verb9, verb10, pict2¹³), at the same time they like using words and like to read (verb3), like to increase their

¹² This cluster is close to Gould's „verbal processor” category, however this group is also concerned about some aspects of visual information processing

¹³ variable labels and items are in table 6.11.

vocabulary (verb5, verb8). While it is important for them to use new words, don't care about searching for synonyms of words (verb7). Their thinking in solving tasks is facilitated by visual presentations (pict1, pict7, pict9).

Cluster 2.: Ignores the importance of processing styles¹⁴

For members of this group visual information processing is not important, this group attributed lowest importance to items that referred to visual information processing preferences. At the same time they did not like writing, taking notes (verb6) and uncertain about the usage of words.

Cluster 3.: Both processing styles are important¹⁵

Members of this group care about both processing styles: verbal and visual. They are visual processors (pict1, pict3, pict7, pict9, pict6). The acquisition of new words is important for them (verb5, verb7, verb8) and as a result, they are very demanding with themselves: they are dissatisfied with their own abilities of expressing themselves (verb4).

Cluster 4.: Preference for visual information processing¹⁶

“Visual types.” They don't like to read (verb9, verb10) and learning new words (verb5). They are daydreamers (pict4, pict10), recall memories in pictures, prefer visual rather than written material.

It is important to note that most respondents hold either visual or verbal processing preferences, less respondents belong to clusters 2., and 3. Visual processing style is the more differentiating dimension.

Cluster membership and other individual characteristics

Respondents' gender, planned major and most important hobbies were also recorded in the questionnaire as for further description of the clusters. Meaning of the clusters is underlined

¹⁴ „low processors” Gould (1990)

¹⁵ „high processors” Goluld (1990)

¹⁶ „visual processors” Gould (1990)

by these characteristics. Individual differences and cluster membership shows the following tendencies:

- ?? Members of cluster 1. were in majority having reading as a hobby.
- ?? Members of cluster 2. characteristically indicated sport as their most important hobby.
- ?? Members of cluster 3. did not have a characteristic hobby. Type of hobby mentioned the most is sport. Member of this cluster are more likely to be involved with technical details, technology (cars, computers).
- ?? Members of cluster 4 regarded, “visual processors” regarded friends, entertainment, theatre, cinema important. Members of this group hardly mentioned reading as a hobby. Their planned direction of career (planned major) is marketing and management. 80 percent of those who chose marketing as a planned major are in cluster 4.

Results of the research are in accordance with results of Gould. Results indicate that the SOP scale clearly differentiates between those who prefer either visual or verbal processing styles.

Product related consumer judgements

Two scales suggested by the literature were tested: “utilitarian” and “hedonic” items of Spangenberg & Voss (1997) HED/UT scale and „aesthetic” items of Hirschman & Solomon (1984) „product aesthetics” scale. Overall an 29-item scale was tested and studied in order to best describe product related consumer responses in the case of mobile telephones. Major objective of the preliminary research was to decrease the number of items in the scale, to find the correlating ones and in the later phase of the research sum them into few explaining factors.

Test of the scale also involves whether the Hungarian adaptation results in similar factor structure.

After a series of factor analyses and reliability analyses (Appendix 4.3.) the following factor solution suggests which are the items that are to be used in the final questionnaire of the research.

The consecutive factor analyses suggest four subscales:

1. Originally utilitarian items form two factors “efficiency” and “practicality”. These two factors include items only from the utilitarian items.
2. The most stable factor “hedonic value” received high importance in each analysis
3. Aesthetic value contains items from the original product aesthetics scale.

Table 4.6. HED/UT, product aesthetics - final factor solution and factor loadings

<i>Factor 1. „hedonic value”</i>	<i>Factor 2. „aesthetic value”</i>	<i>Factor 3. „utility: efficiency”</i>	<i>Factor 4. „utility: practicality”</i>
Hed12 -amusing – not amusing (0,723)	Aest5 -makes me like this product – does not make like this product (0,754)	Ut7 -efficient - inefficient (0,733)	Ut2 -Célszerű-célszerűtlen (0,879)
Hed10 -enjoyable – unenjoyable (0,701)	Aest1 - attractive – not attractive (0,735)	Ut12 -problem solving – not problem solving (0,709)	Ut1 -Hasznos-hasztalan (0,707)
Hed7 -dull - exciting (0,689)	Aest2 -desirable – not desirable (0,522)	Ut11 -unproductive - productive (0,678)	Ut4 -Funkcionális- hasznavehetetlen (0,649)
Hed2 -not delightful - delightful (0,549)		Hed4 -fun – not fun ¹⁷ (0,535)	
Hed6 -not funny - funny (0,499)			

¹⁷ In the Hungarian translation „fun – not fun” was translated as „Jó dolog-nem jó dolog”, which has a stronger connotation of „good thing – not good thing” which in Hungarian strongly relates to usefulness of things.

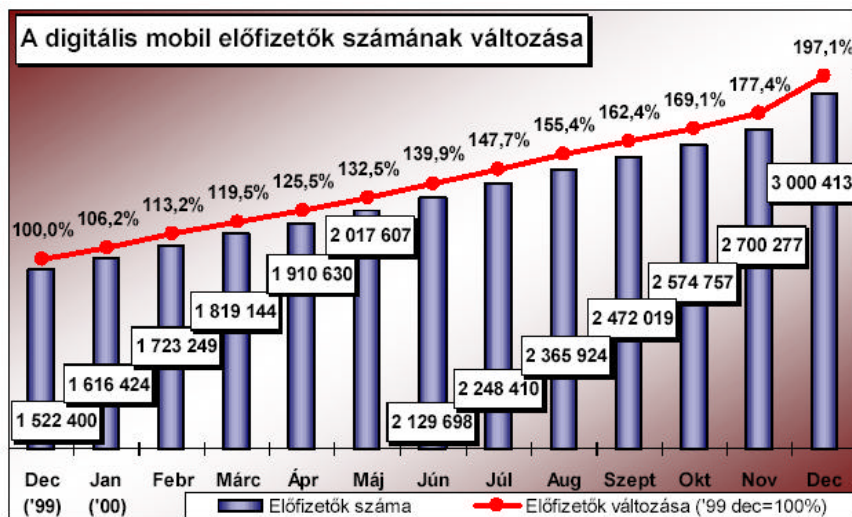
5. Description of the empirical research

5.1. Circumstances and background of research

Underlying research has been conducted in an attentive and responsive environment, Hungary in the case of a product category that has become widely available recently and holds strong practical, but also symbolic and communicative implications: *mobile phones*.

As a result of changes in the economic conditions and the society, therefore, ways of living, consumption itself, acquiring, possessing material things has become especially important. The general availability of all sought goods on the one hand, and the increased importance of their expressive power from the other explains current strong general attentiveness and sensitivity to material objects and their quality of product design in Hungary.

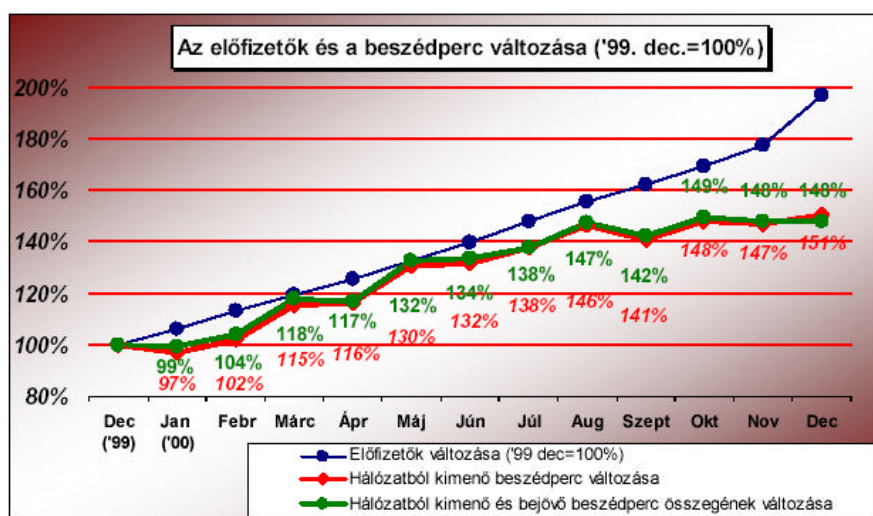
Availability of mobile telephones in Hungary



The objects that are investigated are mobile telephones that became increasingly popular and wide spread among a wide range of groups. Since 1995 number of subscribers of mobile

telephone services has increased sevenfold. According to Gfk in 1999 service providers estimated 15-16 percentage of growth. That time entrepreneurs, company owners (29 %), highly educated executives (17,2 %) used mobile phones. However, that time 10 % of students owned mobile phones. According to age most mobiles were in the ownership of the age-group 30-39¹⁸.

By the end of 2000 number of subscribers has increased by 97,1 % from 1,5 million to 3 million (30 % of the population). This increase involved the increase in the number of mobile telephones sold. Today all service packs can be purchased with any mobile telephone available, so the choice of mobile telephones is not exclusively determined by the favourable service pack so strongly any more, but the telephone itself, its design, characteristics, features, brand and price.



The market dynamically increased in 2000. Rate of the growth of number of subscribers was above 5 %. Between September and November it was between 4-5 %, in December it moved to 11 %. Overall, in 2000 number of subscribers has increased by 97,1 % - almost doubled. Looking at the number of subscribers and usage rates, it is clear that increase in the usage rate was slower than the increase in the number of subscribers. This implies however, that number of mobile telephones sold with each subscription was very high.¹⁹

¹⁸ HVG, 1999 November (Hungarian economic weekly magazine)

¹⁹ Hírközlési Fofelügyelet, Piaci Monitoring Igazgatóság, Digital mobile phone analysis – 2000. January-December

Availability of mobile phones, the increase in the number of mobile telephones bought underlies the choice of mobile phones as research objects. This is a fast changing, design-intensive industry where consumers involvement is high, consumers' concern of product design is articulate. Design plays an important role at the moment of choice formation and during product usage as well. Our preliminary research also confirmed that mobile phones as research objects could be applied in the investigation of the role of product design (chapter 4.2.1.)

5.2. Research object (stimuli): mobile telephones

“Mobile phones are becoming much more than just phones. In the future they are going to become total communication tools and entertainment products. From a design aspect mobile phones are a relatively new product, for example compared to cars. When a product is in its early stage there is an excellent opportunity to develop new ideas.” (Frank Nuovo)²⁰

Models of a popular brand in the Hungarian market were used in the research. Using a particular brand and its differently designed models of similar functions makes possible to exclude the impact of brand in product related judgements at the same time recording the impact of product design. According to our preliminary field research models of the Nokia brand fulfil the above requirements in terms of their current popularity and large scale usage and in terms of the variety of models they offer in the Hungarian market.

According to the conceptual model the research was conducted in two situations: owners of particular mobile telephones were interviewed as for investigating the context of usage and in a choice context where participants chose from mobile telephones almost identical in their provided functions, however different in their designs:

“It's easy to say why you like an object, hard to say why you love it. You like it because of advanced features that make your life easier. You love it because you pick it up and get a feeling of its innate quality, a combination of genuine materials and fine craftsmanship²¹” which are the differences that different product designs create.

Strategic design philosophy (Appendix 5.1.) of Nokia also supports this choice:

*„A fundamental building block of the Nokia brand is our Design. Our goal is to provide a new and beautifully styled products that enhance the lifestyle and idealized personal reflections of of all types of individuals around the world, and **to transform each technologically advanced, functional tool into an object of desire.**”*
Design principles: Ease of use; Human touch; Inspiration”²²

²⁰ source: <http://www.nokia.com>

²¹ source: <http://www.nokia.com>

²² source: <http://connecting.nokia.com>

5.2.1. Context of choice

In the context of choice respondents made their choices among four differently designed Nokia mobile phones that provide at the same time very similar services. At the time the research was executed these models were right before their market launch, therefore respondents did not have preliminary knowledge about them. They formed their choices after looking at and holding the telephones. Using models of the same brand excludes the impact of the brand, the fact that these were not yet introduced to the market and participants were not familiar with them excludes the impact of advertising and communication.

Bellow is a description of the manufacturer company of the selected models. These descriptions and positioning were used and as objectives descriptions, "predetermined standards of value agreed upon by experts providing an 'informed judgement' of the aesthetic worth of a stimulus. Subjects' judgements of the stimulus along various dimensions are then rated as more or less relevant with these expert opinions as *benchmarks*." (Bamossi et. al, 1983, p. 686). Respondents were not familiar with these description at the time of the research, these were used for the objective classification of the research objects.

Nokia 3310



„What is it that gives each of us our individual characters? Our lifestyles maybe, our style and our personalities, our interests, or maybe our backgrounds and the way we express ourselves. With the Nokia 3310, your mobile phone can become part of your personality. With state-of-the-art features such as chat messaging, and the ability to change the phone's appearance whenever you feel like it, the Nokia 3310 is an individual with real character. The Nokia 3310 has been created with our differences in mind. In fact, it's one of the most individual mobile phones around. What you choose to make of it is entirely up to you.”

The above description suggests that the Nokia 3310 can be characterised by **youthfulness, simplicity, personalisation.**”

Nokia 6210



„Harmonious design. At first sight the Nokia 6210 communicates something to you. It's sleek, ergonomic styling tells you at once that this is another classic Nokia design. It's tapered shape and perfect size makes it comfortable and functional to use. With its large display, internal antenna, side volume keys and chameleon colours, the Nokia 6210 is both a pleasure to look at and a joy to use. A mobile telephone designed for the classical segment of the market. Its clear and simple design is close to the idealised and typical picture of mobile telephones”

According to the above description in the research the model Nokia 6210 will be labelled as **„classical and functional”**, which can be approached as the most usual and typical design telephone.

Nokia 8210



„ If you understand the difference between clothing and style, then you know the difference between a mobile phone and the Nokia 8210.

The above description suggests to describe Nokia 8210 as the phone of „self-fulfilment, style and individuality”, which has got a novel design.

Nokia 8850



„ Premium in every detail. A watch is not just for telling you what time it is. And a car is not just for taking you from one place to another. You have a mobile phone, but not simply so you can make a call. A watch, an automobile and a mobile phone are utilitarian objects, but they can also be beautifully designed and carefully made, objects with aesthetic appeal. The difference is quality, something that is very difficult to define. In part it's the design, elegantly simple, with a pleasing visual rhythm. And the materials, like chrome and brushed aluminium. And the craftsmanship and the fine details. Quality is a difficult thing to define, but you know it when you see it.”

Based on the above description Nokia 8850 model can be described as „**elegance, high tech design**” which has got a very novel form of product design.

According to the documentation of Nokia, information about the characteristic of the product design of the pre-selected models was available and can be summarised the following way:

Nokia 3310 - *“its external appearance can be individualised according to personal styles”*

Nokia 6210 - *“produced for the classical segment of the market”*

Nokia 8210 - *“celebrates the harmony of colour and style, youth and self expression”*

Nokia 8850 - *“Nokia’s expression of admiration of quality design and sophisticated technology.”*

We also have to stress that participants of the research did not know the telephones’ indication of model numbers, such as Nokia 3310, 6210, 8210 and 8850.

5.2.2. Context of usage

For the study of the context of usage the two most popular and of similar product category mobile telephones were involved. Reactions of owners about their own phones were recorded. The two telephones that were involved are: Nokia 5510 which is of a very classical design, can be regarded as “typical” in the Hungarian market and the more novel, even “unusual” Nokia 3210 at the time of its market launch. Judgements of the two groups were compared.

Nokia 5110



Freedom of Expression. There are many ways to express yourself. Whether it's in what you say, the way you live, or in the choices you make. They all say something about you as an individual. But until now, your mobile phone has been an area of rebellion.

Be as free as you want. Up to 11 days of stand-by time using a standard battery gives you lots of freedom to roam between charges.

Show off the way you want. Nokia Xpress-on™ covers let you change your phone's looks to suit your mood and style whenever you want. Go wild with custom Xpress-on™ covers. There are hundreds to choose from. So you're sure to find the one that truly matches your style.”

Based on its market performance, time of launch, the Nokia 5110 is labelled as „typical” in the research, for the study of the usage context.

Nokia 3210



„It looks fun on the outside, but on the inside the Nokia 3210 means business. It stands by for up to eleven days with the standard battery. And you can write messages fast with predictive text input. The Nokia 3210 is the first mobile phone with Xpress-on™ covers you can change on both sides - front and back. Snap off the front, snap off the back, and snap on a new cover to match your mood or to suit the situation.

Even when you use the Nokia 3210 just for fun - to keep in touch with your friends, when you are out in the evening - it's nice to know that there are some serious features inside. Features that make the Nokia 3210 more dependable - like long operating times and dual-band operation.”

The above description suggests to label it as „novel, unusual design”, that is used in the usage context of the research.

5.3. Participants of the research

Participants of the research are full-time undergraduate and graduate students of the Budapest University of Economic Sciences and Public Administration (BUESPA) who formed a homogenous sample in terms of age, cultural and economic background. Participants were owners of pre-selected models and owners of other models being a control group and students who do not own mobile telephones. The research was executed in December 2000. 329 students participated in the research, 230 mobile telephone owners.

Our study has been executed among mobile telephone service subscribers, users of pre-selected models therefore ensuring to record consumer responses in the context of usage.

We set up our sampling design according to the type of mobile phone owned. We planned our sample to include one third Nokia users (Nokia 5110 and Nokia 3210 owners), one third users of any other type of phones and one third of non-users.

5.4. Questionnaire design

A standard, self-administered questionnaire was used in the research (Appendix 5.2.) which applies scales and constructs described earlier (chapters 2., 4.). As for the composition of the questionnaire in order to keep respondents involved with the questionnaire we used multiple types of questions (tests, scales, uncompleted sentences, open questions). The questionnaire covers four major issues: (1.) consumer attitudes about product design in general; (2.) product related consumer judgements in the context of usage, with respect to own mobile phone; (3.) product related consumer judgements in the choice context, with respect to a preferred mobile phone; (4.) individual characteristics.

5.4.1. Consumer attitudes about product design in general

The questionnaire starts with an open question (Q1), which records general associations given to the word “design”, “product design”. The objective was to explore which meanings, associations and values attached to the idea of “design” (product design, industrial design) in general.

Consumer associations about product design was questioned directly as well. The questionnaire records general views about product design (Q3), general views about mobile design (Q5), views about the product design of own mobile telephone (Q6j) and chosen mobile phone (Q7k). These sections of the questionnaire are constructed according to the results of a preliminary qualitative study. As a result, these sections ask consumers to consider the importance of such dimensions of design as functionality, characteristics of form, expressiveness of the product and the quality of user-object interaction. These aspects are shortly described in questionnaire in order to indicate clear meanings, connotations.

5.4.2. Product related consumer responses in the context of usage

Sixth section (Q6) of the questionnaire covers product related consumer judgements with regard to usage experiences. In this section respondents express their point of views, attitudes,

evaluations about their own mobile telephone. Those aspects are recorded that can have an impact on product related consumer responses: means of acquiring the telephone (Q6d), aspects that could play a role when the phone was chosen (Q6e), willingness to repurchase the phone (Q6f), duration of usage (Q6g), service pack used (Q6h). Respondents also evaluate their own telephones with respect to utility, aesthetic and hedonic value (Q6i), expressiveness (Q6b), private meaning (Q6c)²³. Finally respondents evaluated the four dimensions of product design of their own mobile telephones (Q6j).

5.4.3. Product related consumer responses in the context of choice

Seventh section of the questionnaire records the impacts of product design in a choice context. This part first records the role of product design by putting respondents into different decision frames (Q7a-h). Switch and loyalty in the different decision frames proves that the choice made in Q7e “Regarding your experiences and the attached information which one would you want to win?” is an appropriate frame of reference for measuring consumer judgements with respect to product design.

Similarly to the usage context respondents evaluated the utility, hedonic and aesthetic value of the preferred telephone (Q7j) and its expressiveness (Q7i)²⁴ and attached importance of the four dimensions of product design (Q7k).

5.4.4. Individual differences

Second section of the questionnaire applies the Hungarian adaptation of the Richins et al. (1992) materialism scale, which records respondents’ views about how much importance they attach to their material possessions.

Fourth section of the questionnaire uses the adaptation of Childers et al (1985) SOP scale. This section is an exact word to word translation of the original scale.

²³ Product related consumer responses: Spangenberg - Voss (1997) HED/UT scale, Hirschman - Solomon (1984) “product aesthetics” scales and Richins (1994) “public and private meanings” in the case of **own telephone**.

²⁴ Product related consumer responses: Spangenberg - Voss (1997) HED/UT scale, Hirschman - Solomon (1984) “product aesthetics” scales and Richins (1994) “public and private meanings” in the case of **preferred telephone in the choice context**.

The last section records characteristics that may have a role in choices, preferences and experiences: gender, age, permanent address (stay), employment, year of study, major and future ambitions.

5.5. Execution of the research

The research took place at BUESPA, it was voluntary for students to participate in the research. Participation was motivated by the opportunity of winning one of the preferred mobile telephones (chapter 5.2.) used in the research. Participation involved filling in a questionnaire, taking a look at, holding the four mobile telephone models under investigation and reading relating information materials.

Administration of the questionnaire, reading the information material, looking at the telephone took between 25-45 minutes to respondents.

It is also notable that this group of respondents have an experience in filling all kinds of forms, the conduct of the research would cause more problems in other groups of respondents (for the general public – long and tiring questionnaire, understanding the questions; for managers, company executives – lengths of the questionnaire would result in unwillingness to complete all the questions.)

5.6. Applied methods of data analysis

5.6.1. Characteristics and structure of applied scales – factor analysis

There are several scales in the research that were investigated by factor analysis. Factor structures were studied and used for bases for comparison (e.g. product related consumer judgements in choice context vs. usage context). Objective of the analyses were twofold: to explore factor structures of the scales (e.g. “materialism” Richins et al. 1992) and to identify underlying dimensions that explain the correlations among a set of variables, in order to identify a smaller set of uncorrelated variables to replace the original set of correlated variables in subsequent multivariate analysis (regression analysis) (Malhotra, 1999).

5.6.2. Consumers’ view about design in general – correlation analysis

In the analysis of the different dimensions of product design it was studied whether those dimensions relate, strength of association between them. Method of analysis used is Pearson correlation, which summarises the strength of association between two metric variables. It indicates the degree to which the variation of one variable is related to the variation in another variable (Malhotra, 1999). It was indicated with Pearson correlation coefficient whether for example there was an association between the importance attributed to functionality and the characteristics of form – whether for those who consider functionality of the product design very important would consider characteristics, quality of product form also important or whether there was a negative relation (see chapters 7., 11.2.).

5.6.3. Role of design in the choice context – cross tabulation and analysis

Respondents considered different decision frames during the research and we analysed it with the help of cross tabulation and its analysis, whether respondents stayed loyal to a product as a result of its product design. For example whether by first looking at a product is similar to or different from preferences based on product design.

Cross-tabulation describes two or more variables at a time. Cross-tabulation is the merging of the frequency distribution of two or more variables in a single table. This helps to understand how one variable (e.g. choice at first sight) relates to another variable (e.g. choice based on perceived functionality). Cross tabulation results in tables that reflect the joint distribution of two or more variables with a limited number of categories or distinct values. Thus, the frequency distribution of one variable is subdivided according to the values or categories of the other variables (Malhotra, 1999) (see chapter 8.).

5.6.4. Product related consumer responses in the context of choice and usage – analysis of variance

It was a crucial part of the research to determine whether the product design of a given mobile phone had an impact on product related consumer judgements. One approach in our analysis was to determine whether there were significant differences in the means of evaluations of those who preferred and chose different product designs. This was completed with analysis of variance.

Analysis of variance (ANOVA) is used as a test of means for two or more populations. It is used for examining the differences in the mean of values of the dependent variable (e.g. evaluation of utility, aesthetics) associated with the effect of the controlled independent variables (e.g. choices of product design A., B., C., D.), after taking into account the influence of the uncontrolled independent variables (Malhotra, 1999, p. 490) (see chapters 9., 10.).

5.6.5. Modifying factors of product related consumer responses – linear regression

It was also investigated in the research whether different product related consumer responses (judgements of utility, aesthetic and hedonic value) were determined by other factors like: individual differences, product design, other product reactions. Applied method of analysis is regression analysis.

Regression analysis is a procedure for analysing associative relationships between metric dependent variable and one or more independent variables. It can be used to determine whether a relationship exists among the variables. For example, whether consumer

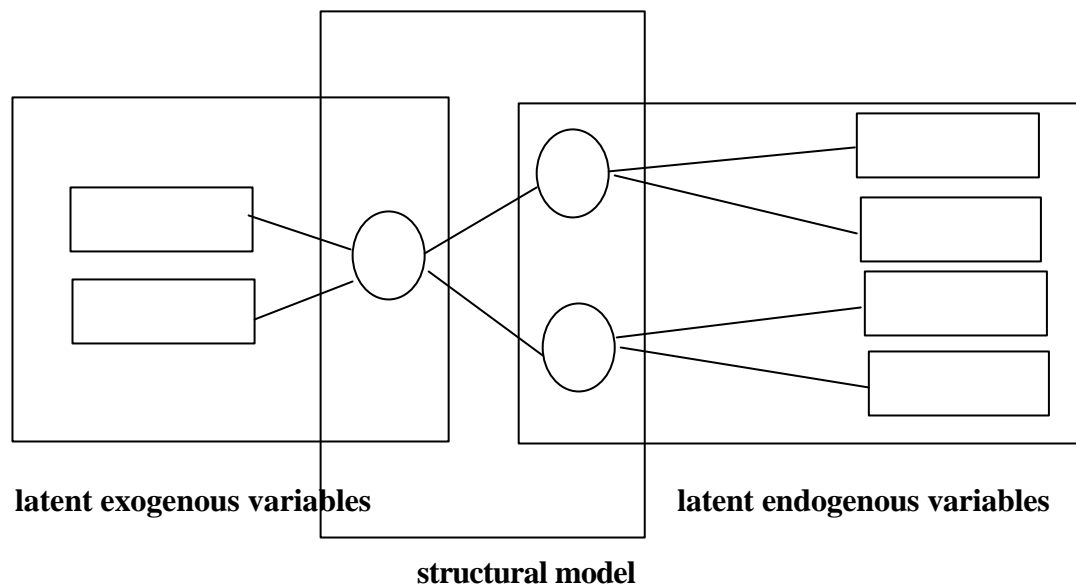
judgements of functionality are determined by how much importance consumers attach to their material possessions, what style of information processing they prefer.

The procedure is also for determining how much of the variation in the dependent variable can be explained by the independent variables: the strength of the relationship (Malhotra, 1999., p. 529). For example judgements of utility of the preferred product how much attributable to materialist / not materialist orientation, style of information processing, etc. (see chapter 9.6.).

5.6.6. Product related consumer responses and their relation – generalisation of results

After the completion of the exploratory and descriptive analysis of product related consumer judgements relations of the different types of reactions were studied (strength and direction of their relation). Structural equation modelling was used for the analysis, the applied program pack was AMOS version 3.61.

Structural equation modelling is for investigating relating variables, latent variables that are cannot be measured directly. In many cases objective of the research is to explore causal relationships among variables. In present research causal relations of product related consumer responses: judgements of utility, aesthetic and hedonic value, functionality, characteristics of form are studied (see chapter 12.).



Backhaus-Erichson-Plinke-Weiber: Multivariate Analysemethoden 7. Auflage Eine anwendungsorientierte Einführung; p. 350.

6. Description of the sample used in the research

The population for our research consists of the full time students of the Budapest University of Economic Sciences. Our sample were 329 students who participated in the research.

6.1. Social and demographic characteristics

Table 6.1. Distribution of gender in the sample

Gender	Frequency (N)	Percentage (%)	Valid percentage (%)
Male	172	52.28	52.76
Female	154	46.81	47.24
Valid cases	326	99.09	100
Missing	3	0.91	
Total	329	100	

The table shows that the distribution of genders in the sample is more or less equal: 53 % are male, 47 % are female.

Table 6.2. Distribution of age in the sample

Age	Frequency (N)	Percentage (%)	Valid percentage (%)
18	12	3.65	3.68
19	17	5.17	5.21
20	54	16.41	16.56
21	109	33.13	33.44
22	55	16.72	16.87
23	36	10.94	11.04
24	11	3.34	3.37
25	11	3.34	3.37
26	3	0.91	0.92
27	2	0.61	0.61
28	2	0.61	0.61
29	2	0.61	0.61
30	5	1.52	1.53
31	2	0.61	0.61
32	2	0.61	0.61
33	2	0.61	0.61
34	1	0.30	0.31
Valid cases	326	99.09	100
Missing	3	0.91	
Total	329	100	

The table shows that the distribution of the sample according to age diverse. The 21-year-old age group is over-represented in the sample. As a result, we decided to classify the sample into three subgroups: participants under 21, 21-year-olds and participants above 21 (Table 6.3.).

Table 6.3. Distribution of age in the sample after classification

Age	Frequency (N)	Percentage (%)	Valid percentage (%)
20-year-old or younger	83	25.23	25.46
21-year-old	109	33.13	33.44
22-year-old or older	134	40.73	41.10
Valid cases	326	99.09	100
Missing	3	0.91	
Total	329	100	

Differences of the three sub-groups can be analysed. Classifying the sample in the above way explains the differences in the three subgroups: members of the youngest groups are in the beginning of their studies (in the first and second year), 21-year-olds are third-year-students in majority and participants above 21 are close to finishing their studies (generally in the fourth and fifth years).

Table 6.4. Distribution of permanent address in the sample

Permanent address	Frequency (N)	Percentage (%)	Valid percentage (%)
Budapest	130	39.51	39.88
Towns with more than 50 thousand inhabitants	93	28.27	28.53
Towns with less than 50 thousand inhabitants	75	22.80	23.01
Village	28	8.51	8.59
Valid cases	326	99.09	100
Missing	3	0.91	
Total	329	100	

The majority of respondents are from Budapest, the next larger group comes from the larger towns, the smallest group comes from the villages.

Table 6.5. Distribution of employment in the sample

Employment	Frequency (N)	Percentage (%)	Valid percentage (%)
Part time employment	107	32.52	33.54
Full time employment	35	10.64	10.97
No employment	177	53.80	55.49
Valid cases	319	96.96	100
Missing	10	3.04	
Total	329	100	

More than half of the participants (55 %) have no jobs besides their studies. It is important to note that quite large number of students have part time jobs (32,5 %), and 10,9 % are full time employed.

Table 6.6. Distribution according to year of studies in the sample

Year	Frequency (N)	Percentage (%)	Valid percentage (%)
1	43	13.07	13.48
2	35	10.64	10.97
3	158	48.02	49.53
4	51	15.50	15.99
5	32	9.73	10.03
Valid cases	319	96.96	100
Missing	10	3.04	
Total	329	100	

As already stated the third year students are the largest group (49,5 % of the sample), the other years have between 10 and 16 % of the total.

To complete the social and demographic characterisation of the participants two more open questions were presented in the questionnaire: “What corporate position could you imagine for yourself after 5 years of graduation?” and “In what kind of sector / industry would you like to work then?”. After the categorisation of the responses we got the following results (Table 6.7.).

It is also important to note that portion of missing responses was quite large: 18,2 % and 16,1 %, which is explainable by the type of open question used and that these were the closing questions of the lengthy questionnaire applied, it is assumable that respondents become exhausted by that time of the research. The other explanation is the year of studies, the

majority of respondents were at beginning of their studies (1st, 2nd, 3rd year students), so they even haven't chosen majors of their studies.

Table 6.7. Distribution preferred future positions in the sample

Preferred future position	Frequency (N)	Percentage (%)	Valid percentage (%)
leader / manager	124	37.69	46.10
middle manager	75	22.80	27.88
top executive	38	11.55	14.13
independent own enterprise	18	5.47	6.69
specific area	14	4.26	5.20
Valid cases	269	81.76	100
Missing	60	18.24	
Total	329	100	

The majority of respondents wished to fulfil managerial positions in the future: 46,1 % wishes to be in some kind of managerial position (did not specify further), 27,9 % would like to be in middle management and 14,1 % aims for top management. Specific areas (e.g. environmental protection, furniture) were indicated by 5,2 % of respondents. It is the ambition of 6,7 % to establish and run their own enterprises. Responses reflect that the great majority respondents are ambitious to fulfil leading or managerial positions.

Table 6.8. Distribution of preferred sector and industry of operation in the sample

Chosen sector	Frequency (N)	Percentage (%)	Valid percentage (%)
services	52	15.81	18.84
marketing, commerce	57	17.33	20.65
finance, banking, accounting	77	23.40	27.90
consulting	5	1.52	1.81
IT, telecommunication, electronics	15	4.56	5.43
entrepreneurship	46	13.98	16.67
state sector	3	0.91	1.09
HR, people	3	0.91	1.09
higher education	3	0.91	1.09
other	15	4.56	5.43
Valid cases	276	83.89	100
Missing	53	16.11	
Total	329	100	

The majority of respondents indicated sectors that are in general popular, fashionable today: "services", "marketing", "finance, banking, accounting", and wanted to have their own "enterprises".

6.2. Relation of social and demographic characteristics and individual differences relevant in the judgement of product design

6.2.1. Individual materialism and social demographic characteristics

We examined whether respondents' social demographic characteristics are in relation with materialist orientations, attitudes towards respondents' surrounding possessions and products. We used the factor structure of an exploratory factor analysis of the Richins et al. (1992) "materialism" scale (chapter 4.2.2., table 4.4.) for the presentation of personal differences.

Gender differences

Acquisition as a pursuit of happiness

Both groups expressed their desire that *'My life would be better if I owned certain things I don't have'*, although this orientation of the male respondents is stronger. Neither group agrees with the statement *'I wouldn't be any happier if I owned nicer things'* however male respondents' disagreement is stronger.

Possession defined success

In the case of the statement *"some of the most important achievements in life include acquiring material possessions."* female respondents' disagreement is stronger; they are more convinced that the acquisition of material objects is not necessarily an important achievement. Neither group agrees with the statement that *'the things I own say a lot about how well I'm doing in life'*; however girls' disagreement is stronger, in their opinion material objects are not always expressions of personal success. Both groups *'like luxury'*, however males' beliefs in it is stronger.

Acquisition centrality

Shopping, acquiring material things is more important for female respondents. Male respondents are more likely to make purchases of things that they really need. At the same time females like to buy products which are not very practical: they agree more with the statement that “*I enjoy spending money on things that aren’t practical.*”

Differences between males and females in the research show generally known gender differences: responses reflect men’s stronger success orientation, they are more inclined to consider material objects as signs of personal success. In the case of female respondents of the research purchase, acquisition centrality is stronger.

Table 6.9. Gender differences in respondents’ materialist orientation

	Gender	N	Mean	Standard deviation	T test sig.
M5_SUCES I like to own things that impress people.	male	168	3.16	0.97	0,08
	female	150	2.98	0.89	
M2_SUCES Some of the most important achievements in life include acquiring material possessions.	male	171	3.12	1.02	0,00
	female	153	2.76	1.04	
M7_CENTR I usually buy only the things I need.	male	171	3.68	1.00	0,00
	female	154	3.23	0.94	
M14_HAPY I have all the things I really need to enjoy life.	male	170	3.11	1.03	0,82
	female	152	3.14	1.13	
M8_CENTR I try to keep my life simple, as far as possessions are concerned.	male	171	2.40	0.93	0,44
	female	153	2.33	0.89	
M3_SUCES I don’t place too much emphasis on the amount of material objects people own as a sign of success.	male	170	3.38	1.05	0,57
	female	154	3.45	1.03	
M1_SUCES I admire people who own expensive homes, cars and clothes.	male	169	2.57	0.93	0,25
	female	153	2.45	0.92	
M10_CENTR I enjoy spending money on things that aren’t practical.	male	168	2.14	0.97	0,00
	female	154	2.68	1.09	
M11_CENTR Buying things gives me a lot of pleasure.	male	171	3.12	0.99	0,00
	female	154	3.86	1.06	
M6_SUCES I don’t pay much attention to the material objects other people own.	male	169	2.95	1.00	0,7

	female	151	2.99	0.87	
M12_CENTR I like a lot of luxury in my life.	male	171	3.76	0.99	0,09
	female	152	3.58	0.97	
M13_CENT I put less emphasis on material things than most people I know.	male	163	2.88	0.84	0,88
	female	146	2.90	0.84	
M9_CENTR The things I own aren't that important to me.	male	170	1.78	0.83	0,2
	female	153	1.67	0.71	
M15_HAPY My life would be better if I owned certain things I don't have.	male	170	3.77	1.06	0,00
	female	153	3.42	1.07	
M16_HAPY I wouldn't be any happier if I owned nicer things.	male	166	2.30	1.02	0,00
	female	150	2.61	0.97	
M4_SUCES The things I own say a lot about how well I'm doing in life.	male	169	2.89	0.93	0,02
	female	152	2.66	0.94	
M17_HAPY I'd be happier if I could afford to buy more things.	male	170	3.49	1.02	0,32
	female	154	3.38	0.99	
M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	male	171	3.75	0.94	0,27
	female	153	3.63	1.07	

Age differences

There are only a very few differences in respondents' materialist orientation and their age groups. Age groups are younger than 21, 21 and older than 21. (Results of analysis of variance are in Appendix 6.1.)

Possession defined success

Neither group agrees with the statement *‘The things I own say a lot about how well I'm doing in life’* however members of the youngest group disagree most, this is followed by 21-year-olds. Respondents older than 21 neither agree nor disagree with this statement. A possible explanation is that youngest respondents depend financially on their families the most, they are at the very beginning of planning their career, so they have less choice in selecting their own belongings for expressing their personal achievements.

Acquisition centrality

21-year-olds disagree with the statement “*I enjoy spending money on things that aren't practical*”, the other two group also express disagreement, but to a smaller extent.

Disregard of others' opinions

There is a difference between the youngest and oldest group with respect whether they “*pay much attention to the material objects other people own*” - younger respondents admit that, 22-year-old or older respondents find this aspect neither important nor unimportant.

Differences with regard to year of studies

Possession defined success

The only difference found in the research (see Appendix 6.2.) that first and third-year-students do not agree with the statement that “*the things I own say a lot about how well I'm doing in life,*” this is not relevant for the students in their second, fourth and fifth years of study, they neither agree nor disagree with this statement.

