

DECISION-MAKING OF DEVELOPERS IN THE IMPLEMENTATION OF RESIDENTIAL DEVELOPMENT PROJECTS IN THE CZECH REPUBLIC ENVIRONMENT

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Abstract: The research was conducted with the aim of analyzing the aspects that enter into the decision-making process of developers in the field of residential construction in the Czech Republic. To ensure the representativeness of a diverse range of companies active in the real estate market, a suitable group of respondents was carefully selected. The survey provided a sufficiently representative sample, based on which the key factors influencing the decision-making in the implementation of development projects were identified. The research found that developers primarily focus on seeking profitable opportunities, and their decision-making process is predominantly aimed at achieving financial gain. In this decision-making, they also consider other factors, such as mortgage interest rates, the quality of newly built homes with an emphasis on energy efficiency, and the use of modern technologies.

Keywords: Deciding on housing construction, housing construction, economic area.

1 Introduction

The issue of apartment construction has become a societal problem in recent years, making it essential for entities in the Czech Republic to examine this issue in all its aspects and evaluate both the positive and negative impacts of proposed solutions. The aim of this contribution is to identify the decision-making processes of individual developers in the implementation of their residential-focused construction projects in the Czech Republic. The survey was conducted using a questionnaire to identify factors that influence decision-making on development projects. The results of the questionnaire were evaluated to determine correlations that could contribute to a better understanding of the decision-making process of developers, who play a key role in the real estate market and thus affect the overall economy.

1.1 Literature review

In the Czech legal system, the term "real estate" is defined as follows: "Real estate is a specific kind of property. According to a settled definition, it refers to land or a building permanently attached to the ground with a solid foundation" (§ 119 of the Civil Code 40/1964 Coll.). The new Civil Code No. 89/2012 Coll. expands this definition by including in the concept of land the space above and below the surface, buildings on the land, and other facilities, excluding temporary structures, including what is planted in the land or attached to the wall. According to § 598 of the New Civil Code, real estate precisely refers to lands, underground constructions with an autonomous purpose, including the in rem rights to them and rights that the law declares as real estate.

Subsequently, it is necessary to focus on the concept of real estate price. The new Civil Code No. 89/2012 Coll. defines the price or value of an item as follows: "The value of an item, if expressible in money, is called price. The price of an item is determined as the usual price, unless agreed otherwise or established by law." The code also defines an extraordinary price: "An extraordinary price of an item is determined with regard to specific circumstances or to special popularity caused by random characteristics of the item." In the context of the real estate market, an extraordinary price can be described in such a way that the property has additional elements that standard real estate does not have, such as address, facilities, or location on the top floor of a building. In this case, the price is determined in a different way, specifically by the so-called added value of the property, which is our definition of an extraordinary price. Although the term real estate is clearly defined in Czech law, the real estate market does not have a clear definition. The market can be defined in several ways. Samuelson and Nordhaus in their

book *Economics* (2007) describe the market as "a place where buyers and sellers meet, and through their trade determine the price and quantity of a good." In the case of the real estate market, this good is property, either residential or commercial space, which differ in size, quality, design, price or rent, purpose of use, associated services, and other factors.

The buyer of real estate can be either a natural or a legal person involved in the acquisition of properties. The motivation for such a purchase can vary, but most commonly, we encounter two main approaches: buying real estate for personal use, such as for living or business purposes, and buying real estate as an investment.

Conversely, the sellers of real estate are those who offer properties for sale during a given period. The reasons for selling can again vary.

It is also important to define the term "development company" from the perspective of the supply side in the real estate market. This company represents the main organizer of construction, preparing, organizing, and managing the sale or lease of a given building. A development company does not use the building itself and usually does not provide it with financial resources. The term "developer" is used by Meluzín and Zeman (2009) in the sense of a construction organizer, while Achour (2005) emphasizes that a developer is an investor in the project, not the final user. Development companies may also provide financing for the purchase of real estate and participate in the leasing or management of properties after construction is completed. In conclusion, a development project, as the outcome of a development company's activities, is characterized by high initial costs invested in the purchase, reconstruction, or construction of the property. These costs are subsequently recovered in the case of a sale through the purchase price or in the case of a lease through rental income. Given the high initial costs, financing of development projects is addressed in the preparatory phase, most often through external sources.

