“The market of flooring systems in Poland”

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The market of flooring systems in Poland

Abstract

The range of functions and the expectations of the users of flooring systems indicate that apart from purely construction-related (i.e. general construction) characteristics, floors used as partition elements have the potential to meet various customer needs on the construction market. Therefore, they constitute interesting research material not only for specialists in the building sector, but also for economists. The aim of this article is to present the results of a survey of the determinants of selection of flooring systems, the popularity of the specific systems on the Polish market, as well as to present the customer needs map as a universal tool in the customer service process on the example of flooring systems. The paper was prepared on the basis of the available literature, as well as the quantitative research carried out in the period from September 2015 to February 2016. The research results indicate that the influential factors taken into consideration in the process of selection of a given flooring system are construction parameters, the speed of assembly and the final cost. Among the key technical parameters influencing customers' decisions one may list noise insulation, thermal insulation and lower surface finishing. In Poland, monolithic and multi-rib beam-and-block (Teriva-type) flooring systems prevail. Based on the factors and criteria set out in the survey, a special map of customer needs relevant for the process of selection of a flooring system has been created. Among other purposes, the map is supposed to enable more profound relation with customers, individualization, streamlining and unification of the customer service process, as well as better understanding of their needs.

Keywords: construction market, marketing of building products, flooring systems, selection criteria for floors, customer needs map, structure of building products.
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Introduction

The selection of a flooring system is a complex process encompassing, among others, aspects of architectonic, construction-related and economic nature, as well as performance. In economic terms, flooring systems constitute products whose sale depends on the potential benefits they may bring to the specific, decision-making participants of the building process.

However, issues relating to flooring systems are perceived as purely technical and, thus, there are practically no publications that would render this sort of information available to marketing managers operating in this sector of the market. And yet, the tasks and expectations of the users of these products indicate that apart from purely technical, general construction-related functions, roofs as separation plates can meet customers' various needs on the building market. Given the above, flooring systems will make an interesting research material not only for construction specialists, but also for economists.

1. Literature review

Problems relating to systemic flooring products, a.k.a. flooring systems, do not constitute the subject of market analyses. There is literature devoted to the directions and trends in the current building industry, including residential building industry, with sustainable building at the locus of interest (Czarnecki & Kaproń, 2012). Sustainable building industry has also been discussed by, among others, Czarnecki and Paszkowski (2015), Piasecki (2010), or Pabian (2012), the author of the concept of sustainable building process.

Authors of numerous publications devoted to construction in general, as well as the broadly defined building structures, put forward different definitions of roofs, yet they all seem to share certain key elements, e.g., separation slabs, construction elements and floors. Thus, it may be assumed that a floor is a horizontally positioned construction element that separates and, thus, marks, different storeys of a given building. Each floor consists of a number of interconnected elements. The manner of connection depends on the implemented technology and the type of materials used. Thus, a new term, i.e., 'flooring system', has been introduced to the building market dictionary and nowadays it is widely used by both regional and nation-wide manufacturers of precast concrete products.

According to Michalak and Pyrak (2011), as well as Hoła, Pietraszek, and Schabowicz (2007), flooring systems must meet the requirements (laid down in the norms) as regards load bearing capacity (durability), stiffness, thermal insulation, acoustic insulation, durability and fire resistance. Additionally, considering economic aspects, investors would not

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necessarily like them to be maximally cheap, but rather to display optimal correspondence between the price, on the one hand, and the quality of production and performance parameters, on the other hand.

On the assumption that the term 'floor type' denotes a specific type of load bearing construction (Mirski & Łącki, 1998), the following differentiating criteria may be mentioned:

- as regards the type of construction material:
  - wooden;
  - steel;
  - steel-concrete;
  - steel-ceramic;
  - reinforced concrete;
  - reinforced concrete-ceramic;
  - prestressed concrete;
- as regards the location of the building:
  - floor constructions over basement;
  - floors in between storeys;
  - loft or flat roofs;
- as regards the type of construction:
  - beam;
  - on beams;
  - slab;
  - rib-and-slab;
  - multi-rib (rib-and-slab);
  - ribbed;
  - waffle;
  - flat slab;
  - precast;
  - monolithic-precast;
- as regards fire resistance:
  - flammable;
  - non-flammable.