Effect of employment

The fact whether respondents hold jobs simultaneously with their studies shows several differences with respect to materialist orientation (Appendix 6.3.) Differences can be explained by the differences of disposable income.

Acquisition as a pursuit of happiness

There are differences in respondents' opinions about “*My life would be better if I owned certain things I don't have.*” Full time employees are more inclined to agree than part time employees and those who don't have jobs.

Those who have supposedly less disposable income (those who don't have a job or have part time jobs) are less discontented. Those who have full time jobs have different experiences, appear in different circles, meet different people and see different interiors. Therefore they have more established opinions about the efforts of the acquisition of material objects.

Possessions defined success

Full time employees slightly agree with the item "*the things I own say a lot about how well I'm doing in life*", the other two groups do not agree with this statement.

Full time employees "*like luxury*" the most.

There is a significant difference between full time and part time employees with respect whether they admit that "*some of the most important achievements in life include acquiring material possessions.*" Full time employees agree, part time employees disagree. Those who don't have jobs neither agree, nor disagree.

Differences of respondents' attitudes can be explained by the fact, that those in full time positions have higher incomes. Therefore they are able to express their situation by acquiring material possessions. For them it is important to express their personal accomplishment too, because they put in great efforts (working full time besides studying). So they agree that acquiring material possessions is an important achievement.

Acquisition centrality

There is a significant difference between part time employees and those students who don't have jobs with respect whether they "*enjoy spending money on things that aren't practical*". The disagreement with this statement is weakest by the group with part-time jobs and strongest by the two other groups.

A possible explanation is, that part time employees are more likely impulsive buyers. Their supplementary income makes it possible. Their positions – studying and having a part-time job – does not imply long term thinking or a wish to express their achievement like the one with a full time job.

Disregard of others' opinions

With the statement *“I don't place too much emphasis on the amount of material objects people own as a sign of success”* the group without jobs disagree (so they care about what other people own); the group holding part-time jobs have no strong opinions (neither agree, nor disagree) about it, the full time employees agree.

Full time employees clearly agree with that they *“don't place too much emphasis on the amount of material objects people own as a sign of success”*, those who don't have jobs find this unimportant.

Responses show that differences in employment – no job, part time job, full time job – have influence on materialist orientations: opportunities, greater freedom as a result of higher income is reflected in the attitudes.

Table 6.10. gives a summary of the results the research about the influence of social and demographic characteristics on the attitudes in materialism. Gender and employment are the characteristics that have the greatest influence.

Table 6.10. Respondents' materialist orientation and their social-demographic characteristics

		gender	age	year of study	employment
Acquisition as a pursuit of happiness					
	M14_HAPY I have all the things I really need to enjoy life.				
	M17_HAPY I'd be happier if I could afford to buy more things.				
	M15_HAPY My life would be better if I owned certain things I don't have.				
	M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.				
	M16_HAPY I wouldn't be any happier if I owned nicer things.				
Possessions defined success					
	M4_SUCES The things I own say a lot about how well I'm doing in life.				
	M12_CENT I like a lot of luxury in my life.				
	M2_SUCES Some of the most important achievements in life include acquiring material possessions.				
	M1_SUCES I admire people who own expensive homes, cars and clothes.				
Acquisition centrality					
	M10_CENT I enjoy spending money on things that aren't practical.				
	M11_CENT Buying things gives me a lot of pleasure.				
	M7_CENTR I usually buy only the things I need.*				
	M8_CENTR I try to keep my life simple, as far as possessions are concerned.				
	M9_CENTR The things I own aren't that important to me.				
Disregard of others' opinions					
	M6_SUCES I don't pay much attention to the material objects other people own.				
	M3_SUCES I don't place too much emphasis on the amount of material objects people own as a sign of success.				
	M13_CENT I put less emphasis on material things than most people I know.				
	M5_SUCES I like to own things that impress people.				



significant differences



tendencies, considerable differences

6.2.2. Information processing preferences and social demographic characteristics

We found that of the four social demographic characteristics – gender, age, year of study, employment – only gender influences respondents' information processing preferences (table 6.11.).

Visual information processing preferences

- ?? Females accept more the statement that *“There are some special times in my life that I like to relive by mentally „picturing” just how everything looked.”*
- ?? It is more important for females that *“When they are trying to learn something new, they’d rather watch a demonstration than read how to do it.”*
- ?? Females prefer more *“to picture how they could fix up their apartment or a room if they could buy anything they wanted.”*
- ?? Males express that they don’t *“like to doodle”*
- ?? Both groups agree, but girls agree more that *“their thinking often consists of mental „pictures” or images”*

The results suggest that female respondents find processing information visually more important than males.

Verbal information processing preferences

- ?? Agreeing with *“reading a lot”* is more characteristic for female respondents.
- ?? Females admit that they *“often make written notes to themselves”*, males made clear that they don’t.
- ?? Males disagree more with the statement *“I spend very little time trying to increase my vocabulary”*, which means that they think they spend more efforts on extending their vocabulary.

Results suggest that there are gender differences in respondents' information processing preferences. The conclusion is: **female respondents consider both visual and verbal information processing important**, they are **more sensitive in information processing**.

Table 6.11. Information processing preferences and gender differences

	Gender	Mean	Standard deviation	T test sig.
VERB1 I enjoy doing work that requires the use of words.	male	2.34	0.67	0,3
	female	2.26	0.71	
PICT1 There are some special times in my life that I like to relive by mentally „picturing” just how everything looked.	male	1.71	0.57	0,00
	female	1.51	0.59	
VERB2 I can never seem to find the right word when I need it.	male	2.01	0.52	0,55
	female	2.05	0.52	
VERB3 I do a lot of reading	male	2.25	0.92	0,04
	female	2.05	0.88	
PICT2 When I am trying to learn something new, I'd rather watch a demonstration than read how to do it.	male	2.04	0.79	0,01
	female	1.82	0.77	
VERB4 I think I often use words in the wrong way.	male	1.81	0.60	0,93
	female	1.82	0.60	
VERB5 I enjoy learning new words.	male	1.98	0.75	0,61
	female	1.93	0.74	
PICT3 I like to picture how I could fix up my apartment or a room if I could buy anything I wanted.	male	2.05	0.92	0,00
	female	1.59	0.81	
VERB6 I often make written notes to myself.	male	2.58	0.94	0,00
	female	1.97	0.98	
PICT4 I like to daydream.	male	1.91	0.78	0,00
	female	1.60	0.65	
PICT5 I generally prefer to use a diagram rather than a written set of instructions.	male	2.33	0.77	0,5
	female	2.39	0.81	
PICT6 I like to „doodle.”	male	2.42	0.96	0,00
	female	2.05	0.95	
PICT7 I find it helps to think in terms of mental pictures when doing many things.	male	1.72	0.69	0,91
	female	1.73	0.75	
PICT8 After I meet someone for the first time, I can usually remember what they look like, but not much about them.	male	2.68	0.82	0,43
	female	2.76	0.88	
VERB7 I like to think of synonyms for words.	male	2.54	0.83	0,57
	female	2.59	0.84	
PICT9 When I have forgotten something I frequently try to form a mental „picture” to remember it.	male	1.65	0.63	0,27
	female	1.57	0.65	
VERB8 I like learning new words.	male	1.93	0.74	0,88
	female	1.94	0.80	
VERB9 I prefer to read instructions about how to do something rather than have someone show me.	male	2.91	0.77	0,62
	female	2.86	0.82	
VERB10 I prefer activities that don't require a lot of reading.	male	2.91	0.66	0,44
	female	2.85	0.64	
PICT10 I seldom daydream.	male	1.86	0.86	0,00
	female	1.61	0.74	
VERB11 I spend very little time trying to increase my vocabulary.*	male	2.29	0.73	0,01
	female	2.10	0.72	
PICT11 My thinking often consists of mental „pictures” or images.	male	1.85	0.58	0,04
	female	1.71	0.63	

7. Consumer evaluations of aspects of product design

Participants of the research considered the meaning, implications of product design of ordinary, everyday products (e.g. pens, furniture, vacuum cleaner, hair drier). Their task was to decide about the importance of the different aspects of product design, which are the following²⁵:

- ?? **Functionality** - the function the object is to fulfil, usability, practicality, etc.
- ?? **Nature, characteristics of form** - size, form, colour – e.g.: big-small, square-round, red-blue, etc.
- ?? **Expressiveness** - capabilities of expressing the owner's / user's personality, quality of appearance, style, aesthetics, trendiness, modernity, elegance, etc.
- ?? **User – object interaction** - how harmonic is the connection / interaction between user and the object, convenience, pleasantness, pleasure of usage, etc.

Respondents divided 100 points among the four aspects, based on which they considered the most important (Table 7.1.).

Table 7.1. Consumer evaluations of the different aspects of product design in general

	Mean	Standard deviation	Minimum	Maximum
Functionality	32.95	15.28	0	80
Nature, characteristics of form	22.70	10.66	0	100
Expressiveness	21.17	10.36	0	50
User – object interaction	22.37	9.03	0	50

Respondents attributed the greatest importance to functionality, the importance of the other aspects is nearly the same to them. Standard deviation of the responses is rather high, sometimes respondents did not attribute any importance to some of the aspects, on the other hand some respondents considered functionality or the characteristics of form exclusively important.

²⁵ aspects were set according to the results of a previous exploratory research, where participants were asked to give the characteristics of „good product design” – associations were then categorised by three judges.

Correlation analysis was used to investigate if there are relations between the four aspects.

The relation between the aspect of functionality and the aspect of characteristics of product form is negative: the more important the functioning of a product is considered the less important its characteristics of form and vice versa. There is a weak negative relation between characteristics of form and user-object interaction. This suggests that if an user, owner considers the harmonic interaction²⁶ between him/her and the object important, the form of the object is less important for him/her.

Respondents also considered the same frame of questions in the case of mobile phones in general which are the research objects of current study. In the case of mobile phones in general research subjects evaluated the same four product design characteristics (Table 7.2.)

Table 7.2. Consumer evaluations of the different aspects of product design of mobile phones

	Mean	Standard deviation	Minimum	Maximum
Functionality	35.64	14.55	0	80
Nature, characteristics of form	24.56	10.63	3	80
Expressiveness	18.64	9.85	0	70
User – object interaction	20.30	9.52	0	50

Respondents' evaluations of the product design of mobile phones are similar to their evaluations of product design in general. Respondents attribute somewhat greater importance to functionality of mobile design than product design in general. The other three aspects relatively equal in their importance: characteristics of form is considered most important, this is followed by user-object interaction and expressiveness was evaluated as the least important.

With regard to the relation to one another we found the following results regarding the four characteristics. Functionality is negatively related to the three other aspects, the strongest relation is between functionality and expressiveness: the more important functionality is, the less consideration is given to expressiveness. There is a negative relation between characteristics of form and user-object interaction. When respondents think that the convenience, enjoyment of the use of a mobile phone is more important they consider how it

²⁶ convenience, pleasantness of use

is shaped (characteristics of form) less important. The negative relation also implies that those respondents who care a lot about the characteristics of form, consider the aspects of convenience less important.

Characteristics of general evaluations of mobile design

Respondents' evaluations of product design in general and about mobile design in general show similar tendencies. Analysis of the correlation between the evaluations of product designs in general and evaluations of product design of mobile phones are positively correlated, which indicates that their consumer considerations are similar.

There is one aspect that is only present in the relation with the two situations²⁷ that reflects the specific of thinking about mobile design in general: expressiveness of product design in general is in positive relation with the characteristics of mobile design in general. This indicates that those respondents who consider the expressiveness of their possessions important, attribute greater importance to form characteristics of mobile phones as well. One possible explanation that respondents regard product design expressiveness important is that they see characteristics of form as a source of expression, communication in the case of mobile phones. Those respondents who do not consider products' expressiveness that important, attributed less importance to mobile phones' form characteristics.

Table 7.3. Relation of the consumer evaluations of the different aspects of product design in general and mobile design in general

Product design in general (everyday products)	Mobile design in general			
	functionality	Nature, characteristics of form	Expressiveness	User – object interaction
Functionality	+		-	-
Nature, characteristics of form	-	+		-
Expressiveness	-	+	+	
User – object interaction	-	-		+

(„-“, „+“ and „+“ show the direction of relationships, which proved to be significant, based on bivariate correlations)

²⁷ aspects of product design and aspects of mobile telephone design

8. The role of product design in choice decisions

According to Bloch (1995) good product design fulfils several functions: “good design conveys meaning” (Papanek, 1971), it is capable of attracting consumers by communicating to them, *increases the value of the product by improving the quality of the usage experience*. Bloch proposes the following list of criteria for assessing its contribution to its success:

- ?? its ability of gaining *consumer notice*;
- ?? its capability of *communicating information* to consumers;
- ?? its potential to affect the *quality of our lives*;
- ?? having a long lasting *effect*;
- ?? its capability of *attracting* consumers;
- ?? its capability of *adding value*.

As suggested by Bloch present research approached the phenomenon of product design from different perspectives. In our research we presented the respondents with four types of mobile telephones, all from Nokia. Respondents evaluated the mobile phones (research objects) on the basis of their own impressions and provided information. Similarly to a real buying situations participants could look at, hold the different mobile phone models. We asked them questions about the phones in such a way that they had to consider and make choices in different decision frames. The questions (decision frames) were the following:

Q7a. “Looking at the mobile telephones, at first sight which one would you choose”

By this decision frame (1.) we measured product appearance in a situation where respondents did not have any information about the models. The role of this decision frame is to record the impact of product appearance on its own and its role in choice decisions.

Q7b. “Which one would you choose if all four models provided exactly the same features and services, and were of the same price?”

In this decision frame (2.) clearly only the impact of product design was measured. The idea of this decision frame is to measure only the impact of the product design by making mobile phones identical in the other aspects like services and price.

Q7c. “Looking at the telephones which one do you consider the most functional?”

The role of this decision frame (3.) was to record what the investigated models communicated about their functionality by their presence, appearance.

Q7d. “Ask for information material F^8 . After reading the information and looking at the telephones, which one do you consider the most functional?”

In the following decision frame (4.) we measured the same judgements of functionality based on facts, information. By this decision frame we could control for the communicative abilities of the listed models and the possible sources of judgements of functionality.

Q7e. “Considering what you have seen and read, which one would you like to win?”

This decision frame (5.) is an idealised situation where respondents after being exposed to the telephone models and information about them considering all experience and knowledge they made choices according to their wishes. At this stage respondents chose the phone they wanted to win as a reward for their participation (this was recorded on a separate form, Appendix 5.2., supplements of the questionnaire). In this situation we limited the influences in their choices to product design and perceived functionality, because we excluded the influences of prices of the phones.

Q7g. Ask for information material Z^9 . After reading the information and looking at the telephones, which one would you buy?”

In this decision frame (6.) we gave information about the prices of the mobile phones to get an idea about the influence of prices (independent of service provider and service pack) on respondents choices.

Q7h. “Considering the design of the mobile telephones which one would you choose”

As for checking earlier outcomes about the influence of product design, we asked respondents directly to form choice preferences according to product design. This is decision frame 7.

²⁸ this is the technical information that Nokia provides to potential users in the shops. These information material contained only technical information about the functions and services of the phones. (see Appendix 5.2., supplements of the questionnaire).

²⁹ see Appendix 5.2., supplements of the questionnaire

8.1. First product and consumer encounter

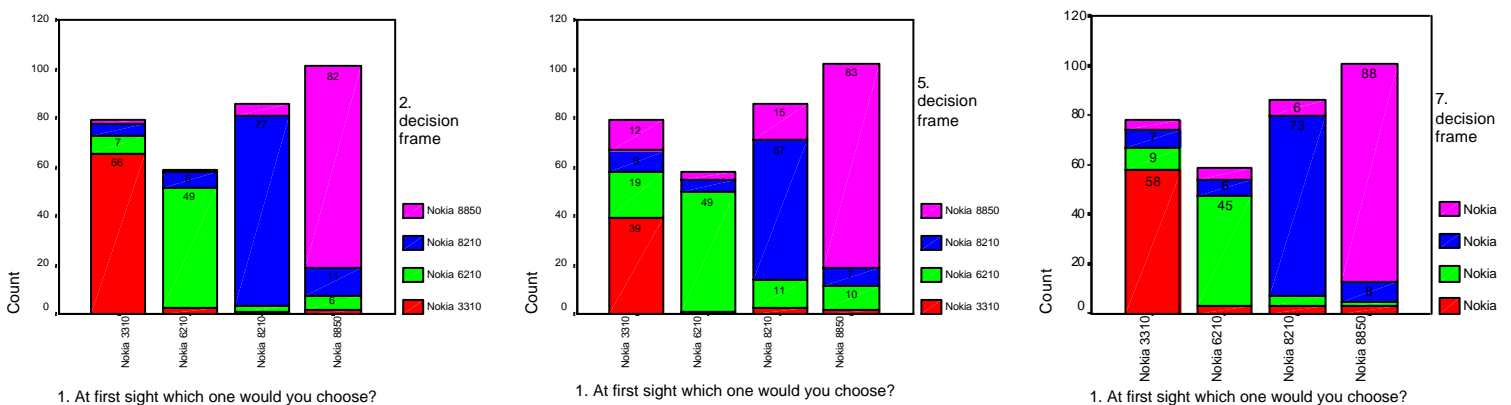
Results show that design determines several aspects of consumer choices, primacy effects (Hewstone et al. 1997; Aronson, 2001) are present in several decision frames. Contrasting the different decision frames shows that the formation of preferences at first sight is very crucial in terms of formation of preferences for design. Our study shows that there is a significant relationships between choices made at first sight and according to design: these responses are close to each other. The majority of respondents remained loyal to the chosen model (decision frame 1.) when

- ?? all models provided *exactly the same services and features* and were of the *same prices*
- ?? all information was known and respondents made *wishful choices*
- ?? choice was made on the basis of the most preferred product design

Table 8.1. Primacy effects in the different decision frames

	Decision frame 1. Looking at the mobile telephones, at first sight which one would you choose					Decision frame 2. Which one would you choose if all four models provided exactly the same features and services, and were of the same price?					Decision frame 5. Considering what you have seen and read, which one would you like to win?					Decision frame 7. Considering the design of the mobile telephones which one would you choose?				
	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?					
Nokia 3310	66	7	5	1	79	39	19	9	12	79	58	9	7	4	78					
row %	83.54	8.86	6.33	1.27	100.00	49.37	24.05	11.39	15.19	100.00	74.36	11.54	8.97	5.13	100.00					
column %	91.67	10.77	5.05	1.12	24.31	86.67	21.35	11.54	10.62	24.31	86.57	15.00	7.45	3.88	24.07					
Nokia 6210	3	49	6	1	59	1	49	5	3	58	3	45	6	5	59					
row %	5.08	83.05	10.17	1.69	100.00	1.72	84.48	8.62	5.17	100.00	5.08	76.27	10.17	8.47	100.00					
column %	4.17	75.38	6.06	1.12	18.15	2.22	55.06	6.41	2.65	17.85	4.48	75.00	6.38	4.85	18.21					
Nokia 8210	1	3	77	5	86	3	11	57	15	86	3	4	73	6	86					
row %	1.16	3.49	89.53	5.81	100.00	3.49	12.79	66.28	17.44	100.00	3.49	4.65	84.88	6.98	100.00					
column %	1.39	4.62	77.78	5.62	26.46	6.67	12.36	73.08	13.27	26.46	4.48	6.67	77.66	5.83	26.54					
Nokia 8850	2	6	11	82	101	2	10	7	83	102	3	2	8	88	101					
row %	1.98	5.94	10.89	81.19	100.00	1.96	9.80	6.86	81.37	100.00	2.97	1.98	7.92	87.13	100.00					
column %	2.78	9.23	11.11	92.13	31.08	4.44	11.24	8.97	73.45	31.38	4.48	3.33	8.51	85.44	31.17					
All	72	65	99	89	325	45	89	78	113	325	67	60	94	103	324					
row %	22.15	20.00	30.46	27.38	100.00	13.85	27.38	24.00	34.77	100.00	20.68	18.52	29.01	31.79	100.00					
column %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00					

p<0,01



Respondents' switches of choices in different decision frames show that choices made according to first impressions, in an idealised choice situation (wishes to win) and choices based directly on design appeared to be very similar, which proves that in these situation the role of product design is decisive.

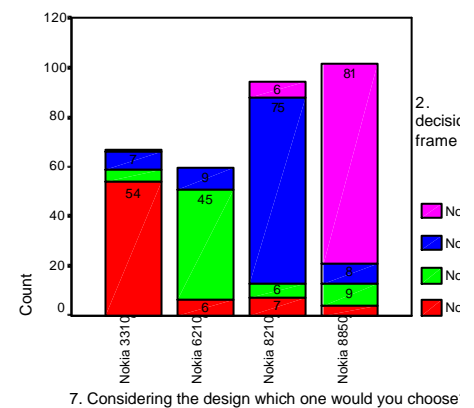
There is only one case where choices made at first sight (1.) are changed to a greater extent in another. This is decision frame 5., for choices Nokia 3310. 49,37 % of respondents remained loyal to the chosen of model, for the other models this is above 66 %. This is explainable by the fact that respondents received the technical information of the models, took a more careful look at them and as a result, they considered the other models of greater value.

8.2. Role of the characteristics of product form

Table 8.2. Choices based on product design exclusively

Decision frame 7.	Decision frame 2.	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?
Nokia 3310	N	54	5	7	1	67
		80.60	7.46	10.45	1.49	100.00
		76.06	7.69	7.07	1.14	20.74
Nokia 6210	N	6	45	9		60
		10.00	75.00	15.00		100.00
		8.45	69.23	9.09		18.58
Nokia 8210	N	7	6	75	6	94
		7.45	6.38	79.79	6.38	100.00
		9.86	9.23	75.76	6.82	29.10
Nokia 8850	N	4	9	8	81	102
		3.92	8.82	7.84	79.41	100.00
		5.63	13.85	8.08	92.05	31.58
?	N	71	65	99	88	323
		21.98	20.12	30.65	27.24	100.00
		100	100	100	100	100

p<0,01



The table and the diagram shows respondents' preferences in the two decision frames 'Which one would you choose if all four models provided exactly the same features and services, and were of the same price?'; and 'Considering the design of the mobile telephones which one would you choose?' were congruent, which proves that the two decision frames measured the same phenomenon.

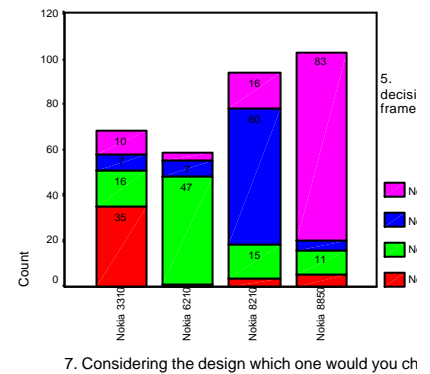
8.3. Idealised choice context

Product design related consumer responses were measured in the case of the model that respondents chose in decision frame 5. This decision frame reflects consumer preferences with respect to product design of the mobile telephone, eliminating the impact of prices. Comparing choices made in this decision frame are idealised choices and choices to product design preferences (decision frame 7.) show that these preferences are very close to each other, which implies that the impact of design is determinant in these idealised choices as well.

Table 8.3. Idealised choices with respect to preferences of design

Decision frame 7.	Decision frame 5.	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?
Nokia 3310	N	35	16	7	10	68
		51.47	23.53	10.29	14.71	100.00
		79.55	17.98	8.97	8.85	20.99
Nokia 6210	N	1	47	7	4	59
		1.69	79.66	11.86	6.78	100.00
		2.27	52.81	8.97	3.54	18.21
Nokia 8210	N	3	15	60	16	94
		3.19	15.96	63.83	17.02	100.00
		6.82	16.85	76.92	14.16	29.01
Nokia 8850	N	5	11	4	83	103
		4.85	10.68	3.88	80.58	100.00
		11.36	12.36	5.13	73.45	31.79
?	N	44	89	78	113	324
		13.58	27.47	24.07	34.88	100.00
		100	100	100	100	100

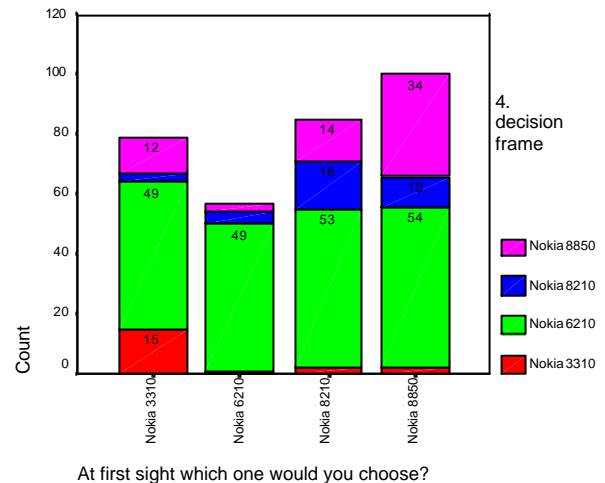
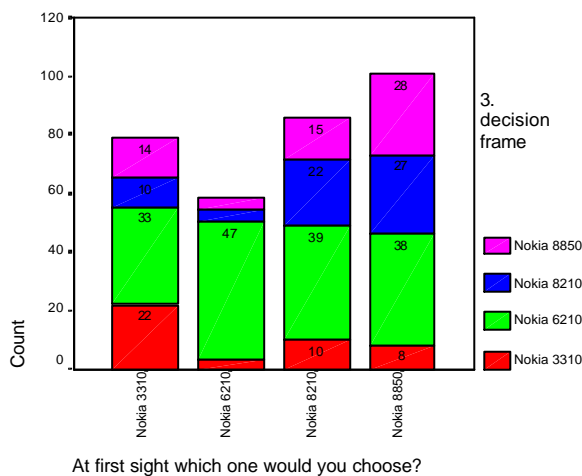
p<.001



As a consequence, this idealised situation can be regarded as a choice that is based on the impact of product design, at the same time these choices also reflect the real slight differences in functions that respondents learnt in the antecedent decision frame (4).

8.4. Judgement of functionality

In decision frames 3. and 4. many respondents did not remain loyal to the model they chose based on product design. Majority of respondents judged one particular model, Nokia 6210 the most functional based on looking at, holding the model (frame 3.) and according to provided information (frame 4.). Only those remained loyal to the model they chose at first sight (frame 1.) or product design (frame 2.), who chose Nokia 6210 in the latter decision frames. These results show that respondents connected the phenomenon “functional” to one particular product design, that was positioned “classical”, the most simple by the manufacturer. “Stylishness, elegance” even “high tech design” respondents did not tend to connect to functionality. (See crosstabs in Appendix 8.1.)



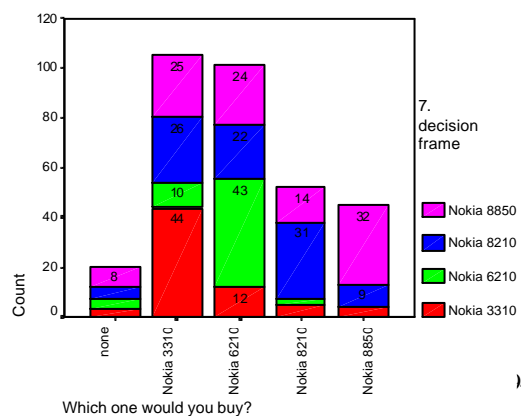
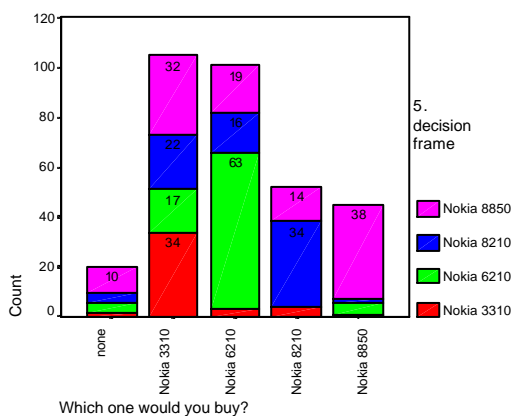
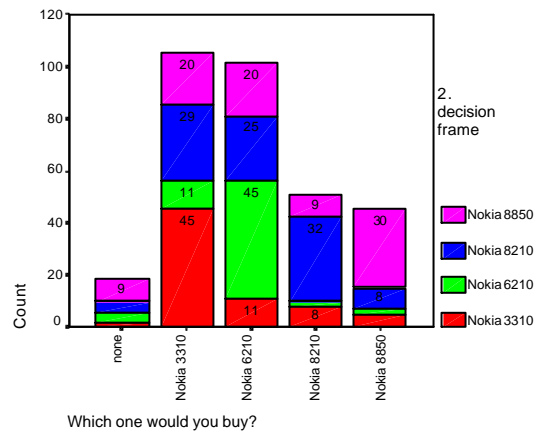
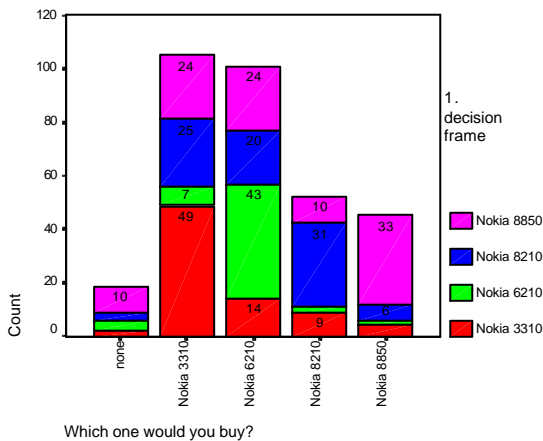
p<0,01

8.5. Intention of purchase

Purchase intentions reflect students' financial situations. Majority of respondents chose the two models of the lowest prices. However by contrasting preferences for design with purchase intentions reflects that quite many respondents remained at their preferences of design even with high prices. For example those who preferred Nokia 8850 for design remained most loyal to this phone in their purchase intentions as well. It is also very interesting to note that those who were not willing to buy any of the four models, preferred Nokia 8850, the most expensive model, which also underlines respondents' strong commitment to the preferred mobile telephone as they did not change their purchasing preference to a cheaper telephone.

Table 8.4. Purchase intentions

	N	(%)
none	20	6.19
Nokia 3310	105	32.51
Nokia 6210	101	31.27
Nokia 8210	52	16.10
Nokia 8850	45	13.93
?	323	100.00



p<0,01

Conclusions

Consumer preferences, choices in the case of mobile telephones is very strongly influenced by the very first encounter (primacy effect). These preferences remain present in choices which are made in a decision frame where:

- ?? all product features, functions and prices are the same, only representation of product form differs
- ?? in an idealised choice context, where technical parameters are considered, but prices are disregarded
- ?? where the basis of decision is directly product design.

Preferences compared in the idealised context and product design are also very close. In a situation where price effects are eliminated the impact of product design determines choices.

Judgements of functionality based on own perception and based on real information were also very close, which proves that consumers' information processing capabilities is limited, they more rely on their judgements that they made on the basis of their perception. However, it is also important to note that research objects in current research are examples of good design, which underline that those research objects communicated about themselves very well, so the most functional model was judged most functional based on own personal experience, perception and formal information. This results prove that product design effectively communicates about itself to consumers.

Preferences with respect to buying intentions reflect respondents financial situations. However, even these preferences reflected respondents' design preferences. Those respondents who preferred the design of the most expensive model were more likely to remain loyal to it, even by refusing other, more affordable models.

9. The role of product design in the context of choice

This chapter describes the impact of product design on the choices consumers are making. The influence of individual differences is investigated, also the role of past experience with the product. Finally we examine which factors influence consumer judgements about the utility, aesthetics and enjoyment, hedonic value of the chosen product.

9.1. Product design preferences and individual differences

9.1.1. Gender

The only significant relation between consumer preferences in the idealised choice context and individual differences recorded in the questionnaire (gender, age, permanent address, fact of employment, year of study, chosen major, future career orientation) was the impact of gender. We found differences in product design preferences according to the gender of respondents.

Table 9.1. Respondents' product design preferences and gender

Gender	Chosen model	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?
male	N	11	59	34	67	171
	row %	6.43	34.50	19.88	39.18	100.00
	column %	24.44	67.05	44.16	58.77	52.78
female	N	34	29	43	47	153
	row %	22.22	18.95	28.10	30.72	100.00
	column %	75.56	32.95	55.84	41.23	47.22
?	N	45	88	77	114	324
	row %	13.89	27.16	23.77	35.19	100.00
	column %	100	100	100	100	100

p<0.01

The table shows that men prefer Nokia 8850 and 6210, women preferred Nokia 8850 and 8210. The distribution of choices by women are far more even. If we look at who have chosen a certain model, we can see that model 3310 is mostly chosen by females and 6210 mostly by males

9.1.2. Ownership of own mobile phone

The fact that whether at the time of the research respondents owned a mobile telephone determined choices. Both groups mostly preferred two models: Nokia 8850 and Nokia 6210, which is similar to the preferences of the whole population. The two other models Nokia 3310 and Nokia 8210 were less popular. However there is one notable tendency of choices: the preferences of Nokia 3310 are of non-owners and preferences of Nokia 8210 are more characteristic of mobile phone owners.

Table 9.2. The fact of ownership of own mobile phone and choice preferences

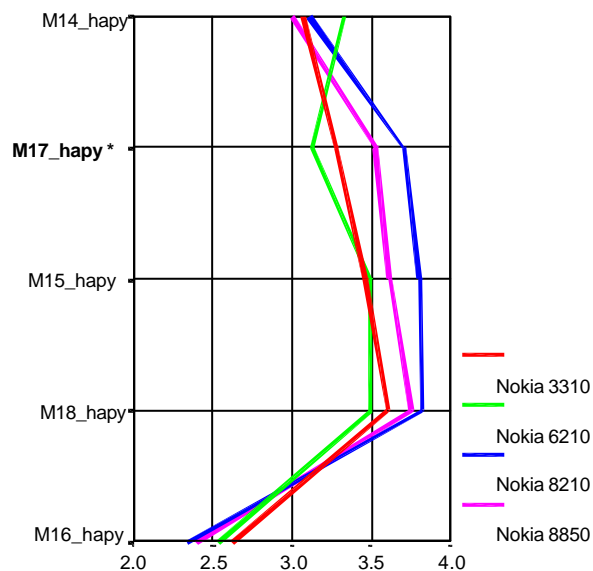
Owns a mobile phone already	Chosen phone	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?
yes	N	25	61	56	86	228
	row %	10.96	26.75	24.56	37.72	100.00
	column %	55.56	68.54	71.79	75.44	69.94
no	N	20	28	22	28	98
	row %	20.41	28.57	22.45	28.57	100.00
	column %	44.44	31.46	28.21	24.56	30.06
?	N	45	89	78	114	326
	row %	13.80	27.30	23.93	34.97	100.00
	column %	100.00	100.00	100.00	100.00	100.00

p=0,099

9.2. Product design preferences and materialist orientation

In the research we found a strong relation between respondents' material orientation and their preferences for the different mobile telephone designs. The results of the research affirm that material orientation, the importance and role respondents attach to their material possessions determines their choices: those who preferred more simple, puritan design models (Nokia 3310 and Nokia 6210) consider the expressive role of their possession towards their environment less important, while those respondents who preferred more “fancy” product designs considered their own material possessions very important in expressing their personal success and achievement.

Acquisition as a pursuit of happiness



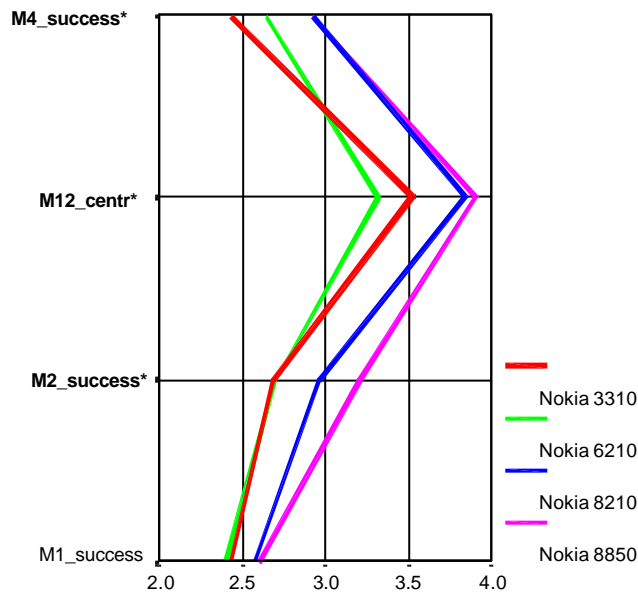
M17_hapy³⁰: for those respondents who preferred Nokia 8210 and 8850 it is a source of personal happiness “if they could afford to buy more things.” This aspect is irrelevant for those who preferred the model 6210 (they neither agree nor disagree, average value of responses is 3,1). For those who preferred Nokia 3310 this aspect is not very important, their evaluations significantly differs from those who preferred Nokia 8210.

Evaluation of other aspects of acquisition as a pursuit of happiness does not show significant differences, but suggests that those, who preferred the more elegant and fancy models (Nokia

³⁰ The figures are based on analyses of variance, see Appendix 9.1. Significant differences are indicated by bold letter type and asterisk

8210 and Nokia 8850) more consider the acquisition of material objects to be a source of individual happiness. In the case of the other remaining four items these respondents express their agreement and disagreement respectively. These results suggest that personal attitudes towards material objects is reflected in preferences of product design.

Possessions defined success



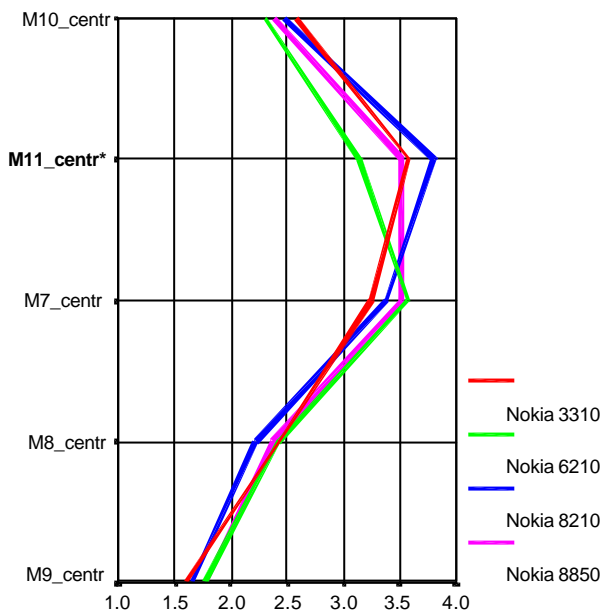
This factor of the materialism scale shows several significant differences in relation to individual preferences of product design:

?? M4_success: those who preferred Nokia 3310 disagree with that “*The things they own say a lot about how well they’re doing in life*”, those who chose Nokia 8210 and 8850 find this unimportant, average value of responses is 2,9.

