

Article

Investor Segments by Perceived Project Risk and Their Characteristics Based on Primary Research Results

Mónika Garai-Fodor, Tibor Pál Szemere and Ágnes Csiszárík-Kocsir * 

Keleti Károly Faculty of Business and Management, Óbuda University, 1034 Budapest, Hungary

* Correspondence: kocsir.agnes@uni-obuda.hu; Tel.: +36-1-666-5222

Abstract: Our research focuses on investment initiatives. The perceived risks are analysed from the consumer's viewpoint, i.e., the client's perspective, from the standpoint of the project. In the literature, there are several risk interpretations and classifications. We assumed it could be interesting and valuable to approach investment projects from a consumer-oriented viewpoint, considering that the perceived and consumer-identified set of risks is a major determinant of the outcome of a decision. In addition to relevant secondary sources, we also present partial results of our primary research project. A pre-tested, standardised online questionnaire was employed in the primary study, using a snowball sampling approach generating 1545 evaluable questionnaires. As a result of the research, we were able to segment the customer (investor) target groups into various categories depending on the perceived project risk. We have established the orientation directions along which these segments may well be meaningfully described in terms of perceived investment risk concerns and socio-demographic characteristics that influence cluster membership. In our opinion, the findings may be a useful source of information for investment project developers looking to identify consumer groups based on risk perception and build project solutions for them.

Keywords: risk; project risk; construction industry; consumer decision



Citation: Garai-Fodor, Mónika, Tibor Pál Szemere, and Ágnes Csiszárík-Kocsir. 2022. Investor Segments by Perceived Project Risk and Their Characteristics Based on Primary Research Results. *Risks* 10: 159. <https://doi.org/10.3390/risks10080159>

Academic Editors: Vasa László and Róbert Magda

Received: 31 May 2022

Accepted: 19 July 2022

Published: 4 August 2022

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1. Introduction

The construction business and construction projects are considered high-risk activities, with project success largely determined by the degree of risk. This is why we feel a client-side, or consumer-side, approach to risk is critical for such initiatives. After all, the perceived quality of a project's output is heavily influenced by the risks that the customer perceives at the start and during the execution of the project. The elements that impact the client's choice, as well as the process and decision mechanism that the customer goes through, must be understood by project contractors. We believe that, by segmenting the client side according to risk, we will be able to deliver realistic information and recommendations to the contractor side. The investment projects discussed in this study, as well as the consumer and customer decisions made as a result of them, may be viewed as a complicated and difficult purchase decision process. As a result, this concept and model served as the theoretical foundation of the study. We believe it is critical to thoroughly investigate the role and impact of risk in projects, particularly building projects, in order to improve project success and reduce any cognitive dissonance once the investment is implemented.

2. Literature Review

2.1. The Concept of Risk and Its Impact on the Success of Projects

Project management as a discipline has undergone significant changes in recent years. These changes have been driven by a high degree of volatility and adaptation to rapidly changing market conditions (Garwood and Poole 2018; Bredillet et al. 2018; Appelo 2011; Fioravanti et al. 2018). This turbulent environment poses a number of challenges and risks.

Under such circumstances, traditional project management methods and risk management techniques are no longer adequate to meet the expectations and challenges brought and caused by the environment. Among project management techniques, the agile approach is gaining increasing prominence and has also proven useful in managing risks (Trzeciak 2020; Zavyalova et al. 2020; Layton et al. 2020; Bogdanova et al. 2020).

Several attempts have been made to define the concept of risk and the origin of the word. Almost a century ago, Knight (1921) attempted to capture the concept of risk alongside that of uncertainty on a purely mathematical basis. In his view, risk is when we know that something will happen (i.e., the probability of its occurrence is known), but we do not know exactly what its effect will be. If we do not know the future effect and cannot even estimate the probability of its occurrence, we call it uncertainty. Risk can also be defined as the difference between the expected and actual outcome, where the difference is the risk. Hillson (2002) also captures the essence of risk along the lines of uncertainty but stresses that it may not always have adverse effects. Jaafari (2001) argues that risk is a property of a system that leads to different outcomes. According to Project Management Institute (PMI) (2017), organizations and stakeholders always perceive and evaluate risks that arise during a project. The attitude towards risk is determined by the organization's risk appetite, tolerance, and the size of the risk threshold that the organization considers tolerable. Both risk appetite and risk perception have been analysed and investigated in a number of studies. The five big personality models presented by Zhao and Seibert (2006) (extroversion, friendliness, conscientiousness, emotional stability, openness to experience), which Wang et al. (2016) used to analyse the relationship to project risk, are noteworthy. Attitudes towards risk can be influenced by certain factors in both positive and negative directions, as noted by Ulbert and Csanaky (2004) in relation to positive illusions, which usually relate to perceptions of one's abilities and skills. All these are relevant for project managers.