Nowadays, the market of producers of building materials for residential building purposes does not offer too many innovative solutions in the field of reinforced concrete flooring systems. The market dynamics are insignificant and have been described by Pyrak (2003):

In small objects, e.g., single-family houses, it is usually important to mount floors without having to use heavy equipment (heavy cranes), which calls for the use of floors produced on site, or precast elements which may subsequently be mounted manually. Thus, for this group of objects, multi-rib floors, especially the ones that do not require boarding, e.g., composite reinforced concrete-ceramic floors are recommended. The precast elements (beams and airbricks) of this kind of floors are produced in numerous production plants throughout Poland (p. 473).

A careful analysis of this text allows to conclude that the market is static, which, in a number of ways, has indeed been the case for many years and constitutes the so-called economy-of-scale effect, i.e., a big amount of small manufacturers. Increased competition among petty producers offering mainly multi-rib floors (beam and floor air brick producers) is particularly well visible through price wars, which affect the quality and, sometimes, the technical parameters of the products. In consequence, Poland is the only country in Europe in which multi-rib floors are so popular. It should be pointed out that this type of floors is relatively rare in Western countries due to high labor costs and low technical performance parameters. Funds for research and product development in (quite often family-owned company) batching plants are practically non-existent. Copying aside, there are hardly any innovations which could significantly change the market offer. However, there are exceptions, i.e., solutions at the forefront of the state-of-the-art building trends, and their popularity is systematically growing. Yet, without cooperation with engineers with practical experience and academic centres, promoting most recent technologies in the field of flooring systems will progress slowly. There is a significant need for dialogue between the specific participants of the market, i.e., investors, constructors, architects, distributors and contractors, which is what motivates this particular research projects.

2. Aims

The aim of this article is to present the selected research results relating to some aspects of the market of flooring solutions in Poland, as well as to present the customer needs map as a universal tool in the customer service process on the example of flooring systems. The aim of the survey was to diagnose the Polish market of systemic flooring solutions with special emphasis on the perception of the specific systems and selection criteria taken into account by various groups of people participating in the design process and purchasing decisions.

3. Methods

The research presented in this article was carried out within the confines of an independent project entitled "The Polish market of flooring systems", carried out in the period from September 2015 to February 2016. The project was organized by the Faculty of Economics of Wielkopolska Higher School of Social Sciences and Economics in Środa Wielkopolska (Poland). The basic research tool was a questionnaire survey consisting of three complex questions including:

- technical-economic criteria relating to the selection of a particular flooring system;
- technical parameters instrumental to the selection of a given flooring system;
- popularity of the selected flooring systems.

The survey was directed to four main groups of recipients/decision makers, i.e., designers (constructors), contractors, distributors and investors. The surveys were directed to 972 selected respondents.

The rate of return of completed surveys was 27.26% and designers/constructors constituted the biggest group of respondents (80% of the survey participants). Figure 1 represents the detailed distribution of the research group.

