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**EXAMINATION OF PERCEIVED PURCHASE RISKS AT THE SALE OF
PLASTIC DOORS AND WINDOWS IN HUNGARY**

Thesis booklet of the PhD Dissertation

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1. Prelude, aim of the research

My 15 years of professional experience in the insurance market played a role in choosing the topic of the dissertation, during which I encountered the legal requirements of financial service providers regarding risk management as an internal auditor. Although the risk management approach of a financial service provider represents a completely different dimension than the risk management of a company engaged in industrial production, the identification, measurement and monitoring of risks is important for these economic actors as well. The sale of products plays a decisive role in the life of companies. During sales, among other things, the question arises of what influences the customer's decision and whether and how the customer can be influenced. One such influencing factor is the perceived risk during the purchase. The area of my research is the investigation of the behavior of customers towards risks. My goal is to highlight the importance of risks perceived by customers during sales, and to develop a recommendation to reduce these perceived risks.

The reason for choosing the window and door market is of family origin, as my family has been involved in window and door sales and production for the second generation. The topic is still relevant in 2023. Fearing declining orders due to the slowdown of the domestic construction industry (Portfolió Építóipar 2023 conference, 2023), competition for consumers is vital. It is essential to acquire knowledge about the customers' decisions, which can help door and window sellers during personal sales.

The third aspect of choosing "windows and doors", as the product of the basis of the dissertation, is the importance of doors and windows today, as part of the "green" trend (the rise of renewable energy sources and energy saving). In September 2022, the European Parliament adopted the revision of the energy efficiency directive (2018/844/EU), with new energy saving targets. 40% of the energy in the European Union is used by buildings. Modernization of heating and cooling of buildings is one of the important areas of the energy efficiency directive (European Parliament, 2023). During the "lockdown" announced at the time of the Covid 19 pandemic, the time spent at home highlighted the importance of our buildings, as in the blink of an eye, homes became offices, kindergartens, and schools in addition to sleeping and resting functions. The renovation of buildings also stimulates the construction industry, by creating new jobs or keeping the existing ones.

One of the basic characteristics of human existence is decision. Making decisions is a complex process that is influenced by biological and social factors. An important area of the study of consumer behavior is the analysis of consumer decision-making. Searching for and showing certain regularities and patterns can help in getting to know the mechanisms behind consumer decisions. During this searching process, we can start from the rational decision-making consumer, however, in everyday life, people do not always follow the rules expected in advance, according to the normative decision theory. For the consumer, the world is becoming more and more complicated; you rarely have all the information you need to make a "good" decision in a given decision situation. Therefore, you are faced with uncertainty during your decision-making. The scientific experiences and knowledge of psychology are available to explain the specific system of rules or irregularities under uncertainty, which help in understanding human thinking and behavior (Zoltayné, 2005).

One of the drivers of consumers' decisions is the individual's subjectively perceived fear of the purchased product or service. This fear is typically felt more strongly for high-value, not well-known products. Before making a purchase decision, questions arise in the buyer's mind, such as whether he can find a product that meets his expectations and needs, whether the product will work as the manufacturer promises, whether the product has the promised functional parameters, what will friends and neighbors say, if you do not choose a premium-quality, branded product, is the product worth the price.

There is no domestic or international research regarding the risks perceived during personal sales, when buying windows and doors. Despite the fact that research conducted with other products and shopping channels (e.g. online shopping) has highlighted that customers' fears play a large role in purchasing decisions (Aghekyan-Simonian, et al. 2012, Gerber et al. 2014, Knuston et al. 2007, Mansour et al. 2009). However, customers' fears can be managed and even reduced with certain techniques. The mapping of risk-reducing tools is thus significant not only from a scientific point of view, but also from a practical point of view, since the knowledge of these tools and the knowledge gained about their importance can help the work of salespeople in practice and make sales more efficient. A salesperson who knows the perceived risks of the potential customer segment during the purchase and the possible tools for reducing the risks will be able to serve customers more successfully and can create additional value, both for the customer and for his employer.

There are four approaches to risk definition (technical, economic, psychological and sociological approaches). During my research, I use the psychological approach, which is based on the subjective perception of the individual.

The aim of the research is to firstly explore the level of risks perceived by consumers during the purchase of door and window sales, and to examine the effect of certain demographic (gender, generations) and social characteristics (educational level) on the degree of risk perception. In the second step, the aim is to examine the importance of the tools used to reduce these risks, to measure the effect of individual demographic (gender, generations) and social characteristics (education) on the importance of the risk reduction tools. Another goal, for the sake of practical usability, is to explore whether perceived risks and risk reduction tools can be separated in risk types. In the event that new factor variables were created during the grouping, my goal was also to examine possible correlations between these variables.