The construction industry and construction projects are considered a high-risk activity. Several studies have shown that the primary determinant of project success in construction projects is the degree of risk (Shen et al. 2001; Wang et al. 2004). Since construction projects are multi-stakeholder projects (involving subcontractors, suppliers, owners, designers, and a wide range of stakeholders), their design and risk assessment require special attention. Risks in projects are normal factors and inherent to operations and have been studied in the literature for many years (Bugarová and Simicková 2019; Tavares et al. 2020). Risk can have either a negative or a positive impact on the project, but the latter is much less common than the negative impact. Impacts can be reflected in productivity, quality, budget and timeframe slippage, or even scope changes (Loosemore et al. 2012; Ismael and Shealy 2018; Ghasemi et al. 2018), so their identification is always a priority regardless of the level of risk (Shrivastava and Rathod 2015).

Some of the risks arise from the complexity of projects. In relation to project complexity, Geraldi et al. (2011) identified five dimensions: structural complexity, uncertainty, dynamics, pace-speed, and the socio-political dimension. Each of these is a risk-generating factor that needs to be analysed in a risk identification analysis.

The management of risk is a key task in project management. Managing risks in project management is as important a task as managing corporate risks (Aleshin 2001). The latter is embedded in the philosophy of corporate management (Hahn 1987). Part of this process is the identification, analysis, selection, measurement, and management of risks.

Project Risk Management (PRM) is increasingly recognised as a factor that increases the likelihood of project success (Olechowski et al. 2016), but the use of these techniques and tools is still rather ad hoc among project managers (Raz and Michael 2001). There are a number of techniques to manage risk. Some of them can be avoided through insurance, and others can be minimised or shared through appropriate costing, such as NPV calculations (Paquin et al. 2016) or contracts (Adler et al. 2016; Lewicki et al. 1998), but there are still some factors that remain unmanaged. Fekete (2009) mentions two levels of risk management:

- Risk control as a causal action (reducing the probability of occurrence, reducing the impact);
- Risk financing as a causal measure (insurance, contracts).

Several researchers and practitioners have worked on the development of risk management systems. Iqbal et al. (2015) developed a system specifically for the construction industry. The authors investigated the importance of different types of risks and the effectiveness of the risk management techniques applied. In his work, Aleshin (2001) identified the most important risk events in the construction industry, classified and evaluated them, and developed risk management recommendations for the risks studied. Choudhry et al. (2012) also identified and prioritised risks and formulated good practices and techniques for managing these risks. Wang et al. (2004) developed a risk model that describes the relationship between risks and their hierarchical interrelationship.

That means, in this context, that a company should make its action plan for managing risk (Sági et al. 2020). Risks can be very diverse, and there are many ways of grouping them. According to Renn (1998), there are technological risks created by the social environment, large-scale risks beyond the control of the individual, monetary risks, and risks taken by the individual's own will. Coenen (2004) identifies five categories of risk: market (competition), operational (operations), financial (capital transactions, exchange rates, interest rates), environmental (legal, business), and other (organisational structure, natural environment).

2.2. The Role of Risk in the Consumer Decision-Making Process

In order to be effective in marketing, companies need to be aware not only of the factors that influence consumers' decisions when choosing a product/service, but also of the process and decision mechanism that leads to the purchase of the product or service. According to the best known and most widely used Engel's five-step model (Engel et al. 1968), the process starts with the identification of the problem and continues with the gathering of the necessary information, followed by the maturation of alternatives and the purchase decision. The fifth stage is the post-purchase behaviour: satisfied or dissatisfied customer status.