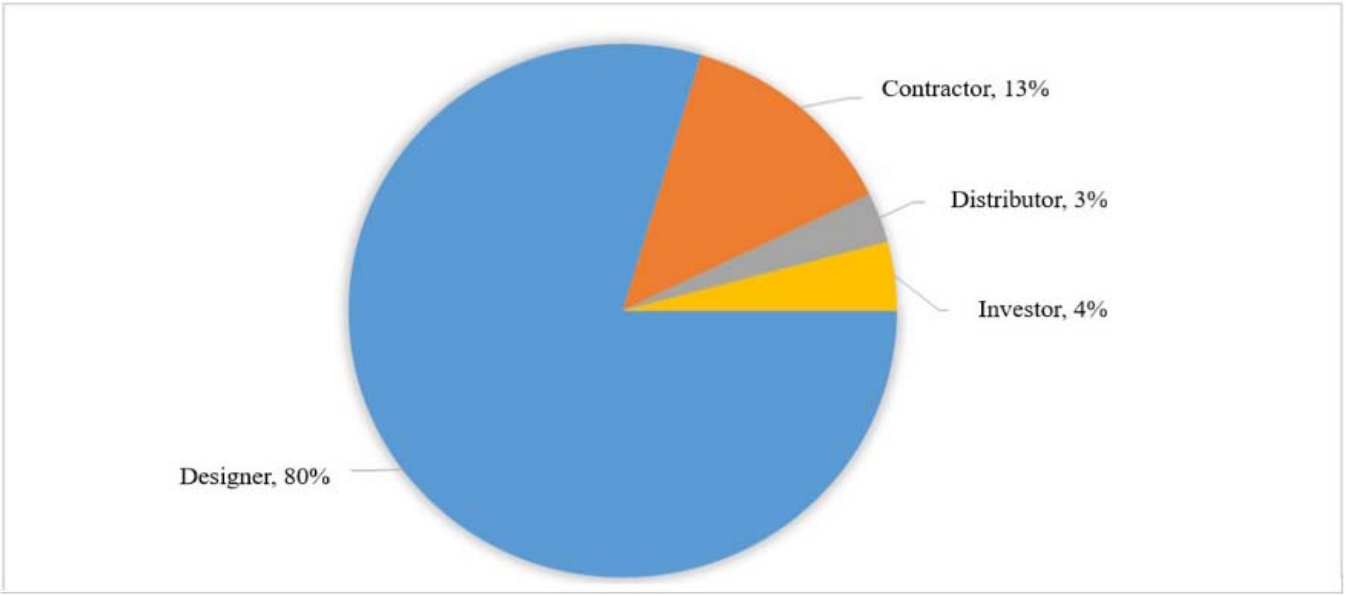

Fig. 1. Respondent profile

Source: Developed by the author.

4. Results

The first question concerned the technical-economic criteria that the respondents consider when making decisions regarding the selection of a particular flooring system. While among numerous opinions (that have yet to be confirmed by relevant studies) there is a feeling that the key factor that determines the choice of the flooring system is the calculation of the final construction cost, this category was rated second (16% of the answers). It should be emphasized at this point that the question concerned the overall construction cost, i.e., both the of purchase of materials and comprehensive labor. This category was associated by (mostly) small investors with the purchase of materials and the basic labor cost (additional services and supplementary materials, e.g., formwork, reinforcement and concrete joists, as well as the purchase or rent of props).

By far, the most important criterion that the respondents took into consideration when making decisions concerning flooring systems is construction parameters (25% of the respondents). The detailed data presented in Figure 2 indicate that factors such as the time of construction (14%) and the easiness of construction (13%) also significantly affect the decision making process. The abovementioned features are particularly crucial for investors who generally appreciate the shortest construction work cycle possible, as well as the contractors given the ever more acute shortage of skilled construction workers and high labor cost.

Similar optic may be applied to another category, i.e., on-site error risk reduction (12%). This may only be obtained by means of using highly processed precast elements, which, since it allows to reduce the volume of physical works on site, thereby eliminates the possibility of committing errors.