For development companies to introduce new offerings in the real estate market, a number of legal requirements must be met. One of these requirements is obtaining a building permit for a specific project. The Act on Spatial Planning and Building Code No. 183/2006 Coll. defines a building permit as a document required by the builder for the construction of a house or significant modifications. This law sets the rules and conditions for granting a building permit. In the following text, we will work solely with the term "building permit," and it is clear that when a building permit is included in statistical data, it meets legal requirements.

In this context, a building permit is understood as a building permit with binding conditions for the execution and use of the building according to the Building Act (Act No. 183/2006 Coll. on Spatial Planning and the Building Code). The building authority ensures the protection of societal interests during the construction and use of the building, ensures the complexity of the construction, compliance with general technical requirements for construction, and minimizes the negative impact of the building and its use on the environment. Just as with construction contracts, the development of building permits can be used to estimate future trends in construction production (businessinfo.cz, 2020)

In implementing new residential construction, it is also important to focus on the project management of the given development company itself. There are many factors that influence project management, and each company's management approaches these factors differently. It is crucial to draw from past experiences and continuously improve all processes to avoid potential losses and failures within the project or the company as a whole, as poor decisions can be existentially crucial for the

company in some cases. As Figurska (2016) emphasizes in her study focused on the capital and real estate market, the effort to predict future market developments is key for every management and its decision-making. This prediction is based on analysis and is influenced by monitoring factors that can affect market development. It is important to declare and define the standards and factors with which analyses work, and with which potential management counts.

Contrary to the publication mentioned above, Kubík (2014) states that one of the main assumptions of strategic management is monitoring the competition and applying such measures to remain competitive. His article practically uses Porter's analysis, which will be applied to multiple enterprises. His conclusions declare that it is very important for management to focus on competitive rivalry and the increasingly strong bargaining power of customers. If a company notices a declining trend in competitive rivalry, it should use this situation to its advantage and focus on differentiation and enhancing its competitiveness. His practical part focused on a company outside the real estate market, SCHOTT, which specializes in manual assembly of products made from industrial optical fibers. Generally speaking, his conclusions apply to management decisions in any enterprise, and therefore these factors need to be considered.

As Ginzburg (2018) mentions in his article focused directly on the construction industry: The construction industry has many driving forces, with investments being the foremost among them. The larger the investment, the more significant is the assessment of the construction itself and the construction process. An investor decides to invest based on the assessment of the construction plan, organizational skills and plan, and technological reliability. Rapid development of technologies and tools for managing construction plans obliges the investor and his team to create new approaches. The authors of the article suggest considering the above very carefully when identifying, analyzing, and subsequently managing the net risks of the project. Net risks are defined as risky events that, when they occur, have either a negative or, in the best-case scenario, a neutral impact on the given construction plan. Considering net construction risks at various stages of construction production allows for a much better consideration of the given project. Thus, the investor can quickly decide to invest in the project and assess possible additional construction costs because he is able to predict and prevent the occurrence of some of these risks for different construction phases.

An interesting article focused on marketing in the real estate market describes Arndt (2017). Together with co-authors, they focused on research into the extent to which a potential buyer can be influenced by a real estate agent. Their results declare that for buyers, it is not crucial whether the given agent is from the specific locality or not. Arndt in his publication states that their results showed gender and marital status as less significant factors. He recommends that real estate agents should mainly use targeted marketing since their customers look in the same segment and have similar views.