- ?? M12_cent: Those, who preferred Nokia 8210 and 8850 were the most clear about that they “*like luxury*”, while those who preferred Nokia 6210 consider this unimportant. Responses of those who chose Nokia 3310 are between the two extremes.
- ?? M2_success: There is a significant difference in the responses among those who preferred Nokia 3310, 6210 and 8850: while those who chose Nokia 3310 clearly disagree that “*some of the most important achievements in life include acquiring material possessions*”, those, who chose Nokia 8850 agree, and those who chose Nokia 8210 are neutral about this aspect.

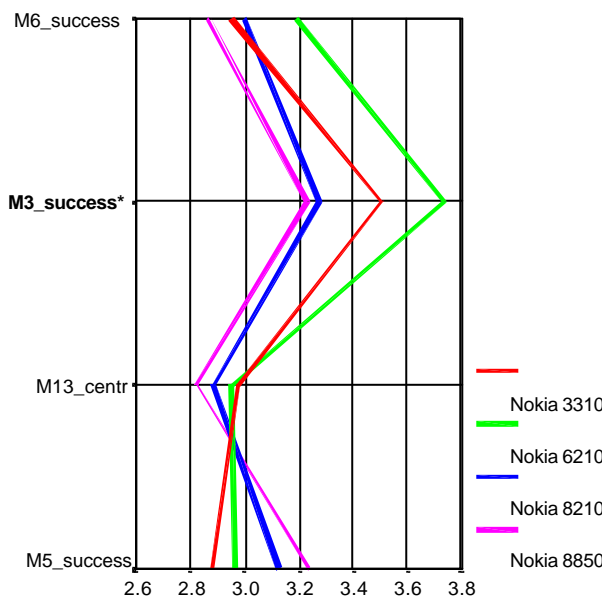
Responses reflect that, those who preferred more simple and puritan product designs consider material objects to be less adequate signs of personal success and achievement, while those who preferred Nokia 8210 and 8850 find the expressive role of material objects in representing their individual success important.

Acquisition centrality



There is only one variable (M11_centr) that shows significant differences with respect to design preferences. Those who preferred Nokia 8210 agree more with the statement that “*buying things gives me a lot of pleasure*”, while this is an aspect that is unimportant for those choosing Nokia 6210, the average value of their responses is around 3,1.

Disregard of others’ opinions



For those, who liked and chose models that are more fancy, elegant and spectacular, care more about others’ opinions with respect to their material possessions. While those, preferring Nokia 6210 agreed most with “*I don’t place too much emphasis on the amount of material objects people own as a sign of success.*”

As an overall result of the analysis we can state that there exists a relation between attitudes in material orientations (materialism) and preferences for certain product design of mobile phones. Those, who chose models conveying more fancy, spectacular and elegant style found the acquisition material objects essential in the expression of their personal achievement and success. While, those who chose more simple and clear forms (Nokia 3310 and 6210) this latter role of material objects is less important. Table 9.3. gives a summary of results.

Table 9.3. Materialism and preferences of design in the case of mobile telephones

		Uncharacteristic item for those who chose the bellow telephone model	Characteristic item for those who chose the bellow telephone model
Acquisition as a pursuit of happiness	M14_HAPY I have all the things I really need to enjoy life.		
	M17_HAPY I'd be happier if I could afford to buy more things.	3310 6210 6210	8210 8210 8850
	M15_HAPY My life would be better if I owned certain things I don't have.		
	M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.		
	M16_HAPY I wouldn't be any happier if I owned nicer things.		
Possessions defined success	M4_SUCES The things I own say a lot about how well I'm doing in life.	3310 3310	8210 8850
	M12_CENT I like a lot of luxury in my life.	6210 6210	8210 8850
	M2_SUCES Some of the most important achievements in life include acquiring material possessions.	3310 6210	8850 8210
	M1_SUCES I admire people who own expensive homes, cars and clothes.		
Acquisition centrality	M10_CENT I enjoy spending money on things that aren't practical.		
	M11_CENT Buying things gives me a lot of pleasure.	6210	8210
	M7_CENTR I usually buy only the things I need.*		
	M8_CENTR I try to keep my life simple, as far as possessions are concerned.		
	M9_CENTR The things I own aren't that important to me.		
Disregard of others' opinions	M6_SUCES I don't pay much attention to the material objects other people own.	8850	6210
	M3_SUCES I don't place too much emphasis on the amount of material objects people own as a sign of success.	8850 8210	6210 6210
	M13_CENT I put less emphasis on material things than most people I know.		
	M5_SUCES I like to own things that impress people.		



significant differences



tendencies, considerable differences

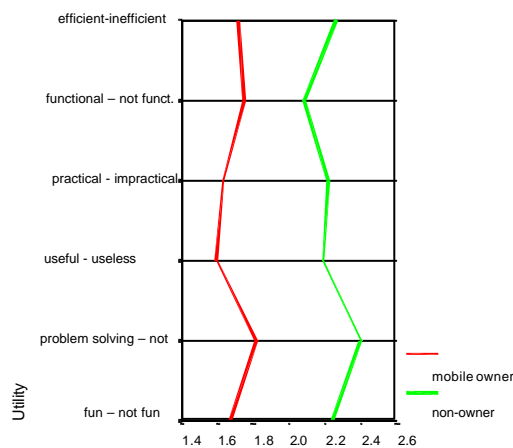
9.3. Factors determining product related consumer judgements: the impact of past experience

The influences of social demographic characteristics and the fact of ownership of mobile telephones on judgements about utility, aesthetic and hedonic value were investigated. For the judgements we used the Spangenberg et al, Hirschman & Solomon, 1985 scales. Results of analysis of variance (ANOVA) show that individual characteristics do not, but the existence of own mobile phone does determine product design related consumer responses – judgement of utility, aesthetics and hedonic value (table 9.4.).

Respondents' evaluations reflect that mobile phone owners are more clear and decisive about the chosen phone than non-owners, they give more expert judgements. As a results, in accordance with the objectives of the research in the later chapters only mobile phone owners' judgements will be analysed.

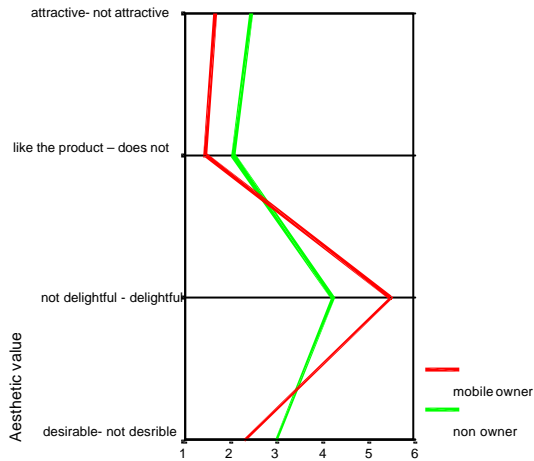
Utility

The curves bellow show that both groups regarded the chosen models useful, however mobile phone owners attributed significantly more utility to them on every item than non-owners.



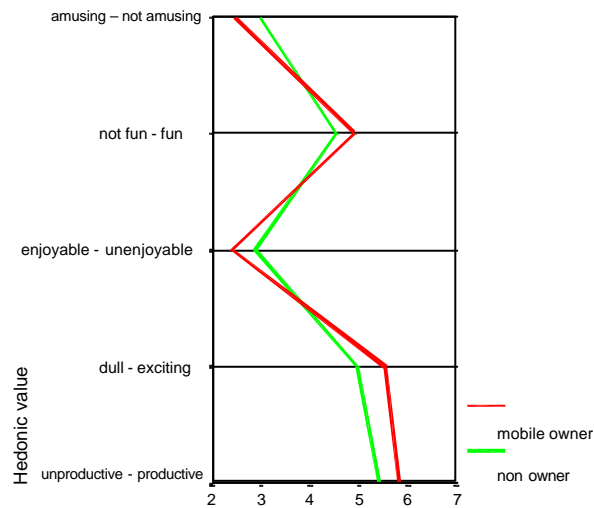
Aesthetic value

Judgements of aesthetics of the chosen phones also show that the direction of evaluations are



the same, both groups are positive in their judgements, however mobile owners significantly more positive, they find the chosen models more aesthetic. On the item ‘not delightful – delightful’ mobile owners’ judgements vary around the value 5,5, while non owners’ judgements vary around 4.

Hedonic value



Judgements of hedonic value show that both groups are positive, however mobile phone owners are more positive: they anticipate the chosen phones a lot more enjoyable.

Table 9.4. Fact of owning a mobile phone and product related consumer judgements

		Sum of Squares	df	Mean Square	F	Sig.
Q7_UT7 efficient – inefficient	Between groups	20.63	1	20.63	21.72	0.00
	Within groups	304.90	321	0.95		
	Total	325.53	322			
Q7_UT4 functional – not functional	Between groups	7.50	1	7.50	7.61	0.01
	Within groups	315.35	320	0.99		
	Total	322.84	321			
Q7_UT2 practical – impractical	Between groups	22.07	1	22.07	22.55	0.00
	Within groups	314.03	321	0.98		
	Total	336.10	322			
Q7_UT1 useful – useless	Between groups	27.12	1	27.12	25.90	0.00
	Within groups	335.09	320	1.05		
	Total	362.21	321			
Q7_UT12 problem solving - not problem solving	Between groups	22.63	1	22.63	19.00	0.00
	Within groups	382.37	321	1.19		
	Total	405.00	322			
Q7_HED4 fun – not fun	Between groups	22.09	1	22.09	21.13	0.00
	Within groups	333.49	319	1.05		
	Total	355.58	320			
Q7_AES1 attractive - not attractive	Between groups	39.49	1	39.49	36.17	0.00
	Within groups	350.50	321	1.09		
	Total	389.99	322			
Q7_AES5 makes me like this product – does not make me like this product	Between groups	24.97	1	24.97	24.10	0.00
	Within groups	332.50	321	1.04		
	Total	357.47	322			
Q7_HED2 not delightful - delightful	Between groups	109.59	1	109.59	50.55	0.00
	Within groups	695.98	321	2.17		
	Total	805.57	322			
Q7_AES2 desirable – not desirable	Between groups	31.44	1	31.44	19.67	0.00
	Within groups	513.21	321	1.60		
	Total	544.66	322			
Q7_HED12 amusing – not amusing	Between groups	18.91	1	18.91	15.57	0.00
	Within groups	389.72	321	1.21		
	Total	408.63	322			
Q7_HED6 not funny - funny	Between groups	10.73	1	10.73	9.66	0.00
	Within groups	355.46	320	1.11		
	Total	366.19	321			
Q7_HED10 enjoyable – unenjoyable	Between groups	15.72	1	15.72	12.83	0.00
	Within groups	392.17	320	1.23		
	Total	407.89	321			
Q7_HED7 dull – exciting	Between groups	24.03	1	24.03	18.69	0.00
	Within groups	412.59	321	1.29		
	Total	436.62	322			
Q7_UT11 unproductive – productive	Between groups	10.45	1	10.45	9.17	0.00
	Within groups	360.07	316	1.14		
	Total	370.53	317			

9.4. The role of product design in product judgements

9.4.1. The structure of product related consumer judgements

The structure of product related consumer judgements was studied. Factor analyses were run for the Spangenberg - Voss (1997) HED/UT scale, (utilitarian and hedonic items) and Hirschman - Solomon (1984) “product aesthetics” scale in the choice context with respect to chosen phones in decision frame 5. (chapter 8.). Structure of the scales remained in the original structure: utilitarian, hedonic and aesthetic factors appear in the four groups – respondents preferring Nokia 3310, 6210, 8210 and 8850. However, variance explained differs by the factors in the case of the four groups, indicates the differences of importance attributed to factors in the case of different models.

Nokia 3310

For those respondents who chose Nokia 3310 utilitarian aspects of the phone appeared to be

Rotated Component Matrix^b

	Component			
	1	2	3	4
Q7_UT7	.863			
Q7_UT4	.823			
Q7_UT1	.783	.301		
Q7_UT2	.751			
Q7_UT12	.688		-.333	
Q7_AES1		.795		
Q7_AES5		.763	-.369	
Q7_AES2		.761		
Q7_HED4	.563	.622		.313
Q7_HED12		.527		.491
Q7_HED10		.486	-.433	.427
Q7_HED6			.803	
Q7_HED2		-.389	.712	
Q7_HED7		-.504	.648	-.379
Q7_UT11				-.861

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

b. Q7E = 1.00 Nokia 3310

the most important (see variable labels in table 9.4., previous page), how it fulfils its functions. Hedonic and aesthetic factors can be differentiated, their order of importance is according to the factor structure of the total sample. On the other hand we can see that the structure of these latter factors slightly changed (items that belonged to the hedonic factor in the total sample appear in the aesthetic factor for this group). The two factors cover logically very close phenomena, which partly explain these differences. The other explanation is that the content, meaning of the two factors

changes a bit: the first aesthetic factors refers to the external and internal aesthetics of the product (previously it only referred to the phone’s attractiveness, and in the case of those who chose Nokia 3310 it also refers to the aesthetics of the anticipated usage experience). The other, hedonic factor can be interpreted as the entertaining aspects of the product.

There is one item in the scale ‘unproductive – productive’ that appeared to be a distinct factor in this group

Nokia 6210

Factor structure and composition of factors changed in the subgroup for those who chose the model Nokia 6210. For the telephone that was perceived most functional (chapter 8.)

Rotated Component Matrix^{a,b}

	Component			
	1	2	3	4
Q7_HED6	-.872			
Q7_HED10	.811			
Q7_HED7	-.692		-.470	
Q7_HED12	.690	.313		
Q7_HED4		.796		
Q7_UT11		-.789		
Q7_UT12		.626		.417
Q7_UT7		.587		.422
Q7_AES1	.341		.776	
Q7_AES5		.377	.753	
Q7_HED2			-.688	
Q7_AES2			.593	.314
Q7_UT2				.835
Q7_UT4		.318		.769
Q7_UT1		.369		.718

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.

- a. Rotation converged in 7 iterations.
- b. Q7E = 2.00 Nokia 6210

respondents considered hedonic value the most important. This result can be explained by that respondents take perfect functioning for granted and take enjoyable, convenient functioning, experience of use more into consideration.

The fact that the factor of utility is composed of two factors is interpretable by respondents’ more sophisticated, careful view of utility and functionality. One factor covers the phenomenon of **efficiency** and the other comprises utility in general, this

latter is less important for those who preferred this model.

The aesthetic factor is in the third place. This phone was regarded the least aesthetic (chapter 8.), at the same time quality of services provided by the model were regarded the most important.

Nokia 8210

Rotated Component Matrix^b

	Component		
	1	2	3
Q7_UT2	.879		
Q7_UT4	.827		
Q7_UT1	.786		
Q7_UT7	.774	.316	
Q7_UT12	.748	.343	
Q7_HED4	.643	.499	
Q7_AES1		.787	.331
Q7_AES5	.389	.734	
Q7_HED2		-.711	-.309
Q7_AES2		.698	
Q7_HED7		-.361	-.803
Q7_HED12			.704
Q7_HED6			-.686
Q7_HED10			.650
Q7_UT11	-.417		-.617

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

b. Q7E = 3.00 Nokia 8210

Factor structure remained similar to the factor structure of the total sample in the group of respondents who chose Nokia 8210. Functionality of the phone was considered the most important, this is followed by the aesthetics and hedonic value. These respondents took an “outside (or external)” view of the telephone, for them appearance, beauty of the chosen model were decisive.

Nokia 8850

Rotated Component Matrix^b

	Component		
	1	2	3
Q7_UT7	.863		
Q7_UT4	.845		
Q7_UT2	.813		.307
Q7_UT1	.725		
Q7_UT12	.665	.410	
Q7_HED12		.790	
Q7_HED10		.692	.312
Q7_HED6		-.689	
Q7_HED7		-.684	-.513
Q7_HED4	.453	.514	
Q7_UT11	-.381	-.503	
Q7_AES1			.851
Q7_AES5	.406		.729
Q7_HED2			-.682
Q7_AES2			.641

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

b. Q7E = 4.00 Nokia 8850

The factor structure among the group who preferred Nokia 8850 is similar to the factor structure of the total sample, however, order of importance of factors changes. Most important factor is utility, this is followed by hedonic value and aesthetic value is in third place.

Overall, factor analyses show that the impact of design is reflected in product related consumer judgements (judgements of utility, aesthetics and hedonic value). Factor structures and order of importance of factors change by the different product designs of mobile

telephones (Table 9.5.). Differences from the total sample are highlighted.

Table 9.5. Factor structures of consumer judgements in the case of different product designs

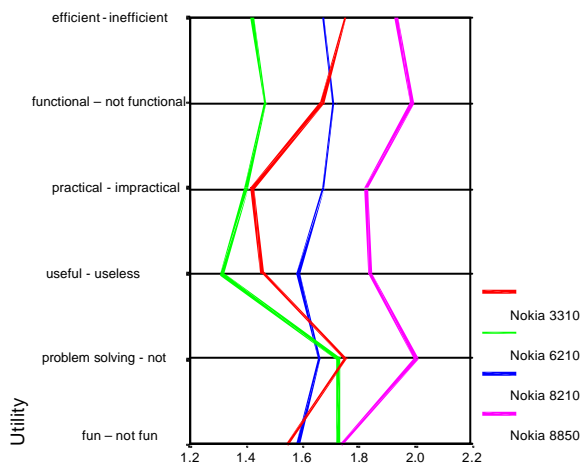
	Choice situation in general (total population)	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850
1. factor: variance explained (%)	utility 38,08 %	utility 43,16 %	hedonic value 38,05 %	utility 44,43 %	utility 35,56 %
2. factor: variance explained (%)	aesthetic value 17,63 %	aesthetic value 14,37 %	utility 15,31 %	aesthetic value 15,03 %	hedonic value 18,16 %
3. factor: variance explained (%)	hedonic value 7,79 %	hedonic value 7,69 %	aesthetic value 7,93 %	hedonic value 7,84 %	aesthetic value 10,04 %
4. factor: variance explained (%)		„unproductive - productive” 7,22 %	utility 2 7,05 %		
Total variance explained	63,50 %	72,44 %	68,34 %	67,30 %	63,76 %
KMO	0,886	0,756	0,813	0,844	0,826
N	326	45	89	78	114

9.4.2. Product related consumer judgements with respect to preferences for product design

Responses and judgements of those respondents who own and don't own mobile phone in the context of choice were significantly different in every scale item (table 9.4.). Mobile owners' responses are more expert and clear – in their case, responses to different designs show significant differences. Non-owners responses hardly show any differences as a result of design, there is only one scale item “*not delightful – delightful*” that non-owners evaluated differently as a consequence of their preferences for a particular design. Therefore, we present and analyse judgements of mobile phone owners (see Appendix 9.2.).

Utility

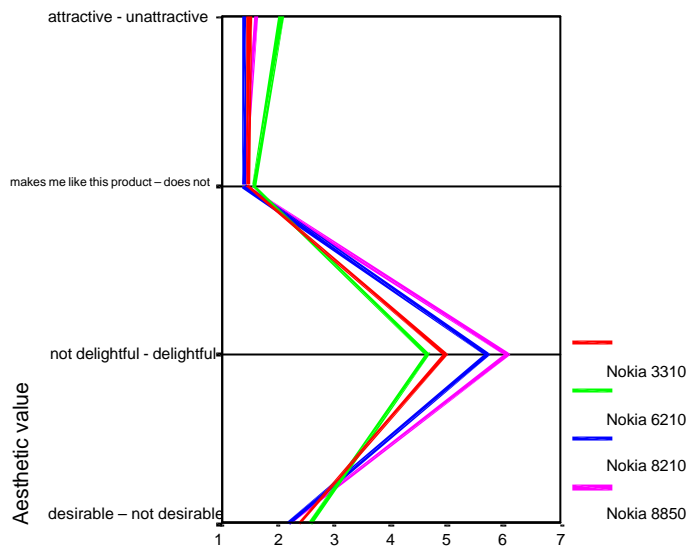
Curves represent that respondents judged each model useful. However, Nokia 6210 was regarded most useful and Nokia 8850 the least useful. Evaluations of Nokia 3310 and 8210 are between the two extremes, Nokia 3310 was found to be more useful on average.



In the case of the first four scale items, differences are significant Nokia 6210 is found to be more “*efficient, functional, practical and useful*” than Nokia 8850.

Aesthetic value

There are only slight differences among judgements of aesthetic value among the four mobile telephones. On items “*makes me like the product – does not make me like the product*” and “*desirable – not desirable*” the judgements are very similar.

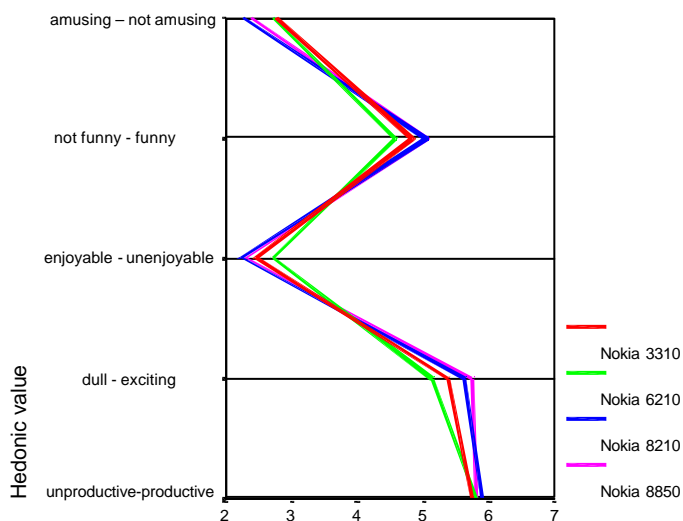


The pair of adjectives “attractive – not attractive” shows significantly different evaluations among the four telephones. Although every model was found to be rather attractive average of evaluations varies between the values 2 and 3. Nokia 8210 and 8850 are more attractive compared to Nokia 6210.

There are significant differences in evaluating the “delight” of the models. Models 8210 and 8850 are regarded clearly more “delightful”. The mean of the judgements for Nokia 6210 vary around the value of 4, which implies that these respondents did not find this aspect relevant³¹. The Nokia 8850 model is judged more delightful than the Nokia 3310 model.

Hedonic value

According to the results of the factor analyses this dimension of hedonic value shows very



few differences among the evaluations of the different models. The evaluation of each phone is positive, every phone was anticipated enjoyable in use, values of average evaluations vary in the two ends of the scale. There is one exception and that is the “not funny – funny” adjectives which show no

³¹ by irrelevant we indicate that the mean of judgements were in the middle of the semantic differential scale. For example respondents did not find Nokia 6210 either „delightful” (scale value „7”) and „not delightful” (scale value „1”), but placed their judgements in the middle which means neither delightful, nor undelightful.

positive results, values varied between 4 and 5. The only significant difference is on the item “dull – exciting” between the models Nokia 6210 and 8850: the latter was found to be somewhat more exciting.

Expressiveness

In the choice context the judgements of the expressiveness of the chosen were studied by the uncompleted sentence „*This mobile telephone is able to tell about its owner that ...*” was applied. Responses were analysed with content analysis (Móricz, 1999). The categories of responses are in accordance with the preliminary descriptions of mobile design. It is also notable that the other measurement instruments used in the research gave similar results.

Table 9.6. Expressiveness - characteristic responses and illustrations; uncompleted sentence: „*This mobile telephone is able to tell about its owner that ...*”

Categories of responses / Percentage of respondents mentioned the category (%) N=329	Percentage of respondents within the chosen models	Illustrative responses
Being functional, importance of the functionality of the phone / 29 %	Nokia 6210 52,5 % Nokia 8210 33,8 % Nokia 3310 31,6 % Nokia 8850 17,1 %	“Likes practical, functional and at the same time elegant mobile telephones”; “it is important for him what his mobile can provide to him, how functional the phone is”; “Functionality is more important to him than external appearance”
Expression of sense of aesthetics and style / 40 %	Nokia 3310 63,2 % Nokia 8210 54,4 % Nokia 8850 43,8 % Nokia 6210 31,3 %	“likes practical (small) and aesthetic objects”; “likes nicely formed objects”; “content and form are both important to him”; “feminine, uniqueness is important, functions as well”; “sporty, dynamic, feminine and colourful”
High income, good financial situation / 34 %	Nokia 8850 55,2 % Nokia 8210 16,7 % Nokia 6210 6,4 % Nokia 3310 5,3 %	„well-off, determinate, successful, fashionable, practical”; “has a lot of money, likes quality innovative products”; “quality is important for him, but also that others can see what he can afford, status symbol”; “being at the top of society”
Acknowledgement of good design and form / 19 % (no significant difference)	Nokia 8210 30,9 % Nokia 3310 23,7 % Nokia 8850 21,9 % Nokia 6210 13,8 %	„likes classical and not extreme forms”; “likes round forms”; “likes nicely shaped telephones and silvern colours”; “cares more about design than functionality;” “likes nice objects, cares more about appearance than functionality”

- ?? Respondents who chose Nokia 6210 associated that the preferred telephone communicated its functionality, it tells about its user, that its functionality as the most important.

- ?? Those who chose Nokia 3310 regarded that their choice reflected their sense of aesthetics and style. For this group of respondents the external appearance of the chosen phone and its quality is very important. The beauty of the telephone for them is crucial.

- ?? Nokia 8850 was associated to communicate about its user that he/she is in a good financial situation and keeps up with the development of technology.

- ?? Excellent design was attributed to Nokia 8210, but there is no significant difference in this category of responses.

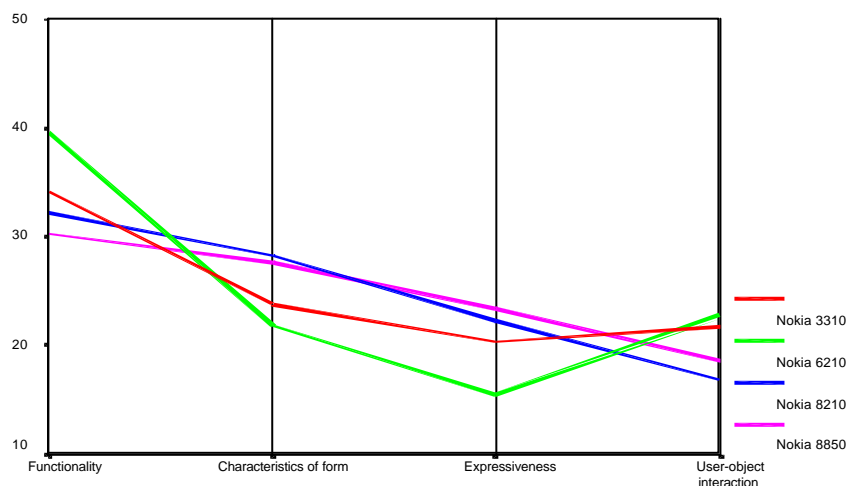
In sum, the above choice context very well showed that models providing almost identical services, but different in design involve distinct, different in product related consumer judgements.

9.4.3. Consumer evaluations of the different aspects of product design

In chapter 7 we discussed the different aspects of product design in general and of product design of mobile phones in general, in this chapter these aspects of product design are evaluated with respect to the four applied models (Nokia 3310, 6210, 8210 and 8850).

Mobile owners' and non-owners' evaluations of the aspects of product design did not significantly differ. However, mobile owners evaluations show significant differences on every dimensions (see below), in the case of non-owners only two dimensions showed significant differences: importance of functionality and the expressive power of the chosen mobile phone (see Appendix 9.3.). Below the more expert evaluations, mobile owners' evaluations are presented.

The below curves indicate that **functionality of the chosen phone is the most important** dimension for all respondents, this is followed by characteristics of form, expressiveness and user-object interaction.



Notable differences among the evaluations by the different product designs are the following:

- ?? For those who preferred Nokia 6210 considered **functionality** (function the object is to fulfil, usability, practicality) the most important. Those respondents who chose Nokia 8210 and 8850 evaluated the importance of functionality significantly lower.

- ?? **Characteristics, nature of form** (size, colour, form – e.g. big-small, square-round, red-blue, etc.) was significantly more essential for respondents choosing Nokia 8210 and 8850 than for those who decided for Nokia 6210, this dimension is a lot less interesting.

- ?? With respect to **expression** (capabilities of expressing the owner's, user's personality, quality of appearance, style, aesthetics, trendiness, modernity, elegance, etc.) those who preferred Nokia 8850 found this dimension very important, while those who evaluated 6210 considered this dimension less important.

- ?? Considering **user-object interaction** (how harmonic is the connection, interaction between user and object, convenience, pleasantness, pleasure of usage, etc.) respondents who preferred Nokia 6210 found this a lot more important than those who preferred 8210 and 8850.

9.5. Past experience and product design preferences

Among those who had mobile phones at the time of the research, the type (brand, model) of the phone was recorded and investigated whether the type of phone owned determined the new choices, whether we could find characteristic routs of switches from one phone to the other.

Among those who owned Nokia 3210 telephones more characteristically chose Nokia 8850. Contrary, current owners of Nokia 5110 were more likely to choose Nokia 6210 and 8210. Owners of Ericsson T10 were likely to choose Nokia 8850. Similarities between the design of owned phone and chosen phone can be observed (chapter 5.2.).

Table 9.7. Crosstab: Type of own mobile phone and chosen mobile phone

Own phone	Chosen phone	Nokia 3310	Nokia 6210	Nokia 8210	Nokia 8850	?
Nokia3210	N	6	14	15	19	54
	row %	11.1%	25.9%	27.8%	35.2%	100.0%
	column %	24.0%	23.7%	26.8%	22.4%	24.0%
Nokia5110	N	6	11	11	8	36
	row %	16.7%	30.6%	30.6%	22.2%	100.0%
	column %	24.0%	18.6%	19.6%	9.4%	16.0%
EricssonT10	N	1	2	2	16	21
	row %	4.8%	9.5%	9.5%	76.2%	100.0%
	column %	4.0%	3.4%	3.6%	18.8%	9.3%
other Nokia	N	1	5	3	9	18
	row %	5.6%	27.8%	16.7%	50.0%	100.0%
	column %	4.0%	8.5%	5.4%	10.6%	8.0%
Siemens	N	2	4	9	6	21
	row %	9.5%	19.0%	42.9%	28.6%	100.0%
	column %	8.0%	6.8%	16.1%	7.1%	9.3%
Motorola	N		2	3	6	11
	row %		18.2%	27.3%	54.5%	100.0%
	column %		3.4%	5.4%	7.1%	4.9%
Ericsson	N	2	5	4	11	22
	row %	9.1%	22.7%	18.2%	50.0%	100.0%
	column %	8.0%	8.5%	7.1%	12.9%	9.8%
Alcatel	N	6	5	5	9	25
	row %	24.0%	20.0%	20.0%	36.0%	100.0%
	column %	24.0%	8.5%	8.9%	10.6%	11.1%
Philips	N		1			1
	row %		100.0%			100.0%
	column %		1.7%			0.4%
Panasonic	N	1	10	4	1	16
	row %	6.3%	62.5%	25.0%	6.3%	100.0%
	column %	4.0%	16.9%	7.1%	1.2%	7.1%
?	N	25	59	56	85	225
	row %	11.1%	26.2%	24.9%	37.8%	100.0%
	column %	100.0%	100.0%	100.0%	100.0%	100.0%

p<0,05

Other models were categorised by respective brands as a result of the great diversity of respondents own phones (distribution of types of phones own is in Appendix 10.1.)

Those respondents who owned other models than Nokia 5110 and 3210 (objects of research, chapter 5.2.) preferred the model Nokia 8850 in the context of choice. Owners of the Motorola, Ericsson and Alcatel models characteristically preferred Nokia 8850. Owners of Siemens brand chose Nokia 8210 in majority and owners of the Panasonic brand mostly chose Nokia 6210. These results make clear that the ownership of a certain type of mobile phone, so past experience, influences future choices.

9.6. Determining factors of product related consumer judgements

9.6.1. The impact of product design and individual differences

Determining factors of product related consumer judgements were studied in the context of choice. Method of analysis is stepwise regression, that is to select, from a large number of predictor variables (*materialist orientation, information processing preferences, gender, design dimension and their attributed importance*) a small subset of variables that account for most of the variation in dependent variable (consumer judgements) (Malhotra, 1999). In this procedure, the predictor variables enter or are removed from the regression equation one at a time. Table 9.9. presents the results of the regression analyses for the three groups of product related consumer judgements: judgement of functionality, aesthetics and hedonic value. The table includes entered variables, their standardised beta coefficients and their coefficient of multiple determination (R^2). The coefficient of determination varies between 0 and 1 and signifies the proportion of the total variance of the dependent variable. (Malhotra, 1999)

In the linear regression models, interaction of the different dimensions of consumer judgements) was assessed by including them in the respective models (i.e. where utility was the dependent variable hedonic and aesthetic were included in the regression model.) In the interpretation of the results of the regression models type and direction of the scales has to be considered.

Table 9.8. Summary of scales used in the regression analyses

Scale	Values and meaning of the scales
?? Utility	7 point scale where „1” means the maximum positive judgement, „7” means absolute disagreement with the item with respect to the assessed phone
?? Hedonic value	
?? Aesthetics	
?? Functionality, ?? Characteristics, nature of form, ?? Expression ?? User – object interaction	100 point interval scale, where „0” absolutely unimportant and „100” means absolutely, exclusively important
Materialist orientation: ?? disregard of others’ opinions ?? possession defined success	„1” means not characteristic aspect, the more higher the score is the more characteristic it is considered
Fact of mobile phone ownership	1=owns a mobile phone; 2=does not own a mobile phone
Gender	1=male; 2=female
Mobile design	based on preferences of design (see questionnaire, question Q7h, Appendix 5.2.) „1” means the mostly preferred mobile

design, „4” means the least preferred mobile design

Summary and interpretation of results

Table 9.9. Determining factors consumer judgements, results of regression analyses

Utility	Hedonic value	Aesthetic value
Hedonic value	Aesthetic value	Hedonic value
0,263	0,499	0,394
Functionality	Utility	Functionality
-0,222	0,224	0,211
Aesthetic value	Expression	Fact of mobile phone ownership
0,224	-0,112	0,175
Characteristics of form		Disregard of others' opinions
0,162		-0,111
Fact of mobile phone ownership		Possession defined success
0,134		-0,142
Mobile design (product design)		Utility
-0,123		0,132
		Gender
		-0,101
		Mobile design (product design)
		0,097
$R^2=0,282$	$R^2=0,395$	$R^2=0,500$

Judgement of utility is determined by the following independent variables:

- ?? The most important factor is judgement of *hedonic value*. There is a positive relation between the two variables, which means that those respondents who evaluated the utility of the phone high, anticipated the hedonic value (enjoyable use) high as well.
- ?? Judgements of utility and functionality move in the same direction – respondents are either positive or negative about both. The reason of the negative coefficient in the table is the direction and meaning of the measurement scales (see table 9.8.) The semantic differential scales of utility indicate “1” as “very utilitarian”, in the judgements of functionality respondents evaluated on a 1-100 scale – the more points they gave the more importance they attributed to functionality.
- ?? There is a positive relation between *aesthetic value* and utility, which means that the two constructs move together: those respondents who were positive about the utility of the chosen telephone, were positive about its aesthetic values. On the other hand, those who evaluated utility low, estimated aesthetics low as well. Judgements about hedonic value

and aesthetics imply that respondents were either more positive or negative on each dimension.

- ?? The relation between *characteristics of form* and utility is negative: those respondents who evaluated the utility of the chosen phone very high considered the objective characteristics of form (size, shape, colour) less important. However, respondents attributing greater importance to product form were more negative about its utility. This relation indicates that respondents were either concerned about the functionality and operation of the chosen form or its external appearance.
- ?? The *existence of own mobile telephone* also determines judgements of utility. Those who owned a mobile phone already more positively evaluated the utility of the chosen phone, non-owners considered the chosen phones less useful respectively. This indicates that past product experiences have an influence on future anticipations of a consecutive choice. This result is important for the very innovative industries (like mobile phones) where new product innovations and new introductions are very fast, and establishing brand loyalty, willing to try and use new technologies are very important.
- ?? Negative relation between judgement of utility and importance attributed to the characteristics of form is further reinforced by the result, that those phones were evaluated less useful that were mostly preferred by their product design. However, those phones that were highly evaluated on the utility dimension were the least popular in choices that were based on design.

Judgements of hedonic value are in accordance with judgements of utility:

- ?? There is a positive relation among judgements of hedonic value, utility and aesthetics. Respondents are either positive or negative about each three dimension.
- ?? Those respondents who attribute greater importance to the *expressiveness* of the chosen telephone judged hedonic value more positively. For those who were less positive about hedonic value of the preferred phone considered the expressiveness of the phone (its ability to communicate to the external environment) less important. This relation implies that the anticipation of the enjoyment, experience of use is partly attributed to the view whether it is able to properly communicate about the user.

In the model of judgements of aesthetics the highest proportion of the total variance of the dependent variable (50 %) is explained (table 9.9):

- ?? In accordance with the other two models, product related consumer responses – judgements of utility, hedonic value and aesthetics – are in positive relation: respondents are either positive or negative about the chosen phones.
- ?? In this model the role of the experience of one's experience with the own phone is present: owners are more positive about the aesthetics of the preferred model than non-owners. This difference can be explained by different attitudes of those owning or not owning a mobile phone. Exploratory phase of the research showed it already that non-owners expressed negative attitudes about mobile phones in general, at the same time owners' responses reflect their previous favourable experiences.
- ?? Respondents' *materialist / not materialist orientation* has an influence on judgements of aesthetics. Those more "materialist" (Hoffmeister & Neulinger, 2001) consumers attribute more aesthetic value to their preferred models: those who consider it important that their material possessions express their personal success regarded their chosen phones more aesthetic, than those who were less materialist orientated. This result approves that markets can be segmented on the basis of consumers' materialist / not materialist orientations (how much importance they attribute to their material possessions). This results justifies hypothesis H2a/1 (chapter 3) according to which "consumers who attribute greater importance to their own possessions give more emphasis to the expressive and communicative characteristics of preferred products in their choices."
- ?? Gender also plays a role in the aesthetic evaluations: female respondents judged their chosen phones more aesthetic than male respondents.
- ?? There is a direct relation between aesthetic judgements and mobile design. The more popular mobile designs were found to be more aesthetic.