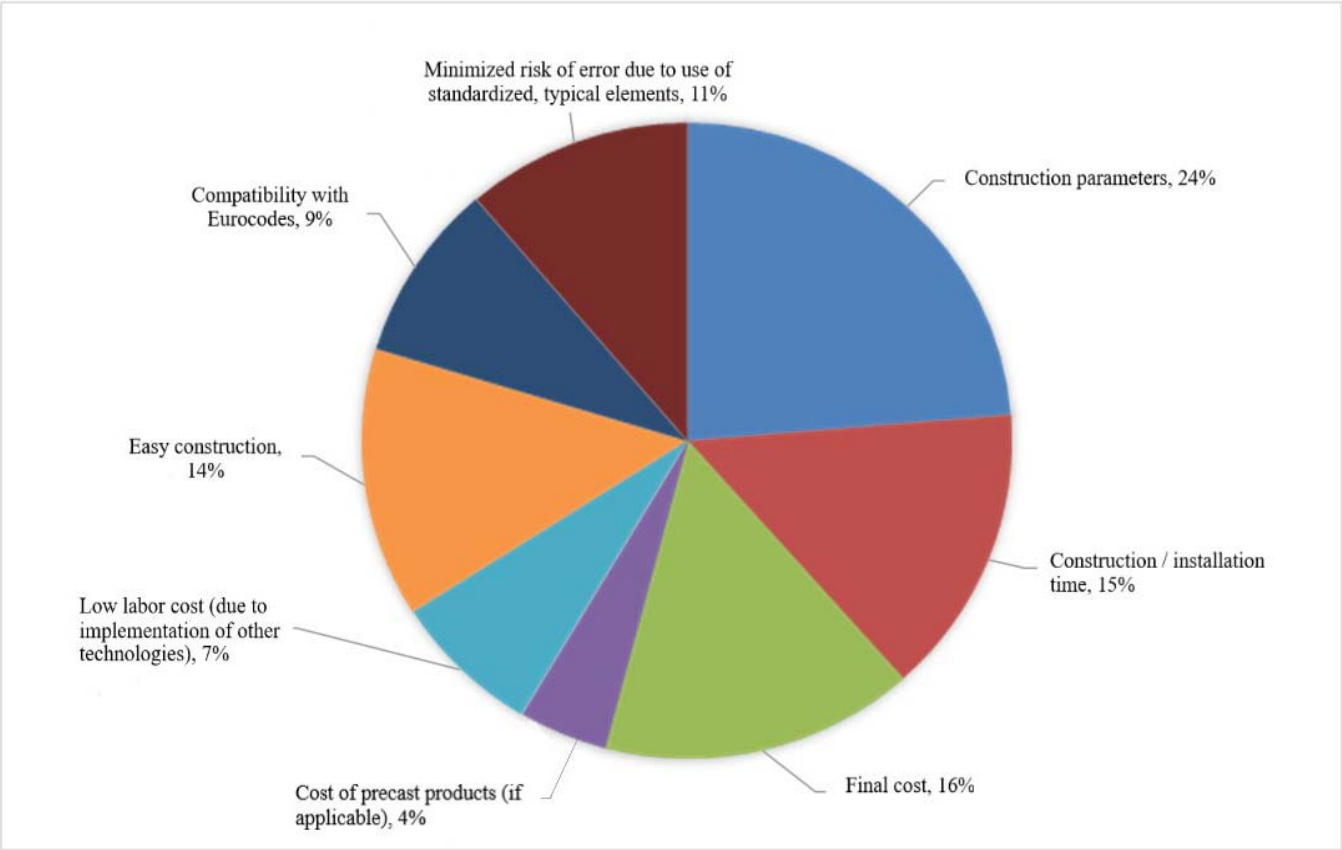

Fig. 2. Technical-economic criteria considered by the respondents when making decisions concerning the selection of a particular flooring system

Source: Developed by the author based on the conducted research.

Only 9% of the respondents consider the compatibility of flooring systems with Eurocodes an important factor (9%). Such a result may be only seemingly surprising. Given the fact that the vast majority of producers of multi-rib floors in Poland use the current regulations to their advantage by offering their products based on documentation which is incompatible with the Eurocodes, the answers obtained are hardly astonishing. What remains is a (rather rhetorical) question about the legal nature of this state of affairs.

The last two answers corresponded to the category relating to the final construction cost of the floor, i.e., lower labor costs reduced due to elimination of certain works with the simultaneous implementation of other technologies (7% of the respondents), as well as the cost of precast materials, if applicable (4% of the respondents). The answers obtained may indicate that it is both the lack of clear priorities for the selection technologies that indeed serve to reduce investment costs, as well as relatively low awareness of the existence of alternative solutions. In this respect, comprehensive and effective marketing communication between producers and different market segments is particularly important.

Among the technical parameters that significantly affected the choice of the flooring system, noise insulation appears to be of prime importance for the respondents (35%). The feature turned out to be particularly prominent in case of multi-storey construction objects. Yet another crucial parameter for the respondents was the finishing of lower surface of the floor (25%). This may be surprising given that fact that (unlike in Germany) in Poland, the most popular finishing is lime-cement or gypsum plaster. The parameters that received equal scores were thermal insulation and the possibility to reduce errors committed at the construction site (23% each). In the ear of highly energy-efficient and passive construction, thermal insulation is a conspicuous tendency which also affects flooring systems.

Thus, the Polish market offers numerous solutions in this respect, i.e., multi-chamber air bricks in multi-rib floors, floors with polystyrene elements, such as Sukiennik or Teriva Light polystyrene floors, as well as cellular or silicate systemic concrete floors. The respondents further hinted at health protection (8%) and environment-related factors (6%) as crucial technical parameters influencing the selection of a flooring system. However, the results may still be perceived as surprisingly low given the current trends in the construction industry. The results should be subjected to further studies.

Load-bearing capacity and fire resistance (2% and 1%, respectively, scored the worst). One could perhaps try to account for by claiming that the majority the flooring systems available on the market have similar technical characteristics in this respect, yet this is not the case. At that point, one should observe that the educational activity conducted by the leading producers is becoming more and more important. The respondents also hinted at the logistics and the universal application of a given flooring system. Both these features have a bearing on the design process, the final cost and the organization of work at the construction site. Given the low scores they obtained, the answers have not been represented in the graphical representation of the scores (Figure 3).