As stated by Petr Kouřil, the director of the development company Bouwfonds ČR bytová výstavba, s.r.o. (E15.cz, 2021), for selecting a suitable location, we use a model that has proven itself over many years of activity in the field of residential living both in the Czech Republic and in other countries where we operate. If I were to briefly summarize our approach, the final decision on the suitability of a given location is always preceded by an analysis of the local market from a marketing and sales perspective. We examine the location in terms of transport services, service offerings, the environment, and also the demand for the given type of housing. Furthermore, we compare our project with competing projects, customer requirements, and the price level of apartments offered in the given city. We also focus on future development possibilities of the area and potential opportunities for cooperation with local business partners. Of course, we also conduct an economic analysis. We calculate the expected return on investment time, project profitability, financing methods, etc. If the analysis results show good

potential, the project usually gains support from our parent company, and we begin to work on it. To the criteria that have always been important in deciding on a new project, such as location, transport services, service offerings, apartment layout, etc., new criteria are now being added. These include determining the suitable size of the project, as people nowadays prefer more intimate projects with a smaller number of apartments. Furthermore, it is necessary to carefully consider prices, as they must reflect the new market situation, and last but not least, it is essential to respond to the more demanding requirements from clients.

The topic of selecting a location for a development project is also addressed by the development company EURO DEVELOPEMENT, a.s. on their website (euro-development.cz, 2023): Larger development companies have their own departments (divisions) for purchasing and selecting properties, while smaller ones may turn to specialized financial advisors for advice. What is crucial when purchasing a suitable plot? Development companies primarily look at the appearance of the location and its surroundings, transport accessibility, and public amenities. And, of course, the corresponding price. It is always necessary to consider how many other projects are in the vicinity and what the interest is in the particular location. An economic balance sheet and a complete assessment are created for each potential plot. A developer usually has a clear idea of whether they plan to build expensive apartments or, conversely, attract with a low price. However, some seek advice from professional firms for selecting a location.

As Pozdílková and co-authors (2020) state in their article focused on monitoring apartment prices in various locations of the Czech Republic, there are locations that show higher stability in future development and time series monitoring, thereby exhibiting less price volatility. This article drew data from the largest Czech real estate advertising portal sReality.cz, monitoring data from July 2018 to December 2019. A very interesting comparison, for example, was between Prague 10 and Žďár nad Sázavou. In this case, the impact of tightening conditions for obtaining mortgage loans was compared. The article clearly confirms that one of the key factors for the construction of apartment buildings is the construction location, which can ensure a certain stability in the pricing strategy process for the sales of individual apartment units.

2 Methodology

The aim of the conducted research was to focus on the specific practices and behaviors of decision-makers when assessing the implementation of a development project. The main goal was to identify suitable indicators for evaluating the feasibility of the investment.

For the implementation of the research, respondents who are actively involved in new construction, especially residential properties in the domestic market, were approached. Their portfolios included apartment buildings with ten to fifty units, with a sales value ranging from 80 to 200 million Czech crowns. The selection of respondents was deliberately focused on smaller investors who do not have established processes and teams specializing in the evaluation of investment opportunities. These were predominantly investors with their own construction companies or those who manage their own property and use new residential construction to evaluate and enhance their investments.

To determine suitable respondents, the public database Orbis Europe, which provides detailed information about business entities in Europe, was used. The defined parameters included:

- The territory of the Czech Republic, classification CZ-NACE 4120 (construction of residential and non-residential buildings),
- Conditions for limited liability companies,
- With revenue ranging from 3,500,000 to 8,000,000 euros.

After applying these parameters, 339 business entities were identified. However, it's important to emphasize that upon verification of a randomly selected 34 companies from this group, it was discovered that up to 70% of the companies, according to their own statements, engage in activities different from development construction. This finding led to an adjustment of the sample, and the resulting selection corresponds to 30% of the originally defined set.