In consumer behaviour, the term risk is used with two meanings: as a synonym for uncertainty and as a source of danger. As uncertainty, it refers to the possibility that the product or service may not meet the expectations of the buyer. In addition, as a hazard, it refers to the possibility that the product or service will cause harm to the consumer or his household (Robertson and Kassarian 1991). Among the early authors, Bettman's (1973) conception was also a major influence on later work. Bettman distinguishes two concepts of risk: inherent and handled risk. Intrinsic risk, which is typical of a product class, is inherent. In contrast, handled risk occurs when a brand is selected for a product class. According to Cunningham's (1967) early conception of risk, which is still valid today, especially in the field of measurability, two components of risk can be distinguished: uncertainty and consequence. Uncertainty expresses the probability that a certain event will occur, while the consequence is the cost to the consumer if the event occurs.

The view that consumer behaviour and purchasing decisions are, in fact, a kind of risk taking was already widespread in the 1960s. The theory of perceived risk is that certain consequences of the chosen alternative cannot be foreseen by the consumer. The magnitude of the perceived risk depends on the personality of the buyer, the nature of the product/service, the price, and the purchase situation. Perceived risks include functional, physical, safety, financial, social, psychological, and time risks, as well as health risks (Bauer 1967; Jacoby and Kaplan 1972; Loudon and Bitta 1993; Lehota 2001).

Cox (1967) links the concept of risk to uncertainty. In his view, consumer behaviour is goal-oriented, i.e., one behaves in a certain way because one expects to satisfy certain needs. Risk is the possibility of not being able to satisfy these needs. Consumers are less and less able to maximise their utility when making purchasing decisions and therefore seek to minimise risk. The consumer is not rational and not fully informed and therefore cannot accurately assess the pros and cons of a purchase. According to Alden (1993), the potential

adverse effects, the possibility of losses, and the costs of losses influence consumers' risk perception. Consumers face risk when they have incomplete information, and this leads to uncertainty.

Perceived risk is subjective and either has or does not have a relationship to objective risk (Loudon and Bitta 1993). It also follows that the risks perceived by individual consumers may be quite different from one another (Hawkins et al. 2019). The situation, the influencing environmental factors, and the personal characteristics of the consumer will always make a risk a priority. How the consumer perceives the severity of the risk and which risk becomes more important to him depend on the current situation (Loudon and Bitta 1993; Hawkins et al. 2019).

In addition to perceived risk, the literature deals in many places with the risk experienced. A specific feature of this theory is that risk sensitivity is examined through the perception of the consequences of the purchase (Hofmeister-Tóth 2003).

Purchase consequences are defined as the adverse product characteristics or unwanted effects that buyers wish to avoid. Two criteria are used to measure the level of perceived risk: the importance attached to the purchase consequence and the perception of the likelihood of the adverse effect occurring for a given product or brand.

In marketing research, there is still no uniform definition of risk. In our study and in the context of the primary research associated with it, we used Jacoby and Jacoby and Kaplan's (1972) structure of perceived risk factors as the basis because we felt that it was the most appropriate for the dimensions of the study of project-related investment risk.

It is now almost natural to regard every purchase as a risk-taking exercise since the consumer's decision is influenced by many factors that he did not have to deal with before. On the one hand, the growing number of competing products and brands on the market and the "communication noise" that surrounds them make it increasingly difficult for consumers to be fully informed about what is on offer.

Another important risk factor is the subject of the purchase: whether it is a simple, inexpensive product or a complex, sophisticated purchase where time, money, and functional risk factors are even more important. The investment projects described in this study and the consumer decisions they entail can be seen as a complex, sophisticated purchasing decision process.

3. Materials and Methods

3.1. Background and Introduction of the Research

The theoretical basis for our research is provided by the domestic and international literature on the economics and business economics approaches to investment. In addition to project and process management theories, the analysis of investment has been extended to aspects of service marketing. Besides the systematic processing of international and domestic literature, a qualitative phase applied as a preliminary study helped to ground the quantitative research. The qualitative research involved individual expert interviews (54 participants) using a semi-structured interview design. The qualitative results, evaluated through traditional content analysis, helped to outline the hypotheses of the quantitative research and to design the standardised questionnaire. The quantitative phase focused on two target groups: clients and investors (B2C) and contractors (B2B). This paper presents partial results of the research on the former target group.

For the B2C quantitative research, a pre-tested, standardised questionnaire in the form of an online survey with a snowball sampling procedure was used. This resulted in 1545 evaluable questionnaires.