The research also concentrated on the analysis of the popularity of the specific flooring system types and the materials collected have been presented in five major categories, that is the systems which are chosen:

- very frequently;
- frequently;
- not too often;
- rarely;
- very rarely.

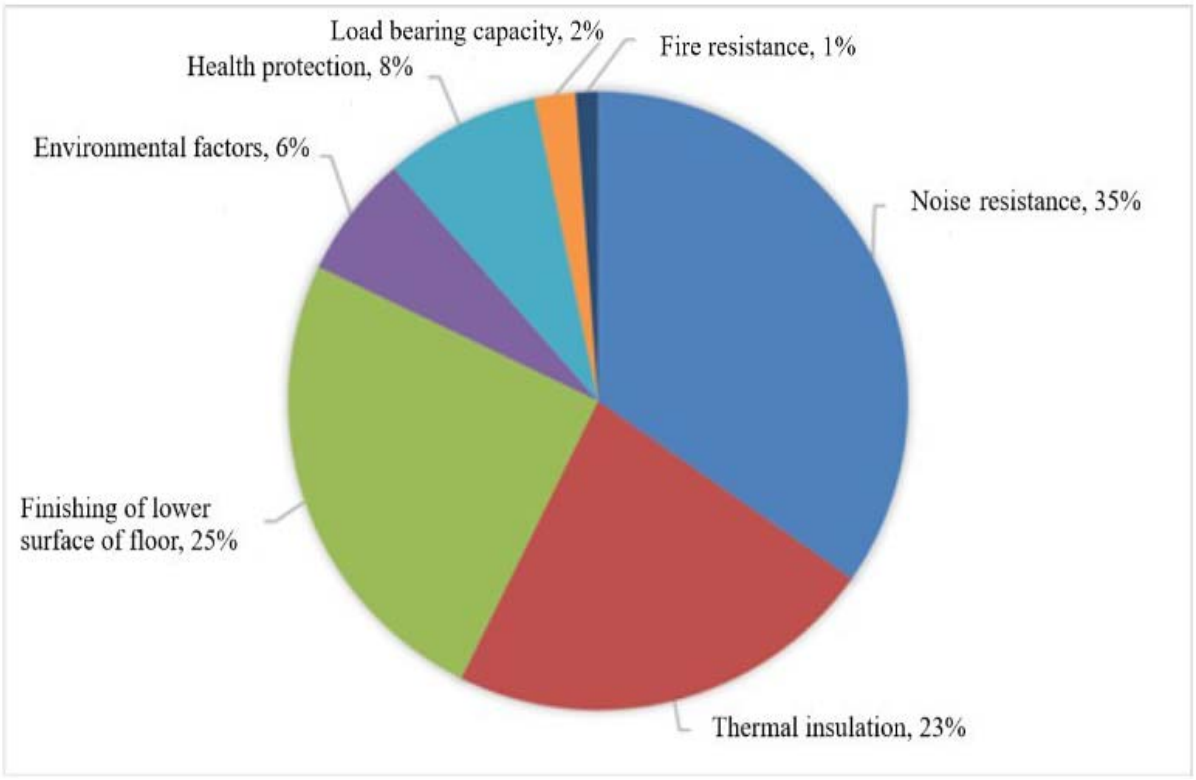

Fig. 3. Technical parameters instrumental to the selection of a given flooring system

Source: Developed by the author.

The results compiled in this way will be presented in the comprehensive research report. For the sake of this article, only one category ("very frequently") is presented.

According to the respondents, the most popular flooring systems are monolithic floors (43%), followed by multi-rib floors (25%). Provided the popularity of these two systems is considered separately, Teriva floors emerge as definitely the most popular (21%, fare second after monolithic floors). Multi-rib ceramic floors, as well as compressed beam multi-rib floors, scored 5% and 2%, respectively.

The results obtained seem to suggest that the Polish market of flooring systems is somewhat 'fossilized', with solutions characterised by low innovation potential and high performance costs (including the cost of additional materials, e.g., steel and concrete, as well as high labor costs) playing the dominant role. The fact that the market is dominated by such technologically obsolete solutions is caused by a number of factors, such as the following:

- the force of habit;
- reluctance to 'experiment';
- lack of sufficient knowledge in the field of alternative flooring systems;
- ample supply of of multi-rib floors in both retail and wholesale trade (as the author estimates, there are currently about a few hundred Teriva floor producers).