To calculate the number of samples in the sample set, the formula (Singh 2014) was used:

$$\text{Sample size} = \frac{\frac{z^2 \cdot p_v(1-p)}{e^2}}{1 + \left(\frac{z^2 \cdot p_v(1-p)}{e^2 N} \right)}$$

where:

- N is the number of companies in the total set,
- z is the Z-score for the corresponding level of significance,
- p is the standard deviation (50%),
- e is the margin of error (5%).

The calculation then is:

$$\text{Sample size} = \frac{1,96^2 \cdot 0,5(1-0,5)}{0,05^2} = 80,71 \approx 81 \text{ companies}$$

Assuming a 10% margin of error, the number of companies would be reduced to 40. The questionnaire was primarily completed by respondents in person or distributed to other employees in the company who are responsible for making decisions about undertaking or not undertaking potential investment projects. A total of 36 specific individuals who are well-informed and knowledgeable about the domestic market were approached.

Before creating the questionnaire, primary research in the form of structured interviews with developers was conducted. The aim of this research was to identify key variables and factors that are crucial for developers in the implementation of development projects. The first part of the research focused on questions such as:

- What issues does a developer address?
- What are the key variables considered? Are they, for example, price development, interest rates for clients, reputation among clients, or trends in housing?
- What approaches and strategies do developers have when implementing projects?
- What is the main goal for developers? Is it profit, prestige, differentiation from competitors, or the satisfaction of future clients?
- What tools and strategies does a developer use to influence the success of a project?
- And other questions that emerged from ongoing conversations.

After completing the first part of the primary research – structured interviews, secondary research was conducted, summarizing the current state of knowledge on the issue and scientifically confirming or refuting information obtained from the interviews. Thanks to the information gathered, a questionnaire was created that should help answer primarily the research questions listed below.

1. To what extent does competition in a given location influence your decision-making when choosing a location?
2. To what extent does the potential difficulty of obtaining a building permit in a given location influence your decision-making when choosing a location?
3. How important is the use of modern technologies in the project without impacting the financial side of the project?

4. How much do you prefer using external financial resources in the form of a loan over involving another investor when purchasing land for construction?
5. To what extent do you prefer financing the construction of the project with your own financial resources and eliminating loans?
6. To what extent is the implementation of modern technologies within the project important to you, regardless of its financial impact?
7. To what extent is the energy efficiency of the project important to you in the context of expected profit or interest?
8. How does the average wage of residents in the Czech Republic or in a specific location influence your decision-making on the price of apartment units?
9. How much does the level of mortgage interest rates influence your decision-making on the price of apartment units?
10. To what extent do you prioritize the satisfaction of neighboring entities (neighbors, neighboring homeowners' associations) at the expense of your profit or interest?

3 Research results

The individual research questions will be evaluated solely through verbal comments. The order of the questions in the evaluation will be preserved as they were defined in the previous part of the questionnaire. The construction of the questionnaire reflects the importance of individual aspects from the author's perspective, meaning that questions focused on key aspects will be ranked before questions that are less significant.

The location for potential construction is among the most important parts of the decision-making process. A graphical representation is provided in the following chart.

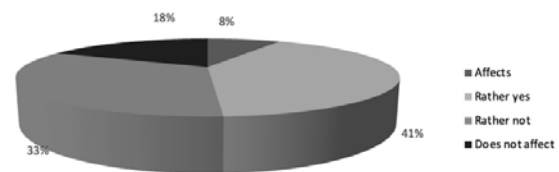


Figure 1. Location selection

From the survey results, it can be concluded that from the investor's perspective, the location is not considered a key factor. Positive responses to this question constitute less than half of the answers, and approximately one-fifth of the respondents expressed zero interest in location, indicating that it is not decisive for them. This fact suggests that other factors will likely be more important in investment decision-making. This tendency will probably be supported by further responses.