2. Content and methodology

The two main pillars of the research are the examination of perceived risks and the tools used to reduce these risks from different approaches.

To achieve the goals of the research, I conducted secondary and primary research. At the beginning of my research, I used an exploratory qualitative research method, the netnographic research, after which I formulated hypotheses.. I used quantitative research methods to test the hypotheses.

I measured the customers' perceived risk factors and the importance of risk reduction tools with a questionnaire, using a Likert scale.

I investigated the effect of demographic factors (gender, age, education) on the variables with non-parametric tests, depending on the number of groups.

The large number of variables induced the use of the multivariate statistical method, the principal component analysis, with which I succeeded in compressing the variables into factor variables, thus revealing the existing relationships between the variables. The analysis resulted in four factors for perceived risks when purchasing, and five factors for risk reduction techniques.

3. Theses and results

The examination of the risks perceived during the purchase of windows and doors can be considered unique, since research in this direction has not yet been born. The topic of the dissertation was investigated using demographic and socio-demographic characteristics. I analyzed the effect of gender, generation and education both in terms of perceived risk values and risk reduction tools.

The relationship between gender and risk perception is a much researched area. An important economic question is whether men and women systematically differ in their responses to risks. Research experiences are divided as to whether a certain risk is perceived more strongly by women or men.

The results show that women perceive certain risks stronger than men. We found a significant difference in the „time” variable, e.g. women consider the time spent searching more important than men. They feel more insecure that the door and window will not be aesthetically pleasing, that they will not be able to find accessories that match the color, that it will not be top quality or that it will not be safe. There is also a significant difference between the sexes in terms of risk reduction tools. For women, it is more important to check the window and door company's website and visit blogs and forums. The phenomenon observed during the netnographic research, that men prefer to use blogs and forums to gather information, was not proven based on our sample, since women are the ones for whom this method is more important based on the questionnaire survey. Asking acquaintances, on the other hand, is more important for male respondents.

Generational studies about risk perception also show differences between individual age groups. Using the generational classification widely used in the literature, I investigated the relationship of the Baby Boomer, X, Y and Z generations to the perceived risk. The results of the study show a rather heterogeneous picture. An interesting result is the difference between generations X and Z regarding the „time” variable. For Generation Z, time is significantly more important, which can be explained by their heightened sense of time. In a changing environment, Baby Boomers do not consider the risk of the product being made from non-recycled materials to be dangerous at all. The comparison of generations X and Y highlighted the fact that the older generation feels risks are more important than the younger generation X, this phenomenon can be observed in all significant differences, i.e. the „functioning”, the „poor quality”, the „time”, the „likes of the partner” and the „down payment” variables. This

connection also appears between Generation Z and the older age group. Older people feel that it is more important to have top technology, top-quality raw materials, and heat and sound insulation as product features. Older people are more positive about the function alone, that the window they bought will work well.

The research highlighted several generational differences in the tools used to reduce risks. The most striking feature of generation Z is that they do not consider it important to try it on in the showroom, or to inspect the door and window elements in the showroom, or to have the expertise of the salesperson. They rely more on the opinions of their friends and the manufacturer's website than their older customers. Members of the Baby Boomer generation, on the other hand, rely less on the opinions of their friends or even celebrities. This corresponds to the fact that the Baby Boom generation has a lot of experience and probably starts from their own opinions and experiences, like the younger ones. Generation X considers the appearance of the point of sale and the salesperson to be more important than Generation Y.

With the exception of life expectancy, people with no higher education perceive a higher risk. This is contrary to studies found in the literature, that people with higher education tend to perceive higher risks. For each of the variables of „installation professionalism”, „source of raw material” and „color satisfaction”, non-higher-educated people have higher values.

Regarding education, I found a significant difference in the perceived risk for many variables, but for all of them it can be said that those with a higher education have a higher average than those with a lower education, which means that they are more aware of the potential risks that occur when shopping. With regard to risk-reducing tools, I found that the non-higher-educated people in the sample consider risk-reducing tools to be less important, which is in line with the observation that people with a higher-educated level perceive risk at a higher level and therefore it may be more important for them to use risk-reducing tools.

Thesis 1: As a thesis of the research, I formulated that gender, generational affiliation, and level of education influence the level of perceived risks when shopping and the importance of risk reduction tools.