The research tool consisted exclusively of closed questions and nominal measurement levels—single- and multiple-choice selective questions—in addition to Likert scales and semantic differential scales to analyse consumer attitudes and values. Scaling questions were asked using a scale ranging from 1 to 4. One reason for this is the individual scale preference of Hungarian respondents: due to the school grading system, our Hungarian

respondents are most stable in interpreting the scale up to 5 as opposed to scales 1–7, 1–9, or 1–10.

The even scale was chosen because the middle value (3) for the odd (1–5) scale is an escape route for respondents. In the analysis of attitudes, those who choose the middle value do not tip the scales in either direction, resulting in an excessive proportion of “indifferent” consumers, making it difficult to segment them in a statistically and professionally meaningful way. We therefore opted for an even scale, which, by excluding the middle value, leads the respondent to take a more rigorous stance, thus contributing more to a successful segmentation (Malhotra and Simon 2017). In addition, for the questions analysed using the odd–even scale, it was not necessary to have the middle, indifferent value either as a “do not know” or “not aware of” response option, as the cognitive level was filtered using separate questions.

The design of the research tool themes was the result of relevant secondary data analysis. The finalisation of each response alternative—the pre-testing of the research tool—was carried out in light of the qualitative results.

During the quantitative research phase, our main objective was to analyse the following hypotheses:

- H1: *The risks perceived by the investor of a construction investment project can be categorized.*
- H2: *The range of investors (B2C) can be segmented according to the investor-perceived project risks of the construction investment project.*
- H3: *The segments according to the investor’s perceived project risks can be characterised on the basis of socio-demographic aspects.*

The logical framework for the presentation of the partial results presented in this paper is the evaluation of the above hypotheses.

Descriptive statistics and bivariate and multivariate analyses were applied using SPSS 22.0 software to process the quantitative results and test the hypotheses put forward. The first step in the food shopper preference segmentation was to perform a factor analysis of the preference system, deciding on the final factor structure based on the KMO value, the total variance value, and the professional explanatory power. For the segmentation, we implemented a K-means clustering procedure, which is a statistically appropriate method due to the sample size of more than 1000 sample elements.

In the present study, in addition to the results of the factor and cluster analyses, Pearson’s Chi-squared significance values were used to establish statistical correlations when characterising the segments, while the absolute values of the Adjusted Residual (Adj.R) were used to establish and analyse the internal correlations.

3.2. The Demographic Characteristics of the Sample

The largest share of the sample (40.9%) lived in Central Hungary, followed by residents of Northern Hungary (12.6%) and the Central Transdanubian region (10.8%).

In terms of age, a quarter of the sample (25%) was made up of respondents aged 18–25, and 20% of the sample was made up of respondents aged 26–33, followed in order (14%) by respondents aged 34–41. In terms of sex ratio, the sample was 48% male and 42% female. The largest proportion (47%) of respondents with the highest level of education were those with secondary education (vocational secondary school, high school, technical college), followed by a fairly marked presence (40%) of those with tertiary education (college, university, Ph.D.).

Respondents with a net monthly income of HUF 151–200 thousand per capita (25%), those with a net income of HUF 101–150 thousand (21%), and those with an income of more than HUF 251 thousand (22%) were almost equally represented in the sample.

4. Results—Property Renovation through the Eyes of the Investor

While 59% of respondents owned their own property, 39% did not currently own any property. Respondents who owned their own property had an average of 1.25 properties. Of respondents who owned their own property, 20% were planning to renovate their most

recently purchased/owned property, 35% were not planning to do so, and a further 4% were still hesitant about whether they needed to renovate their property at all. Those who did not plan to renovate their property said that the property had been renovated recently and was in good condition at the moment. It is certainly a positive result in terms of attitudes towards investors that only 1.5% said that they had negative experiences with previous renovation work.

It was also considered important to examine the importance of the aspects that determine the effectiveness of the investment for the client. In particular, we analysed how the aspects that determine the final outcome of the works were assessed by the investors.

In light of the results, it can be concluded that the most important factors influencing the investor's perception of the success of the project were the planning (the degree of preparation of the project), the financial aspects, and the human factor (the relationship between the client and the designer) (Table 1).

Table 1. Success rate of construction investment project implementation (% of mentions).

