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**CONSUMER BEHAVIOUR RESEARCH ON THE
MARKET OF ROOF FENESTRATIONS - ANALYSIS
OF ROOF WINDOWS MARKET**

PhD thesis instalment

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1. Relevance of the topic

Due to the limited financial resources expansions of domestic middle-class residential areas in many cases currently aim at the vertical housing expansion. There is a well-defined trend that can be perceived as the development of the traditional high-roof attic providing full comfort regarding enlighting, thermal and acoustic characteristics for the home users.

The domestic roof windows market is considered as the specific segment of the industrial joinery for construction and partly of furniture industry. The scientific exploration of this market and possibilities of future trends were analysed with the help of examination of consumer behaviour throughout the following pages.

2. The objectives and the methodology of the research.

The thesis investigates the demand side of the domestic roof windows market, and especially the behaviour of private customers was explored. That is there was not examined the context of the supply side of the market by analysing technical or sale data, but it was rather intended to explore and explain the perception of customers. The primary aims were to identify and modeling the factors of purchase, especially to identify and explore the elements of the product and that of the purchase location regarding the roof windows throughout the perception of customers.

Based on these aims detailed objectives of the research were to gain a picture of the known and preferred brands of roof windows among private house builders and renovators and that of their considerations of product choices and place choices. The objectives were also to explore the impacts of attributes of product quality on their decisions, as well as their attitudes towards the place of stores and their preference of stores types.

The exploration of customer behaviour on roof windows market and the hypothesis testing were implemented by using a quantitative method with primary data collected by questionnaire during face-to-face interviews.

During the research, as precedents of it and for defining the frame of the survey, personal research experiences and some results of a previous qualitative research (Pakainé, 2007.) were applied. Since the research focuses on a less explored area of domestic market it also has to be noted that foremost a few general statements need to be examined (H1, H2 hypothesis).

3. Basic hypothesis of the research

H1. During the reference period there is one leader brand determines the domestic roof window market, but this situation can be changed.

In Hungary we consider the beginning of roof windows market – that was born by an invention in the 40's in Denmark - in the early 80's. This market is a relatively fast developing market, where the manufacturers, especially Velux as the first inventor kept its innovative characteristic and it still creates new markets by new innovations in the related fields (roof terrace, balcony system, sun tunnels, etc.).

The market situation was expressed by data gained from the customers with the help of a question for purchase intention that concerns of intended or purchased brands in the questionnaire. From these data it is clearly confirmed that still one brand, the Velux leads this market with relevant higher rate of sale comparing the follower brands. It is also a characteristic of this market as the majority of the customers are first buyers, therefore we can not consider high brand loyalty as a dominant impact factor when purchasing. However as we see there is a quite high rate of the uncertain customers (60%) which means that a lot depends on the activity of the manufacturers, that is the positions on the market can be influenced by market players in the near future

The H1 hypothesis was accepted, as there is one leader brand determines the domestic roof window market, but this situation can be changed depending on the activity of producers.

H2. The product characteristic of roof windows basically satisfied the customers' needs in the reference period

As we saw on the roof window market manufacturers pursue a quite innovative business policy. In case of the products with higher technical content the innovation can also lead to the beginning of a new market. In addition, there can emerge new demands from the customers towards the products. Such a problem was for example the water condensation on the glass, which was solved by new ventilation systems in casements developed by the manufacturer companies. The level of how the supply generally satisfies the needs of customers was measured by a multi answered question in the questionnaire. The results showed that the respondents perceived the supply generally good, beside the relevant rate of neutral respondents (1/5 of

respondents), but the rate of negative evaluation (bad, very bad) can be considered negligible, that means that there were no relevant customer needs unsatisfied. This was also strengthened by the results as customers generally (98,5%) purchase products of only one brand, which refers to the fact that the supply of each relevant brands can satisfies almost all needs of a customer, all needs emerged throughout a construction or a renewal connected to roof windows.

In this way the H2 hypothesis was verified as the product characteristic of roof windows basically satisfied the customers' needs on the domestic market in the reference period.

H3. The purchasing process when informing and inquiring is also a learning process of customer in which the weight of the criteria of selection is changing

Roof window purchasing - as in most of cases of durables - is a decision making process that needs consideration, and in this process when informing mostly technical type of characteristics has to be considered. During inquiring as getting to know the options customer is learning and his points of views can be changed. In the research this learning process - as the changing of the weight of purchasing criteria - can be measured by comparison of evaluation of groups of those intend to build house *in the next two years* versus those have already built *it in past two years*. The data show that while purchasing roof window as the results of learning process the relevance of *timber*, namely the *quality timber* became more important criterion for customers parallel to the increasing *need of aesthetic*.

The H3 hypothesis proved to be right. The purchasing process when informing and inquiring can be considered also a learning process while the weight of the criteria of selection is changing.

H4. Those prefer plastic products accept timber higher extent than those prefer timber products accept plastic as base material of roof windows.

As the research progressed there were two characteristic groups of customers emerged by their preference of base materials: one bigger group consists of those prefer timber, and another smaller one consists of those prefer plastic. During the process of getting informed, as customers get to know detailed characteristics of the product, the characteristics connected to timber become more important, the preference of plastic decreases, that is in relations of timber versus plastic

customer needs move towards timber from the plastic. In case of the two preference groups the acceptance of the other material can be measured by the relation to a product made of both timber and plastic. As the results show those prefer timber accept timber-plastic window less than those prefer plastic, that is the refusal of the other material is not symmetric, among those prefer timber it is stronger.