The second group of questions addressed the issue of obtaining building permits, which had previously been identified in the literature review as a key problem that can significantly extend the duration of implementation or even hinder the progress of the project itself. The responses to this question are particularly interesting because less than half of the respondents consider this issue to be crucial, while about one-third of the respondents indicated that it somewhat influences. More detailed information is graphically illustrated in the following chart.

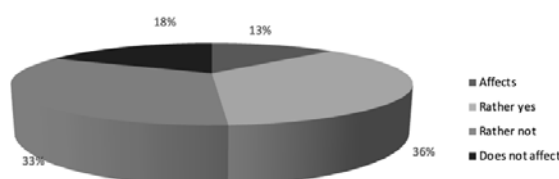


Figure 2. The difficulty of obtaining a building permit

This situation can be explained by developers, due to their experience and knowledge of the environment, choosing locations where they have a good understanding of legislative issues. It would only be speculative to assume that they may have professional teams for whom this phase is not a problem, thereby differentiating them from the general population.

Given the boom and general use of modern technologies, this question is also considered in the questionnaire. Here, the results align with expectations for the first time. More than half of the developers consider the use of new technologies in their decision-making, but only for approximately one-sixth of them is this factor crucial. There likely exists a dependency on the location where the use of modern technologies is necessary due to the surrounding environment, while in other locations, this need not be considered.

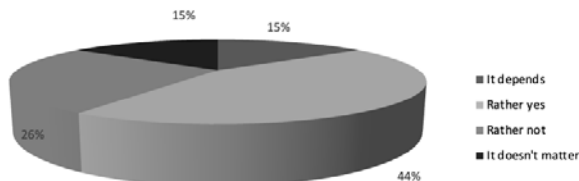


Figure 3. Use of modern technologies

Regarding the method of financing, most developers prefer financing through loans. The co-participation of an investor is not strictly required, as no response reflects a preference for investors only. The detailed distribution is presented in the following chart.

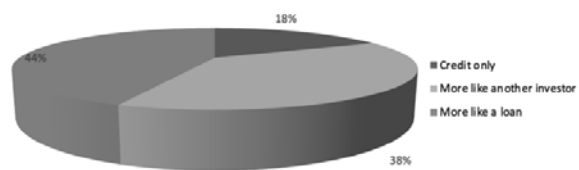


Figure 4. Funding preferences

An even more significant correlation can be observed in the next part of the survey. When it comes to sources of funding, two-thirds of developers prefer external sources, specifically loan financing. Only about one-third would opt for a larger share of their own resources. Like in the previous question, there is no response that would prefer exclusively their own resources. The responses to questions regarding project financing options are consistent, with developers generally preferring a greater involvement of external financial resources. Details are illustrated in the following chart.

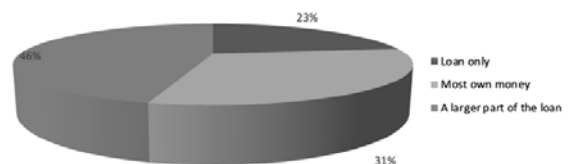


Figure 5. Comparison of another investor and the use of credit

The questionnaire also explored the relationship between desired profit and the use of modern technologies. The results show that the respondents' answers are divided into very similar groups. Approximately half prefer to prioritize achieving profit, while the other half would favor the use of more modern technologies. It is interesting to compare these results with the previous question regarding the relationship of modern technologies irrespective of profit impact. When the reality of using modern approaches meant a reduction in potential profitability, investors reduced their preference by 17%. The preference for modern technologies considering profit drops to merely 5%. It should be noted that the questionnaire survey was conducted in a

somewhat different situation than the current energy market scenario. Therefore, it can be assumed that the current situation, given the higher impact of purchase price by energy efficiency, might have partially changed these preferences. Another chart more accurately represents the values.