Result 1: As a result of the research, it can be stated that there is a significant difference in the risks perceived when buying windows and doors in terms of gender, age and education, however, these differences are not generally present in the sample, but differ with respect to individual variables.

In the literature, researchers group the risks perceived in the purchase according to various aspects. The most frequently used typology distinguishes health, physical, functional, time, financial, psychological and social risks for the risks perceived when purchasing.

Thesis 2: Based on research conducted in other fields, the risks perceived when buying windows and doors can be classified into groups that reflect the expectations of customers regarding the product and sales.

My attempt to reduce the variables by following the steps of the principal component analysis was successful and factors were created that can be explained well from a professional approach. For the risk variables, four factors were isolated. I named the first factor "Aesthetic" risk. The starting variables that are related to some appearance of the product were included in this variable. The second factor was named "Functional" risk. These include the variables that are related to a product characteristic of the windows and doors, to the assumed basic function. Such as the waterproofing, heat and sound insulation of the doors and windows or the appropriate duration of the product. The third factor highlights the financial risk. It indicates financial disadvantages such as the risk of losing the down payment if the customer chooses an inappropriate manufacturer, or the financial loss if the installation is not professional or if the production time is longer than the production time agreed upon when ordering. The name of the variable became "Financial" risk. The fourth factor includes the risk related to the origin of the product. For the people answering the questionnaire, it is important that the product they want to buy comes from a country that they expect based on their information, but they consider it doubtful whether the product really comes from there. I have named this "Country of Origin" risk. However, the results cannot be generalized, as the cross-sensitivity test was not performed, as the used statistical software does not support this kind of analysis.

Result 2: With regard to the perceived risks when buying windows and doors, the aesthetic, functional, financial and country of origin risks can be distinguished.

The role of risk-reducing tools is very important from the point of view of consumers, as they can ultimately influence the decision to purchase. The means by which the salesperson can minimize the perceived risk, so that the customer no longer sees a danger or a risk at purchase, is an important knowledge at sales.

Thesis 3: Tools for reducing the risks detected during the purchase of windows and doors can be sorted into factors.

At using the principal component analysis of risk reduction tools, I created five factors. The first risk-reducing factor shows the importance of personal selling. The appearance of the salesperson and the point of sale, as well as the salesperson's expertise, are important to customers. Based on the correlations, this category also includes obtaining information through other, personal channels, relying on the experiences and recommendations of other people. The new variable is called "Personal Connections". The second category of tools suitable for risk reduction includes activities aimed at reducing information asymmetry, which apply to online information acquisition and apply to the manufacturer's or trading company's website. I named the variable the "Online information search" factor. The third factor supports the involvement of as many of the customers' senses as possible in sales. It is important for the customer to be able to feel and try the product or product sample. You can do all this in the showroom. This variable is called "Physical Sensing". When naming the factors, the fourth factor was named "Reliability of the manufacturer". Here are the components that relate to the manufacturer's properties. For example, if the manufacturer has process certification, e.g. ISO certification or product awards or known by the customer. Financial risk reduction tools were included in the fifth variable. I named this factor the "Finance" factor. Based on the examination of the mean values, after the expertise of the salesperson, these two tools are the most significant risk-reducing tools among the respondents. Their classification into one factor also points to this fact.

Result 3: The grouping of risk mitigation tools based on a statistical method resulted in five factors, personal connections, online information search, physical perception, manufacturer reliability and financial risk mitigation categories.

According to the values of the new factor variables created, they can be classified into above-average and below-average groups. It is interesting to explore whether there is a significant correlation between the perceived risk categories and the categories of risk reduction tools.

Thesis 4: There is a correlation between the factor variables of perceived risk and risk reduction tools.

I looked for a correlation between the newly created factors, but this investigation was unsuccessful. I also analyzed the correlation between the perceived risk variables and the risk reduction tools, but even here only weak relationships are present in the sample. Going further, I also analyzed the association between perceived risk importance and risk reduction tools. This

investigation shed light on one of the most important relationships from the point of view of the research, which represents the fourth main result of the research.

E4: Buyers for whom it is more important that the installation be professional, rely mostly on the expertise of the salesperson. This risk-reducing tool is the most essential for certain functional factors of the door and window (such as the gas seal of the glass or the safe operation of the product), as well as the importance of the given down payment. The second most significant risk mitigation tool, the money-back guarantee, correlates with the soundproofing variable.

In the research, the questionnaire survey assessed the importance of risk reduction tools from the customer's point of view, however, I consider it essential to "translate" these tools by setting up a model, so that the obtained knowledge becomes practical knowledge that can be used by the sales personal in practice.