Results indicate that for respondents the phenomenon of product design strongly relates to the external product appearance in the choice context: characteristics of form and aesthetics. Functionality and utility are in opposite relation with aesthetic features: chosen phones are either perceived more functional or more aesthetic. The influence of the materialist orientation is present in aesthetic judgements.

9.6.2. The impact of information processing preferences

Product judgements in the context of the current research showed some relations with visual information processing preferences. Strong preferences for visual information processing determine the more emotional type of judgements, aesthetic and hedonic values. Respondents with strong preferences for visual information processing attributed greater aesthetic and hedonic value to their preferred mobile phones, and respondents with no articulated preferences for visual information processing evaluated the hedonic and aesthetic value lower. This relation is significant for the judgements of hedonic value and in the case of aesthetic value it is a strong tendency (last row of table 9.10.)

Table 9.10. Impact of information processing preferences on preferences for product design and Product related consumer judgements

	Judgement of Utility		Judgement of Aesthetics		Judgement of Hedonic value	
	Standardised Coefficients Beta	Sig	Standardised Coefficients Beta	Sig.	Standardised Coefficients Beta	Sig.
Nokia 3310						
weak/strong visual orientation	0.07	0.69	-0.06	0.74	-0.05	0.77
weak/strong verbal orientation	0.04	0.82	0.10	0.58	0.05	0.75
Nokia 6210						
weak/strong visual orientation	0.07	0.57	0.14	0.24	0.26	0.03
weak/strong verbal orientation	0.02	0.83	0.06	0.59	-0.10	0.38
Nokia 8210						
weak/strong visual orientation	0.02	0.90	0.07	0.61	0.15	0.23
weak/strong verbal orientation	-0.21	0.11	-0.16	0.22	-0.09	0.50
Nokia 8850						
weak/strong visual orientation	0.21	0.03	0.19	0.05	0.16	0.10
weak/strong verbal orientation	-0.15	0.13	-0.13	0.18	0.04	0.72
disregarding telephone type						
weak/strong visual orientation	0.08	0.14	0.10	0.06	0.13	0.02
weak/strong verbal orientation	-0.09	0.12	-0.05	0.36	0.03	0.96

There are differences with regard to the preference of a particular mobile design and strong / weak visual orientation.

- ?? In the case of the Nokia 3310 and 8210 models visual orientation does not play a role in product judgement, however gender does. Female respondents tend to attribute more higher level of utility, aesthetic and hedonic value to them.
- ?? In the case of the model Nokia 6210, high visual orientation has an impact on the judgement of enjoyment / hedonic value of the product, this tendency also present in the aesthetic judgements.
- ?? For mobile models Nokia 8850 the impact of high visual orientation is also present. Strong visual orientation results in more positive judgements of the product's utility and aesthetics, and the case of judging its hedonic value as well, however this latter is a tendency, not a significant relations.

It is interesting to note that the impact of visual orientation is present for those two models that were judged either the least aesthetic (Nokia 6210) and the most aesthetic (Nokia 8850). Two possible explanations follow:

- ?? visual processing preferences and preferences for different product design relate;
- ?? those with high visual orientations tend to give stronger, more extreme product judgements (they give higher values).

This is explainable by these people's confidence in these judgements, while those who don't have these orientation, capabilities tend to be less certain in such judgements therefore giving lower marks.

Results justify **H2** hypothesis according to which "those consumer who are more visual in their information processing tendencies are more careful and make more expert judgements of their possessions' appearance, its aesthetic and expressive characteristics. Verbal information processing preferences have no impact on Product related consumer judgements."

10. The role of product design in the context of usage

Product related consumer judgements were investigated in the context of usage by recording respondents reactions about their own mobile phones. Objective of the research was to assess usage experiences that relate to two particular models Nokia 3210 and Nokia 5110 that are very close in functions but different in designs (chapter 5.2.2.). However, participating respondents owned other models (Appendix 10.1. – types of respondents' own mobile telephones).

Responses to the models of Nokia 3210 and 5110 were recorded and as a control responses for Ericsson T10 were assessed too. Responses for other models were categorised by the brand (table 10.1.).

Table 10.1. Type of respondents' own mobile telephones

Type / brand of own mobile phone	Frequency (N)	Percentage (%)	Valid percentage (%)
Nokia3210	54	16.27	16.56
Nokia5110	38	11.45	11.66
EricssonT10	21	6.33	6.44
other Nokia	18	5.42	5.52
Siemens	21	6.33	6.44
Motorola	11	3.31	3.37
Ericsson	22	6.63	6.75
Alcatel	25	7.53	7.67
Philips	1	0.30	0.31
Panasonic	16	4.82	4.91
Does not have a mobile phone	99	29.82	30.37
Valid cases	326	98.19	100.00
Missing	6	1.81	
Total	332	100.00	

10.1. Structure of product related consumer judgements in the context of usage

Similarly to the context of choice product related consumer judgements were measured by the Spangenberg et al, 1997 and Hirschman et al 1984 scales. Factor structure of the scales is identical to the factor structure of the choice context (see chapter 9.4.1.). However, the order of importance, variance explained by the different factors differ: utility is the most important, second is hedonic value, this is followed by aesthetic value.

Table 10.2. Factor structure of product related consumer judgements in the context of usage

	Factor 1. utility	Factor 2. hedonic value	Factor 3. aesthetic value
Q6_UT1 useful – useless	0.76	0.01	0.17
Q6_UT7 efficient – inefficient	0.76	0.03	0.16
Q6_HED4 fun – not fun	0.70	-0.04	0.14
Q6_UT2 practical – impractical	0.67	-0.16	0.14
Q6_UT4 functional – not functional	0.66	-0.07	-0.04
Q6_UT12 problem solving not problem solving	0.58	-0.14	-0.32
Q6_UT11 unproductive – productive	-0.46	0.40	0.16
Q6_HED6 not funny - funny	-0.01	0.76	-0.08
Q6_HED7 dull – exciting	-0.02	0.76	-0.33
Q6_HED10 enjoyable – unenjoyable	0.29	-0.66	0.39
Q6_HED12 amusing – not amusing	0.35	-0.57	0.32
Q6_HED2 not delightful - delightful	0.12	0.49	-0.40
Q6_AES2 desirable – not desirable	0.01	-0.14	0.79
Q6_AES1 attractive not attractive	0.12	-0.33	0.76
Q6_AES5 makes me like this product – does not make me like this product	0.18	-0.35	0.72

Principal components, varimax rotation, KMO=0,834; variance explained: 56,10 %

An explanation of the difference in order of importance is the following. In the context of choice the view of the product, its aesthetic value, is more important than the ease of using it (its hedonic value) that cannot be fully experienced at the point of choice and purchase. In the context of usage the order is reverse, where the user, owner can really experience the product.

10. 2. Factors influencing product related consumer judgements

The research recorded several aspects that can influence Product related consumer judgements in the context of use. These include:

- ?? means of acquiring the telephone (bought it for oneself; got it as a present, corporate telephone, uses someone else's phone, etc.)
- ?? factors that played a role in the choice decision making (services, functions provided by the phone, price, type of service pack, design)
- ?? willingness to repurchase current phone
- ?? length of usage

There are two types of factors that have an impact on product related consumer judgements: (1.) aspects that played a role in the choice decision making and (2.) willingness to repurchase the current phone.

10.2.1. Factors that influenced the choice of current phone and product judgements

In their responses respondents considered which aspects were decisive in their choice of their own current mobile telephone. Importance of aspects of perceived past decision making (services, functions provided by the phone, price, type of service pack, design) were considered by respondents by distributing 100 points among them: those aspects received more points they thought to be more important in their decision-making. For example, if they gave 20 points to one aspect and 40 to another, this latter was considered twice as important.

Table 10.3. Aspects determining the choice of own mobile phone

Aspects of decision making	Mean	Standard deviation	Minimum	Maximum
Services / functions provided by the phone	26.73	14.13	0	90
Price	30.10	16.17	0	90
Type of service pack	19.77	12.23	0	50
Design of the telephone	19.18	12.25	0	60

N=222

Table 10.3. indicates that respondents found price the most important factor in their decision-making, this is followed by the importance of the functions of the phone. Type of service pack and design were seen as less important aspects.

With respect to the relation of the different aspects of decision-making there is a negative relation between importance of functionality and, price and chosen service pack. Those respondents who considered the functions of the chosen phone very important, did not care that much about the price and service pack, on the other hand, for those who were concerned about prices functionality was not important. There is a similar relation between design and, price and service pack: respondents who respected the design of the phone important did not care that much about the price of the telephone and the accompanying service pack.

For contrasting aspects of decision making and relating consumer responses upper and lower quartiles of the decision making factors were computed (table 10.4.). For example those who valued the importance of functionality and services in the decision-making with less than 20 points were categorised as considering this aspect unimportant. Those who gave scores higher than 35 points were categorised as taking this aspect into consideration carefully, for them functionality is important.

Table 10.4. Factors determining the choice of own mobile phone, means and quartiles

		Functions, services provided by the phone	Price	Type of service pack	Design of the phone
N		222	222	222	222
Mean		26.73	30.10	19.77	19.18
Standard dev.		14.13	16.17	12.23	12.25
Quartiles	25	20	20	10	10
	50	25	30	20	20
	75	35	40	30	30

Difference of evaluations (Product related consumer judgements) were estimated by ANOVA among those who considered the above factors either important or unimportant. Summary of results shows the significant differences among the two groups on each aspect of decision making (Table 10.5.).

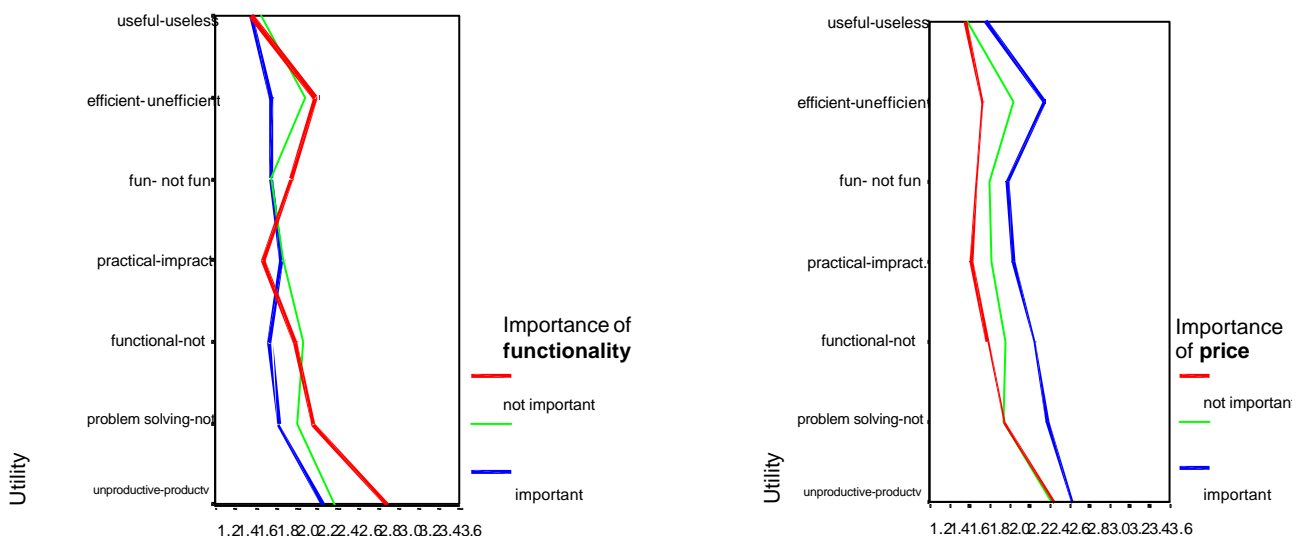
Table 10.5. Aspects of choice of own phone and relating product judgements

	Function		Price		Service pack		Design	
	T	Sig.	T	Sig.	T	Sig.	T	Sig.
Q6_UT1 useful – useless	0.41	0.66	0.64	0.53	1.02	0.36	0.51	0.60
Q6_UT7 efficient – inefficient	3.73	0.03	3.81	0.02	0.92	0.40	0.18	0.83
Q6_HED4 fun – not fun	0.61	0.54	0.71	0.49	0.94	0.39	1.67	0.19
Q6_UT2 practical – impractical	0.51	0.60	1.57	0.21	0.02	0.98	1.04	0.35
Q6_UT4 functional – not functional	2.47	0.09	1.33	0.27	0.02	0.98	0.01	0.99
Q6_UT12 problem solving not problem solving	1.68	0.19	2.17	0.12	2.28	0.10	2.12	0.12
Q6_UT11 unproductive – productive	5.30	0.01	0.44	0.65	0.84	0.43	1.53	0.22
Q6_HED6 not funny - funny	0.56	0.57	0.41	0.66	0.89	0.41	1.82	0.16
Q6_HED7 dull – exciting	2.65	0.07	0.92	0.40	7.09	0.00	9.20	0.00
Q6_HED10 enjoyable – unenjoyable	3.73	0.03	2.79	0.06	3.72	0.03	5.46	0.00
Q6_HED12 amusing – not amusing	6.84	0.00	6.63	0.00	1.14	0.32	0.65	0.52
Q6_HED2 not delightful - delightful	5.71	0.00	2.16	0.12	3.56	0.03	6.79	0.00
Q6_AES2 desirable – not desirable	1.07	0.35	2.25	0.11	5.37	0.01	3.74	0.03
Q6_AES1 attractive not attractive	3.27	0.04	3.85	0.02	3.79	0.02	20.10	0.00
Q6_AES5 makes me like this product – does not make me like this product	4.71	0.01	2.88	0.06	3.38	0.04	15.96	0.00

The above table shows that judgements of utility are mostly related to attributed importance of functionality in the decision making. The four aspects of decision making significantly differ in judgements of hedonic and aesthetic value.

Utility

Respondents evaluated their own phone useful (utilitarian) in general. For those, who found functions and services of their own phone important in their choices evaluated their phone



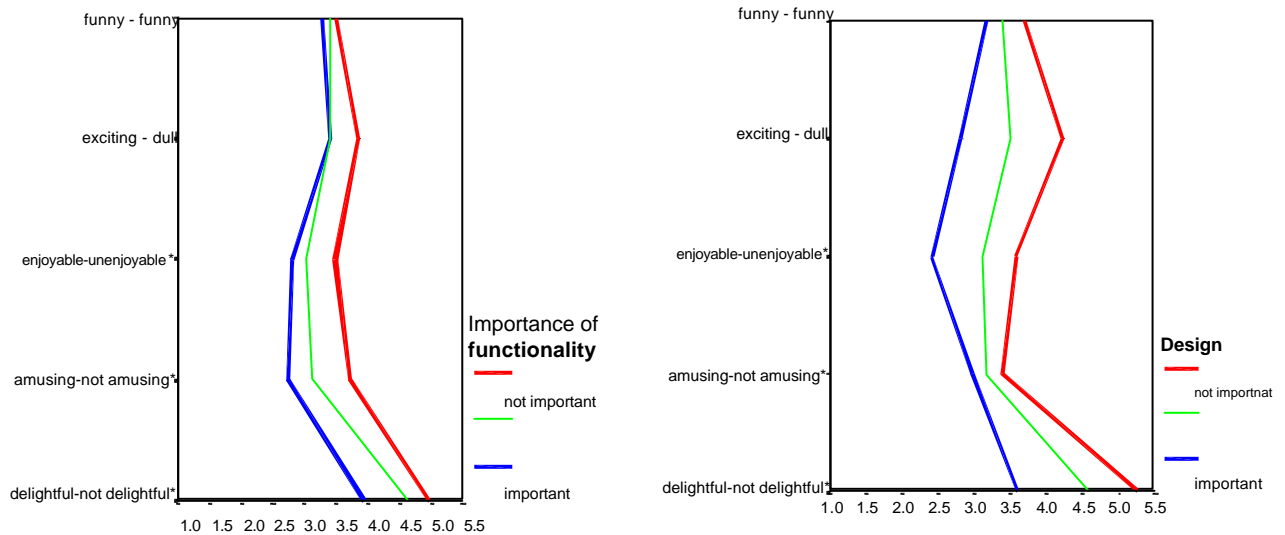
higher in the *utility* factor. They judged their phones a lot more ‘*efficient*’ and ‘*productive*’ than those who did not consider functions important in their choices³².

The effect of consideration of prices is only present in the case of one item ‘*efficient*’: for users who did not care very much about the price of their phone found their phones more efficient – in other words they were concerned about the functions, services of the phone not its price.

Hedonic value

There are several notable differences with relation to judging hedonic aspects: quality of the usage experience of one’s own mobile telephone.

Respondents who considered **functionality and design more important in their choices, characteristically found their phones more exciting, enjoyable and delightful**. Those who were really into design found it even more exciting and those respecting functionality found their phones more *entertaining*.



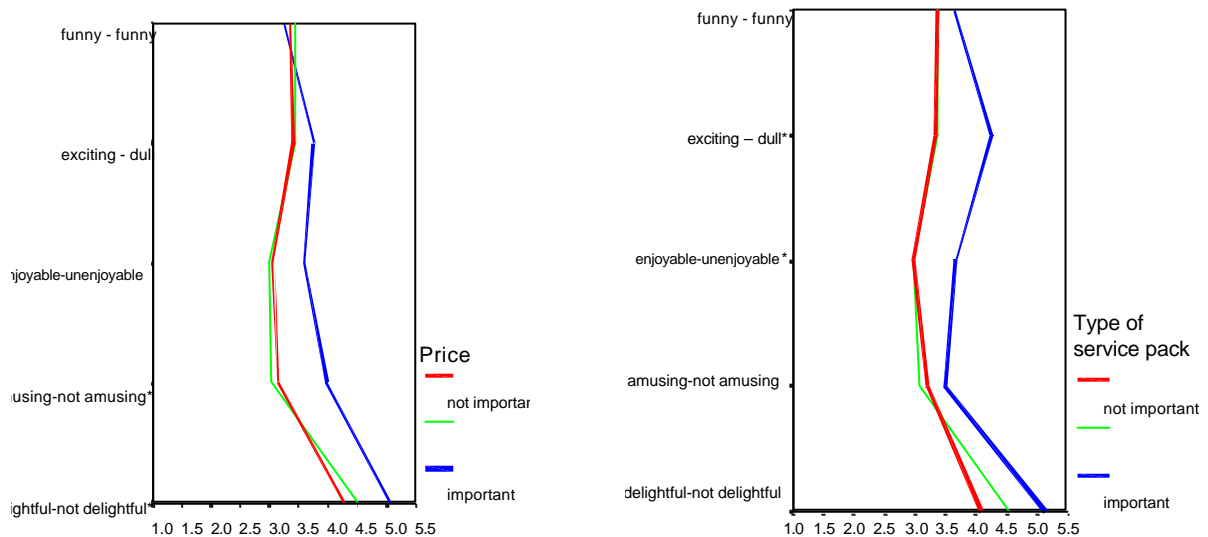
This result is explainable by the definition of design itself that one of the most important tasks of design is to make use more pleasant and enjoyable (Papanek, 1971, Pye, 1978, Lissák, 1998). Respondents who made their choices according to design were the most positive in the

³² The figures are based on analyses of variance, see Appendix 10.2. Significant differences are indicated by asterisk

judgements of hedonic value. In the case of those being concerned about functions and services at the point of choice this is explainable by the good operation of the function and diversity of provided services and options in the phone.

Less price sensitive respondents, and those **less concerned about the service pack** found their **own telephones more “enjoyable”, “amusing” and “exciting”**. Presumably more price sensitive respondents chose and use a lot more cheaper and simple phones, they only care about the primary functions of the phone.

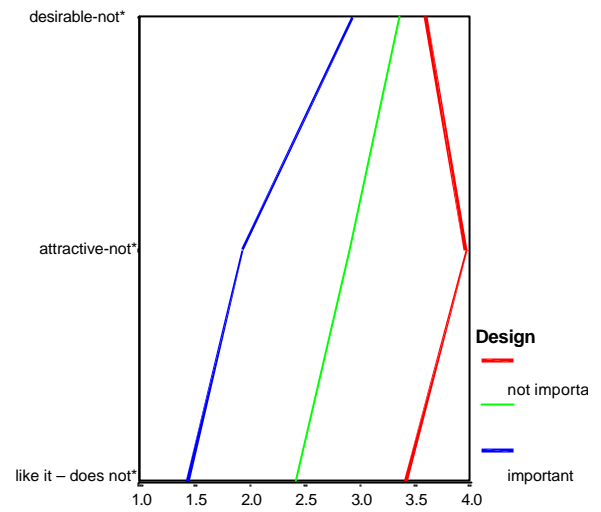
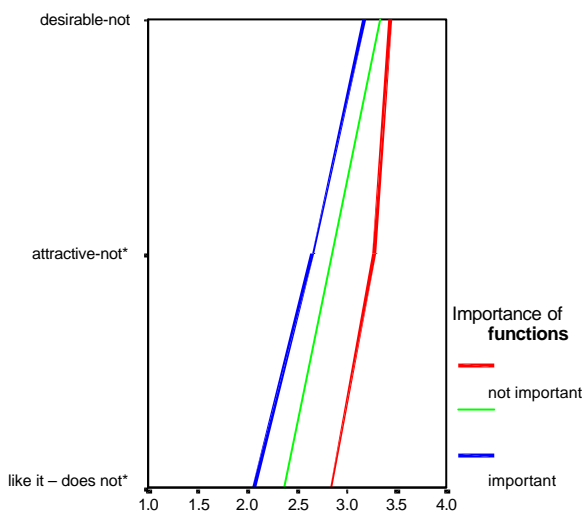
The other possible explanation that cheaper telephones are of really lower quality, therefore the hedonic value, the quality of the usage experience they provide is lower. Important to note that these judgements were still positive.



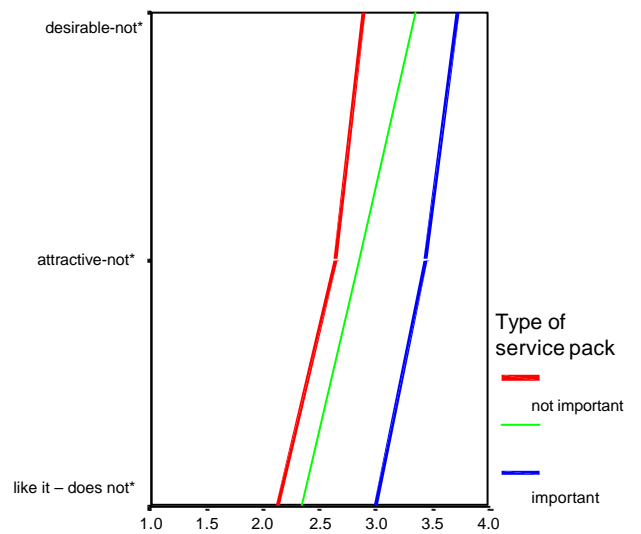
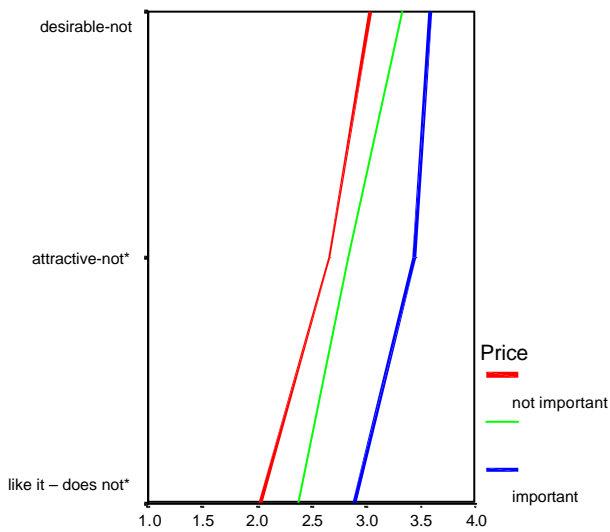
Aesthetic value

Judgements of aesthetic value also differ according to aspects considered important in the decision making process of the own mobile phone.

Respondents having made their **choices primarily on the basis of functionality and design** were more **positive in their aesthetic judgements** as well. The difference is very outstanding among those who considered design important: they found their own mobiles more *“attractive, desirable”* and *“likeable”*.



This above tendency justifies that product aesthetics becomes evident during use (Lissák, 1998; Piersig).



Evaluations of those respondents who were more concerned about economical aspects – price and service pack – were lower. This may prove that cheaper products provide less services or services at lower quality.

10.2.2. Willingness to repurchase and product judgements

Product related consumer judgements also varied according respondents' willingness to repurchase their current phones. Willingness to repurchase is an indicator of consumer satisfaction, therefore influences consumer judgements.

Table 10.6. Willingness to repurchase current telephone and relating consumer judgements

Product related judgements	Willingness to repurchase	Mean	Standard dev.	T	Sig.
Q6_UT1 useful – useless	would repurchase	1.57	0.78	1.32	0.25
	would not	1.71	0.98		
Q6_UT7 efficient – inefficient	would repurchase	1.93	0.83	5.76	0.02
	would not	2.25	1.09		
Q6_HED4 fun – not fun	would repurchase	1.76	0.93	1.07	0.30
	would not	1.90	1.10		
Q6_UT2 practical – impractical	would repurchase	1.74	0.80	4.08	0.04
	would not	2.00	1.05		
Q6_UT4 functional – not functional	would repurchase	1.85	0.85	10.19	0.00
	would not	2.31	1.22		
Q6_UT12 problem solving not problem solving	would repurchase	2.00	1.11	0.21	0.65
	would not	2.08	1.22		
Q6_UT11 unproductive – productive	would repurchase	5.65	0.92	5.81	0.02
	would not	5.28	1.23		
Q6_HED6 not funny - funny	would repurchase	4.80	1.04	22.76	0.00
	would not	4.09	0.95		
Q6_HED7 dull – exciting	would repurchase	4.73	1.17	24.71	0.00
	would not	3.91	1.01		
Q6_HED10 enjoyable – unenjoyable	would repurchase	2.80	1.17	29.63	0.00
	would not	3.75	1.24		
Q6_HED12 amusing – not amusing	would repurchase	2.90	1.19	22.11	0.00
	would not	3.77	1.40		
Q6_HED2 not delightful - delightful	would repurchase	3.69	1.58	12.42	0.00
	would not	1.91	1.10		
Q6_AES2 desirable – not desirable	would repurchase	3.17	0.90	12.15	0.00
	would not	3.65	1.01		
Q6_AES1 attractive not attractive	would repurchase	2.67	1.11	18.56	0.00
	would not	3.40	1.25		
Q6_AES5 makes me like this product – does not make me like this product	would repurchase	2.04	0.99	46.50	0.00
	would not	3.26	1.67		

(would repurchase: N=161; would not N=65)

Results show that those respondents who would repurchase their own current phone are more positive in their relating judgements. Important to note that there are significant differences on

every item of the hedonic and aesthetic factors among those willing or unwilling to repurchase their current mobile telephone.

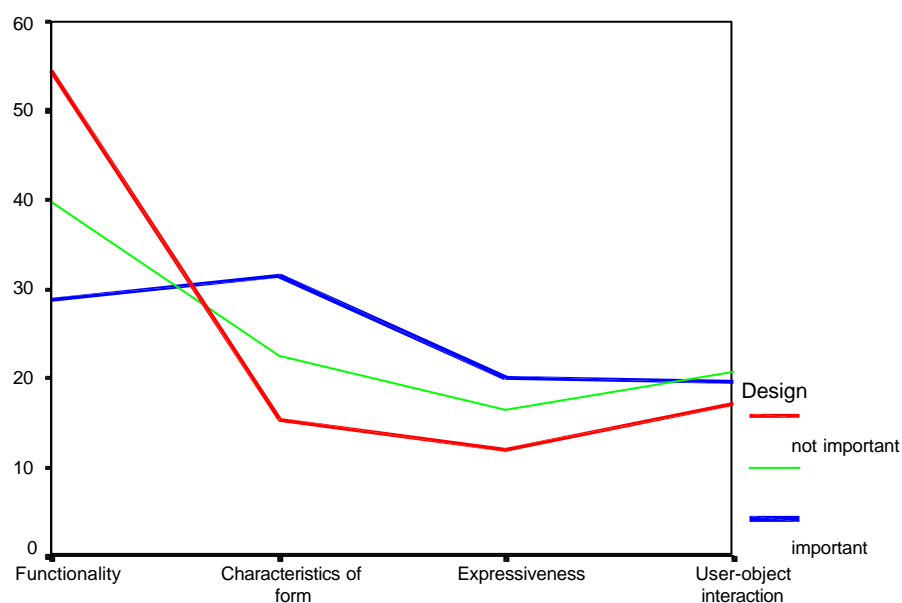
10.2.3. Evaluations of the aspects of product design of own phone and choice criteria

The only relation that is present between evaluations of the design of the own phone and choice criteria (functionality, price, service pack and design) – is whether product design was a decisive factor in the choice. This reflects that those respondents considering product design important or unimportant view the product design of their mobiles differently.

Table 10.7. Product design as an /un/important factor in the choice of own phone and evaluation of the design of the phone

	Design as a choice criteria	Mean	Standard deviation	F value	Sig.
Functionality	not important	41.36	20.77	7.06	0.01
	important	28.65	11.79		
Nature, characteristics of form	not important	20.23	10.41	10.59	0.00
	important	31.35	12.85		
Expressiveness	not important	18.18	10.75	0.45	0.51
	important	20.00	8.00		
User – object interaction	not important	19.77	10.17	0.01	0.93
	important	20.00	7.75		

(Design as an **important** choice criteria N=26; design as an **unimportant** choice criteria N=22)



Relation of the two aspects is very interesting. Those who **considered design unimportant in their choices** think that the **functionality of their phones is very important**. Those who made their **choice by design consider functionality less important**. Further, those who made choice decision upon product design are more careful about the characteristics of the form of the own phone (size, shape, colour) and respectively those who were not influenced by design in their choices disregard characteristics of their own mobiles. On the other two dimensions of design (expressiveness, use-object interaction) design conscious respondents attribute more importance (these are not significant differences, only tendencies).

10.3. Role of product design in product related consumer judgements

Participants were asked about their own mobile telephone, what they thought it meant to their environment and to themselves – public and private meanings Richins (1994a, b.). Two uncompleted sentences were applied (see tables 10.8. and 10.9.). Responses were categorised (Móricz, 1999) and differences in meanings attached to different types of phones were investigated. Responses were possible to categorise into distinct groups, some tendencies can be formed on the basis of the results.

Expressiveness: public meanings

In the associations about *what the telephone tells about itself to its owner's environment* characteristic responses differ in the case of the two investigated models. Owners of the Nokia 3210 mostly attach the idea to the phone that *"I make phone-calls", "I use the phone"*. Owners of the Nokia 5110 mostly associate the idea *"I am available", "I can be reached", "I have the availability in case of some important matters"*

While associations related to Nokia 3210 are more concerned with the object, tool itself and the related activity is in focus, in the case of Nokia 5110 the focus is on the abstract content of the form: availability, ability of being able to be reached. Regarding the two models they provide almost identical services, Nokia 5110 was launched earlier (having a classical, more typical design), Nokia 3210 that was introduced somewhat later designed in a more unusual form, having an internal antenna. Differences in responses can be explained by the differences of designs. In that period of time Nokia 5110 could be considered as the typical mobile telephone – therefore in its case – being a telephone, the possibility of making phone-calls is taken for granted by the respondents. On the contrary owners of Nokia 3210 still had to get used to the newness, unusual form of the telephone. Furthermore, stronger familiarity with the Nokia 5110 as a result of its earlier launch underlines the associations.

The other category of responses, in which responses of Nokia owners dominated were those where owners acknowledged that the phone expresses something positive, favourable of its

owner: *“I am pragmatic and simple, don’t want to show off”*; *“I have good style and I use the phone in an unobtrusive manner”*; *“I am modest, practical and modern and up to date”*

In this category of responses citations of Nokia owners are the most frequent – here owners of other Nokia phones (top category phones) and responses of owners of Nokia 3210 are strongly represented. Responses can be explained by the novelty of the design of Nokia 3210 phones and therefore associations of being innovative. In the case of other Nokia phones the premium positioning of the telephones gives the explanation.

Table 10.8. Categories and characteristic responses

Uncompleted sentence: *„My mobile telephone tells about me to my environment that”*

Categories of responses / Percentage of respondents mentioned the category (%) N=230	Percentage of owners mentioned the category
I use the phone / 21 %	1. Motorola (45,5 %) 2. Ericsson T10 (28,6 %) 3. Nokia 3210 (27,8 %)
being reachable / available / 19 %	1. Alcatel (32,0 %) 2. Siemens (23,8 %) 3. Nokia 5110 (23,7 %)
expresses something positive about me / 38 %	1. Other Nokia (61 %) 2. Ericsson T10 (42,9 %) 2. Nokia 3210 (40,7 %)
association with moderate spending on mobile communication / 9,5 %	1. Ericsson T10 (23,8 %)

Expressiveness: private meaning

In the case of the uncompleted sentence *“what the mobile telephone meant to its owner”* (Richins 1994b) – private meaning – responses differ in the case of the two models. For owners of Nokia 3210 primary association is being reachable: *“I am not stuck in the office, I can organise my time better”*, *“ I can be reached any time when I turn it on.”* Owners of Nokia 5110 attribute characteristically the idea of freedom and efficiency to their telephones: *“I am not dependent? I can make phone-calls any time when I need it”*, *“it makes my life easy”*, *“I can organise my program spontaneously, because I am reachable and I can reach my friends.”*

Differences in associations can be explained by the differences of the mobile designs. Unusual form implies, that as a result of its novelty users consciously pay attention to how the function is fulfilled, while in the case of the more usual and familiar phone (Nokia 5110) function can be taken for granted, which elicits further associations and meanings.

Table 10.8. Categories and characteristic responses; uncompleted sentence: „My mobile phone means to me that”

Categories of responses / Percentage of respondents mentioned the category (%) N=230	Percentage of owners mentioned the category
I am possible to reach / 66 %	1. Alcatel (80 %) 2. Nokia 3210 (72,2 %) 3. Ericsson T10 (66.7 %)
I can reach others / 33 %	1. Panasonic (50 %) 2. Ericsson T 10 (42,9 %) 3. Alcatel (40 %)
Connection, relations – family, friends / 13 %	1. Ericsson T 10 (38,1%)
Efficiency, freedom / 32 %	1. Siemens (52,4 %) 2. Nokia 5110 (44,7 %)
Security / 7,3 %	1. Siemens (19 %)
Something positive why the phone is important to me / 9,5 %	1. Ericsson (31,8 %)

11. Differences between the contexts of choice and usage

11.1. Structure differences in product related judgements between the two contexts

Respondents evaluated their own phones in the context of usage and the preferred telephone in the context of choice with respect to utility, hedonic value and aesthetics (Spangenberg - Voss (1997) HED/UT scale, (utilitarian and hedonic items) and Hirschman - Solomon (1984) product aesthetic scale (aesthetic items)).

Factor analyses show similar factor structures in the two contexts, however their order of importance differs. In both context respondents found utilitarian aspects the most important, “*how useful, practical, functional, efficient, productive, problem-solving*” the particular phone was. The order of importance of the other two factors – hedonic and aesthetic value – differs.

Rotated Component Matrix^a

	Component		
	1	2	3
Q6_UT1	.757		
Q6_UT7	.755		
Q6_HED4	.701		
Q6_UT2	.674		
Q6_UT4	.656		
Q6_UT12	.584		-.315
Q6_UT11	-.461	.402	
Q6_HED6		.765	
Q6_HED7		.757	-.334
Q6_HED10		-.658	.390
Q6_HED12	.347	-.565	.316
Q6_HED2		.492	-.399
Q6_AES2			.786
Q6_AES1		-.329	.760
Q6_AES5		-.350	.716

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

KMO=0,834; variance explained =56,1 %

Rotated Component Matrix^a

	Component		
	1	2	3
Q7_UT7	.834		
Q7_UT4	.821		
Q7_UT2	.794		
Q7_UT1	.775		
Q7_UT12	.707		.341
Q7_HED4	.557	.318	.382
Q7_AES1		.843	
Q7_AES5	.393	.723	
Q7_HED2		-.696	
Q7_AES2		.664	
Q7_HED12			.731
Q7_HED6			-.706
Q7_HED10		.345	.679
Q7_HED7		-.530	-.670
Q7_UT11	-.374		-.588

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

KMO=0,886; variance explained =63,5%

The above tables show that items representing the two other factors (hedonic and aesthetic value) clearly differ. Second most important factor in the **context of usage** is the **hedonic value**, that is how “*funny, exciting and amusing*” one’s own mobile phone is. The third differentiating factor is aesthetic value, that is how “*attractive, nice*” one’s own mobile telephone is. In the context of choice the order is utility, aesthetic value and hedonic value, also some of the items changed places.

The first, “*utilitarian factors*” is identical to the utilitarian factor of the usage context except for one item. The second most important factor is the aesthetic value, which compared to the usage situation involved one more item “*not delightful – delightful*” item. The third factor, hedonic value includes one more utilitarian item “*unproductive – productive*”.

Differences in the two factor structures can be explained by the nature of the two contexts. While in the **usage context users have already some experience** with the phone, in the **choice context respondents can only have anticipations, expectations**. While the **usage context is built on personal experience** – so the hedonic value becomes more important, the **choice context depends more on an external point of view**: the aesthetics of the phone becomes more important.

There is one more important notable result that the hedonic item (HED4) “*fun – not fun*” are in the utilitarian factors in both contexts, which may be a result of translation and the connotation of the words in the Hungarian language³³.

³³ In Hungarian translation „*jó dolog – nem jó dolog*” which would be rather „*good thing – bad thing*” in back translation.