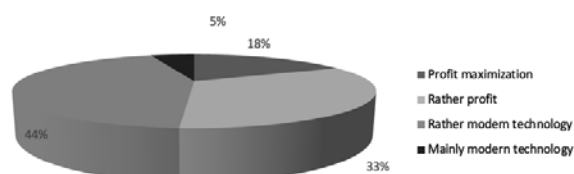


Figure 6. Modern technology in relation to profit

The profit generated from the realization of a development project can be linked to the energy efficiency of the project. As mentioned in the previous text, this factor is currently very relevant. When creating the questionnaire, it likely was not considered as crucial, which is reflected in the structure of the responses. From the perspective of the person implementing the project, the energy efficiency of the project is not a crucial indicator that would have a significant impact on decision-making. The following chart shows that the various response options are practically represented by the same percentage share.

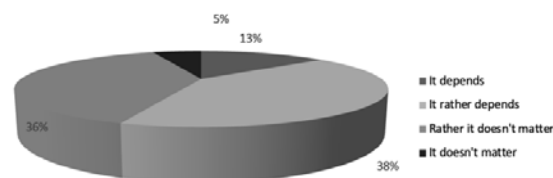


Figure 7. Energy intensity of the project (PENB) in relation to profit

The group of individuals for whom energy efficiency is a decisive factor is relatively small. Similarly, for those indicating partial influence, the difference is only two percentage points in favor of the response "somewhat influences."

The macroeconomic question regarding the relationship between price and average wage showed that most developers do not feel that a change in average wage would have a fundamental impact on their pricing decisions. Only a third are influenced by it, and only eight percent significantly. Detailed numerical values are presented in the chart.

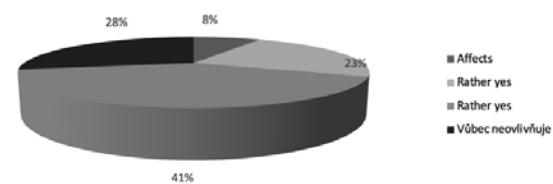


Figure 8. The effect of average wages

This finding can be interpreted to mean that demand for the offered product is relatively unaffected by changes in customers' incomes, suggesting a low income elasticity value. Customers, therefore, prefer to purchase newly built apartments regardless of potential fluctuations in their incomes. This market is characterized by greater stability during possible economic crises compared to the consumer goods market. The current market situation seems to confirm this stability.

Another macroeconomic factor is the level of interest rates, which was translated in the questionnaire to the average mortgage interest rate. In this area, the situation differs from that of average wages. Approximately half of the respondents state that the level of interest rates affects the final price of their projects. However, a negligible portion of developers consider

this variable significant, with the numerical value being only five percent. It can be assumed that a developer who has been selling newly built apartments to customers without using mortgage financing for a long time may not consider potential changes in the mortgage market as key. As already explained, developer customers will be differentiated, but a significant portion likely is not affected by changes in the mortgage market. Further details are recorded in the attached chart.

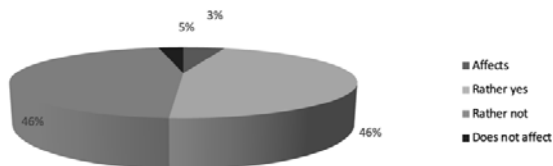


Figure 9. The effect of the amount of interest on mortgage loans

The last part of the questionnaire addressed the relationship between developers and the social environment. The question that reflected this issue focused on whether developers would prefer to achieve profit or the satisfaction of the surrounding community. The results of this section confirm previous findings, as nearly three-quarters of respondents prioritize profit. Only three percent of respondents expressed a pure orientation towards the satisfaction of the surrounding community. Details can be observed in the attached chart.

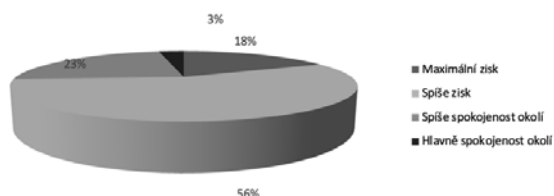


Figure 10. Relationship to surroundings

4 Discussion

Many authors have addressed these aspects. Kubík (2014) dealt with the topic of competitiveness and location selection. According to him, monitoring competition is a key strategic assumption for business success. The author points out the strengthening position of customers, who are able to negotiate better. Our research found that location is a significant but not crucial factor. Less than half of the respondents reacted positively to the question of the importance of location, indicating that a broader spectrum of factors enters into the decision-making about location, which needs to be further explored.