Aspects Determining Effectiveness	Average (Where 1 = Not Affected at All and 4 = Totally Affected)
the relationship between the designer and the contractor	2.88
the relationship between the client and the designer	3.06
the relationship between the client and the contractor	3.20
the role of the designer in cost reduction	2.94
the role of the contractor in cost reduction	3.04
the contribution of the state of preparation of the works to the success of the works	3.12

Source: authors' own research, 2018. $N = 1545$ (standard deviation = 0.86–1.00).

The success of the construction project depends, to a large extent, on the relationship between the client and the designer, which was considered by respondents to be the most dominant aspect of the success of the project. In addition, the degree of preparation of the construction and the relationship between the client and the designer were also decisive.

We also analysed the importance of the style of the property to be built/renovated and the factors that played a role in the choice of building materials. The results highlight the most important opinion leaders and opinion formers in the choice of style (Tables 2 and 3). They also reveal what other factors were also considered by investors when making decisions. In both the choice of style and the choice of building material, the professional's opinion was the most influential for investors, followed by the financial resources available and previous experience.

Table 2. Perception of importance of factors influencing style choice (average, where 1 = not at all, 4 = totally affected).

Perception of Factors Influencing the Choice of Style of Property to Be Built/Renovated among the Sample	Average (Where 1 = Not Affected at All and 4 = Totally Affected)
advice of design and construction professionals	2.59
advice from friends and family	2.37
ideas from magazines, journals, books	2.36
experiences in showrooms of specialist shops	2.50
style cues seen on television, in films	2.14
the amount of money one can spend	3.28

Source: authors' own research, 2018. $N = 1545$ (standard deviation = 0.92–0.96).

Table 3. Perception of factors influencing material use (average, where 1 = not at all, 4 = totally affected).

Perception of the Factors Influencing the Choice of Building Material for the Property to Be Built/Renovated among the Sample	Average (Where 1 = Not Affected at All and 4 = Totally Affected)
on the advice of design and construction professionals	3.00
advice from friends and family	2.37
ideas from magazines, journals, books	2.30
experiences in showrooms of specialist shops	2.55
style cues seen on television, in films	1.96
the amount of money one can spend	3.29

Source: authors' own research, 2018. $N = 1545$ (standard deviation = 0.91–0.94).

We have also found that the most important factor influencing the extent to which the investor ultimately feels ownership of the completed, renovated property was the style of the property (Table 4).

Table 4. Importance of factors affecting the psychological risk of the finished property (*mean, where 1 = not at all important 4 = absolutely important*).

Importance of Considerations for Investors in Making the Renovated Property Feel Like Their Own	Average (Where 1 = Not Important at All and 4 = Absolutely Important)
participate fully in all tasks	2.55
make all decisions yourself	2.95
you choose all the materials to be installed	2.83
the contractor is in constant contact	3.32
the style should be to one's taste	3.49
the costs do not exceed the budget	3.15
what the family and friends think of the finished property	2.31
the property is not completed by the promised deadline	2.78

Source: authors' own research, 2018. $N = 1545$ (standard deviation = 0.82–1.02).

In terms of loyalty to the contractor and service re-selection, investors believed that the success of the quality and financial performance of the project was the main determinant of whether they would work with the contractor again (Table 5).

Table 5. Importance of risk factors influencing continuity according to investors' views (*average, where 1 = not at all important 4 = absolutely important*).

Importance of Considerations According to Investors as to Whether They Would Work with the Professional Again	Average (Where 1 = Not Affected at All and 4 = Totally Affected)
it is very important to know what our relationship was in the past	3.25
how well my expectations have been met in terms of quality	3.52
how well my expectations have been met in terms of cost	3.33
the extent to which my expectations in terms of meeting deadlines have been met	3.24
how much I own the property after the renovation	3.05
the complexity of the services provided by the professional	2.87
I would not work with a professional in the first place	1.72

Source: authors' own research, 2018. $N = 1545$ (standard deviation = 0.82–1.02).

The main objective of our research was to explore the structure of the risk factors of construction projects as perceived by clients/investors and to segment the client side based on the perceived risks. In order to achieve the research objective, we conducted a factor analysis of risk factors first. This allowed us to find out which risk factors are related according to the investors' perception.