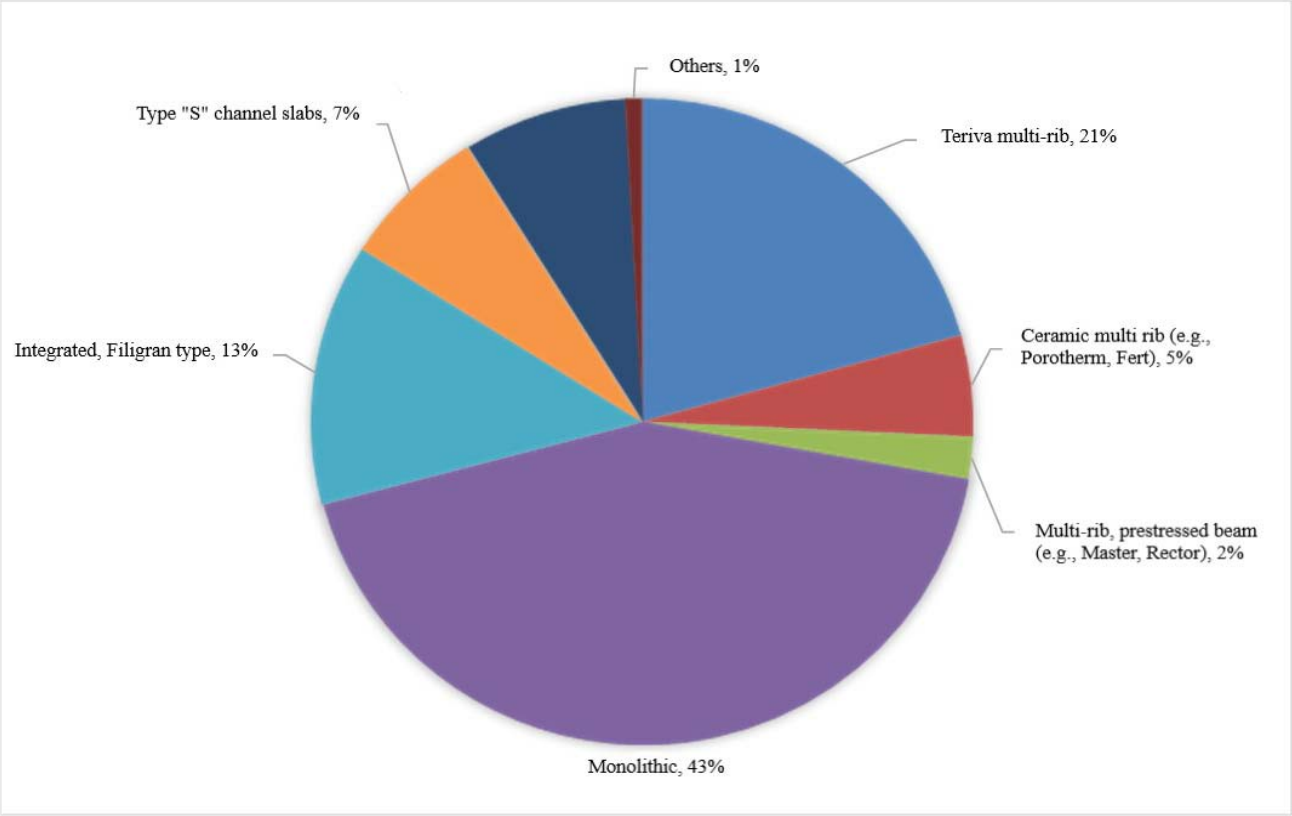

Fig. 4. The popularity of the flooring systems classified as "used very frequently"

Source: Developed by the author.

Integrated Filigran-type floors, prestressed concrete channel slabs and S-type channel slabs (13%, 8% and 7% of the votes, respectively) were also rated as "used very frequently". Out of the systems mentioned above, Filigran-type floors and S-type slabs have also been present on the Polish market for decades and are characterised by low-innovation potential. Especially the latter (S-type slab) with its numerous cracks, brings back the memories of the dubious glory of blocks of flats made of the so-called "grand slab". It should also be observed that the system based on prestressed channel slabs allows to reduce the construction time, as well as obtain high load bearing capacity and high span with relatively thin floors. Additionally, due to the fact that numerous additional works are redundant and may be skipped, these systems fare among cheap (if not the cheapest) flooring solutions on the Polish market. Numerous positive aspects of this produce make it currently the most popular flooring system in the world, according to Derkowski and Niesyczyński (2016). In Poland, apart from the standard prestressed concrete channel slabs with the width of 1.2m dedicated to large-surface, developer, industrial objects, etc., slabs of 0.6m, the so-called Smart light floor panels, dedicated mainly to single-family housing, are also available.