Another aspect is obtaining building permits, which can be a key factor in a developer's decision-making. Our research showed that the difficulty of obtaining building permits is a crucial aspect for a third of developers. In a global comparison, the Czech Republic ranks among the countries with a difficult process of obtaining permits, which can significantly affect the project's economy. Vilémová (echo24.cz, 2020) emphasizes that in some cases, obtaining a permit can take up to ten years, significantly affecting the project's economy. According to the Doing Business ranking by the World Bank, the Czech Republic is ranked 127th out of 185 countries in the speed of processing construction permits. The difficulty of obtaining permits can vary regionally, affecting an investor's decision-making in implementing a development project.

In some cases, the research monitored developers' decision-making in two different situations. The first situation represented a scenario where their decision would affect the final profit, while the second situation was characterized by their decision having no impact on the financial side of the project. This approach aimed to identify the nature of developers' decision-making and their reactions in an ideal construction environment.

Ideal conditions include low competition, low-interest rates, low construction costs, and high selling prices.

The research revealed that the trend of using modern technologies is starting to become a relevant topic for developers, especially in the context of desired profit. It is becoming increasingly clear to developers that following modern trends is key to maintaining competitiveness. Modern technologies can contribute to the successful realization of a project, facilitate and streamline construction, risk management (Ginzburg, 2018), or increase the project's attractiveness to potential clients, for example, through energy efficiency. On the other hand, it must be considered that modern technologies can mean additional costs that may limit the project's budget.

Financing was another key topic, focusing on methods for securing funds for the initial acquisition, i.e., purchasing land, as well as financing the construction itself. There are several approaches to this issue. Some developers try to cover everything from their own financial resources, often an approach of large, already established market players. This method is economically demanding. Another option is the use of external financial resources, either through a bank loan, which is associated with certain conditions, or through the involvement of another investor. An advantage of financing using external sources is also the theoretical perspective, where the cost of debt is lower than the cost of equity because the required return on equity is higher than the interest rates of bank loans (Koh, 2019). The purchasing power of potential clients is a key factor in determining the success or failure of a given project. The creditworthiness of clients is influenced by many factors, including their wages, savings, management, current interest rates, and others. When setting the pricing strategy of a project, it is important to consider the individual conditions of the given locality, including the average monthly wage, which affects market dynamics (Hlaváček, 2010). Price differences can be apparent between different localities in the Czech Republic, reflecting local employment opportunities, civic amenities, and thereby the level of wages in the area.

5 Conclusions

The research focused on analyzing the decision-making of developers in the area of residential construction in the Czech Republic. To represent the diverse portfolios of companies operating in the real estate market, appropriate respondents were carefully selected. The survey provided a sufficiently representative sample, based on which the main factors influencing the decision-making in the implementation of development projects were identified.

The research found that developers pay considerable attention to seeking profitable opportunities, and their decision-making is primarily oriented towards achieving financial gain. In this process, they consider other aspects, such as mortgage interest rates, the quality of newly built homes with an emphasis on energy efficiency, and the use of modern technologies. The average wage in the locality does not have a significant impact on their decision-making. Although choosing a suitable location is part of their decision-making process, it is not one of the most dominant factors. This decision is connected with other aspects, such as the difficulty of obtaining a building permit. In the construction or acquisition of investment projects, most developers prefer external financing, with loans and other investors being the preferred forms. This research constitutes only one part of a broader project aimed at an in-depth analysis of the decision-making process of developers in residential construction, which will be followed by future publication.

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