Varimax rotation method was used for all factor analyses. The total variance and KMO values were used to evaluate the results of each test (four-, five-, and six-factor tests), of which the five-factor result showed the most appropriate structure both professionally and statistically (hypothesis H1 was confirmed).

In each of the trials, there were factors that moved together throughout regardless of the number of factors, implying that these elements are very closely linked in the investors' value judgements.

Examples of such factors were:

- The duration of the project (construction) and the time risk group generated for the period of the investment (if the work would be done in spring, summer, autumn, or winter);
- Some of the competences that are linked to the professional (problem solving, flexibility, availability).

In addition, there were also some so-called migrant elements, which were grouped into different factor groups in light of the factor numbers, such as:

- The element describing "the segment of the investment (residential or commercial—build to let)";
- The element of "health risk (e.g., will I get sick, or will the contractor get sick during the process?)".

The five-factor test (Table 6) resulted in the following factor structure:

- Factor 1: "human and quality factor", which included the competences related to the professional and the quality element of the project;
- Factor 2: "financial and legal risk group", where financial risks linked to the return on investment and risks generated by changes in the legal environment were placed;
- Factor 3: "social risk", which included psychological and social risk factors related to the investor. The social perception of the project and the acceptance of the project by the investor, as well as the risk of identification with the result were included in this factor;
- Factor 4: "health risk", which included elements related to the adverse health impacts of the investment;
- Factor 5: "time risk", a group of risk factors generated by the duration and time period of the project.

After the factor analysis, a cluster analysis was performed on the original factor list using K-means clustering to segment the consumer sample based on risk factors. The analysis of variance showed a difference between at least two clusters based on each risk factor.

We first characterised the segments created on the basis of the risk factors included in the factor analysis, which resulted in the characterisation of five investor-customer (consumer) groups (Table 7). (Hypothesis H2 was confirmed.)

- Cluster 1: "preferenceless", for whom none of the risk factors was more important than the sample average;
- Cluster 2: "all risk overestimators", who rated each risk factor as more important than the overall sample average;
- Cluster 3: "financial, legal and health risks over-assessors", for whom the financial, legal, and health risks of the investment project were the most important;
- Cluster 4: "conscious", who considered the importance of the human competences linked to the professional to be more important than the sample average, in addition to the price and quality risk elements; these are the investors who really valued the flexibility, availability, problem solving, reliability, experience, and level of trust in the professional;
- Cluster 5: "social risk overestimators", for whom the social and psychological risk dimensions of the investment project were of above-average importance. For clients in this segment, the feedback they receive from their environment, the feedback from friends and family, and the degree of dissonance of the product with their social class are very important.

Table 6. Investor risk factor structure for the five factors.

Risk Factors/Factor Groups	Human–Quality Risk	Financial–Legal Risk	Social Risk	Health Risk	Time Risk
Reliability of the professional (how much work, with how much responsibility, and whether he or she delivers on time)	0.804	0.150	−0.096	0.021	0.107
My trust in the professional	0.735	0.177	0.113	0.124	0.081
Contact details of the architect/contractor	0.704	0.082	0.097	0.188	0.027
The professional's independent problem solving	0.694	0.097	0.232	−0.008	−0.041
The quality of the work done (poor quality materials, substandard work)	0.685	0.299	−0.168	0.115	0.223
Flexibility of the architect/builder to deal with specific problems	0.677	0.083	0.079	0.089	0.126
Experience of the professional, number of years in the profession	0.640	0.055	0.287	−0.062	0.149
Cooperation with the contractor, exchange of information (sharing all information, informing about the next step at the end of a work phase, etc.)	0.600	0.114	0.108	0.345	0.090
Coverage of the investment (whether he has enough money to complete the works)	0.223	0.508	−0.102	0.197	0.094
Price of services (how expensive the service is)	0.299	0.325	0.001	0.199	0.258
Credit risk (whether the interest rate on the loan will increase)	0.199	0.744	0.042	0.095	0.022
Changes in legislation (new taxes, levies)	0.147	0.732	0.168	0.210	0.046
Investment risk (market factors change so the property does not hold its value)	0.091	0.691	0.263	0.079	0.107
Legal risk (inadequate contract)	0.293	0.660	0.072	0.286	0.054
Expected return on investment (when the investment will return its value)	0.056	0.528	0.495	−0.029	0.188
The social perception of the property is not what you would have liked (friends, colleagues will have a negative opinion of the property)	−0.259	0.013	0.650	0.310	−0.069
Reputation of the builder/developer	0.285	0.024	0.631	−0.005	−0.028
Choice of services of the professional	0.390	0.110	0.616	0.005	0.106
Taste risk: the finished property may not be up to your taste in the end	0.061	0.188	0.563	0.429	−0.085
Segment of the investment (residential or commercial—build to let)	0.019	0.350	0.560	0.166	0.193
Health risk (will I get sick, or will the builder get sick during the process?)	0.037	0.181	0.442	0.426	0.197
Accident risk (someone gets hurt during the investment process)	0.193	0.266	0.209	0.739	0.102
Health risk (built materials are harmful to health)	0.321	0.234	0.124	0.728	0.109
Time of the project (whether the work would take place in spring, summer, autumn, or winter)	0.110	0.086	0.098	0.140	0.793
Duration of construction	0.310	0.125	0.023	0.028	0.714