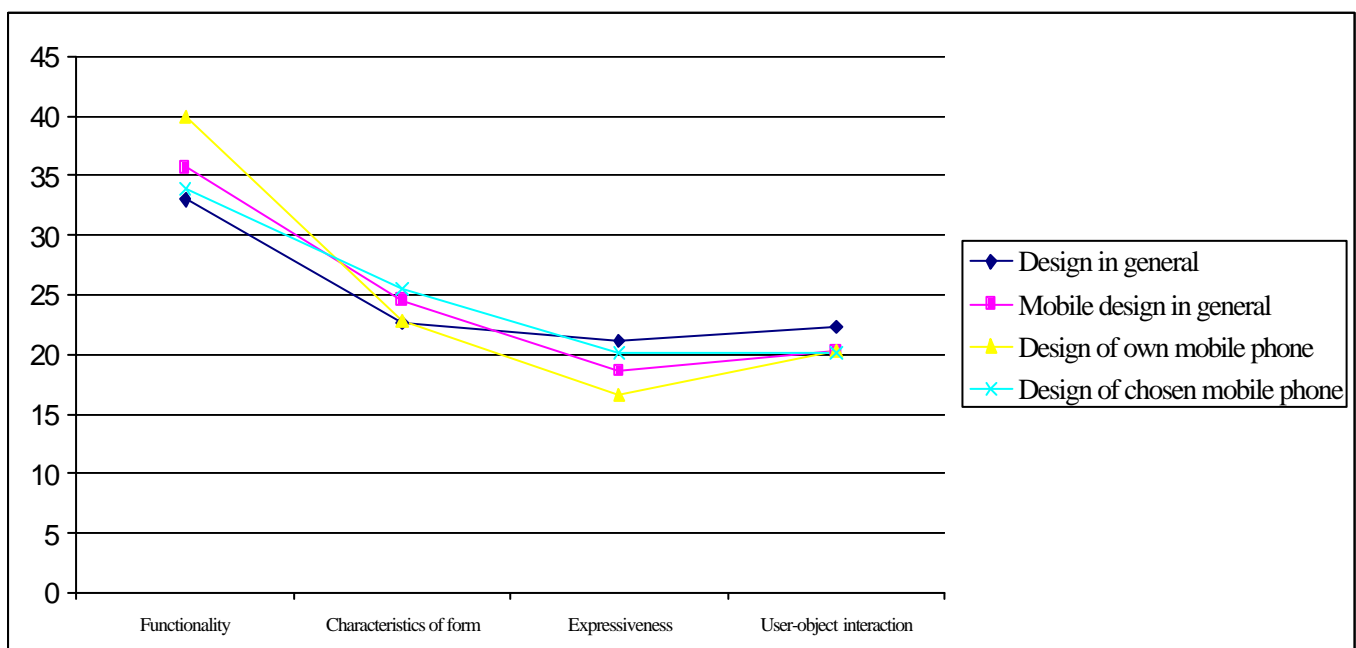
11.2. Evaluating of aspects of product design in the two contexts

Evaluations of design of own phones and chosen phones were recorded by the same measurement instruments. Respondents distributed 100 points among the four aspects of design, functionality, characteristics of form, expressiveness and user-object interaction (Appendix 5.2., applied questionnaire, questions Q3, Q5, Q6j, Q7k) with respect to four frames of reference: design in general, mobile design in general, design of own mobile telephone, design of chosen mobile telephone.

Comparing the average scores of the four frames of reference with respect to the above four aspects of product design explores the specifics of the role of product design. Respondents attributed **greatest importance to functionality** in the description of their **own telephones**. **Characteristics of form** played the **most important** role in the case of the **yet unknown but preferred phone**. Respondents regarded the **expressiveness** of their **own phone the least important**.

Table 11.1. Average evaluations of aspects of product design in four frames of reference

	Design in general	Mobile design in general	Design of own mobile	Design of chosen mobile
Functionality	32.94741	35.63578	39.90265	33.89274
Characteristics, nature of form	22.69918	24.56271	22.77212	25.42902
Expressiveness	21.16695	18.64043	16.58186	20.11987
User-object interaction	22.36634	20.30243	20.32444	20.14826



The relations among the different aspects of product design shows similarities in the two contexts. In both contexts functionality is in a negative relationship with the other three aspects. There is also a negative relationship between characteristics of form and user-object interaction. This implies that respondents consider the characteristics of form (size, shape, colour) not contributing to user-object interaction.

Table 11.2. Consumer evaluations of the different aspects of own mobile telephone

Design of own mobile phone	Design of own mobile phone			
	functionality	Nature, characteristics of form	Expressiveness	User – object interaction
Functionality	1			
Nature, characteristics of form	-	1		
Expressiveness	-	+	1	
User – object interaction	-	-		1

(,-,, and ”+” show the direction of relationships, which proved to be significant, based on bivariate correlations)

Table 11.3. Consumer evaluations of the different aspects of chosen mobile telephone

Design of chosen mobile phone	Design of chosen mobile phone			
	functionality	Nature, characteristics of form	Expressiveness	User – object interaction
Functionality	1			
Nature, characteristics of form	-	1		
Expressiveness	-		1	
User – object interaction	-	-		1

(,-,, and ”+” show the direction of relationships, which proved to be significant, based on bivariate correlations)

The only difference in the existence and direction of significant relationships is that in the **context of choice importance of characteristics of form and expression show a positive relationship** (grey cell in table 11.2.) This implies that respondents think that the **characteristics of form of one’s mobile phone contributes to its expressiveness**, which is: form determines whether mobile phone in question is capable of communicating owner’s

personality and style. This latter relationship also justifies that characteristics of form is considered to be determining external characteristics, appearance of the mobile phone.

Aspects of design in the two contexts were related to aspects of product design in general, which show the following relationships:

Table 11.4. Aspects of design in the two contexts related to product design in general

Design in general	Design of own mobile phone				Design of chosen mobile phone			
	functionality	Nature, characteristics of form	Expressiveness	User – object interaction	functionality	Nature, characteristics of form	Expressiveness	User – object interaction
Functionality	+	-	-	-	+	-	-	-
Nature, characteristics of form		+				+		-
Expressiveness	-	+	+		-		+	
User – object interaction	-	-		+	-			+

(„-“, „+“ and „+“ show the direction of relationships, which proved to be significant, based on bivariate correlations)

Similarly to general views about mobile telephones, there is a positive relation between importance of expressiveness of every day objects and the characteristics of form of one's own mobile phone. This relation is not present in the context of choice. This relation suggests that those respondents who **attribute greater importance to the expressiveness of their things in general, attribute greater importance to the characteristics of the form of their own mobile telephone** and vice versa. Those respondents giving **greater importance to the expressiveness of things in general see the expressiveness of their own phones in the characteristics of its form**. Characteristics of form therefore can **communicate** about the object.

With respect to general ideas about design it is also special about the context of usage that there is a **negative relationship between the importance of user-object interaction in general and the importance attributed the characteristics of the own phone** (see in table 11.4. indicated with grey shade). This indicates that those respondents who consider user object interaction important, do not give that much emphasis to the type of form that serves that, and those who care about these external characteristics (shape, size, form) are less concerned about the harmonic interaction with products in general.

There is a similar relationship in the context of choice: there is a negative relationship between the above two constructs: where the external (outside) point of view of the choice situation is reflected. **Characteristics of form of things / material objects in general is in negative relationship with anticipated user-object interaction of the preferred phone.** As a result those respondents valuing the characteristics of form high disregard user-object interaction. This implies that the importance of the characteristics of product appearance does not play a role in the evolution of the anticipated harmonic interaction of user and chosen telephone.

Aspects of product design in the two contexts were also related to the design of mobile phones in general (see table 11.5.).

Table 11.5. Aspects of design in the two contexts related to mobile telephone design in general

Mobile design in general	Design of own mobile phone				Design of chosen mobile phone			
	functionality	Nature, characteristics of form	Expressiveness	User – object interaction	functionality	Nature, characteristics of form	Expressiveness	User – object interaction
Functionality	+	-	-	-	+	-	-	-
Nature, characteristics of form	-	+		-		+		-
Expressiveness	-	+	+		-		+	
User – object interaction	-	-		+	-	-		+

(, -, , and "+") show the direction of relationships, which proved to be significant, based on bivariate correlations)

Negative relationships between functionality and characteristics of form is present with respect to evaluation one's own mobile. Lack of this relationship in the context of choice is explainable by the external point of view, that users are not familiar with the preferred telephone yet, therefore they are not certain about their evaluations yet.

Respondents attributing less importance to the characteristics of form of mobiles in general gave greater importance to the functionality and vice versa. Being concerned about functionality involves less concern about the characteristics of form, which implies it is not important how the telephone looks like, but how it operates. On the other hand, those who give greater importance to characteristics of form are less concerned about the aspects of functioning.

The relationships of evaluations of the design of the own telephone and the chosen one show those relationships that are present in general: negative relationships between the importance of functionality and characteristics of form, expressiveness, user-object interaction and negative relationship between characteristics of form and user-object interaction. This suggests that in the context of choice and usage that evaluation of the different aspects of design evolve similarly.

Table 11.6. Aspects of product design in the two contexts related to each other

Design of own mobile phone	Design of chosen mobile phone			
	Functionality	Nature, characteristics of form	Expressiveness	User – object interaction
Functionality	+	-	-	-
Nature, characteristics of form	-	+		-
Expressiveness	-		+	
User – object interaction	-	-		+

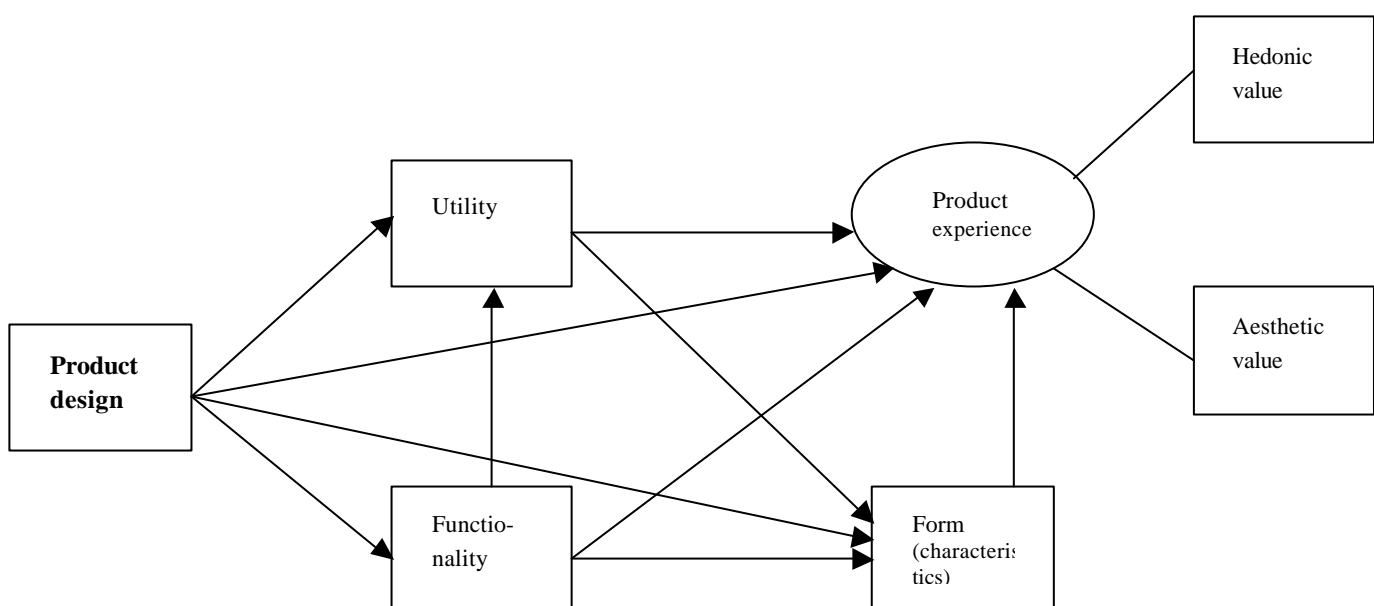
(,, and ”+” show the direction of relationships, which proved to be significant, based on bivariate correlations)

12. Product related consumer judgements

Following the exploratory and descriptive analyses of Product related consumer judgements the elements of these judgements and their determining factors (strength and direction of relations) are further analysed with structural equation modelling.

Objective of this last causal part of the research is to describe the relationships of product related consumer judgements and their determining factors. The figure below shows all the possible relationships of product related consumer responses judgements. Results of the descriptive analyses suggest the following:

- ?? Product design determines product related consumer judgements: evaluations of utility, aesthetic and hedonic value.
- ?? Judgements of aesthetic and hedonic values are in a very strong relationship, together they form a latent variable, which is labelled later as “*product experience*”
- ?? As a result of past experience and knowledge contexts of choice and usage differ. In the case of evaluations of own phone it is experience that determines responses, while in the case of a newly chosen telephone it is anticipations based on product design and other features that determine relating consumer judgements.
- ?? Different aspects of product design (functionality, characteristics of form, expressiveness and user-object interaction) are related to consumer judgements.



12.1. Product related consumer judgements in the choice context

Structural equation modelling was conducted in the subgroups of respondents who preferred given product designs of mobile telephones. The impact of the design of the given mobile telephone was recorded by the introduction of dichotom variable which got the value “1” for those who chose the given phone and “2” for those who chose other phones respectively.

Measures of fit (Cmind/Df, general measures of fit (GFI, AGFI, CFI)) show that models well represent the populations. Variance and covariance not explained by the models (RMR) is relatively high. References (scale descriptions) for the bellow interpretations of results are in chapters 4.1. and 9.6.

Following figures show that preferences in the context of choice show similarities: the same relationships and their similar directions are present among product related consumer judgements. Differences occur in relationships with product design and relating consumer judgements, directions and strength.

The latent variable “*product experience*” is formed by two variables judgements of aesthetic and hedonic value.

Importance attached to the characteristics of form determines the anticipation **of product experience (quality of the product experience)** which is influenced by product design. All four models show a slight negative relationship between the two variables. This suggests that importance attached to the characteristics of form and anticipated product experience (emotions evoked) relates, the more important the characteristics of form to a future user is, the nicer product experience they expect. For those who more disregard the characteristics of form are more negative about the type of experience they anticipate. This result underlies that **respondents in the context of choice make anticipations about the usage experience based on the characteristics of product form.**

Importance attached to functionality determines anticipated product experience, utility and evaluations of the characteristics of form. This relationship exists for each model. There is a weak positive relationship between importance attached to functionality and anticipated product experience. This implies that those respondents who attach great

importance to functionality of the phone are less positive about the anticipated emotions evoked by the phone (product experience). For those who are less concerned about functionality are more positive about the anticipated product experience with the chosen telephone. This relationship suggests that narrowly defined notion of **functionality** (serving basic functions) is **not connected to the experience and emotions** evoked by the phone, because basic, primary **functions** presumably are **taken for granted** in today's market situations.

There is a weak negative relationship between importance of functionality and judgements of utility. This means that respondents attaching **greater importance to functionality** are more **positive** about the **anticipated utility** of the chosen phone and vice versa.

There is a strong negative relationship between importance given to functionality and characteristics of form. The existence of this relationship is logical and was discovered in the descriptive part of the research. Respondents being more concerned about the functionality of the phone are less caring about its formal characteristics, while those being concerned about the characteristics of form give less importance to functionality.

A relationship exists in all models between judgements of **utility** and anticipated **product experience (emotions)**, however its strengths and direction differs by the different product designs of mobile telephones. This justifies the **impact of product design in Product related consumer judgements**. While for those phones that were evaluated more aesthetic (Nokia 3310, 8210 and 8850) there is a strong positive relationship between the two variables – so respondents being very positive about the anticipated utility of the chosen phone were also very positive about the quality of the anticipated product experience (emotions), for those who were more negative about the utility of the preferred phone, were also more negative about the anticipated experience with it. The more utilitarian the phone the more enjoyable product experience is expected. Another possible explanation is high / low involvement with the mobile phone in question. For those who consider the mobile phone important, all aspects are important and positively judged, while for those, who do not care too much, evaluate both aspects less positively.

Among those who chose the mobile Nokia 6210 the relationship is of the opposite direction and weaker. For those preferring Nokia 6210 more positive judgements of utility come with more negative judgements of anticipated product experience (hedonics and aesthetics) and vice versa. A possible explanation is that attitudes towards the functionality of the phone are very different. For some respondents functionality, operation of the chosen phone is

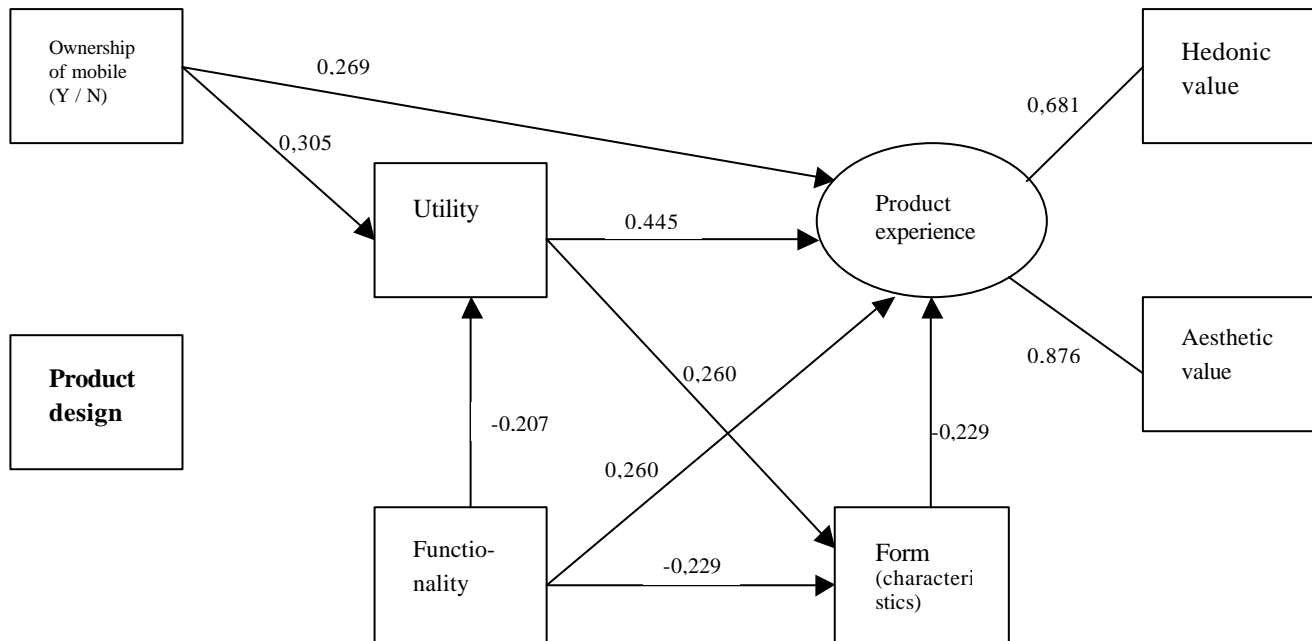
exclusively important and the notion of product experience is irrelevant. In the explanation of the other extreme the descriptive results of the research can help. The telephone that was evaluated the most utilitarian (“*functional, practical, efficient*”, etc.) (chapter 9.4.) is also associated with exceptional enjoyable product usage experience.

Relationship between **utility and importance attached to characteristics of product form** is present for three phones: Nokia 3310, 6210 and 8850. Nature of the relationships is different for the three mobile types which is **explainable by the different product designs**. For the more complicated and sophisticated Nokia 6210 and 8850 phones the relationship is weaker and negative. Positive evaluations of utility result in greater importance attached to the characteristics of form. Those who anticipated more utilitarian the chosen telephone gave more importance to the characteristics of form as well. Those expecting utility of the chosen phone lower were less concerned about the characteristics of form.

For the more simple Nokia 3310 this relation is positive. Those who found the phone very utilitarian gave less concern to the external characteristics of the form, presumably for them it was important to own one telephone, which they could use for making phone calls. (This is also underlined with the fact, those respondents who did not have mobile phones in the time of the research were more likely to choose this model than mobile owners, see chapter 9.1.2., 9.5.) However, the result that those evaluating utility lower and giving greater importance to characteristics of form is explainable by that they saw a very attractive phone in Nokia 3310.

There is one more similar tendency in the four models: the **fact of owning a mobile telephone**, past experience with mobile phones. In accordance with results of the descriptive research, results of structural equation modelling indicate that **mobile phone owners are more positive about the utility and anticipated experiences (emotions)** with the chosen phones. One explanation is their existing experiences and non-owners’ lack of experience and their more negative attitudes towards mobile phones in general (see chapter 4.2.1.)

Nokia 3310 – “youth, simplicity and beauty”



Product related consumer judgements, impact of the design of Nokia 3310

Description of the model

N=45

Chi square= 7,378

Df = 4

p= 0,117

Cmin/Df = 1,845

Measures of fit

RMR: 0,544

GFI: 0,994

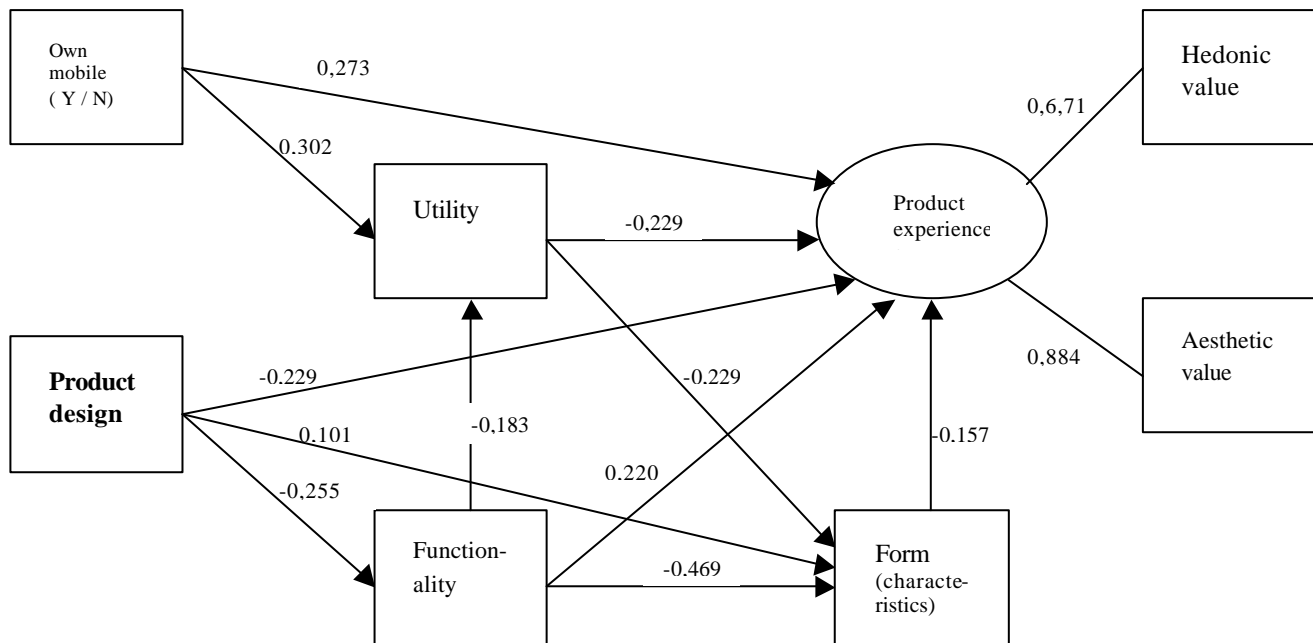
AGFI: 0,956

CFI : 0,992

When the variable product design is set for the value “1” for those who chose Nokia 3310 and “2” for those who chose other phones there is no significant relationship found between this variable and the other variables indicating product responses.

The simple and aesthetic form of the phone is traceable in the relationship of utility and characteristics of form. Contrary to the evaluations of the three other models there is an opposite relation between the two latter variables: those who preferred Nokia 3310 either evaluated its utility high or gave great importance to the characteristics of its form.

Nokia 6210 – “the classical mobile phone”



Product related consumer judgements, impact of the design of Nokia 6210

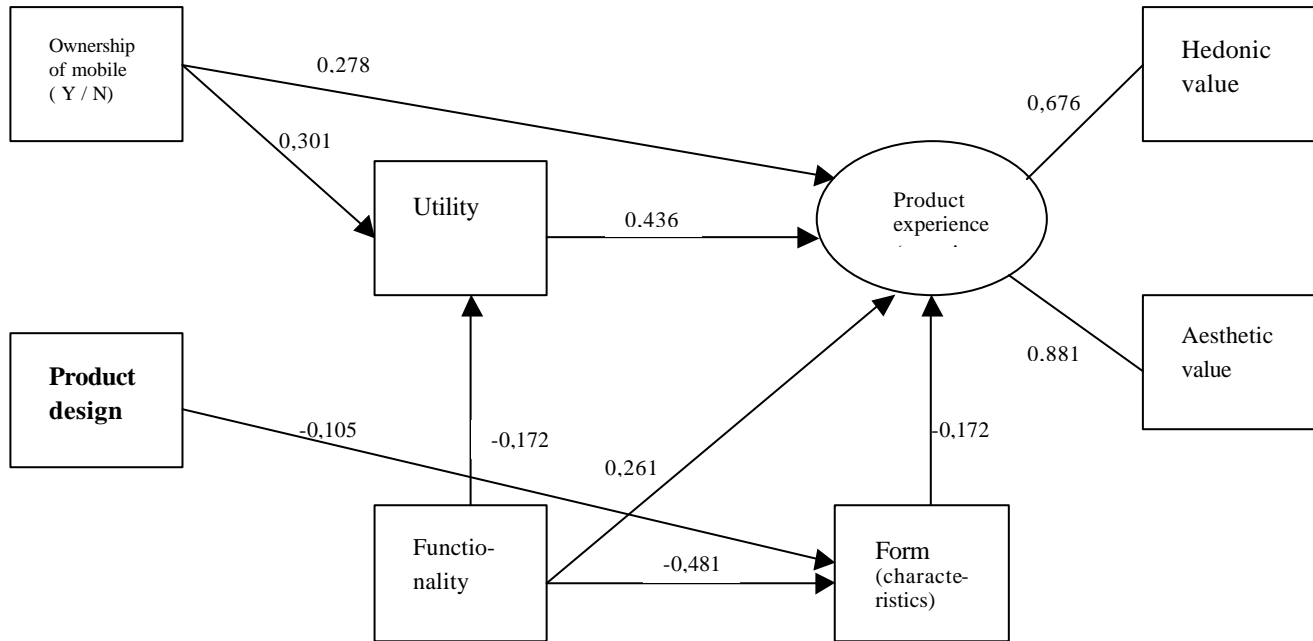
Description of the model
N=89

Chi square= 8,956
Df = 7
p= 0,256
Cmin/Df = 1,279

Measures of fit
RMR: 0,520
GFI: 0,992
AGFI: 0,968
CFI : 0,996

There are several notable relations in the case of the model Nokia 6210. Nokia 6210 and its product design “talks for itself”. The above model indicates that those respondents who chose Nokia 6210 attributed greater importance to functionality than those who chose other mobile telephones. However, these respondents (who preferred Nokia 6210) regarded characteristics of product form and product experience less important. In the case Nokia 6210 the simple and clear product form is taken for granted, they are more concerned about the diverse services of the phone.

Nokia 8210 – “self-fulfilment, style and individuality”



Product related consumer judgements, impact of the design of Nokia 8210

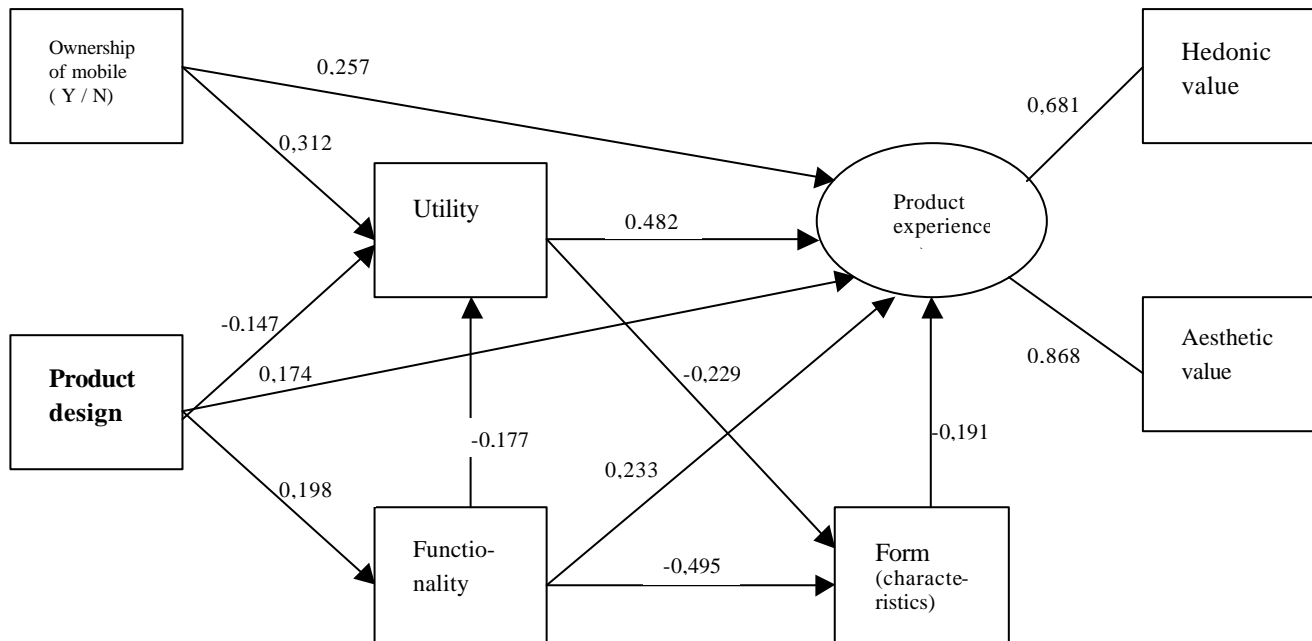
Description of the model
N=78

Chi square= 6,360
Df = 5
p= 0,273
Cmin/Df = 1,272

Measures of fit
RMR: 0,528
GFI: 0,995
AGFI: 0,969
CFI : 0,997

For those respondents who chose Nokia 8210, we can see the characteristic relations and further, there is a weak negative relation between product design and characteristics of product form. This implies: the mobile phone model that positions itself as “aesthetic”, was chosen by respondents who attribute greater importance to the characteristics of product form and appearance.

Nokia 8850 – “elegance, high tech, design”



Product related consumer judgements, impact of the design of Nokia 8850

Description of the model
N=114

Chi square= 12,187
Df = 7
p= 0,095
Cmin/Df = 1,741

Measures of fit

RMR: 0,557
GFI: 0,989
AGFI: 0,958
CFI : 0,989

According to the manufacturer’s positioning the telephone Nokia 8850 is a ‘tribute to quality product design and advanced technology’. There are several notable relations among the different types of Product related consumer judgements. The more spectacular Nokia 8850 (evaluated as the least functional telephone) was regarded less useful, utilitarian, at the same time relating product experience was considered of very high importance. Logically, the functionality of this telephone was regarded less important.

12.2. Impact of product related consumer judgements in the usage context

It was studied within the two subgroups – owners of Nokia 5110 and Nokia 3210 – whether product related consumer judgements differed in the usage context, whether there were characteristic differences between the two groups as a result of owning, using, experiencing different design mobile telephones.

Measures of fit (chi square/degree of freedom (Cmind/Df), general measures of fit (GFI, AGFI, CFI)) show that models well represent the populations. Variance and covariance not explained by the models (RMR) is relatively high. References (scale descriptions) for the below interpretations of results are in chapters 4.1. and 9.6.

Examination of product related consumer judgements in the usage context show the following relationships.

Product experience is determined by judgements of utility. There is a positive relationship between the two variables. Users who regard their phones utilitarian, useful, evaluated the quality of their product experience also important. One possible explanation is that they are satisfied with their telephones. Those respondents who are satisfied with their telephone evaluated every aspect of the phone positively, while dissatisfied users are negative about those aspects.

There is a positive relationship between judgements of utility and characteristics of product form. Users who consider their telephones useful consider the characteristics of form of their phones less important, while those who are more concerned about the characteristics of the form consider utility less important.

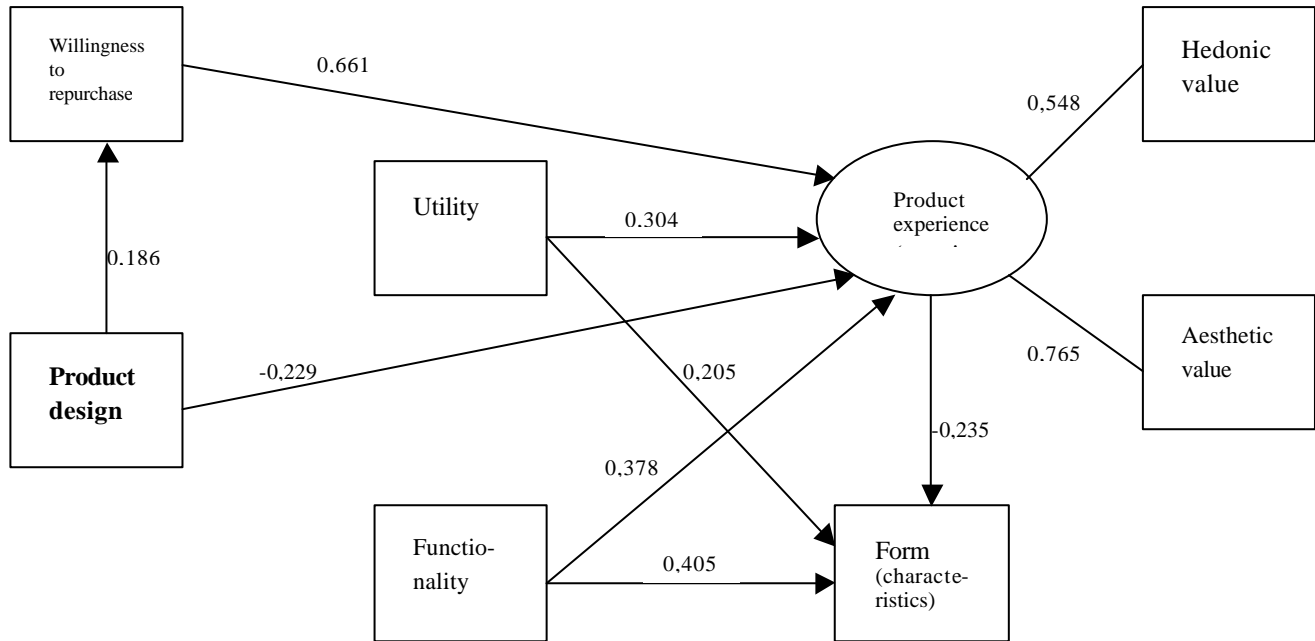
Importance attributed to functionality determines product experience. The more important functionality for the user, the lower he / she evaluates product experience. Those respondents who consider the functionality of their telephones less important, evaluate relating product experience higher. These reactions also show differences as a results of the ownership of mobile telephones with **different product designs**: for owners of Nokia 5110 the coefficient is 0,378 and for owners of Nokia 3210 it is 0,638.

Importance attributed to functionality and characteristics of product form are important for the users of both telephones, however, their direction is opposing. For owners of Nokia 5110 this relationship is positive: user either regard functionality and characteristics of product form important or unimportant. For owners of Nokia 3210 this strong relationship is negative: those who regard functionality of high importance are not concerned about the characteristics of product form and those owners consider the characteristics of product form important, for them, functionality is less important.

There is a relationship between product experience and characteristics of product form. What is very interesting is that compared to the choice context the direction of the relation is opposite: **product experience determines the importance attributed to product form.** Characteristic of this relationship is that those respondents who were positive about the product experience of their telephones also considered the characteristics of product form important, and those who were more negative about the product experience, gave less importance to product form as well.

There is one further aspect that played a role in the reactions, and that is the fact of willingness or unwillingness to repurchase the telephone – as an indicator of consumer satisfaction. Results show, that those who were willing to repurchase their telephones were more positive about product experience of their mobile telephones.

Nokia 5110 – “classical and typical mobile phone”



Product related consumer judgements, impact of the design of Nokia 5110

Description of the model
N=38

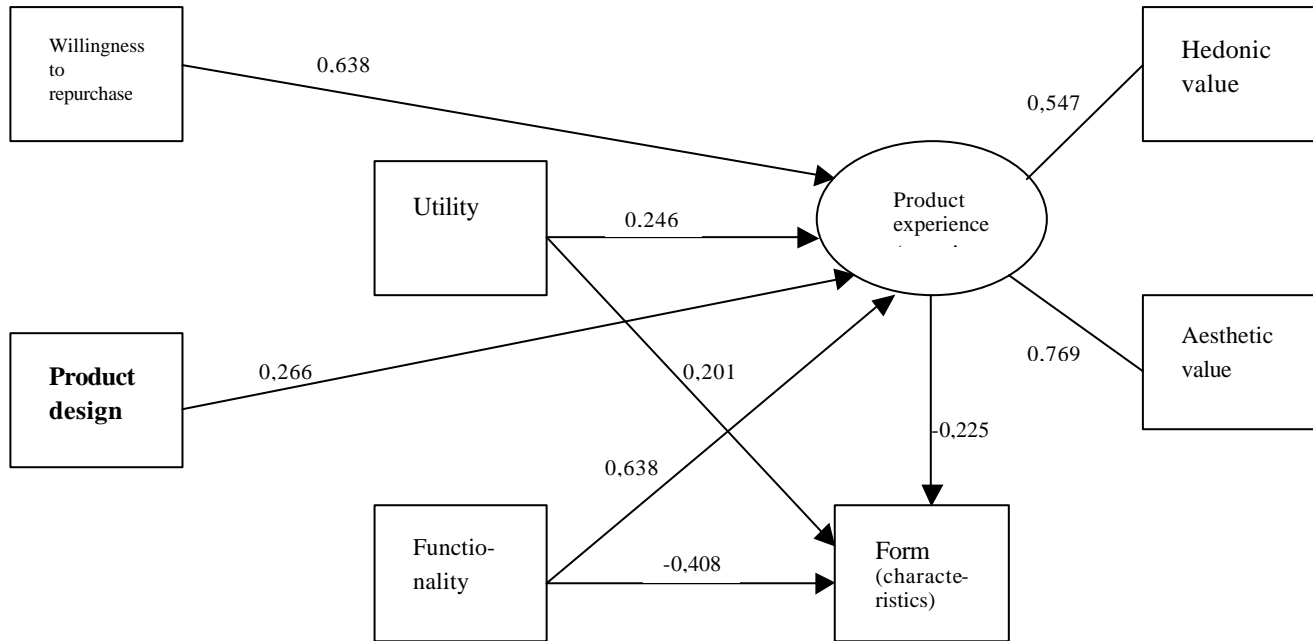
Chi square= 11,965
Df = 10
p= 0,287
Cmin/Df = 1,197

Measures of fit

RMR: 0,684
GFI: 0,969
AGFI: 0,914
CFI : 0,982

The above model indicates that owners of Nokia 5110 evaluate their product experience lower than owners of Nokia 3210. There is a weak positive relationship between product design and willingness to repurchase, which indicates that owners of Nokia 5110 would repurchase their phones, therefore they are more satisfied.