The hypothesis was accepted, those prefer plastic products accept timber higher extent than those prefer timber products accept plastic as base material of roof windows.

H4a. The reason why a customer prefers plastic as base material is its price: the price of plastic roof windows is lower than that of timber ones.

This hypothesis expresses a generally accepted belief as plastic associates to the notion of lower price. The root of this belief can also be that earlier the reason why plastic as base material could spread fast was mostly its lower price beside the image of modernity. The hypothesis was tested by comparison of prices of most popular sized windows as both plastic and timber ones were examined in same period with same technical content and from same manufacturer companies. In case of the most relevant producers examined, Velux and other ones as Fakro and Roto the roof windows made of plastic proved to have higher prices comparing similar products made of timber; only the products of Schindler Kft have the same prices regarding base material.

So this hypothesis was rejected, the prices of plastic roof windows are higher or same than that of timber ones in case of same technical content and therefore customers choose plastic windows not because of its price.

H5. The base material of roof windows is an extremely important factor in customers' decision.

We could see that the preference of base material shares the respondents more than the other examined characteristics of the product. To explore the effect of base material and of some other relevant criteria on buyers' decision Conjoint Analysis was applied. Using this Analysis we could measure the relative importance of criteria, their influencing ability and the utilities of taken values of each criterion perceived by customer. Based on these results the priority of characteristics can be sorted by influential ability on the customers' decision. Derived from the

results of utilities and importance we can see that from the examined characteristics - thermal insulation, price, durability, base material and warranty - the base material proved to be the most influential factor within the examined range.

So the H5 hypothesis was accepted, the base material of roof windows is an extremely important factor in customers' decision; it is the most determinative factor among examined ones.

H6. The effect of the price appears different extent in customers' decision regarding regions.

Incomes of households are quite diverse regarding different regions in the country. Generally the price of products is one of the most relevant criteria of the purchase. As we saw when the previous hypothesis was examined, *price* has similar influence level as *warranty* and *durability* have on buyers' decision related to roof windows within the examined range. As results show, although in case of *base material*, *thermal insulation* and *warranty* there are significant differences regarding regions, in case of influence of *price* there is no difference found, *price* influences buyers' decision in all three parts of the country (*Budapest and Pest county, Transdanubia, East of the Danube*) on the same extent within the examined range (50 000 Ft-70 000 Ft). The relatively higher level of net income of a household does not mean lower price sensitivity in the examined range.

This hypothesis (H6.) was rejected. The effect of the price appears same extent in customers' decision regarding regions of the country with a note, that this statement was examined within the interval of 50000Ft-70000 Ft.

4. The theses of the thesis.

As the consequence of the research the thesis of the dissertation can be summarised as follows:

T1. It was found that in case of a low-populated country with relatively low GDP such as Hungary the market that established by an innovative company and led by its brand, can provide room for some other similarly positioned brands regarding the higher technical content of the products. This way, beside the dominancy of one brand, the market supply meets customer needs and this market keeps supply competition, provides business opportunities for different manufacturers by innovation and by active market behaviour.

T2. In case of such products of joinery industry as roof windows, branding has an outstanding relevance, the consumer behaviour can be influenced by its uncertainty-reducing effect. There is a further potential in it for manufacturers since the role of brand is currently not on the appropriate and necessary level regarding the consumer behaviour comparing to other durables.

T3. It was presented that Conjoint Analysis - because of its flexible nature and applicability potential - is well suitable for examine characteristics of products of joinery industry as end products of wood industry throughout exploring perceptions of consumers.

T4. It was found that although in Hungary the household incomes are very dissimilar regarding regions, and usually price has a very significant role in the purchasing decision, the effect of the prise of roof windows on purchasing decision does not differ by regions within the examined range.

T5. It has been proved that the character of base material of roof windows dominantly influences the purchasing decision. At the same time characteristics of the products during the purchasing process - which is also a learning process for customers – change consumer behavior towards the acceptance of wood as natural base material.

5. Utilization of the results, possible directions for further research

As opportunities of utilization of research results several areas may arise. One of them is the area of roof windows manufacturer companies. They could establish their product development strategies taking into account factors that influence consumer decisions the most. Similar researches that are conducted periodically could follow the changes in consumer behaviour.

Roof window distributor stores and retailers could establish their business policy taking into account selection criteria relating to the place of purchase in order to tailor them meeting best customer needs.

Another important area can be the education, as the applied research methodology may get role in order to introduce the study of consumer behaviour in case of other product groups, to follow the changes in consumer behaviour and to spread consumer-oriented approach among future professionals.

Connecting to the study above I suggest additional research within the following areas:

- First it would be important to refine the model of consumer behaviour. The model devised set out from the most commonly used general model for durables, but for more accurate understanding of consumer behaviour on roof windows market further refine is necessary.
- In addition, it is necessary to conduct a further research with a random sampling method over the country in order to gain results with more general validity. In relation to this research – as it is mentioned in the dissertation – a further investigation would be useful in order to explore and estimate the number and age of roof windows built in the houses and homes to estimate future demand derived from expected replacement of them. These results of the research could provide manufacturers current and useful information regarding marketing strategy.
- Derived from the applied method of Conjoint Analysis results concerning priority criteria are valid within the specified intervals. In further research it would be reasonable to extend these

intervals to the neighbouring ranges in order to gain results with more comprehensive validity.

- The primary data collection – the fieldwork – of the research was conducted before the financial crisis. Conducting same research again we can get time series data and from that the change in customer behaviour influenced by financial crisis can be explored.

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