The detailed information regarding the popularity of the respective flooring systems in the category of systems "used very frequently" is presented in Figure 4.

Figure 5 presents the results of the study of the flooring system rated most popular according to the survey, i.e., the monolithic floor. Over 75% of the respondents use this solution "very frequently" or "frequently". Out of this group, 48% and 28%, respectively, claim to have chosen the first (very frequently) and the second (frequently) option. Further research in this field seems to be of marginal importance as it does not contribute significantly to the overall picture. However, it should be pointed out that 11% of the respondents use this solution "not too often", for 6% it is "rarely used" and 7% implement it "very rarely".

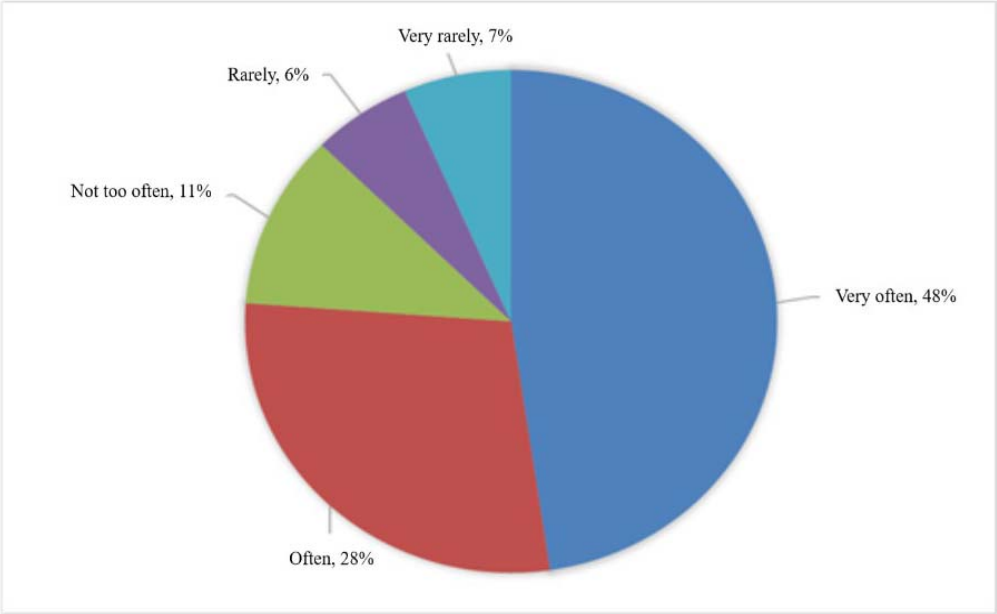

Fig. 5. Popularity of monolithic floors

Source: Developed by the author.

The research results confirm the high popularity of the most basic flooring solution, which in many cases, also turns out to be the most expensive and labor-consuming. At the same time, it should be observed that the use of monolithic floor is sometimes the only possible option. In Poland, there are areas where the monolithic floor system is also the dominating one in the field of single-family housing. This is the case for Pomorskie, Warmińsko-Mazurskie, Podlaskie or Świętokrzyskie voivodeships.

This situation is predicted to change in favor of the systems, which are less labor-consuming (which, among other things, may be caused by lack of qualified labor force) and more time-efficient, as the two factors clearly have a direct influence on the volume of the necessary investment funds.

Figure 6 presents the popularity of Teriva-type multi-rib, beam-air brick floors. The data provided here may be particularly interesting for the Ukrainian market, as (as far as the author is concerned) multi-rib floors are not very popular there. According to the survey results, the system is still fairly common, i.e., it is frequently used by almost a half of the respondents (25% and 19%, respectively, marked it as “used very frequently” or “frequently”).