Nokia 3210 – “new and unusual form”



Product related consumer judgements, impact of the design of Nokia 3210

Description of the model
N= 54

Chi square= 7,325
Df = 10
p= 0,694
Cmin/Df = 0,733

Measures of fit
RMR: 0,693
GFI: 0,982
AGFI: 0,951
CFI : 1,000

What is characteristic about the responses of owners of Nokia 3210 is that they are more positively evaluate the product experience of their own phones.

This difference between the responses of the owners of the two differently designed phones can be explained by the characteristics of form being usual or unusual: typicality. The very well known, almost classical and typical Nokia 5110 is less exciting, its quality and services are taken for granted, while Nokia 3210 at its market launch became very popular with its unusual product design (it was the first mobile telephone without an external antenna in the Hungarian market.)

Our research results and results of the modelling suggest the following directions of generalisations for product related consumer responses (judgements of functionality, hedonic and aesthetic values) for future research.

1. More rational considerations, judgements of utility and importance attributed to **functionality determines** the more emotional aspects **judgements of aesthetic and hedonic value**. This relationship is present in **both: choice and usage contexts**.

2. There is a **difference between the choice and usage contexts**:
 - ?? In the context of usage product experience determines judgements of characteristics of product form.
 - ?? In the context of choice, based on the judgements of the characteristics and quality of product form anticipations of the quality of product experience are formed.

13. Possible directions of extension of the research

13.1. Direct extension of the research

As it was already indicated in the conceptual model of the research it can be extended in several ways. It is very important to involve other types of everyday products in consecutive future research. Replication of the study with other products would confirm results of the present research and would prove the strength of the research model, which would make it possible to form theoretical generalisation about the impact of product design in product related consumer judgements and responses. Replicating the study in different industries could reveal how product design has its impact in very innovative and technology intensive industries (such as mobile telephones) and less technology and innovation driven industries – whether there are common and industry specific relations.

Very crucial direction to extend the research would be involving further groups of respondents. This would allow for involving the impact of such consumer characteristics as personality characteristics, personal experience and background, education, and level of income in the consumer decision-making processes. Extending the research of product design in the mobile telephone industry would be very relevant among company executives in managerial positions as they are the ones who switch their mobile telephones regularly, follow new product introductions. Modelling, forecasting switching and formation of new choices (e.g. switch from mobile telephone “A” to mobile telephone “E”.) could very much facilitate the planning of new product introductions (see chapters 8. and 10.). Furthermore, segmenting potential consumers on the basis of the importance they attach to their material possessions and design preferences would help marketers to more subtly segment their markets and position their products there.

Present research excluded the impacts of brand, fashion and price by using research objects of the same brand, fashion and price. Important direction of extension is incorporating the influence of the brand, fashion and price in a consecutive research. What importance does product design “itself” play in consumer choices, how is this either facilitated or conflicted with brand preferences. These directions of extensions imply experimental research.

Considering the importance of fashion and trends is also very relevant in the study of product design: which is more important for consumers, fashion or quality of product design? For manufacturers it is also important to discover what are the relations between price sensitivity and preferences for product design. Are consumers willing to pay more for the design they prefer? In what cases, in what product categories? Are these choices explainable by other individual characteristics?

13.2. Relating corporate research

Present research results suggest to extend the research to corporate product policies, new product development processes with the objective of tracking these policies and decisions in different industries and conduct comparative studies, this direction directly connects to the research project of Berács et al. (2001), cross industrial research. With respect to new product introductions the study of corporate strategic and marketing goals serve as an input.

Investigation of a given industry with respect to strategic functions and the role of product development within this could give an insight about what the role of innovation and the process of industrial design among other company functions. The study could give an answer to whether marketing or other corporate functions led product innovation and the process of product design or whether they were just a consequence of other functions.

13.3. Possible directions of consumption research

As a result of the usage of internationally applied measurement instruments present results of the research give a basis for intercultural comparative studies.

Current research approach support a historical overview as well, where product design successes and failures could be analysed with the same methods. Common features of successes and failures could be revealed, which could later be used for testing implied hypotheses.

A spectacular and innovative direction would be the study of societal innovations (Cova & Swanfeldt, 1993) which also support the direction of doing consumption studies not only in the field of artistic and extreme products and activities but more simple every day objects.

With the help of the proposed measurement instruments the meanings and Product related consumer judgements to societal innovations could be explored, what differentiates them from successful products that remained in their markets for shorter time periods. It would also be interesting to explore personal characteristics of those consumers, whether those consumers who have preferences for societal innovations are more design acumen (Bloch, 1995). Finally it would be interesting to contrast and compare the experiences of users of two exemplary societal innovations: Citroen 2CV and VW Beetle, which would also reveal common specifics of these products but also their own specifics.

14. Conclusions

Present research approaches product design as a marketing tool, that is a mean for facilitating market exchange, by having a role in the „act of interpretation, understanding, perception of the product” (p. 161., Lissák, 1998). Our results show that design not only makes functioning possible, but establishes this in a distinctive way, therefore influences choices, communicates and positions: attracts consumers and is capable to communicate with them (Bloch, 1995).

At the same time, the studying of product design is not complete, if we disregard that the fact that it is the essence of industrial design to produce a particular function, so its essential task is also to establish a harmonic relation between the user and the object. “The psychological function can be read from the product, but can only be explored and experienced during using, sensing the product” (p. 160., Lissák 1999). Therefore design cannot be fully investigated without studying the context of usage.

Approaching design from the above two perspectives has practical implications as well. Understanding the context of choice is important from the point of view of sellers. However, understanding the context of usage is inevitable for producers who intend to establish and maintain their successful positions in the market in the long run, especially in the innovation intensive sectors of businesses. As a result, present research investigates both, choice and usage contexts, describes their specialities and differences.

14.1. Methodology of the research

Our research consists of two phases. In the first exploratory phase, we used qualitative, projective research techniques (sentence completion). In this phase the research object: the mobile telephone was chosen (chapter 4.2.1.). The existence and interpretability of the three aspects of Product related consumer judgements - judgement of utility, hedonic and aesthetic value - in the case of mobile telephones were tested with sentence completion technique as well (chapter 4.2.1.). Hungarian adaptation of internationally used scales were subject to pre-tests too (chapter 4.2.2.).

In the consecutive conclusive (Malhotra, 2001) phase of the research a standard written type of questionnaire was used, that was administered by the respondents themselves (chapter 5.). The questionnaire was designed according to the results of the exploratory research. In the research product related consumer judgements were investigated in two contexts: in the context of use, with regard to one's own mobile telephone, and in the context of choice in a simulated situation. In the simulated choice context similar to a real buying situation respondents could look at, take in their hands the selected telephone models. Based on these experiences they chose and evaluated one of the four models they most preferred (chapters 7., 8., 9., 10., 11., 12.).

14.2. Major results and contribution of the research

In the following paragraphs the major findings of the research are summarised, acceptance or rejection of hypotheses is indicated. Further, the contribution of these findings to scientific and practical knowledge is presented.

14.2.1. Product design determines consumer choices

Our results justify that product design determines several aspects of consumer choice (chapter 8.): preferences are determined by design at first sight, in an idealised choice where price factor is excluded. However, in choices where the impact of prices is present, the impact of design preferences still remains influential. The notion of primacy effects (Hewstone et al. 1997, Forgas 1989, Aronson 2001) is present in the case of consumer preference formation for product design. In the case of models used in the research product design clearly communicates about itself: it tells about its functionality. Judgements based on looking at, touching the design of the preferred model were very close to those judgements that were made based on reading the technical information of the involved models.

Above results justify hypothesis **H1**: “characteristics of product form have an impact on product related consumer judgements”. By contrasting the applied decision frames it becomes clear that respondents remained loyal to those mobile models preferred according to product

design in other aspects of choice. It is clear from the reactions, which model was found to be the most functional. By first sight preferences and based on real technical information the “functional and classical” Nokia 6210 was found to be the most functional, utilitarian by the respondents, which justifies hypothesis **H1/a**: “The more usual, typical a given product design is, the more functional, useful it is perceived by the consumers. The more novel and unusual a given product design is, the less functional and useful it is judged in the context of choice.”

The scientific contribution of these results is that they prove that primacy effects are present in the case of product design in the context of choice. Our results show that primacy effects, - choice formation at first sight - remained determinant at other aspects of choice, in other decision frames. Contrary to previous research (Veryzer & Hutchinson, 1998; Hirschman, 1986; Bamossy et al., 1983) the present research applied real, existing products, not constructed models.

The practical implication of the results is that they prove the importance of the “first impression” in the case of marketable products with regard to their design. Our results show the power of product design in consumer choices: consumers make judgements at first sight and make inferences about the product immediately. In the case of a successful product design these anticipated inferences are similar to judgements made based on real technical product information. Preferences formed according to first impressions stay the same in several decision frames.

Applying the suggested series of decision frames (chapter 8., appendix 5.2./Q7a-h) could contribute to studying product related consumer judgements and preferences in the case of other type of products.

14.2.2. Impact of individual differences on preferences for product design

Research objects (the four mobile phone models) used in the research were all pre-selected models with “good” product design, that are clearly capable of communicating about themselves, well positioned (chapter 5.2.). The different models were found to be attractive by different groups of respondents (chapters 9.1., 9.2.). Those respondents who considered their possessions important in the expression of their personal excellence and success, who

regarded owning valuable things important preferred different models than those respondents who put less emphasis on material possessions and their expressive power.

- ?? The first group, considering material possessions and their expressive power important, preferred the model *“celebrating self expression, differentiating between clothing and style, and mobile phone and a Nokia 8210³⁴”* and the model *“which is not for only conversation, but an admiration of quality design and high technology”* Nokia 8850.
- ?? The second group, those respondents who did not consider their possessions as major signs of their personal success, preferred another model: the “classical” Nokia 6210, of which *“the ergonomic design tells, that its lines and perfect size ensures convenience and functionality.”*

These results prove hypothesis **H2a/1** that “consumers who attribute greater importance to their own possessions give more emphasis to the expressive and communicative characteristics of preferred products in their choices.” Results of the research showed that models more fancy, spectacular in their appearance, not only functional but luxurious models: *“more than telephone...”*, *“not only for conversation”* were preferred by the more materialist respondents, those who more tended to express their own personal excellence through material possessions.

Those respondents who were less materialist (Hofmeister & Neulinger, 2001) preferred, more simple, “puritan”, classical models like the Nokia 6210 which justifies hypothesis **H2a/2** that “those consumer who attach less importance to their material possessions consider the experiential, hedonic aspects decisive.”

Scientifically, these results prove that the “materialism” construct (Richins, 1992) is also applicable in another cultural context, like the situation in Hungary. As a result of the complete adaptation of the scale (word-for-word translation) it would be possible to conduct comparative, cross cultural analyses in the future. Our results also prove that consumer materialism, importance attached to products by consumers can be a relevant base for segmentation.

The results are notable for the corporate practice. As they prove that there is a distinct relationship between personal attitudes towards products and consumer preferences for

design, companies have the opportunity to segment their market according to consumers orientation towards their possessions and position their products by their product design.

We can assume that the above relation is present in the case of other products as well: different messages conveyed by different product designs are preferred by different groups of consumers. An economic implication of our results is, that products with the same technical value can be positioned differently with different consumer groups by their design.

14.2.3. Impact of product design on product related consumer judgements

Our research results show that product design indeed communicates about itself and reflects the message of the designer in product related consumer judgements (chapter 9.4.). Positioned as *“classical and functional”* Nokia 6210 was perceived to be the most useful, the model celebrating *“self-fulfilment, individuality, style”* (Nokia 8210) and *“elegance and high tech”* (Nokia 8850) were regarded to be the most aesthetic. Intended messages of the designer are traceable in respondents’ views about what the preferred model communicated about to their environment. Functionality is the most characteristic association in the case of the model that *“provides usage value besides aesthetics”* (Nokia 6210). The *“youthful, simple and personal”* Nokia 3310 invoked associations of good sense of aesthetics and style. The telephone created *“not only for conversation”* (Nokia 8850) was most characteristically associated expressing its owners favourable financial situation. The model *“celebrating the harmony of colour and style, youth and self-expression”* (Nokia 8210) was attributed to be of quality design.

Th results confirm hypothesis **H1/a** as respondents regarded Nokia 6210 the most useful. The results also justify hypothesis **H1/b** – “The more novel, unusual a given product design is, the more important its aesthetic and hedonic features are considered. On the contrary, in the case of very usual, typical designs consumers regard aesthetic and hedonic values less important.” It is clear that Nokia 8850 and 8210 were considered the most aesthetic, hedonic, which can be described by their spectacular and fancy design, not by their functionality, while aesthetic judgements of Nokia 6210 were the lowest.

³⁴ quotations in italics are descriptions of the Nokia company, source: www.nokia.hu

H1/c hypothesis can also be confirmed as that to all four models extraordinary expressiveness and clear messages (to both, usual and unusual forms) were attributed to. This justifies that “the more usual, typical a particular product design is, the more expressive power is attributed to it. The more novel, unusual a product design is, the more expressive power is attributed to it.”

In the evaluation of aspects of product design (functionality, nature and characteristics of form, expressiveness, user – object interaction) similar judgements were formed. Those, who preferred Nokia 6210 regarded functionality as most important; those preferring Nokia 8210 and 8850 considered the nature and characteristics of form more important. Expressiveness, so that the given model well communicates about its user to his/her environment were the most important among those who chose Nokia 8850. Finally the harmony and convenience of object-user interaction was most important for those who preferred Nokia 6210 compared to those who preferred Nokia 8210 and 8850.

Product form related consumer judgements differ as a result of differentiating product designs. Consumer evaluations of product design proves hypothesis **H1**: “In the case of those products that differ in their design, but identical in their services and value bring about different consumer judgements. Nature, characteristics of product design whether it is novel and unusual or usual, namely typical determine how much utility, aesthetic and hedonic value consumers attribute to different products”

The scientific implication of the results that they prove that the four elements of product related consumer judgements (Spangenberg et al 1997; Hirschman & Solomon, 1984) can be applied in the evaluation of product design. In the choice context responses reflect consumer expectations, in the context of usage consumer experience are reflected. The reliability of the scale is proved by the fact that in the case of “good” examples it was able to differentiate. We can assume that in the case of models that were similar in their functionality but “better” and “worse” in their designs would give even more differentiating results.

Notable practical is implication that the results show that product design affects product related consumer judgements. It is also clear that a given design character generates a definite direction of consumer judgements. Products communicating

something different about themselves are regarded differently by consumers. In design-intensive sectors it is important to trace and control that products convey their designers', producers' intended messages in consumers' product related consumer judgements, whether consumers well interpret what the given product tells to them. Adopted measurement instruments would make it possible to record product related consumer judgements for other types of products.

14.2.4. The role of design in the context of usage

Above results well proved that design plays an important role in determining consumer choices. At the same time, a comprehensive study of product design should include the role of product design in the context of product use, as *“design can wholly explored during and through use by multiple sensory experiences”* (Lissák, 1998).

Our results show that choice criteria considered at the time of purchase play an important role in Product related consumer judgements in the context of usage (chapter 10.) For those respondents who considered product design as a decisive factor at the purchase consider the characteristic of form of their mobile more important than its functionality. At the same time, those respondents who disregarded the importance of design, considered the functionality of their mobile telephones more important. Price sensitive (being concerned about the price of the telephone and service pack) evaluated the functionality and usefulness, hedonic and aesthetic value of their telephones lower.

An interesting result that the responses of the owners of Nokia 5110 and 3210 models show very slight differences, however the latter was regarded more aesthetic. The responses reflect the novelty of the Nokia 3210 model at the time of its market launch.

Further, an unsurprising result is that those respondents who were willing to repurchase their mobiles (therefore being more satisfied), were more positive about their mobiles in every aspect. This result can be explained by general consumer satisfaction rather than the quality and nature of product design.

In the context of usage the relation between judgement of functionality and differences in design – **H1/a** hypothesis – could not be proved. In the usage context one aspect of hypothesis **H1/b** could be proved: the more novel (Nokia 3210) was evaluated more aesthetic than the more usual, typical Nokia 5110 launched earlier. According to the results of the qualitative research (chapter 10.3.) hypothesis **H1/c** can be confirmed. It is also important to stress that (real) previous choice criteria determines Product related consumer judgements. This underlines hypothesis H1, that those respondents who regarded product design as crucial in the choice of their own mobile, gave a lot more emphasis to the nature of their mobile phone.

Scientific implication of the results that they record aspects of the experience of consumption and use in the case of real, everyday, ordinary consumption objects: mobile telephones. Up till now consumption research has been more focusing on extreme activities and products that are very aesthetic by their function. Our results show that the study of the consumption experience of ordinary products support theoretical suggestions. The investigation of the consumption experience has also proved by the industrial design, applied artistic perspective, which states that products can wholly be explored during their use by the users' sensory experience.

Practical implications of the results that they show that consumer satisfaction is present in product related consumer judgements: more satisfied consumers are more positive in their responses, which can play a role in the choice of a consecutive model: whether becoming loyal to a brand.

Differences of choice criteria are reflected in consumer responses, which implies that according to different choice criteria different combinations of products and services are to be offered, which can be exploited during product use.

In the context of usage consumers' "self justification" is also recorded – less satisfied consumers tend to express that "product appearance is less important", which can be explained by cognitive dissonance (Aronson, 2001) as a strategy for handling dissatisfactory choices.

14.2.5. Differences in the nature of choice and usage contexts

Structure of product related consumer judgements is similar in the two contexts: in choices and in usage (chapter 11). In both contexts consumers found utility the most important aspect. At the same time more emotional aspects show differences: aspects of aesthetic value are more important in choices and hedonic value, experiential aspects are more important during use.

Research results justify hypothesis **H3**: “Different product judgements are made in the context of choice and the context of usage. Evaluations of functionality, experience, enjoyment of use and expressive characteristics differ in the two contexts as a result of the learning process of usage. Responses given in the context of usage are more expert judgements they are more consistent.” The hypothesis is confirmed by the above results, which implies that different consumer perspectives are present in the two contexts: external aspects (e.g. appearance) are more dominant in choices, while the quality and nature of experiences is more decisive in the context of usage. H3 is also approved by the result that those consumers who owned mobile phones already at the time of the research gave more consistent and expert judgements (chapter 9.1.2., chapter 11.). For mobile owners means of responses varied in either ends of the scales, so they could decide whether a given item (value, quality) was characteristic of the chosen model of mobile telephone or not. At the same time non-owners put their evaluations in the middle of the scales indicating they did not find the item (value, quality) relevant in the case of the chosen mobile telephone.

This result has scientific implications. The results prove the approach of studying product design in both of its relevant contexts simultaneously: in choice and in usage. The results show that product design is indeed a “differentiating marketing tool” that determines attraction and attention at moment of choice, where external elements, features of product appearance, aesthetics of the product becomes decisive. Present research reflects consumers’ more external, outsider point of view in their choices. At the same product design can be “*experienced and wholly explored*” through multiple sensory experiences, therefore hedonic value, quality of use, enjoyment can only be studied from the perspective of product usage – consumption experience.

This latter approach and result also has practical implications, knowing the difference between choice and usage experiences and evaluation is a very important input for companies in the improvement and development processes of existing product designs, determination of the new directions of product design.

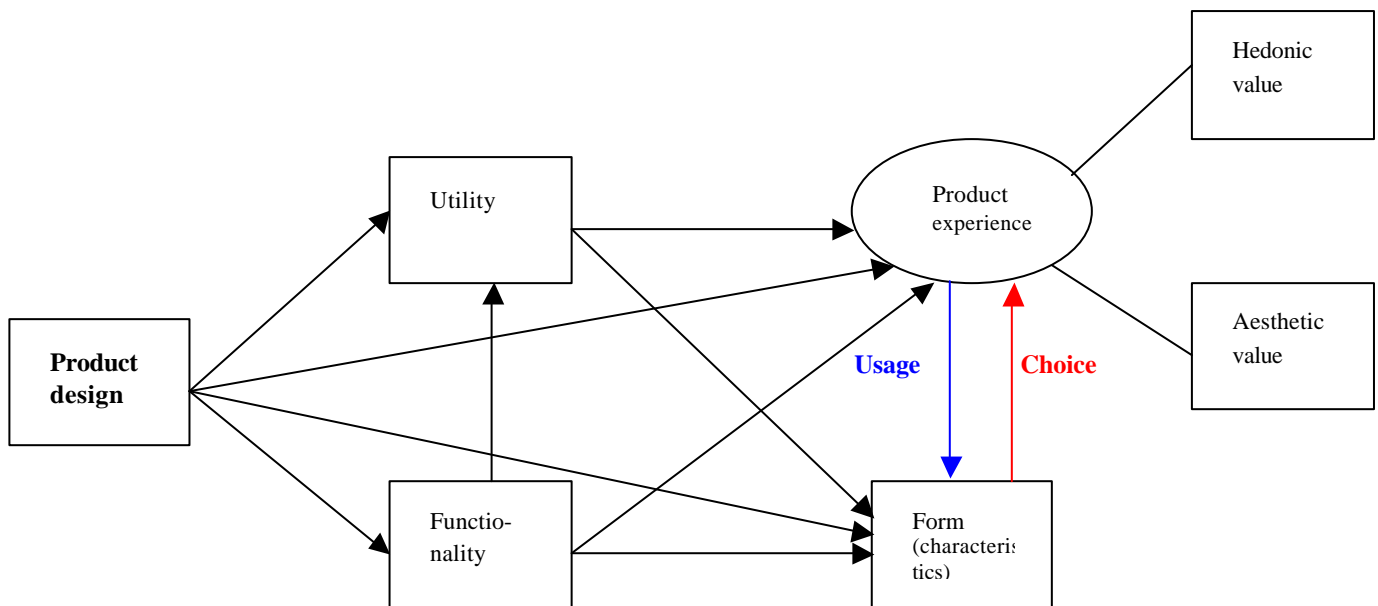
14.2.6. Product related consumer judgements

With linear structural modelling it was possible to prove that product design determines product related consumer responses (judgements of utility, aesthetic and hedonic values). The analysis also showed the existing relations (their strength and direction) among the different types of consumer responses (chapter 12.)

Bellow figure summarises the existing relations. Utility and importance of functionality determine the more emotional types of reactions: product experience (hedonic and aesthetic value) and the importance attributed to characteristics of product form.

The model reflects the different consumer point of views of the two contexts: choice and usage. While in the context of choice consumers make inferences about the product experience – hedonic and aesthetic values on the basis of the characteristics of product form, in the context of usage, product experience determines evaluations of the quality of product form. Results of the structural equation modelling justify hypothesis H3, so that consumers' experiences are reflected in evaluations of the usage context.

The scientific and practical implication of the is result that it justifies the twofold approach to product design, industrial design in marketing research. While expressive, communicative aspects of product form play a crucial rule in the context of choice, in the usage contexts those aspects of product form are important that facilitate or trouble product usage.



Quantitative and qualitative results confirm the theoretical approach and approve that product design has a determinant role in consumers' choice formation and at the same time determines consumers' usage experience:

Industrial design is not the planning of surface, but the expression of all functions through form"

Lissák (1998)

15. Relating publications

Publications

- A forma tartalma - A termékdesign sajátosságainak szerepe a termékek fogyasztói megítélésében.2.rész.* Marketing és Menedzsment, XXXV. évf., 2001., 5-6. szám, p.74-84. (co-author: Sajtos László)
- A forma tartalma - A termékdesign sajátosságainak szerepe a termékek fogyasztói megítélésében.* Marketing és Menedzsment, XXXV. évf., 2001., 4. szám, p.49-57. (co-author: Sajtos László)
- The Role of Product Design in Product Related Consumer Responses: The Case of Mobile Telephones.* In: Advances in Consumer Research, Eds.: Susan Broniarczyk & Kent Nakamoto Vol. XXIX, 2002. (co-author: Sajtos László)
- Persuasive Form. How do ordinary objects communicate about themselves and their users.* In: „Visual Persuasion” Advertising and Consumer Psychology bookseries published by Lawrence Erlbaum, 2001.
- Formahatás. Design, mint a tartós piaci siker eszköze.* Kreatív, IX. évf. 11/1., 2000. november 15.
- Ipari formatervezés, mint a tartós piaci siker eszköze. A termékforma értékelésének új szempontjai.* In: Marketing Almanach, 2000.

Conference proceedings

- Measuring Consumer Evaluation of Competing Product Designs.* 31st EMAC (European Marketing Academy) Conference, Portugal, Braga, 2002 May., (co-author: András Bauer)
- Stratégiai kihívások és válaszok a termékforma marketing szempontú vizsgálatában. A termékdesign szerepe a mobiltelefonok fogyasztói megítélésében.* In „Stratégiai kihívások és válaszok a marketingoktatásban és kutatásban” Magyar Marketing Oktatók VII. Országos konferenciájának előadásai, Gödöllo, 2001. augusztus 30-31., p. 117-126. (co-author: Sajtos László)
- Rethinking Studying the Impact of Product Design. The Role of Product Design in Product Related Consumer Responses.* 30th EMAC (European Marketing Academy) Conference, Norway, Bergen, 2001 May. (poster)
- Marketing és az ipari formatervezés kapcsolata. Fogyasztói különbségek a termékdesign minősége megítélésében.* In: Hagyomány és megújulás a magyar marketingoktatásban. A magyar marketingoktatók IV. éves konferenciájának előadásai. Pécs, 1998., p. 144-152.

Unpublished conference presentations

- Cover to cover: Judging distinct product type appearance,* International Association for Research in Economic Psychology/SABE 2001. Conference. Bath, England 2001. September 6-8., (co-author: Ronald Pieters)
- How Do Mobiles Communicate? - The Role of Product Design in Product Related Consumer Responses: The Case of Mobile Telephones,* Marketing Science Conference 2001 Wiesbaden, Germany, 2001. July 5-8., (co-author: Sajtos László)

- Persuasive Form. How do ordinary objects communicate about themselves and their users.* Society for Consumer Psychology, Advertising and Consumer Psychology Conference on Visual Persuasion. Ann Arbor, Michigan, 2000. May 18-21.
- Product Design As A Determinant Of The Consumption Experience of Everyday Objects.* 1st International Conference on Consumption and Representation – "Consuming Meanings, Consuming Markets", Plymouth, England, 1999. September 1-3.
- The Marketing and Design Interface. Differences of Visual Processing in the Attribution of Goodness of Design.* 11th EMAC (European Marketing Academy) Colloquium for Doctoral Students in Marketing, Stockholm, 1998 May.
- A design tudományos kutatásának új távlatai. Lissák György: A formáról címu könyve tükrében.* Magyar Tudományos Akadémia Marketing Bizottsága, "A forma és a marketing kapcsolatáról" címu vitaulése, (felkért hozzászólás), 1998. november 10.

16. Bibliography

- Absolut Design (1999) Budapest: Tér és Rend Kiadó Kft.
- Absolut Design (2000/1) Budapest: Tér és Rend Kiadó Kft.
- Alexander, Mary (1985). „Creative marketing and innovative consumer product design – some case studies.” *Design Studies*, Vol. 6. No. 1., January, 41-50.
- Arnheim, Rudolf (1966). „Toward a Psychology of Art.” Berkley and Los Angeles: University of California Press.
- Arnheim, Rudolf (1974): „Art and Visual Perception. A Psychology of the Creative Eye. The New Version.” Berkley, Los Angeles, London: University of California Press.
- Arnheim, Rudolf (1996), „Sketching and the Psychology of Design,” in *The Idea of Design*, Victor Margolin and Richard Buchanan ed. Cambridge, Massachusetts, London, England: The MIT Press., p. 70-74.
- Arnould, Eric J. & Linda L. Price (1993). „River Magic: Extraordinary Experience and the Extended Service Encounter.” *Journal of Consumer Research*, Vol. 20., June, 24-45.
- Aronson, Eliot (2001), *A társas lény*. KJK-KERSZÖV Jogi és Üzleti Kiadó Kft., Budapest, 12. kiadás
- Ashcraft, Daniel & Lorraine Slattery (1996). „Experiential Design. Strategy and Market Share.” *Design Management Journal* Vol. 7., No. 4., Fall, 40-45
- Babbie Earl: *A társadomtudományi kutatás gyakorlata*. Balassi Kiadó, Budapest, 1996.
- Babin, Barry J., Darden William R. & Mitch Griffin (1994). „Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value.” *Journal of Consumer Research*, Vol. 20., March, 644-656.
- Bailetti, Antonio J. - Litva, Paul F.: Integrating Customer Requirements into Product Designs. In: *Journal of Product Innovation Management*, 1995./ 12. pp. 3-15.
- Bailetti, Antonio J. & Paul F. Litva (1995). „Integrating Customer Requirements into Product Designs.” *Journal of Product Innovation Management*, 12, 3-15.
- Bak Imre: *Vizuális alkotás és alakítás, Népművelési Propaganda Iroda*.
- Balogh Jenő (1983). „Rajz a gimnázium I.-III. osztálya számára.” Budapest: Tankönyvkiadó.
- Bamossy, Gary (1985). „Aesthetic Judgment and Arts Partonage of Adolescents.” *Advances in Nonprofit Marketing*, Vol. 1. 161-206.
- Bamossy, Gary, Debra L. Scammon, and Marilyn Johnston (1983), "A Preliminary investigation of the Reliability and Validity of Aesthetic Judgement Tests," in *Advances in Consumer Research*, Vol. 10, R. Bagozzi and Tybout, eds. Ann Arbor, MI: Association for Consumer Research, 685-90.
- Barnicoat, John (1972). „Posters A Concise History.” London: Thames and Hudson.

- Baudrillard, Jean (1987), *A tárgyak rendszere*, Gondolat, Budapest.
- Bauer A. - Agárdi I, Mitev A., Kenesei Zs. (2000a). Az értékesítési rendszer iparági elemzésének lehetőségei változó környezeti hatások között, *Vezetéstudomány*, /4.sz., p. 3-8.
- Bauer A. - Berács J. Kenesei Zs, Kolos K. (2000b) A piaci pozíció tényezőinek hatása a magyar vállalatok marketingtevékenységére, *Vezetéstudomány*, 4 sz., p. 8-17.
- Bauer A. - Berács J., Kolos K. (2000c) A marketingszervezet megjelenése a magyar vállalatok körében, *Marketing és Menedzsment*, 4. sz. (megjelenés előtt)
- Bauer András – Lissák György – Horváth Dóra (2000), „A marketing és az ipari formatervezés kapcsolata - A termékdesign szerepe a piaci sikerességben”, OTKA kutatási pályázat, Budapest
- Bauer András & Berács József (1998). „Marketing.” Budapest: Aula.
- Becker György & Kaucsek György (1996) *Termékergonómia és termékpszichológia*, Tölgyfa Kiadó, Budapest.
- Beeke, Anthon (1997). „Dutch Posters 1960-1996.” Amsterdam: BIS Publishers.
- Beke László (1986). „Muallotások elemzése a gimnázium I.-III. osztálya számára.” Budapest: Tankönyvkiadó.
- Belk, Russel W. & Melanie Wallendorf (1989). „The Sacred and the Profane in Consumer Behaviour: Theodicy on the Odyssey.” *Journal of Consumer Research*, Vol. 16., June, 1-38.
- Belk, Russel W., Kenneth D. Bahn & Robert N. Mayer (1982). „Developmental Recognition of Consumption Symbolism.” *Journal of Consumer Research*, Vol. 9, June 4-17.
- Belk, Russell W. (1988). „Possessions and the Extended Self.” *Journal of Consumer Research*, Vol. 15., September, 139-168.
- Berkowitz, Marvin (1987). „Product Shape as a Design Innovation Strategy.” *Journal of Product Innovation Management*, 4, 274-283.
- Berlyne, D. E. (Ed.) (1974). „Studies in the New Experimental Aesthetics: Steps Toward an Objective Psychology of Aesthetic Appreciation.” New York – London – Sydney – Toronto: John Wiley & Sons.
- Bitner, Mary Jo (1992). „Servicescapes: The Impact of Physical Surroundings on Customers and Employees.” *Journal of Marketing*, Vol. 56., April, 57-71.
- Bloch, Peter H. (1995), “Seeking the Ideal Form: Product Design and Consumer Response,” *Journal of Marketing*, 59 (July), 16-29
- Brown, Stephen & Darach Turley (Eds.). (1997). „Consumer Research. Postcards from the edge.” London and New York: Routledge.
- Brown, Stephen (1994). „Marketing as Multiplex: Screening Postmodernism.” *European Journal of Marketing*, Vol. 28., No. 8/9, 27-51.
- Brown, Stephen (1995). „Postmodern Marketing.” London and New York: Routledge.
- Brown, Stephen (1997). „Marketing science in a postmodern world: introduction to the special issue.” *European Journal of Marketing*, Vol. 31., No. ¾, 167-182.

- Brown, Stephen (1999). „Marketing and Literature: The Anxiety of Academic Influence.” *Journal of Marketing*, Vol. 63., 1-15.
- Brown, Stephen, Marie Doherty and Bill Clarke (1998). „Romancing the Market.” London and New York: Routledge.
- Browne, Beverly A. & Dennis O. Kaldenberg (1997). „Conceptualizing Self-Monitoring: Links to Materialism and Product Involvement.” *Journal of Consumer Marketing*, Vol 14., No. 1. 31-45.
- Childers, Terry L., Michael J. Houston, and Susan E. Heckler (1985), "Measurement of Individual Differences in Visual Versus Verbal Information Processing," *Journal of Consumer Research*, 12 (September), 125-34.
- Cova, Bernard (1996), "Entrepreneurial vision: Making Enthusiasm and Opportunity Coincide into Design," *Journal of Design Management*, Vol. 7. (Fall), 32-39.
- Cova, Bernard (1997). „Community and consumption Towards a definition of the „liking value” of products or services.” *European Journal of Marketing*, Vol. 31., Issue 3-4.,
- Cova, Bernard and Christian Swanfeldt (1993), "Societal innovations and the postmodern aesthetization of everyday life," *International Journal of Research in Marketing*, (10), 297-310.
- Cox, Dena & Anthony Cox (1994). „The Effect of Arousal Seeking Tendency on Consumer Preferences for Complex Product Designs.” *Advances in Consumer Research*, Vol. 21., 554-559.
- Cranz, Galen (1998). „The Chair. Rethinking Culture, Body, and Design.” New York, London: W. W. Norton & company.
- Csikszentmihályi, Mihály (1996), “Design and Order in Everyday Life,” in *The Idea of Design*, Victor Margolin and Richard Buchanan ed. Cambridge, Massachusetts, London, England: The MIT Press,
- Csikszentmihályi, Mihály and Eugene Rochberg-Halton (1981), *The meaning of things. Domestic symbols and the self*. Cambridge. Cambridge University Press.
- Dahl, Darren W. – Amitatva Chattopadhyay – Gerald J. Gorn (1999) "The Use of Visual Imagery in New Product Design," *Journal of Marketing Research*, Vol. XXXVI. (February), p. 18-28.
- Dingena, Maria (1994). „The Creation of Meaning in Advertising. Interaction of Figurative Advertising and Individual Differences in Processing Styles.” Amsterdam: Thesis Publishers.
- Dvorszky Hedvig (Ed.) (1979). „Design. A forma művészete.” Budapest: Képzőművészeti Alap Kiadóvállalata.
- Eckman, Molly & Janet Wagner (1994). „Judging the Attractiveness of Product Design: the Effect of Visual Attributes and Consumer Characteristics.” *Advances in Consumer Research*, Vol. 21., 560-564.
- Farkas András & Gyebnár Viktória (Eds.). (1998). „A vizuális művészetek pszichológiája I.” Budapest: Nemzeti Tankönyvkiadó.
- Farkas András (Ed.). (1998). „A vizuális művészetek pszichológiája 2.” Budapest: Nemzeti Tankönyvkiadó.

- Faste, Rolf (1997). „A Visual Essay on Invention and Innovation.” *Design Management Journal*, Vol. 8. Spring # 9562FAS09.
- Fiell, Charlotte & Peter Fiell (1997). „1000 chairs.” Köln – Lisboa – London – New York – Paris – Tokyo: Taschen.
- Firat, A. Fuat - Nikhilesh, Dholakia - Venkatesh, Alladi (1995), "Marketing in a postmodern world," *European Journal of Marketing*, Vol. 29. (1), pp 40-56.
- Firat, A. Fuat - Venkatesh, Alladi (1995), "Liberatory Postmodernism and the Reenchantment of Consumption." *Journal of Consumer Research*. Vol. 22., December 1995. pp. 239-267.
- Firat, A. Fuat & Clifford J. Shultz II (1997). „From segmentation to fragmentation. Markets and marketing strategy in the postmodern era.” *European Journal of Marketing*, Vol. 31., No. 3/4, 183-207.
- Firat, A. Fuat and Alladi Venkatesh (1993), “Postmodernity: The age of marketing,” *International Journal of Research in Marketing*, (10), 227-249.
- Firat, A. Fuat, John F. Sherry Jr. & Alladi Venkatesh (1994). „Postmodernism, marketing and the consumer” *International Journal of Marketing Research*, 11, 311-316.
- Fisher Gardial, Sarah; D. Scott Clemons; David W. Schumann; Mary Jane Burns; Robert B. Woodruff (1994). „Comparing Consumers’ Recall of Prepurchase and Postpurchase Product Evaluation Experiences.” *Journal of Consumer Research*, Vol. 20., March, p. 548-561.
- Forgas, Joseph P. (1989) *A társas érintkezés pszichológiája*. Gondolat, Budapest.
- Forrai Gábor & Szegedi Péter (Eds.). (1999). „Tudományfilozófia. Szöveggyűjtemény.” Budapest: Áron Kiadó.
- Frascara, Jorge (1996), “Graphic Design: Fine Art or Social Science?,” in *The Idea of Design*, Victor Margolin and Richard Buchanan ed. Cambridge, Massachusetts, London, England: The MIT Press., p. 44-55.
- Glynn, Simon (1985). „Science and Perception as Design.” *Design Studies*, Vol. 6. No. 3., July, 122-126.
- Gould, Stephen J. (1990). „Style of Information Processing Differences in Relation to Products, Shopping and Self-Consciousness.” *Advances in Consumer Research*, Vol. 17., 455-460.
- Gould, Stephen J. (1991). „The Self-Manipulation of My Pervasive, Perceived Vital Energy through Product Use: An Introspective-Praxis Perspective.” *Journal of Consumer Research*, Vol. 18., September, 194-207.
- Gregory, Richard L(1973). „Az értelmes szem.” Gondolat, Budapest.
- Grönroos, Christian (1994). „From Marketing Mix to Relationship Marketing: Towards a Paradigm Shift in Marketing” *Management Decision*, Vol. 32 No. 2, pp. 4-20.
- Halász László (Ed.). (1973). „Művészetpszichológia.” Budapest: Gondolat Könyvkiadó.
- Heckler Susan E. & Terry L. Childers (1992). „The Role of Expectancy and Relevancy in Memory for Verbal and Visual Information: What Is Incongruity?” *Journal of Consumer Research*, Vol. 18., March, 475-492.