Thesis 5: Knowing the identified risks and risk reduction tools, a risk reduction model of sales can be set up, which can help door and window salespeople by knowing the risks perceived by customers and the tools that can reduce them, by making them aware of these factors.

I named the model the "sales risk reduction model".

Result 5: The result of the research was the creation of a risk reduction model for sales.

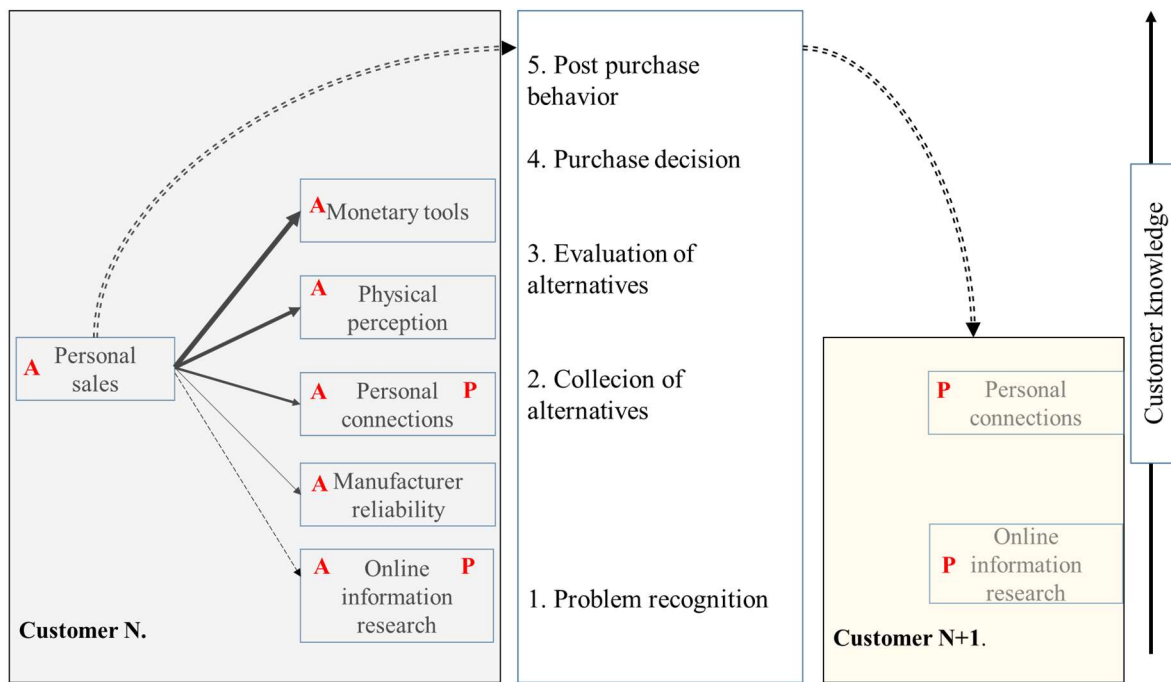


Illustration: The risk reduction model of sales,
Source: own research, SPSS

In the model, I distinguished two types of risk-reducing tools, those that can be actively influenced (A) and those that are passively experienced and can only be controlled indirectly (P). In the model, I marked the tools according to the capital letters, although there are overlaps, it still contains useful information, especially for practitioners.

Technologies that can be actively influenced are those that the manufacturing/distributing company can manage, shape, and control within its own authority. This category includes, among others, the design of the website, the qualifications of the manufacturing company, the expertise and appearance of the personal salesperson, the design of showrooms and the application of financial risk reduction techniques. In the model, I marked the given customer with a big N. Passively controllable tools are blogs, forums, and the opinions of the customer's friends. These affect the next customer, who is named N+1 in the model. At the end of the purchase process, the customer acquires all the information on which he can base a purchase decision that provides him with a subjective sense of security.

Within personal sales, the salesperson can consciously use these risk-reducing tools, focusing on making the customer feel satisfied and making the purchase of windows and doors a positive experience. In this way, you can passively influence whether the customer passes on the positive information about the product or manufacturer after the purchase, or reports about a positively

experienced purchase to his friends, thereby influencing the reduction of the risk perception of the next customer.

The model is also supported by the thesis presented in Fuentel's (2021) dissertation, according to which the search for information fundamentally affects the perceived risks of consumers, and the perceived risk also shapes the way of information search. Perceived risk and information seeking have a causal relationship that is reciprocal and dynamic in purchase situations and plays a crucial role in how consumers make decisions in today's digital environment.