Source: authors' own research, 2018. $N = 1545$, total variance = 57.9%; $KMO = 0.925$.

Segments by risk factors were also analysed by socio-demographic characteristics. The results showed that education and net monthly income showed a significant relationship with segment membership, so we characterised each group according to these criteria (Table 8). (Hypothesis H3 was partially confirmed.)

The results showed that, in the cluster of “conscious”, the proportion of people with higher education was higher than expected. However, this cluster was also characterised by under-representation of those with vocational education and training, as well as those with primary education.

In the cluster of “social risks overestimators”, the proportion of people with primary education was higher than expected, while the proportion of people with tertiary education was lower. In the segment of “professionally aware”, the proportion of subjects in the income bracket above 251,000 was higher than expected, while the proportion of subjects in the income bracket between 151,000 and 200,000 was lower. On the other hand, the proportion of subjects in the income bracket between 0 and 50,000 was higher than expected in the segment “those overestimating social psychological risk”. Overall, it can therefore be said that, among the subjects surveyed, those with higher education and those in the highest income bracket are over-represented in the “conscious” segment compared to the

expected value. For the “social risk overestimators”, it was precisely the subjects with primary education and those in the lowest income category who were over-represented compared to the expected value.

Table 7. Investor segments by perceived risk factors.

Risk Factors	Segments					Total Sample N = 1545
	Preferenceless	All-Risk Overestimators	Financial, Legal and Health Risks Over-Assessors	Conscious	Social Risk Overestimators	
The period of the investment (spring, summer, autumn, or winter)	2.00	2.91	2.61	2.37	1.93	2.48
Duration of the works	2.26	3.22	2.78	2.87	2.10	2.80
Flexibility of the architect/contractor to deal with specific problems	2.05	3.58	2.73	3.24	2.30	3.00
Availability of the architect/contractor	1.84	3.74	2.82	3.27	2.29	3.06
Independent problem solving by the professional	1.95	3.59	2.77	3.18	2.22	2.98
Reliability of the professional (how much work, what responsibility he/she takes on and whether he/she delivers on time)	2.24	3.86	3.17	3.75	2.03	3.30
Experience of the professional, number of years in the profession	1.92	3.48	2.79	3.13	2.21	2.93
Range of services provided by the professional	1.76	3.26	2.59	2.41	2.49	2.65
Confidence in the professional	1.86	3.79	2.91	3.32	2.18	3.09
Reputation of the architect/contractor	1.74	3.01	2.33	2.31	2.61	2.51
Health risk (will I get sick, or will the contractor get sick during the process?)	1.72	3.12	2.60	1.98	2.63	2.50
Price of services (how expensive the service is)	2.06	3.58	3.15	3.07	2.18	3.03
The quality of the work done (poor quality materials, substandard work)	2.24	3.88	3.40	3.65	2.00	3.31
Expected return on investment (when the investment will return its value)	1.78	3.14	2.94	2.10	2.50	2.60
The segment of the investment (residential or commercial—build to let)	1.70	3.08	2.68	1.97	2.69	2.51
Coverage of the investment (whether you have enough money to complete the works)	1.91	3.70	3.27	3.18	2.23	3.11
Legal risk (inadequate contract)	1.59	3.62	3.09	2.49	2.28	2.84
Changes in legislation (new taxes, levies)	1.68	3.42	3.08	2.28	2.48	2.75
Credit risk (interest on the loan will increase)	1.84	3.49	3.30	2.56	2.47	2.90
Investment risk (market factors change so property does not hold its value)	1.78	3.30	3.08	2.29	2.40	2.71
Taste risk: the finished property is not up to your taste in the end	1.47	3.08	2.47	1.80	2.68	2.40
Social perception of the completed property is not what you would have liked (friends, colleagues’ opinions will be negative)	1.61	2.31	2.13	1.34	2.83	2.01
Cooperation with the contractor, exchange of information (sharing all information, informing about the next step at the end of a work phase, etc.)	1.68	3.54	2.74	2.93	2.26	2.87
Health risk (materials used are harmful to health)	1.51	3.66	3.05	2.32	2.40	2.80
Accident risk (someone gets hurt during the construction process)	1.50	3.50	2.97	2.08	2.45	2.67