- Hegedus József (1992), "Design-stratégiák és a marketing-tevékenység összekapcsolása" *Marketing* (2-3.), pp.91-95.
- Hegedus József (1994), "Az ipari formatervezés megváltozott hatásterületei," *Marketing* (3), pp. 195-219.
- Hegedus József (1998). „Az értékelemzés és a marketing találkozási pontjai II.” In: Hagyomány és megújulás a magyar marketingoktatásban. A magyar marketingoktatók IV. éves konferenciájának eloadásai. Pécs, 1998., p. 136-143.
- Henderson, Pamela W. - Joseph A. Cote (1996), "Designing Positively Evaluated Logos," in *Marketing Science Institute - Report Summary # 96-123*.
- Henderson, Pamela W. Joseph A. Cote (1998), "Guidelines for Selecting or Modifying Logos," *Journal of Marketing*, Vol. 62 (April), p 14-30.
- Hernádi Miklós (1982). „Tárgyak a társadalomban” Budapest: Kozmosz Könyvek.
- Hirschman, Elizabeth (1986), "The Effect of Verbal and Pictorial Advertising Stimuli on Aesthetic, Utilitarian and Familiarity Perceptions," *Journal of Advertising*, 15 (2), 27-34.
- Hirschman, Elizabeth C. & Morris B. Holbrook (1982). „Hedonic Consumption: Emerging Concepts, Methods and Propositions.” *Journal of Marketing*, Vol 46. Summer, 92-101.
- Hirschman, Elizabeth C. (1983). „Aesthetics, Ideologies and the Limits of the Marketing Concept.” *Journal of Marketing*, Summer, 45-55.
- Hirschman, E. C. & Solomon, M. R. (1984). “Utilitarian, Aesthetic, and Familiarity Responses to Verbal Versus Visual Advertisements”. *Advances in Consumer Research*, Volume 11, 426-431.
- Hoffmeister Tóth Ágnes & Töröcsik Mária (1997). „Fogyasztói magatartás.” Budapest: Aula.
- Hofmeister Tóth Ágnes & Neulinger Ágnes (2001). „Mennyire Materialisták a magyar fogyasztók?” In: „Stratégiai kihívások és válaszok a marketingoktatásban és kutatásban” A Magyar Marketing Oktatók VII. Országos Konferenciájának eloadásai, Gödöllo, p. 137-144.
- Holbrook, Morris „The Cat” (1997). „Feline consumption. Ethography, felologies and unobtrusive participation in the life of a cat.” *European Journal of Marketing*, Vol. 31., No. ¾, 214-233.
- Holbrook, Morris B. & Elizabeth C. Hirschman (1982). „The Experiential Aspects of Consumption: Consumer Fantasies, Feelings and Fun.” *Journal of Consumer Research*, Vol. 9., September, 132-140.
- Holbrook, Morris B. & Robert M. Schindler (1994) „Age, Sex, Attitude Toward the Past as Predictor of Consumers’ Aesthetic Tastes for Cultural Products” *Journal of Marketing Research*, Vol. 31, No. 3., 412-423.
- Holbrook, Morris B. & Zirlin, Robert B. (1985). „Artistic Creation, Artworks, and Aesthetic Appreciation: Some Philosophical Contributions to Nonprofit Marketing.” *Advances in Nonprofit Marketing*, Vol. 1., 1-54.
- Holbrook, Morris B. (1986), "Aims, Concepts, and Methods for the Representation of Individual Differences in Esthetic Responses to Design Features," *Journal of Consumer Research*, Vol. 13 (December), 337-347.

- Holbrook, Morris B. (1986). „Aims, Concepts, and Methods for the Representation of Individual Differences in Esthetic Responses to Design Features.” *Journal of Consumer Research*, Vol. 13., December, 337-347.
- Holbrook, Morris B. (1993). „Nostalgia and Consumption Preferences: Some Emerging Patterns of Consumer Tastes, *Journal of Consumer Research*, Vol. 20., September, 245-256.
- Holbrook, Morris B. (1995). „Consumer Research. Introspective Essays on the Study of Consumption.” Thousand Oaks – London – New Delhi: Sage Publications.
- Holbrook, Morris B. (1999). „Popular Appeal versus Expert Judgements of Motion Pictures” *Journal of Consumer Research*, Vol. 26., September, 144-
- Holbrook, Morris B., Robert W. Chestnut, Terence A. Oliva & Eric A. Greenleaf (1984). „Play as a Consumption Experience: The Roles of Emotions, Performance, and Personality in the Enjoyment of Games.” *Journal of Consumer Research*, Vol. 11., September, 728-739.
- Hollis Richard (1994). „Graphic Design A Concise History.” London: Thames and Hudson.
- Holt, Douglas B. (1995). „How Consumers Consume: a Typology of Consumption Practices.” *Journal of Consumer Research*, Vol. 16, June, 1-16.
- Horváth Dóra (1998). „Vizuális és / vagy verbális információfeldolgozás? Egy skála adaptációja és előzetes tesztje.” *Kvantitatív kutatási technikák, szigorlati dolgozat.* Budapesti Közgazdaságtudományi Egyetem, Marketing Tanszék.
- Huff Endre Béla (1993), "Az ipari formatervezés diszciplináris kérdései," *Ipari formatervezési konferencia kiadványa* 1993, p. 188-200.
- Hunt, Shelby D.: On Rethinking Marketing: Our discipline, Our Practice, Our Methods. In: *European Journal of Marketing*, Vol. 28. No.3, 1994, pp. 13-25.
- Hutchinson, J. Wesley & Joseph W. Alba (1991). „Ignoring Irrelevant Information: Situational Determinants of Consumer Learning.” *Journal of Consumer Research*, Vol. 18., December, 325-345.
- Iparifoma tervezés. A design, a vizuális kultúra és a muszaki fejlesztés összefüggéseinek elemzése.* (1991) Országos Muszaki Fejlesztési Bizottság Ipari Formatervezési és Ergonómiai Tanács Irodája, Budapest
- Itten, Johannes (1987). „A színek művészete.” Budapest: Göncöl Kiadó.
- Jobson, J.D (1992). *Applied Multivariate Data Analysis. Volume II: Categorical and Multivariate Methods.* New York, Berlin, Budapest: Springer – Verlag.
- Jones, J. Christopher (1980), *Design Methods*, John & Sons, London.
- Kälviäinen, Mirja (1999). „Reflections of Consumer Taste in the Design Process.” working paper, 1st International Conference on Consumption and Representation, Plymouth, UK, 1-3 September.
- Kepes György: *A látás nyelve.* Budapest, Gondolat Kiadó, 1979.
- Kleine, Robert E. III & Jerome B. Kerman (1988). „Measuring the Meaning fo Consumption Objects: An Empirical Investigation.” *Advances in Consumer Reseach*, Vol. 15., 498-504.

- Kleine, Robert E. III & Jerome B. Kerman (1991). „Contextual Influences on the Meanings Ascribed to Ordinary Consumption Objects.” *Journal of Consumer Research*, Vol. 18., December, 311-324.
- Kotler, Philip & Gary Armstrong (1996). „Principles of Marketing.” Englewood Cliffs, New Jersey: Prentice Hall.
- Krampen, Martin (1996), “Semiotics in Architecture and Industrial/Product Design,” in *The Idea of Design*, Victor Margolin and Richard Buchanan ed. Cambridge, Massachusetts, London, England: The MIT Press, p. 89-103.
- Krippendorf, Klaus (1995). „A tartalomelemzés módszertanának alapjai.” Budapest: Balassi Kiadó.
- Krippendorf, Klaus (1996), “On the Essential Contexts of Artefacts or on the Proposition that “Design Is Making Sense (of Things)”, in *The Idea of Design*, Victor Margolin and Richard Buchanan ed. Cambridge, Massachusetts, London, England: The MIT Press, p. 156-184.
- Kristensen, Tore (1997). „Design for the Quality of Life.” *Scandinavian Journal of Design*, Vol 7., 1-13.
- Lantos Ferenc (1994). „Képekben a világ.” Budapest: Nemzeti Tankönyvkiadó.
- Lélek és forma. Magyar művészet 1896-1914. Budapest: A Magyar Nemzeti Galéria Kiadványai 1986/2.
- Lénárd Ferenc (Ed.). (1984). „Alkalmazott pszichológia” Budapest: Gondolat.
- Lensveld, Jim (1996). „- Harley-Davidson – Az amerikai legenda.” Budapest: GABO Kft.
- Levy, R. (1985). „Science, technology and design.” *Design Studies*, Vol. 6. No. 2., April, 66-72.
- Levy, Sidney J. (1981). „Interpreting Consumer Mythology: A Structural Approach to Consumer Behaviour.” *Journal of Marketing*, Vol. 45., Summer, 49-61.
- Levy, Sidney J. (1996). „The Stalking Amphisbeana.” *Journal of Consumer Research*, Vol. 23., December, 163-176.
- Lissák György (1990), "A design új dimenziói," *Marketing (5-6)*., pp. 277-279.
- Lissák György (1995), "Esz­tétika: Arculattervezés a vizuális felidézés tükrében," *Iminfo Arculati Szakmák Kézikönyve*, Iminfo Kiadó.
- Lissák György (1998), *A formáról*, Láng Kiadó és Holding Rt., Budapest.
- Loken, Barbara – James Ward (1990), "Alternative Approaches to Understanding the Determinants of Typicality," *Journal of Consumer Research*, Vol. 17. (September), p. 111-126.
- Macel, Otakar (1990). „Avant-garde Design and the Law: Litigation over teh Cantiliever Chair.” *Journal of Design History*, Vol. 3., Nos. 2-3., 125-143.
- Malhotra, Naresh K. (2001), *Marketingkutató*, Muszaki Könyvkiadó, Budapest.
- Mano, Haim & Richard L. Oliver (1993). „Assessing the Dimensionality and Structure of the Consumption Experience: Evaluation, Feeling and Satisfaction.” *Journal of Consumer Research*, Vol. 20., December, 451-466.

- Margolin, Victor and Richard Buchanan ed. (1996), *The Idea of Design*, Cambridge, Massachusetts, London, England: The MIT Press.
- McDermott, Catherine (1999). „Desigmuseum. „20th Design” London: Carlton.
- McKenna, Regis: Real-Time Marketing. In: Harvard Business Review, July-August 1995, pp. 87-95.
- Mead, A.: Review of the development of multidimensional scaling methods. In: The Statistician (1992) 41, pp. 27-39.
- Meszéna György (1996): Kvantitatív kutatási technikák. Óravázlatok.
- Meyers-Levy, Joan & Alice M. Tybout (1989). „Schema Congruity as a basis for product evaluation.” Journal of Consumer Research, Vol. 16., June, 39-55.
- Mick, David Glen (1986). „Consumer Research and Semiotics: Exploring the Morphology of Signs, Symbols and Significance.” Journal of Consumer Research, Vol. 13., September, 196-213.
- Mick, David Glen (1996). „Are Studies of Dark Side Variables Confounded by Socially Desirable Responding? The Case of Materialism.” Journal of Consumer Research, Vol. 23. No. 2., September, 106-120.
- Moholy-Nagy László (1941, 1961). „látás mozgásban” Budapest: Mucsarnok – Intermédia, 1996.
- Moles, Abraham A. (1996). „A giccs, a boldogság művészete.” Budapest: Háttér Kiadó.
- Móricz Éva (1992). „Attitud, az önkéntes szemellenzo.” Marketing, 1992 / 1.
- Móricz Éva (1999). „Reklámpszichológia.” Budapest: Budapesti Közgazdaságtudományi Egyetem, Marketing Tanszék, Marketingkommunikáció Alapítvány.
- Murken-Altrogge, Christa (1991). „Coca-Cola art. Konsum Kult Kunst.” München: Klinkhardt & Biermann.
- Nádasi Katalin (2000), „Szükséglet vagy szórakozás? avagy Hogyan érzékelik a hallgatók a mobiltelefonokat? – skálafejlesztési esettanulmány”, Szigorlati sokváltozós statisztikai esettanulmány, Budapesti Közgazdaságtudományi és Államigazgatási Egyetem, Marketing Tanszék
- Oakley, Mark: Managing Product Design. Weidenfeld and Nicolson, London, 1984.
- Oliver, Richard L. (1993). „Cognitive, Affective, and Attribute Bases of the Satisfaction Response.” Journal of Consumer Research, Vol. 20., December, 418-430.
- Overy, Paul (1991). „Carpentering the Classic: A Very Peculiar Practice. The Furniture of Gerrit Rietveld.” Journal of Design History, Vol 4., No., 3., 135-166.
- Papanek, Victor (1971), *Design for the Real World. Human Ecology and Social Change*. New York: Pantheon Books, A Division of Random House.
- Pelly, Chuck (1996). „Creative Consciousness: Designing the Driving Experience.” Design Management Journal Vol. 7., No. 4., Fall, 51-54.
- Peters, Tom (1997). „DESIGN IS...” Design Management Journal, Vol. 8. Spring # 9561PET29.

- Peterson, Robert A.: A Meta-analysis of Cronbach's coefficient Alpha. In: Journal of Consumer Research, Vol. 21, September 1994, pp. 381-391.
- Petho Bertalan (Ed.). (1997). „poszt-posztmodern. A kilencvenes évek. Vélemények és filozófiai vizsgálódások korszakváltásunk ügyében.” Budapest: Platon.
- Pile, John: Furniture. Modern + Postmodern. John Wiley & Sons, Inc. New York, Chichester, Brisbane, Toronto, Singapore. 1990.
- Price, Linda L. & Nancy M. Ridgway (1983). „Development of a Scale to Measure Use Innovativeness.” Advances in Consumer Research, Vol. 10., 679-684.
- Punj, Girish and David W. Stewart: Cluster Analysis in Marketing Research: Review and Suggestions for Application. In: Journal of Marketing Research, vol. XX. (May 1983), pp. 134-148.
- Pye, David (1978), *The Nature and Aesthetics of Design*. New York: Van Nostrand.
- Rafferty, Tod (1993). „Harley-Davidson. A Motorok Királya.” Budapest – Los Angeles: JLX Kiadó.
- Rassam, Clive (1995), *Design and Corporate Success*. Gower, The Design Council.
- Reketttye Gábor (1999). *Értékkeremtés a marketingben: Termékek piacvezérelt tervezése, fejlesztése és menedzselése*. Közgazdasági és Jogi Kiadó, Budapest., 2. kiadás.
- Richins, Marsha L.(1994a), "Special Possessions and the Expression of Material Values," Journal of Consumer Research, Vol. 21 (December), 522-533.
- Richins, Marsha L.(1994b), "Valuing Things: The Public and Private Meanings of Possessions," Journal of Consumer Research, Vol. 21 (December), 504-521.
- Richins, Marsha L., Scott Dawson (1992), "A Consumer Values Orientation for Materialism and Its Measurement: Scale Development and Validation," Journal of Consumer Research, Vol. 19 (December), 303-316.
- Sándor Imre (1997). „A marketingkommunikáció kézikönyve.” Budapest: Budapesti Közgazdaságtudományi Egyetem, Marketing Tanszék, Marketingkommunikáció Alapítvány.
- Schmitt, Bernd & Alex Simonson (1997). „Marketing Aesthetics.” New York – London – Toronto – Sydney – Singapore: The Free Press.
- Schultz Kleine, Susan, Robert E. Kleine III & Chris T. Allen (1995). „How Is a Possession „Me” or „Not Me”? Characterizing Types and an Antecedent of Material Possession Attachment.” Journal of Consumer Research, Vol. 22., December, 327-343.
- Slézia József (1993). „Designelméleti törekvések a hetvenes és nyolcvanas években.” *Ipari formatervezési konferencia kiadványa* p. 456-466.
- Solomon, Michael R. (1983). „The Role of Products as Social Stimuli: A Symbolic Interactionism Perspective.” Journal of Consumer Research, Vol. 10., December, 319-329.
- Souder, Wm. E. - Song, Michael X.: Contingent Product Design and Marketing Strategies Influencing New Product Success and Failure in U.S. and Japanese Electronic Firms. In: Journal of Product Innovation Management, 1997/ 14 pp. 21-34.

- Spangenberg, Eric R., Kevin E. Voss & Ayn E. Crowley (1997). „Measuring Hedonic and Utilitarian Dimensions of Attitude: A Generally Acceptable Scale.” *Advances in Consumer Research*, Vol. 24., 235-241.
- Stanfield, Peter (1992). „Heritage Design: the Harley Davidson Motor Company.” *Journal of Design History*, Vol. 5., No. 2., 141-155.
- Stangos, Nikos (Ed.) (1994). „Concepts of Modern Art. From Fauvism to Postmodernism.” London: Thames and Hudson.
- Statistics Guide (SPSS kézikönyv), 8., 9. Fejezet, B - 155 - 184.
- Stern, Philip (1999). „Perception and Behaviour: the Role of Usage” *Work in Progress, EMAC Proceedings*, Berlin, 1999 May.
- Stokmans, M. J. W. (1991). „The Relative Importance of Product Attributes.” *Consumer decision theories in new-product development*, Doctoral Dissertation, Technische Universiteit Delft.
- Strahilevitz, Michal A. & George Loewenstein (1998). „The Effect of Ownership History on the Valuation of Objects.” *Journal of Consumer Research*, Vol. 25 No. 3., December p276-
- Szociálpszichológia európai szemszögbol. Szerk.: Miles Hewstone, Wolfgang Stroebe, Jean-Paul Codol, Geoffrey M. Stephenson. Közgazdasági és Jogi Könyvkiadó, 2. kiadás, 1997.
- The World's Best Products. *Business Week*, European Edition, June 2. 38-53.
- Thomas, Michael J.: *Marketing in Chaos or Transition?* In: *European Journal of Marketing*, Vol. 28. No.3, 1994, pp. 55-62.
- Tomcsányi Pál (1991) „A marketing és az értékelés”, *Értékelési Szemle*, 6. 1991. 2., p. 11-18.
- Umiker-Sebeok, Jean (Ed.) (1987). „Marketing & Semiotic s. New Directions in the Study of Signs for Sale.” Berlin – New York – Amsterdam: Mouton de Gruyter.
- Vágási Mária (1996). „Terméktervezés és marketingkutatás” *Tudományos kutatás – Marketing, Marketing Oktatók II. éves konferenciája*, Szolnok, szeptember 5-6.
- van Raaij, W. Fred (1993). „Postmodern Consumption.” paper presented at the conference of the Association for Consumer Research, Amsterdam, June 13, 1992.
- Veryzer, Robert Jr. (1998). „Key Factors Affecting Customer Evaluation of Discontinuous New Products.” *Journal of Product Innovation Management*, 15, 136-150.
- Veryzer, Robert W. – Wesley Hutchinson (1998), "The Influence of Unity and Prototypicality on Aesthetic Responses to New Product Designs," *Journal of Consumer Research*, Vol. 24. (March), p. 374-393.
- Veryzer, Robert W. (1993), "Aesthetic Response and the Influence of Design Principles on Product Preferences," in *Advances in Consumer Research*, Vol. 20, Leigh McAllister and Michael Rothschild, eds. Provo, UT: Association for Consumer Research 224/31.
- Veryzer, Robert W. (1997) „Measuring Consumer Perceptions in the Product Development Process” *Design Management Journal*, Vol. 8. Spring # 9782VER66
- Vihma, Susann (1995). „Products as Representations. A semiotic and aesthetic study of design products.” Helsinki: University of Art and Design Helsinki UIAH.

Ward, James & Barbara Loken (1988). „The Generality of Typicality Effects on Preference and Comparison: An Exploratory Test.” *Advances in Consumer Research*, Vol. 15., 55-61.

Wikström, Solveig (1995). „The customer as co-producer.” *Journal of European Marketing*, Vol. 30., No. 3., 6-19.

Yamamoto, Mel - Lambert, David R.(1994) The Impact of Product Aesthetics on the Evaluation of Industrial Products. In: *Journal of Product Innovation Management* (11), pp. 309-324.

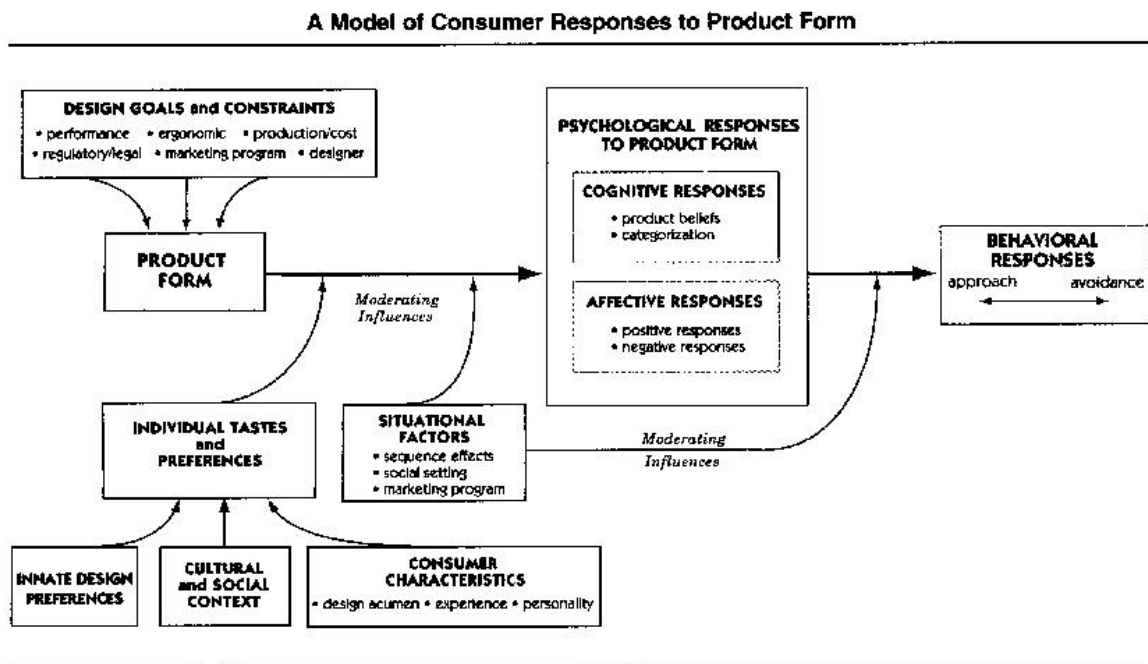
Zalavári József: A forma szerkezeti és funkcionális modellje; A formatervezés elméleti kérdései. Kézirat, Moholy-Nagy László Ösztöndíj, 1989-91.

Appendix

Appendix

<u>Appendix 2.1.</u> - Relating conceptual model of Bloch (1995)	185
<u>Appendix 4.1.</u> – Uncompleted sentences applied in the exploratory research	186
<u>Appendix 4.3.</u> Test of the HED/UT and „product aesthetics” scales	188
<u>Appendix 5.1.</u> – Design philosophy of Nokia	190
<u>Appendix 5.2.</u> – Applied questionnaire	191
<u>Appendix 6.1.</u> – Differences in “materialist and not materialist orientation” with respect to age	204
<u>Appendix 6.2.</u> – Differences in “materialist and not materialist orientation” with respect to year of studies	206
<u>Appendix 6.3.</u> – Differences in “materialist and not materialist orientation” with respect to employment	208
<u>Appendix 8.1.</u> – Choices made upon functionality and at first sight	210
<u>Appendix 8.2.</u> Willingness to make purchases and design preferences	211
<u>Appendix 9.1.</u> – Differences in “materialist and not materialist orientation” with respect to preferences for design	213
<u>Appendix 9.2.</u> – Differences in product judgements with respect to the fact of owning or not owning a mobile telephone	215
<u>Appendix 9.3.</u> – Differences in evaluations of product design with respect to the fact of owning or not owning a mobile telephone	216
<u>Appendix 10.1.</u> – Participants’ mobile phones and types	217
<u>Appendix 10.2.</u> – Differences in product judgements in the context of usage with respect to the ownership of mobile telephones Nokia 5110 and Nokia 3210	218

Appendix 2.1. - Relating conceptual model of Bloch (1995)



Appendix 4.1. – Uncompleted sentences applied in the exploratory research

Please complete the following sentences: version 1.

Somebody who has a mobile phone is like

A mobile telephone is unnecessary if.....

A mobile telephone can tell about its user that.....

It is enjoyable about a mobile telephone that.....

A mobile phone is useful, practical because.....

Someone without a mobile phone is like

A mobile phone “dresses” its user by.....

A mobile telephone can be entertaining because.....

The connection between a mobile telephone and its user can be best described by the comparison.

Characteristic of a typical mobile phone is that

Personal data:

Do you own a mobile phone?

- yes; type, model:
- its most important characteristic:

- no

What kind of mobile phone could you imagine for yourself?

.....
.....

Gender: • male • female

Hobby:.....

Planned major of studies:

Please complete the following sentences: **version 2.**

A person who has a mobile phone is like

.....

Someone without a mobile phone is like

.....

The mobile phone is so important for me as

.....

A mobile phone can tell about its user that

.....

The future mobile telephone will be like

.....

A mobile phone is attractive, because

.....

A mobile phone "dresses" its user by

.....

A mobile phone is entertaining because

.....

Major characteristics of a typical mobile phone

.....

Personal data:

Do you own a mobile phone?

- yes; type, model:
- its most important characteristic:

- no

What kind of mobile phone could you imagine for yourself?

.....

.....

Gender: • male • female

Hobby:.....

Planned major of studies:

Appendix 4.3. Test of the HED/UT and „product aesthetics” scales

1. faktor „élvezeti érték”	2. faktor „esztétikai érték”	3. faktor „hatékonyaság”	4. faktor „praktikusság
Hed12 -Szórakoztató-monoton (0,723)	Aest5 -Tetszik-nem tetszik (0,754)	Ut7 -Hatékony-hátráltató (0,733)	Ut2 -Célszerű-célszerűtlen (0,879)
Hed10 -Élvezetes-unalmas (0,701)	Aest1 -Vonzó-taszító (0,735)	Ut12 -Problémamegoldó- problémát okozó (0,709)	Ut1 -Hasznos-haszontalan (0,707)
Hed7 -Érdektelen-izgalmas (0,689)	Hed11 -Felvidfító-lehangoló (0,562)	Ut11 -Eredménytelen- eredményes (0,678)	Ut4 -Funkcionális- hasznavehetetlen (0,649)
Aest3 -Izgató-álmosító (0,681)	Aest2 -Kívánatos-ellenszenves (0,522)	Hed4 -Jó dolog-nem jó dolog (0,535)	
Hed1 -Egyhangú-érdekfeszítő (0,549)	Hed2 -Szokványos-elragadó (- 0,430)	Ut3 -Nélkülözhetetlen szükségtelen(0,410)	
Hed6 -Lehangoló-mulatságos (0,499)			

Factor 1.: “Hedonic value”

Item-total Statistics

Scale	Scale Mean if Item Deleted	Corrected Variance if Item Deleted	Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
HED12	18,4699	17,6680	,7052	,5830	,7694
HED10	18,4863	17,7567	,7299	,5965	,7655
HED7	18,3169	17,5583	,6340	,4184	,7840
AES3	18,0710	19,9015	,4287	,1970	,8266
HED1	17,9945	17,6099	,5675	,3356	,8008
HED6	18,2240	20,0429	,4968	,2682	,8120

Reliability Coefficients 6 varibales:

Alpha = ,8223 Standardized item alpha = ,8244

Az „izgató-álmosító” jelzo-pár kivétele a faktorból minimálisan javíthatja a skála megbízhatóságát: $0,8266 > 0,8223$

2. Faktor: „Esztétikai érték”

Item-total Statistics

Scale	Scale Mean if Item Deleted	Corrected Variance if Item Deleted	Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
AES5	14,2065	8,7768	,6014	,4960	,3564
AES1	13,3207	8,8201	,6323	,4831	,3413
HED11	13,4130	11,5990	,4431	,2438	,4888
AES2	13,3533	8,7652	,5631	,4713	,3782
HED2	13,7065	17,4981	-,3226	,1108	,8083

Reliability Coefficients 5 variables

Alpha = ,5828 Standardized item alpha = ,5628

A megbízhatósági együtttható jóval a marketingkutatásban előírt 0,71 alatt van. Az alacsony alfa egyértelműen a HED2 változóból fakad, ha kiemeljük, akkor a skála megbízhatósági együttthatója 0,8083-ra emelkedne, ami nagymértékű javulás lenne és a skálát elfogadhatóvá tenné. A kiemelés után a megbízhatósági együttthatók a következők:

Item-total Statistics					
Scale	Scale Mean if Item Deleted	Corrected Variance if Item Deleted	Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
AES5	10,8703	9,8526	,6961	,4920	,7342
AES1	9,9892	10,0325	,7018	,4926	,7316
HED11	10,0811	13,1836	,4902	,2561	,8263
AES2	10,0216	9,7387	,6648	,4705	,7518
Reliability Coefficients 4 variables					
Alpha = ,8136		Standardized item alpha = ,8118			

A „felvidítő-lehangoló” skálatétel kivételével még tovább javíthatjuk a skála megbízhatóságát, igaz csak csekély mértékben $0,8263 > 0,8136$

3. Faktor: „Hatékonyság”

Item-total Statistics					
Scale	Scale Mean if Item Deleted	Corrected Variance if Item Deleted	Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
UT7	9,8919	10,6404	,5909	,3599	,6473
UT12	9,6541	9,8471	,4676	,2679	,6771
UT11	9,3027	9,5166	,4661	,2705	,6795
HED4	9,6541	9,0101	,6143	,3907	,6145
UT3	8,6973	10,7774	,3182	,1683	,7364
Reliability Coefficients 5 variables					
Alpha = ,7198		Standardized item alpha = ,7327			

A „nélkülözhetetlen-szükségtelen” jelzo-pár kivételével minimálisan javítható a skála megbízhatósága: $0,7364 > 0,7198$

4. Faktor: „Praktikusság”

Item-total Statistics					
Scale	Scale Mean if Item Deleted	Corrected Variance if Item Deleted	Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
UT2	3,5080	2,1330	,5473	,3401	,3094
UT1	3,5775	2,8582	,4640	,2966	,4651
UT4	3,5668	3,1931	,2844	,0937	,6968
Reliability Coefficients 3 variables					
Alpha = ,6142		Standardized item alpha = ,6118			

Bár a Cronbach alfa értéke viszonylag alacsony, a faktor tartalmilag fontos.

Appendix 5.1. – Design philosophy of Nokia

Appendix 5.2. – Applied questionnaire

Consumer Evaluation of Product Design

Instructions to the respondents:

Kedves Megkérdezett!

Az alábbi kérdőív témája a design. Nincs jó és rossz válasz. Kutatásunk célja annak feltárása, hogy az egyes termékek designja milyen szerepet tölt be az emberek életében, miben látják annak fontosságát, mit jelent számukra. Milyen személyes jellemzők vannak hatással a design megítélésére.

Válaszaiddal Horváth Dóra Ph.D. kutatásához járulsz hozzá, kérünk tehát, hogy a kérdőívben szereplő egyes kérdéseket legjobb tudásod és saját meggyőződésed szerint válaszold meg. A válaszadás önkéntes.

Budapest, 2000. december 6.

Q1. What comes to your mind / what do you associate when you hear the word, (industrial) design?

.....

.....

.....

.....

Q2. Bellow you can read a list of statements relating to the importance we can attribute to things, objects, possessions that surround us. Please consider to what extent you agree with these statements. If for example you completely disagree with the statement „The things I own say a lot about how well I’m doing in life.” circle the number „1”, if you completely agree with it circle number „5”.

	Completely disagree	Disagree	Neither disagree nor agree	Agree	Completely agree	NT/ NV
I like to own things that impress people.	1	2	3	4	5	9
Some of the most important achievements in life include acquiring material possessions.	1	2	3	4	5	9
I usually buy only the things I need.*	1	2	3	4	5	9
I have all the things I really need to enjoy life.*	1	2	3	4	5	9
I try to keep my life simple, as far as possessions are concerned.*	1	2	3	4	5	9
I don't place too much emphasis on the amount of material objects people own as a sign of success.*	1	2	3	4	5	9
I admire people who own expensive homes, cars and clothes.	1	2	3	4	5	9
I enjoy spending money on things that aren't practical.	1	2	3	4	5	9
Buying things gives me a lot of pleasure.	1	2	3	4	5	9
I don't pay much attention to the material objects other people own*.	1	2	3	4	5	9
I like a lot of luxury in my life.	1	2	3	4	5	9
I put less emphasis on material things than most people I know.*	1	2	3	4	5	9
The things I own aren't that important to me.*	1	2	3	4	5	9
My life would be better if I owned certain things I don't have.	1	2	3	4	5	9
I wouldn't be any happier if I owned nicer things.*	1	2	3	4	5	9
The things I own say a lot about how well I'm doing in life.	1	2	3	4	5	9
I'd be happier if I could afford to buy more things.	1	2	3	4	5	9
It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	1	2	3	4	5	9

Q3. ABOUT DESIGN IN GENERAL

Q3b. What does product design mean to you with respect to **ordinary, everyday objects** (like pens, furniture, vacuum cleaner, hair-dryer, etc.)? Take into consideration the listed factors. Which of them do you think **determine product design** the most? Think over how important you regard those bellow factors in the case of product design. Distribute 100 points among the different factors. If you give 20 points to one of the factors out of the 100 and 10 points to the other one, this implies that the first factor is **twice as much important** to you as the second one.

	Attributed importance of the factor
Functionality (function the object is to fulfil, usability, practicality, etc.)	
Nature, characteristics of form (size, form, colour – e.g.: big-small, square-round, red-blue, etc.)	
Expressiveness (capabilities of expressing the owner's / user's personality, quality of appearance, style, aesthetics, trendiness, modernity, elegance, etc.)	
User – object interaction (how harmonic is the connection / interaction between user and the object, convenience, pleasantness, pleasure of usage, etc.)	
Others:	
Altogether:	100

Q4. THE STYLE OF PROCESSING

The aim of this exercise is to determine the style or manner you use when carrying out different mental tasks. Your answers to the questions should reflect the manner in which you typically engage in each of the tasks mentioned. There are no right or wrong answers, we only ask that you provide honest and accurate answers. Please answer each question by circling one the four possible responses. For example, if I provided the statement „I seldom read books,” and this was your *typical* behaviour, even though you might read one book a year, you would circle the ALWAYS TRUE response.

	Always true	Generally true	Generally false / not true	Never true
1. I enjoy doing work that requires the use of words.	1	2	3	4
2. There are some special times in my life that I like to relive by mentally „picturing” just how everything looked.*	1	2	3	4
3. I can never seem to find the right word when I need it.*	1	2	3	4
4. I do a lot of reading	1	2	3	4
5. When I am trying to learn something new, I’d rather watch a demonstration than read how to do it.*	1	2	3	4
6. I think I often use words in the wrong way.*	1	2	3	4
7. I enjoy learning new words.	1	2	3	4
8. I like to picture how I could fix up my apartment or a room if I could buy anything I wanted.*	1	2	3	4
9. I often make written notes to myself.	1	2	3	4
10. I like to daydream.*	1	2	3	4
11. I generally prefer to use a diagram rather than a written set of instructions.*	1	2	3	4
12. I like to „doodle.”*	1	2	3	4
13. I find it helps to think in terms of mental pictures when doing many things.*	1	2	3	4
14. After I meet someone for the first time, I can usually remember what they look like, but not much about them.*	1	2	3	4
15. I like to think of synonyms for words.	1	2	3	4
16. When I have forgotten something I frequently try to form a mental „picture” to remember it.*	1	2	3	4
17. I like learning new words.	1	2	3	4
18. I prefer to read instructions about how to do something rather than have someone show me.	1	2	3	4
19. I prefer activities that don’t require a lot of reading.*	1	2	3	4
20. I seldom daydream.	1	2	3	4
21. I spend very little time trying to increase my vocabulary.*	1	2	3	4
22. My thinking often consists of mental „pictures” or images.*	1	2	3	4

Q5. DESIGN OF MOBILE TELEPHONES

How do you regard importance of the bellow factors in the case of the **design of mobile telephones**? Which do you think are the most important and which are the least important?

Take into consideration the listed factors. Which of them do you think **determine mobile design** the most? Think over how important you regard those bellow factors in the case of mobile design. Distribute 100 points among the different factors. If you give 20 points to one of the factors out of the 100 and 10 points to the other one, this implies that the first factor is **twice as much important** to you as the second one.

	Attributed importance of the factor
Functionality (function the object is to fulfil, usability, practicality, etc.)	
Nature, characteristics of form (size, form, colour – eg.: big-small, square-round, red-blue, etc.)	
Expressiveness (capabilities of expressing the owner's / user's personality, quality of appearance, style, aesthetics, trendiness, modernity, elegance, etc.)	
User – object interaction (how harmonic is the connection / interaction between user and the object, convenience, pleasantness, pleasure of usage, etc.)	
Others:	
Altogether:	100

Q6. OWN MOBILE TELEPHONE

Bellow you will read a few questions regarding your own mobile telephone:

Q6a. Type of mobile telephone:

Q6b. My mobile telephone tells about me to my environment that

Q6c. My mobile telephone means to me that

Q6d. How did you get your mobile telephone?