According to the model, it is worth considering the following for companies selling windows and doors:

- 1) commission of a competent website editor, who already on the website mentions the functional and aesthetic characteristics of the product, as well as the process certification of the manufacturing company (if it is not already available, it is worth considering), its product prices, the place of origin of the raw materials, as well as statistical information on compliance with the deadlines of the products manufactured so far. It might be worth entering into a cooperation agreement with installation companies whose professional work increases product satisfaction after the purchase,
- 2) employment and further training of salespeople with high expertise,
- 3) creation of a well-equipped, high-quality (profiles, fittings, finished products, etc.) and transparently organized showroom,
- 4) definition of financial incentive tools, but only after the calculation of additional costs associated with these tools. Warranty extensions or money-back guarantees, for example, are effective tools, but in this regard, the company's viability should not be jeopardized by a possibly poorly set up strategy. These devices should be used within reasonable limits, for example, the warranty can only be extended if the door and window has been installed professionally, for example, it has an installation "certificate" or is serviced annually by an installation and maintenance company recommended by the manufacturer.

New and novel results of the research

The research provides new knowledge in many areas. Compressing the risks detected during the purchase into factors during the purchase of windows and doors sales. The principal component analysis resulted in four main factors of the perceived risk categories. The financial, functional and aesthetic factors fit the existing models and theoretical approach. The fourth

factor, the risk of the place of origin, is a specific risk element. It would require further research to find out whether this is a characteristic of Hungarian consumers, or only a phenomenon existing in the choice of doors and windows, or possibly both. It indicates the uncertainty of consumers regarding the origin of the raw material of the ordered product and the place of production.

The examination of the individual risk factors (importance and probability of occurrence), the total value of the perceived risks and the dependence of risk reduction tools on demographic factors led to novel results.

A completely new scientific result of the research is the classification of tools for reducing the risks perceived during the purchase of windows and doors into factors. As a result of the principal component analysis and the research interpretation, I separated five factors from each other. The first is the "personal relationships" factor, which includes person-to-person knowledge transfer and its circumstances. Among the risk-reducing tools, these include the expertise and appearance of the personal salesperson, the design and overall effect of the personal sales location, as well as interviewing acquaintances and taking into account the experiences of others. The online information search is separate from the rest of the tools, the examination of the information on the websites, be it the website of the manufacturer or the trading company, as well as the search for information on blogs and forums, are included in one factor. The third factor sheds light on the importance of showrooms during window and door purchases. The reliability of the manufacturer also reduces the risks perceived by customers. Among the respondents, the most preferred risk reduction tools are the money-back guarantee and the extension of the warranty, which form the fifth factor in the factor model.

I created the "risk reduction model of sales", in which I represented the factors created from the risk reduction tools in accordance with the flow chart of the purchase and marked them according to whether the selling company can actively or passively manage and control these tools.

As a result of the research, my marketing strategy recommendations, based on scientific knowledge, are also a new result for companies that sell windows and doors. Focusing the content elements of tomorrow's editing on the functional and aesthetic product characteristics, the manufacturing company's qualifications, the place of origin, increasing the expertise of the personal sales associate, equipping the showroom, and using financial risk reduction tools proved to be valuable decision-facilitating factors from the customer's point of view.

4. Conclusions and further recommendations

The present research examined a relatively narrowly defined area, by broadening which it would be possible to acquire additional knowledge. Both geographically and by expanding the research market and the sales channel, new research areas can be created.

The research was carried out territorially in Hungary, by interviewing Hungarian customers, but this can be extended, for example, to Hungarian customers who live abroad. An international comparison would also provide additional knowledge, for example in the neighboring countries to which Hungarian door and window manufacturing companies deliver.

The examination of the purchase risks perceived by consumers can already extend to products, for example other durable consumer goods, such as the purchase of furniture, electronic devices or cars, where personal sales still have the right to exist.

Apart from gender, age and education, other independent variables could also be included in the analysis of perceived risks. This could be, for example, the effect of the occupation on the perceived risk (e.g. professions requiring technical affinity versus consumers working in healthcare professions), or the economic situation of the household involved in the purchase (e.g. by social category: lower, middle and upper class).

It would be possible to compare the perceived risks within the online and traditional personal sales channel.

Within the risks during personal sales, data protection risk research can also be examined.

The exploratory research of risk reduction tools can also be extended to other products or other sales channels.

Methodologically, the correlations between the perceived risks and the risk reduction tools, their effect on each other, what analyzes can be done and what measurement methods and scales can be used to carry them out.

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