Source: authors’ own research, 2018. N = 1545.

Table 8. Socio-demographic characteristics of investor segments by perceived risk factors.

Criteria	Preferenceless N = 152	All-Risk Overestimators N = 466	Financial, Legal and Health Risks Over-Assessors N = 306	Conscious N = 421	Social Risk Overestimators N = 200
qualification sig = 0.000	elementary Adj.R = 1.25	vocational Adj.R = 1.60 higher education Adj.R. = -2.37	vocational Adj.R = 1.88 higher education Adj.R. = -1.75	higher education Adj.R = 5.13 vocational Adj.R. = -3.92 elementary Adj.R. = -2.71	elementary Adj.R = 2.48 higher education Adj.R. = -1.76
net income p.c. sig = 0.001	51–100,000 Adj.R = -1.74	51–100,000 Adj.R = 1.66 above 251,000 Adj.R. = -1.72	51–100,000 Adj.R = 1.70 above 251,000 Adj.R. = -2.50	above 251,000 Adj.R = 4.44 151–200,000 Adj.R. = -2.83	0–50,000 Adj.R = 2.48

Source: authors’ own research, 2018. Measurement levels: nominal, attributes = clusters Chi-squared test, Adj = adjusted standardised residuals, % = column percentage of variables in the cluster.

5. Summary and Conclusions

This result shows that, if service providers can categorise their clients according to their risk perception, they can provide them with personalised services. Based on the results of our empirical research, we have been able to define the project risk structure perceived by the client side of a construction project. We have successfully defined the customer (investor) target groups based on perceived project risk, creating distinct segments, such as “preferenceless”, who did not rank any risk as more important than average. The second group was “all risk overestimators”, who considered all risk dimensions to be of above-average importance. We could characterize “financial, legal and health risks over-assessors”, for whom the financial, legal, and health risks of the investment project were the most important. The “conscious” mostly listen to the opinion of experts. For the “social risk overestimators”, social risks were the most prominent. We have identified the orientation directions along which these segments can be relevantly characterized in terms of perceived investment risk factors and socio-demographic aspects determining cluster membership.

As a result of the segmentation, we distinguished five target customer groups, which, in addition to their risk assessment, could be characterised by their educational attainment and their monthly net income (socio-demographic characters with significant relationships). The consumer segments characterised by the identified risks and their further characteristics explored in the research can help service providers to develop their differentiated strategic pillars. In fact, knowledge of the main consumer characteristics will facilitate the design of target group-specific solutions and thus a more targeted service.

A limitation of the study is that the sampling procedure using the snowball method did not ensure representativeness, so the results are local despite the large sample size. As a continuation of the research, we aim to explore the changes caused by the coronavirus: the main question is how the perceived risks of the construction project and their importance changed due to the pandemic and whether new target groups emerged on the client side according to the perceived risk.

Author Contributions: Conceptualization, M.G.-F. and T.P.S.; Data curation, T.P.S. and Á.C.-K.; Formal analysis, M.G.-F. and Á.C.-K.; Methodology, M.G.-F.; Software, M.G.-F.; Supervision, T.P.S. and Á.C.-K.; Visualization, Á.C.-K.; Writing—original draft, M.G.-F., T.P.S. and Á.C.-K.; Writing—review & editing, Á.C.-K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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