- bought it for myself
- got it as a present
- corporate telephone
- use the phone of one of my acquaintances
- others

Q6e. Which of the bellow factors played a role in choosing your own mobile telephone. Distribute 100 points among the different factors. If you give 20 points to one of the factors out of the 100 and 10 points to the other one, this implies that first factor is **twice as much important** to you as the second one.

	Attributed importance
services / functions provided by the phone	
price of the phone	
type of the service-pack	
design of the phone	
others.....	
	100

Q6f. If you made your choice today (among the same selection of telephones) would you choose the same mobile telephone?

- yes
- no

Q6g. I have been using my telephone since..... years

Q6h. Used service pack:

Q6i. Consider the bellow characteristics. Which do you think is more characteristic of your **own mobile**? If for example you regard your own mobile very useful circle number “1” if you consider it absolutely useless circle the number “7”, if you feel the characteristic of your mobile somewhere in between circle a number in between respectively.

useful	1 2 3 4 5 6 7	useless
attactive	1 2 3 4 5 6 7	not attractive
practical	1 2 3 4 5 6 7	impractical
not delightful	1 2 3 4 5 6 7	delightful
desirable	1 2 3 4 5 6 7	not desirable
functional	1 2 3 4 5 6 7	not functional
fun	1 2 3 4 5 6 7	not fun
makes me like this product	1 2 3 4 5 6 7	does not make me like the product
efficient	1 2 3 4 5 6 7	inefficient
not funny	1 2 3 4 5 6 7	funny
dull	1 2 3 4 5 6 7	exciting
unproductive	1 2 3 4 5 6 7	productive
enjoyable	1 2 3 4 5 6 7	unenjoyable
problem solving	1 2 3 4 5 6 7	not problem solving
amusing	1 2 3 4 5 6 7	not amusing

Q6j. Considering the design of your **own mobile telephone** how important do you regard the bellow factors.

- 1.) Take into consideration the listed factors. Think over how important you regard those bellow factors in the case of your **own mobile telephone**. Distribute 100 points among the different factors. If you give 20 points to one of the factors out of the 100 and 10 points to the other one, this implies that the first factor is **twice as much important** to you as the second one.
- 2.) How characteristic are these of your **own mobile telephone**? “1” implies it is not characteristic at all, “5” means it is absolutely characteristic.

	Attributed importance	characteristic					NT/ NV
		not charac- teristic at all				absolutely charac- teristic	
Functionality (function the object is to fulfil, usability, practicality, etc.)		1	2	3	4	5	9
Nature, characteristics of form (size, form, colour – eg.: big-small, square-round, red-blue, etc.)		1	2	3	4	5	9
Expressiveness (capabilities of expressing the owner’s / user’s personality, quality of appearance, style, aesthetics, trendiness, modernity, elegance, etc.)		1	2	3	4	5	9
User – object interaction (how harmonic is the connection / interaction between user and the object, convenience, pleasantness, pleasure of usage, etc.)		1	2	3	4	5	9
Others:		1	2	3	4	5	9
Altogether:							

Q7. CHOICE

Look at and put in your hands the mobile telephones exhibited, and think over the following:



Write in the table the number of the telephone you think best fits the described dimension. You can give only one answer.

Q7a. Looking at the telephones at first sight which one would you choose?	
Q7b. If all the telephones provided the very same functions and their prices were the same which one would you choose?	
Q7c. Looking at the telephones, at first sight which one do you find the most functional?	
Q7d. Ask for information material no. 1. Regarding your experiences and the attached information which one do you find the most functional?	
Q7e. Regarding your experiences and the attached information which one would you want to win?	
Q7f. Assess the prices of each telephone: 1.....Ft 2.....Ft 3.....Ft 4.....Ft	
Q7g. Ask for information material no. 2. Regarding your experiences and the attached information which one would you want to buy?	
Q7h. Considering the design of each mobile telephone which one would you choose?	

In the following questions we would ask you about the telephone you chose in **Q7e**.

Q7i. This telephone can tell to its owner's environment about her / him that

.....

Q7j. Consider the bellow characteristics. Which do you think is more characteristic of the **mobile phone you chose in Q7e**? If for example you regard the mobile very useful circle the number "1" if you consider it absolutely useless circle the number "7", if you feel the characteristic of your mobile somewhere in between circle a number in between respectively.

useful	1 2 3 4 5 6 7	useless
attractive	1 2 3 4 5 6 7	not attractive
practical	1 2 3 4 5 6 7	impractical
not delightful	1 2 3 4 5 6 7	delightful
desirable	1 2 3 4 5 6 7	not desirable
functional	1 2 3 4 5 6 7	not functional
fun	1 2 3 4 5 6 7	not fun
makes me like this product	1 2 3 4 5 6 7	does not make me like the product
efficient	1 2 3 4 5 6 7	inefficient
not funny	1 2 3 4 5 6 7	funny
dull	1 2 3 4 5 6 7	exciting
unproductive	1 2 3 4 5 6 7	productive
enjoyable	1 2 3 4 5 6 7	unenjoyable
problem solving	1 2 3 4 5 6 7	not problem solving
amusing	1 2 3 4 5 6 7	not amusing

Q7k. Considering the design of the **mobile telephone** you chose how important do you regard the bellow factors.

- 1.) Take into consideration the listed factors. Think over how important you regard those bellow factors in the case of the **mobile telephone you chose in Q7e**. Distribute 100 points among the different factors. If you give 20 points to one of the factors out of the 100 and 10 points to the other one, this implies that the first factor is **twice as much important** to you as the second one.
- 2.) How characteristic are these factors of the **mobile telephone you chose in Q7e**? “1” implies it is not characteristic at all, “5” means it is absolutely characteristic.

	Attributed importance	characteristic					NT/ NV
		not charac- teristic at all				absolutely charac- teristic	
Functionality (function the object is to fulfil, usability, practicality, etc.)		1	2	3	4	5	9
Nature, characteristics of form (size, form, colour – eg.: big-small, square-round, red-blue, etc.)		1	2	3	4	5	9
Expressiveness (capabilities of expressing the owner’s / user’s personality, quality of appearance, style, aesthetics, trendiness, modernity, elegance, etc.)		1	2	3	4	5	9
User – object interaction (how harmonic is the connection / interaction between user and the object, convenience, pleasantness, pleasure of usage, etc.)		1	2	3	4	5	9
Others:		1	2	3	4	5	9
Altogether:							

Demographic questions

Gender

- ~~Male~~
 ~~Female~~

Age:

Place of living (constant address)

- ~~Budapest~~
 ~~Town above 50.000 inhabitants~~
 ~~Town below 50.000 inhabitants~~
 ~~Village~~

Do you have a job besides the university?

- ~~Yes, part time~~
 ~~Yes, full time~~
 ~~No~~

Year:

Major:

What corporate position can you imagine for yourself after years of graduation?

.....

In what kind of sector / industry would you like to work?

.....

Appendix 6.1. – Differences in “materialist and not materialist orientation” with respect to age

		Sum of Squares	df	Mean Square	F	Sig.
M14_HAPY I have all the things I really need to enjoy life.	Between Groups	3.02	2	1.51	1.30	0.27
	Within Groups	370.02	319	1.16		
	Total	373.03	321			
M17_HAPY I'd be happier if I could afford to buy more things.	Between Groups	1.60	2	0.80	0.79	0.46
	Within Groups	326.04	321	1.02		
	Total	327.64	323			
M15_HAPY My life would be better if I owned certain things I don't have.	Between Groups	0.21	2	0.11	0.09	0.91
	Within Groups	372.85	320	1.17		
	Total	373.07	322			
M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	Between Groups	2.22	2	1.11	1.10	0.33
	Within Groups	322.92	321	1.01		
	Total	325.14	323			
M16_HAPY I wouldn't be any happier if I owned nicer things.	Between Groups	2.73	2	1.36	1.34	0.26
	Within Groups	317.36	313	1.01		
	Total	320.09	315			
M4_SUCES The things I own say a lot about how well I'm doing in life.	Between Groups	4.51	2	2.26	2.58	0.08
	Within Groups	278.22	318	0.87		
	Total	282.74	320			
M12_CENT I like a lot of luxury in my life.	Between Groups	0.50	2	0.25	0.26	0.77
	Within Groups	308.37	320	0.96		
	Total	308.87	322			
M2_SUCES Some of the most important achievements in life include acquiring material possessions.	Between Groups	0.18	2	0.09	0.08	0.92
	Within Groups	353.03	321	1.10		
	Total	353.21	323			
M1_SUCES I admire people who own expensive homes, cars and clothes.	Between Groups	3.80	2	1.90	2.23	0.11
	Within Groups	272.65	319	0.85		
	Total	276.45	321			
M10_CENT I enjoy spending money on things that aren't practical.	Between Groups	11.60	2	5.80	5.29	0.01
	Within Groups	349.72	319	1.10		
	Total	361.32	321			
M11_CENT Buying things gives me a lot of pleasure.	Between Groups	1.24	2	0.62	0.52	0.60

	Within Groups	383.74	322	1.19		
	Total	384.97	324			
M7_CENTR I usually buy only the things I need.*	Between Groups	3.09	2	1.55	1.56	0.21
	Within Groups	319.88	322	0.99		
	Total	322.97	324			
M8_CENTR I try to keep my life simple, as far as possessions are concerned.	Between Groups	0.22	2	0.11	0.13	0.88
	Within Groups	267.07	321	0.83		
	Total	267.29	323			
M9_CENTR The things I own aren't that important to me.	Between Groups	0.21	2	0.10	0.17	0.84
	Within Groups	194.27	320	0.61		
	Total	194.48	322			
M6_SUCES I don't pay much attention to the material objects other people own.	Between Groups	7.67	2	3.84	4.42	0.01
	Within Groups	275.08	317	0.87		
	Total	282.75	319			
M3_SUCES I don't place too much emphasis on the amount of material objects people own as a sign of success.	Between Groups	5.84	2	2.92	2.73	0.07
	Within Groups	342.74	321	1.07		
	Total	348.58	323			
M13_CENT I put less emphasis on material things than most people I know.*	Between Groups	0.37	2	0.18	0.26	0.77
	Within Groups	217.89	306	0.71		
	Total	218.26	308			
M5_SUCES I like to own things that impress people.	Between Groups	0.47	2	0.23	0.27	0.77
	Within Groups	275.72	315	0.88		
	Total	276.19	317			

Appendix 6.2. – Differences in “materialist and not materialist orientation” with respect to year of studies

		Sum of Squares	df	Mean Square	F	Sig.
M14_HAPY I have all the things I really need to enjoy life.	Between Groups	4.30	4	1.08	0.93	0.44
	Within Groups	357.11	310	1.15		
	Total	361.42	314			
M17_HAPY I'd be happier if I could afford to buy more things.	Between Groups	8.65	4	2.16	2.15	0.07
	Within Groups	313.40	312	1.00		
	Total	322.05	316			
M15_HAPY My life would be better if I owned certain things I don't have.	Between Groups	10.20	4	2.55	2.26	0.06
	Within Groups	350.70	311	1.13		
	Total	360.90	315			
M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	Between Groups	3.98	4	0.99	0.98	0.42
	Within Groups	315.20	312	1.01		
	Total	319.18	316			
M16_HAPY I wouldn't be any happier if I owned nicer things.	Between Groups	1.82	4	0.46	0.46	0.77
	Within Groups	302.26	305	0.99		
	Total	304.08	309			
M4_SUCES The things I own say a lot about how well I'm doing in life.	Between Groups	14.26	4	3.57	4.36	0.00
	Within Groups	252.68	309	0.82		
	Total	266.95	313			
M12_CENT I like a lot of luxury in my life.	Between Groups	6.34	4	1.59	1.70	0.15
	Within Groups	290.73	311	0.93		
	Total	297.08	315			
M2_SUCES Some of the most important achievements in life include acquiring material possessions.	Between Groups	8.02	4	2.01	1.84	0.12
	Within Groups	340.96	313	1.09		
	Total	348.98	317			
M1_SUCES I admire people who own expensive homes, cars and clothes.	Between Groups	3.99	4	1.00	1.16	0.33
	Within Groups	266.53	310	0.86		
	Total	270.52	314			
M10_CENT I enjoy spending money on things that aren't practical.	Between Groups	10.14	4	2.53	2.32	0.06
	Within Groups	339.05	310	1.09		
	Total	349.19	314			
M11_CENT Buying things gives me a lot of pleasure.	Between Groups	10.47	4	2.62	2.24	0.07
	Within	366.50	313	1.17		

	Groups					
	Total	376.97	317			
M7_CENTR I usually buy only the things I need.*	Between Groups	5.60	4	1.40	1.44	0.22
	Within Groups	303.79	313	0.97		
	Total	309.39	317			
M8_CENTR I try to keep my life simple, as far as possessions are concerned.	Between Groups	1.31	4	0.33	0.39	0.82
	Within Groups	261.50	312	0.84		
	Total	262.81	316			
M9_CENTR The things I own aren't that important to me.	Between Groups	1.16	4	0.29	0.47	0.76
	Within Groups	190.51	311	0.61		
	Total	191.67	315			
M6_SUCES I don't pay much attention to the material objects other people own.	Between Groups	7.18	4	1.80	2.13	0.08
	Within Groups	260.50	309	0.84		
	Total	267.68	313			
M3_SUCES I don't place too much emphasis on the amount of material objects people own as a sign of success.	Between Groups	2.15	4	0.54	0.50	0.74
	Within Groups	336.13	313	1.07		
	Total	338.28	317			
M13_CENT I put less emphasis on material things than most people I know.*	Between Groups	2.57	4	0.64	0.92	0.45
	Within Groups	208.04	297	0.70		
	Total	210.61	301			
M5_SUCES I like to own things that impress people.	Between Groups	2.75	4	0.69	0.79	0.54
	Within Groups	268.24	306	0.88		
	Total	270.99	310			

Appendix 6.3. – Differences in “materialist and not materialist orientation” with respect to employment

		Sum of Squares	df	Mean Square	F	Sig.
M14_HAPY I have all the things I really need to enjoy life.	Between Groups	4.18	2	2.09	1.82	0.16
	Within Groups	358.00	312	1.15		
	Total	362.17	314			
M17_HAPY I'd be happier if I could afford to buy more things.	Between Groups	5.03	2	2.52	2.51	0.08
	Within Groups	314.89	314	1.00		
	Total	319.92	316			
M15_HAPY My life would be better if I owned certain things I don't have.	Between Groups	6.67	2	3.33	2.89	0.06
	Within Groups	361.48	313	1.15		
	Total	368.15	315			
M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	Between Groups	4.29	2	2.15	2.17	0.12
	Within Groups	310.89	314	0.99		
	Total	315.18	316			
M16_HAPY I wouldn't be any happier if I owned nicer things.	Between Groups	1.65	2	0.82	0.84	0.43
	Within Groups	300.49	306	0.98		
	Total	302.14	308			
M4_SUCES The things I own say a lot about how well I'm doing in life.	Between Groups	11.76	2	5.88	6.98	0.00
	Within Groups	262.07	311	0.84		
	Total	273.84	313			
M12_CENT I like a lot of luxury in my life.	Between Groups	7.66	2	3.83	4.19	0.02
	Within Groups	286.32	313	0.91		
	Total	293.98	315			
M2_SUCES Some of the most important achievements in life include acquiring material possessions.	Between Groups	13.31	2	6.65	6.29	0.00
	Within Groups	333.43	315	1.06		
	Total	346.74	317			
M1_SUCES I admire people who own expensive homes, cars and clothes.	Between Groups	0.38	2	0.19	0.22	0.80
	Within Groups	268.08	312	0.86		
	Total	268.46	314			
M10_CENT I enjoy spending money on things that aren't practical.	Between Groups	8.01	2	4.01	3.59	0.03
	Within Groups	348.34	312	1.12		
	Total	356.35	314			
M11_CENT Buying things gives me a lot of pleasure.	Between Groups	0.24	2	0.12	0.10	0.90
	Within	378.88	315	1.20		

	Groups					
	Total	379.12	317			
M7_CENTR I usually buy only the things I need.*	Between Groups	1.00	2	0.50	0.50	0.61
	Within Groups	316.25	315	1.00		
	Total	317.25	317			
M8_CENTR I try to keep my life simple, as far as possessions are concerned.	Between Groups	3.08	2	1.54	1.87	0.16
	Within Groups	258.99	314	0.82		
	Total	262.08	316			
M9_CENTR The things I own aren't that important to me.	Between Groups	2.64	2	1.32	2.18	0.12
	Within Groups	189.95	313	0.61		
	Total	192.59	315			
M6_SUCES I don't pay much attention to the material objects other people own.	Between Groups	9.28	2	4.64	5.46	0.00
	Within Groups	263.18	310	0.85		
	Total	272.46	312			
M3_SUCES I don't place too much emphasis on the amount of material objects people own as a sign of success.	Between Groups	11.25	2	5.63	5.41	0.00
	Within Groups	326.87	314	1.04		
	Total	338.12	316			
M13_CENT I put less emphasis on material things than most people I know.*	Between Groups	1.95	2	0.98	1.39	0.25
	Within Groups	209.86	299	0.70		
	Total	211.82	301			
M5_SUCES I like to own things that impress people.	Between Groups	0.61	2	0.31	0.35	0.71
	Within Groups	271.54	308	0.88		
	Total	272.15	310			

Appendix 8.1. – Choices made upon functionality and at first sight

		Q7C Looking at the telephones, at first sight which one do you find the most functional?				Total
Q7A Looking at the telephones at first sight which one would you choose?		1.00 Nokia 3310	2.00 Nokia 6210	3.00 Nokia 8210	4.00 Nokia 8850	
1.00 Nokia 3310	Count	22	33	10	14	79
	% within Q7A	27.85	41.77	12.66	17.72	100.00
	% within Q7C	51.16	21.02	15.87	22.58	24.31
2.00 Nokia 6210	Count	3	47	4	5	59
	% within Q7A	5.08	79.66	6.78	8.47	100.00
	% within Q7C	6.98	29.94	6.35	8.06	18.15
3.00 Nokia 8210	Count	10	39	22	15	86
	% within Q7A	11.63	45.35	25.58	17.44	100.00
	% within Q7C	23.26	24.84	34.92	24.19	26.46
4.00 Nokia 8850	Count	8	38	27	28	101
	% within Q7A	7.92	37.62	26.73	27.72	100.00
	% within Q7C	18.60	24.20	42.86	45.16	31.08
Total	Count	43	157	63	62	325
	% within Q7A	13.23	48.31	19.38	19.08	100.00
	% within Q7C	100.00	100.00	100.00	100.00	100.00

p<0,01

		Q7D Ask for information material no. 1. Regarding your experiences and the attached information which one do you find the most functional?				Total
Q7A Looking at the telephones at first sight which one would you choose?		1.00 Nokia 3310	2.00 Nokia 6210	3.00 Nokia 8210	4.00 Nokia 8850	
1.00 Nokia 3310	Count	15	49	3	12	79
	% within Q7A	18.99	62.03	3.80	15.19	100.00
	% within Q7D	75.00	23.90	9.09	19.05	24.61
2.00 Nokia 6210	Count	1	49	4	3	57
	% within Q7A	1.75	85.96	7.02	5.26	100.00
	% within Q7D	5.00	23.90	12.12	4.76	17.76
3.00 Nokia 8210	Count	2	53	16	14	85
	% within Q7A	2.35	62.35	18.82	16.47	100.00
	% within Q7D	10.00	25.85	48.48	22.22	26.48
4.00 Nokia 8850	Count	2	54	10	34	100
	% within Q7A	2.00	54.00	10.00	34.00	100.00
	% within Q7D	10.00	26.34	30.30	53.97	31.15
Total	Count	20	205	33	63	321
	% within Q7A	6.23	63.86	10.28	19.63	100.00
	% within Q7D	100.00	100.00	100.00	100.00	100.00

p<0,01

Appendix 8.2. Willingness to make purchases and design preferences

		Q7A Looking at the telephones at first sight which one would you choose?				Total
Q7G Ask for information material no. 2. Regarding your experiences and the attached information which one would you want to buy?		1.00 Nokia 3310	2.00 Nokia 6210	3.00 Nokia 8210	4.00 Nokia 8850	
0.00 none	Count	2	4	3	10	19
	% within Q7G	10.53	21.05	15.79	52.63	100.00
	% within Q7A	2.56	6.90	3.53	9.90	5.90
1.00 Nokia 3310	Count	49	7	25	24	105
	% within Q7G	46.67	6.67	23.81	22.86	100.00
	% within Q7A	62.82	12.07	29.41	23.76	32.61
2.00 Nokia 6210	Count	14	43	20	24	101
	% within Q7G	13.86	42.57	19.80	23.76	100.00
	% within Q7A	17.95	74.14	23.53	23.76	31.37
3.00 Nokia 8210	Count	9	2	31	10	52
	% within Q7G	17.31	3.85	59.62	19.23	100.00
	% within Q7A	11.54	3.45	36.47	9.90	16.15
4.00 Nokia 8850	Count	4	2	6	33	45
	% within Q7G	8.89	4.44	13.33	73.33	100.00
	% within Q7A	5.13	3.45	7.06	32.67	13.98
Total	Count	78	58	85	101	322
	% within Q7G	24.22	18.01	26.40	31.37	100.00
	% within Q7A	100	100	100	100	100

p<0,01

		Q7B If all the telephones provided the very same functions and their prices were the same which one would you choose?				Total
Q7G Ask for information material no. 2. Regarding your experiences and the attached information which one would you want to buy?		1.00 Nokia 3310	2.00 Nokia 6210	3.00 Nokia 8210	4.00 Nokia 8850	
0.00 none	Count	2	4	4	9	19
	% within Q7G	10.53	21.05	21.05	47.37	100.00
	% within Q7B	2.82	6.25	4.08	10.23	5.92
1.00 Nokia 3310	Count	45	11	29	20	105
	% within Q7G	42.86	10.48	27.62	19.05	100.00
	% within Q7B	63.38	17.19	29.59	22.73	32.71
2.00 Nokia 6210	Count	11	45	25	20	101
	% within Q7G	10.89	44.55	24.75	19.80	100.00
	% within Q7B	15.49	70.31	25.51	22.73	31.46
3.00 Nokia 8210	Count	8	2	32	9	51
	% within Q7G	15.69	3.92	62.75	17.65	100.00
	% within Q7B	11.27	3.13	32.65	10.23	15.89
4.00 Nokia 8850	Count	5	2	8	30	45
	% within Q7G	11.11	4.44	17.78	66.67	100.00
	% within Q7B	7.04	3.13	8.16	34.09	14.02
Total	Count	71	64	98	88	321
	% within Q7G	22.12	19.94	30.53	27.41	100.00
	% within Q7B	100	100	100	100	100

p<0,01

		Q7E Regarding your experiences and the attached information which one would you want to win?				Total
Q7G Ask for information material no. 2. Regarding your experiences and the attached information which one would you want to buy?		1.00 Nokia 3310	2.00 Nokia 6210	3.00 Nokia 8210	4.00 Nokia 8850	
.00 none	Count	2	4	4	10	20
	% within Q7G	10.00	20.00	20.00	50.00	100.00
	% within Q7E	4.55	4.49	5.19	8.85	6.19
1.00 Nokia 3310	Count	34	17	22	32	105
	% within Q7G	32.38	16.19	20.95	30.48	100.00
	% within Q7E	77.27	19.10	28.57	28.32	32.51
2.00 Nokia 6210	Count	3	63	16	19	101
	% within Q7G	2.97	62.38	15.84	18.81	100.00
	% within Q7E	6.82	70.79	20.78	16.81	31.27
3.00 Nokia 8210	Count	4		34	14	52
	% within Q7G	7.69		65.38	26.92	100.00
	% within Q7E	9.09		44.16	12.39	16.10
4.00 Nokia 8850	Count	1	5	1	38	45
	% within Q7G	2.22	11.11	2.22	84.44	100.00
	% within Q7E	2.27	5.62	1.30	33.63	13.93
Total	Count	44	89	77	113	323
	% within Q7G	13.62	27.55	23.84	34.98	100.00
	% within Q7E	100	100	100	100	100

p<0,01

		Q7H Considering the design of each mobile telephone which one would you choose?				Total
Q7G Ask for information material no. 2. Regarding your experiences and the attached information which one would you want to buy?		1.00 Nokia 3310	2.00 Nokia 6210	3.00 Nokia 8210	4.00 Nokia 8850	
.00 none	Count	3	4	5	8	20
	% within Q7G	15.00	20.00	25.00	40.00	100.00
	% within Q7H	4.41	6.78	5.38	7.77	6.19
1.00 Nokia 3310	Count	44	10	26	25	105
	% within Q7G	41.90	9.52	24.76	23.81	100.00
	% within Q7H	64.71	16.95	27.96	24.27	32.51
2.00 Nokia 6210	Count	12	43	22	24	101
	% within Q7G	11.88	42.57	21.78	23.76	100.00
	% within Q7H	17.65	72.88	23.66	23.30	31.27
3.00 Nokia 8210	Count	5	2	31	14	52
	% within Q7G	9.62	3.85	59.62	26.92	100.00
	% within Q7H	7.35	3.39	33.33	13.59	16.10
4.00 Nokia 8850	Count	4		9	32	45
	% within Q7G	8.89		20.00	71.11	100.00
	% within Q7H	5.88		9.68	31.07	13.93
Total	Count	68	59	93	103	323
	% within Q7G	21.05	18.27	28.79	31.89	100.00
	% within Q7H	100	100	100	100	100

p<0,01

**Appendix 9.1. – Differences in “materialist and not materialist orientation”
with respect to preferences for design**

		Sum of Squares	df	Mean Square	F	Sig.
M14_HAPY I have all the things I really need to enjoy life.	Between Groups	5.10	3	1.70	1.46	0.23
	Within Groups	371.42	318	1.17		
	Total	376.52	321			
M17_HAPY I'd be happier if I could afford to buy more things.	Between Groups	15.62	3	5.21	5.31	0.00
	Within Groups	313.75	320	0.98		
	Total	329.37	323			
M15_HAPY My life would be better if I owned certain things I don't have.	Between Groups	5.44	3	1.81	1.56	0.20
	Within Groups	370.24	319	1.16		
	Total	375.68	322			
M18_HAPY It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.	Between Groups	5.46	3	1.82	1.78	0.15
	Within Groups	327.16	320	1.02		
	Total	332.62	323			
M16_HAPY I wouldn't be any happier if I owned nicer things.	Between Groups	3.28	3	1.09	1.07	0.36
	Within Groups	319.01	312	1.02		
	Total	322.29	315			
M4_SUCES The things I own say a lot about how well I'm doing in life.	Between Groups	11.61	3	3.87	4.53	0.00
	Within Groups	271.12	317	0.86		
	Total	282.74	320			
M12_CENT I like a lot of luxury in my life.	Between Groups	19.89	3	6.63	7.50	0.00
	Within Groups	281.90	319	0.88		
	Total	301.79	322			
M2_SUCES Some of the most important achievements in life include acquiring material possessions.	Between Groups	15.27	3	5.09	4.83	0.00
	Within Groups	337.03	320	1.05		
	Total	352.31	323			
M1_SUCES I admire people who own expensive homes, cars and clothes.	Between Groups	2.92	3	0.97	1.13	0.34
	Within Groups	273.53	318	0.86		
	Total	276.45	321			
M10_CENT I enjoy spending money on things that aren't practical.	Between Groups	2.59	3	0.86	0.77	0.51
	Within Groups	357.11	318	1.12		
	Total	359.70	321			
M11_CENT Buying things	Between Groups	17.35	3	5.78	5.08	0.00
	Within Groups					

gives me a lot of pleasure.						
	Within Groups	365.68	321	1.14		
	Total	383.03	324			
M7_CENTR I usually buy only the things I need.*	Between Groups	3.70	3	1.23	1.24	0.30
	Within Groups	319.07	321	0.99		
	Total	322.77	324			
M8_CENTR I try to keep my life simple, as far as possessions are concerned.	Between Groups	1.57	3	0.52	0.64	0.59
	Within Groups	263.18	320	0.82		
	Total	264.75	323			
M9_CENTR The things I own aren't that important to me.	Between Groups	2.06	3	0.69	1.13	0.34
	Within Groups	193.50	319	0.61		
	Total	195.57	322			
M6_SUCES I don't pay much attention to the material objects other people own.	Between Groups	5.86	3	1.95	2.21	0.09
	Within Groups	278.89	316	0.88		
	Total	284.75	319			
M3_SUCES I don't place too much emphasis on the amount of material objects people own as a sign of success.	Between Groups	11.45	3	3.82	3.61	0.01
	Within Groups	338.77	320	1.06		
	Total	350.22	323			
M13_CENT I put less emphasis on material things than most people I know.*	Between Groups	1.21	3	0.40	0.56	0.64
	Within Groups	217.83	305	0.71		
	Total	219.04	308			
M5_SUCES I like to own things that impress people.	Between Groups	5.57	3	1.86	2.16	0.09
	Within Groups	270.61	314	0.86		
	Total	276.19	317			

Appendix 9.2. – Differences in product judgements with respect to the fact of owning or not owning a mobile telephone

	Mobile phone owners			Non-owners			F	
		df	Mean Square	F	Sig.	df		Mean Square
Q7_UT1 useful – useless	Between Groups	3	3.49	4.05	0.01	3	0.89	0.63
	Within Groups	220	0.86			94	1.41	
	Total	223				97		
Q7_AES1 attractive – not attractive	Between Groups	3	4.63	5.60	0.00	3	1.66	1.05
	Within Groups	221	0.83			94	1.58	
	Total	224				97		
Q7_UT2 practical – impractical	Between Groups	3	2.68	3.94	0.01	3	1.60	1.00
	Within Groups	221	0.68			94	1.61	
	Total	224				97		
Q7_HED2 not delightful – delightful	Between Groups	3	26.55	14.65	0.00	3	12.13	6.35
	Within Groups	221	1.81			94	1.91	
	Total	224				97		
Q7_AES2 desirable – not desirable	Between Groups	3	2.11	1.28	0.28	3	1.29	0.87
	Within Groups	221	1.65			94	1.48	
	Total	224				97		
Q7_UT4 functional – not functional	Between Groups	3	3.27	3.91	0.01	3	2.28	1.87
	Within Groups	220	0.84			94	1.22	
	Total	223				97		
Q7_HED4 fun – not fun	Between Groups	3	0.46	0.48	0.70	3	0.34	0.26
	Within Groups	221	0.96			92	1.29	
	Total	224				95		
Q7_AES5 makes me like this product – does not make like the product	Between Groups	3	0.33	0.41	0.75	3	0.63	0.40
	Within Groups	221	0.82			94	1.58	
	Total	224				97		
Q7_UT7 efficient – inefficient	Between Groups	3	3.21	4.22	0.01	3	0.80	0.60
	Within Groups	221	0.76			94	1.33	
	Total	224				97		
Q7_HED6 not funny - funny	Between Groups	3	2.44	2.05	0.11	3	0.58	0.65
	Within Groups	220	1.19			94	0.90	
	Total	223				97		
Q7_HED7 dull - exciting	Between Groups	3	4.36	3.53	0.02	3	2.91	2.32
	Within Groups	221	1.23			94	1.26	
	Total	224				97		
Q7_UT11 unproductive – productive	Between Groups	3	0.18	0.15	0.93	3	1.06	1.17
	Within Groups	217	1.25			93	0.91	
	Total	220				96		
Q7_HED10 enjoyable – unenjoyable	Between Groups	3	2.65	2.05	0.11	3	0.94	0.90
	Within Groups	220	1.29			94	1.04	
	Total	223				97		
Q7_UT12 problem solving – not problem solving	Between Groups	3	1.55	1.37	0.25	3	1.24	0.94
	Within Groups	221	1.13			94	1.32	
	Total	224				97		
Q7_HED12 amusing – not amusing	Between Groups	3	2.57	2.12	0.10	3	0.89	0.75
	Within Groups	221	1.21			94	1.18	
	Total	224				97		

Appendix 9.3. – Differences in evaluations of product design with respect to the fact of owning or not owning a mobile telephone

		Mobile phone owners				Non-owners			
		df	Mean Square	F	Sig.	df	Mean Square	F	Sig.
Q7_FUNKC Functionality	Between Groups	3	1042.78	5.17	0.00	3	624.75	3.86	0.01
	Within Groups	218	201.78			91	161.97		
	Total	221				94			
Q7_FORM Characteristics of form	Between Groups	3	542.72	5.90	0.00	3	156.44	1.63	0.19
	Within Groups	218	91.94			91	96.10		
	Total	221				94			
Q7_EXPR Expressiveness	Between Groups	3	766.57	9.78	0.00	3	210.97	3.26	0.03
	Within Groups	218	78.36			91	64.81		
	Total	221				94			
Q7_PRIV User-object interaction	Between Groups	3	388.19	5.46	0.00	3	22.36	0.28	0.84
	Within Groups	218	71.05			91	78.52		
	Total	221				94			

Appendix 10.1. – Participants’ mobile phones and types

Mobile phone type	Frequency	Percent	Valid Percent	Cumulative Percent
10.00 nokia	1	0.43	0.44	0.44
11.00 nokia 3210	54	23.48	23.79	24.23
12.00 nokia 5110	38	16.52	16.74	40.97
13.00 nokia 6110	8	3.48	3.52	44.49
14.00 nokia 7110	3	1.30	1.32	45.81
15.00 nokia 6150	3	1.30	1.32	47.14
16.00 nokia 3310	2	0.87	0.88	48.02
17.00 nokia 2110	1	0.43	0.44	48.46
20.00 ericsson	1	0.43	0.44	48.90
21.00 ericsson T10	21	9.13	9.25	58.15
22.00 ericsson T18	1	0.43	0.44	58.59
23.00 ericsson T28	3	1.30	1.32	59.91
24.00 ericsson GA 628	3	1.30	1.32	61.23
25.00 ericsson GH 688	1	0.43	0.44	61.67
26.00 ericsson A1018	10	4.35	4.41	66.08
27.00 ericsson gf768	2	0.87	0.88	66.96
28.00 ericsson s868	1	0.43	0.44	67.40
30.00 motorola	3	1.30	1.32	68.72
31.00 motorola star tac 301	1	0.43	0.44	69.16
32.00 motorola t2288	4	1.74	1.76	70.93
33.00 motorola v6388	1	0.43	0.44	71.37
34.00 motorola m3888	2	0.87	0.88	72.25
40.00 siemens	1	0.43	0.44	72.69
41.00 siemens c25	13	5.65	5.73	78.41
42.00 siemens c35	7	3.04	3.08	81.50
50.00 alcatel	7	3.04	3.08	84.58
51.00 alcatel 301	2	0.87	0.88	85.46
52.00 alcatel one touch club	5	2.17	2.20	87.67
53.00 alcatel one touch pocket	1	0.43	0.44	88.11
54.00 alcatel one touch max	3	1.30	1.32	89.43
55.00 alcatel one touch view	1	0.43	0.44	89.87
56.00 alcatel one touch easy	4	1.74	1.76	91.63
57.00 alcatel 302	1	0.43	0.44	92.07
58.00 alcatel sl	1	0.43	0.44	92.51
61.00 philips genie	1	0.43	0.44	92.95
90.00 panasonic	2	0.87	0.88	93.83
91.00 panasonic g450	9	3.91	3.96	97.80
92.00 panasonic gd 50	4	1.74	1.76	99.56
93.00 panasonic gd 90	1	0.43	0.44	100.00
Total	227	98.70	100.00	
System	3	1.30		
	230	100.00		

**Appendix 10.2. – Differences in product judgements in the context of usage
with respect to the ownership of mobile telephones Nokia
5110 and Nokia 3210**

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Q6_UT7 hatekony__hatraltato	Equal variances assumed	0.55	0.46	0.37	90.00	0.71
	Equal variances not assumed			0.38	86.89	0.70
Q6_UT4 funkcionalis__hasznavehetetlen	Equal variances assumed	1.13	0.29	0.76	90.00	0.45
	Equal variances not assumed			0.77	84.31	0.44
Q6_UT2 celszeru__celszerutlen	Equal variances assumed	0.68	0.41	0.61	90.00	0.55
	Equal variances not assumed			0.62	85.59	0.54
Q6_UT1 hasznos__haszontalan	Equal variances assumed	0.01	0.93	0.18	90.00	0.85
	Equal variances not assumed			0.18	78.21	0.86
Q6_UT12 problemamegoldo__problemat okoz	Equal variances assumed	0.42	0.52	0.38	90.00	0.71
	Equal variances not assumed			0.38	79.55	0.71
Q6_HED4 jo dolog__nem jo dolog	Equal variances assumed	0.75	0.39	0.44	89.00	0.66
	Equal variances not assumed			0.44	79.70	0.66
Q6_AES1 vonzo__taszito	Equal variances assumed	4.99	0.03	-3.05	89.00	0.00
	Equal variances not assumed			-3.11	84.48	0.00
Q6_AES5 tetszik__nem tetszik	Equal variances assumed	0.00	0.98	-0.39	90.00	0.70
	Equal variances not assumed			-0.40	85.80	0.69
Q6_HED2 szokvanyos__elragado	Equal variances assumed	0.50	0.48	1.43	90.00	0.15
	Equal variances not assumed			1.47	85.49	0.15
Q6_AES2 kivanatos__ellenszenves	Equal variances assumed	1.81	0.18	-1.31	89.00	0.19
	Equal variances not assumed			-1.38	89.00	0.17
Q6_HED12 szorakoztato__monoton	Equal variances assumed	0.13	0.72	-1.25	90.00	0.21
	Equal variances not assumed			-1.28	84.55	0.21
Q6_HED6 lehangolo__mulatsagos	Equal variances assumed	0.09	0.77	-0.66	90.00	0.51
	Equal variances not assumed			-0.67	85.33	0.50
Q6_HED10 elvezetes__unalmas	Equal variances assumed	0.36	0.55	-1.02	90.00	0.31
	Equal variances not assumed			-1.03	83.79	0.30
Q6_HED7 erdektelen__izgalmas	Equal variances assumed	0.11	0.74	1.18	89.00	0.24
	Equal variances not assumed			1.17	76.01	0.25
Q6_UT11 eredmenytelen__eredmenyes	Equal variances assumed	0.27	0.61	-0.05	89.00	0.96
	Equal variances not assumed			-0.05	82.07	0.96