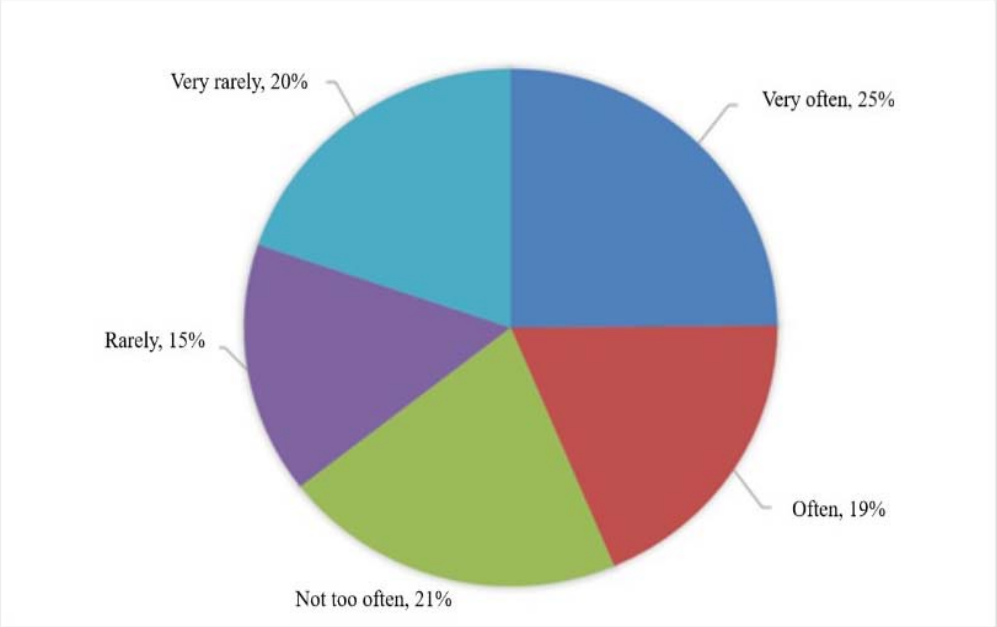

Fig. 6. Popularity of multi-rib Teriva-type floors

Source: Developed by the author.

Teriva-type floors have been present in Poland for years now and, as already mentioned here, their popularity does not stem from their technical parameters, but rather from the simplicity of production of precast elements (air brick, beam) and standardization due to the commonly binding documentation fo the specific variants or subsequent generations of this system. Considering the development of construction technology in recent years, the solution is obsolete and does not meet the needs of the present-day market. The scope of implementation of Teriva floors seems to confirm a conclusion along these lines. Until a few years ago, Teriva floors were used in both single- and multi-family housing, as well as in public utility and industrial construction. Nowadays, they are mainly used in single-family housing only. They have been from other areas by other solutions characterized by better technical and economic parameters. Given that, it is reasonable to assume that a similar process will soon also take place in the field of single-family housing.

This, in turn, allows to conclude that the life cycle of multi-rib beam-air brick floors is coming to an end. The research results seem to reflect that as well, as 21% of the respondents declare they use Teriva "not too often", 15% use it "rarely" and as much as 20% use it "very rarely". However, one should be aware of the fact that the results presented here refer to the entire construction sector and not a particular segment thereof (single-family housing).

5. Discussion

Each and every stage of constructions raises new problems and reveals challenges for investors, forcing them to make important decisions. As is the case for other component parts of the building, the choice of a suitable flooring system influences the technological, economic and exploitation-related aspects of the investment.

According to the survey, the key aspects governing the choice of the flooring system are the following: construction-related parameters, construction time and the final cost. As for the technical parameters, respondents consider noise resistance, thermal insulation and the finishing of the lower surface most important.

The received results should be interpreted with relation to designers / constructors, as this group of respondents turned out to be most frequent. However, the participation of other groups of respondents not only doesn't disturb the study results, but also provides other interesting perspectives, thereby offering an extended overview of the problem.

The determinants of selection of floor systems identified in the course of the study represent a response to consumers' needs relating to the choice of a particular floor system. Once compiled and presented to a potential customer in the during the process of sale, they may prove helpful for both the investor and the employee – seller. Given that, a map of needs of decision making clients and subsequent buyers of floor systems has been worked out.

Customers, especially individuals without educational background in the field of construction, have little knowledge of the floor systems. Typically, they have some residual information found on the Internet or no information at all. Therefore, they usually rely on the contractor's opinion, and in some cases ask the designer or the construction manager. However, in the vast majority of cases, it is the investor who is going to be the end user of the floor. Thus, while they need not possess the elementary technical knowledge, they should be aware of the functions, characteristics and technical-performance parameters are important for them when deciding on a particular floor system and how they project on the rudimentary aspects of the construction process, such as the construction time, as well as the final cost of a given element or the entire investment.

The map of needs presented in Figure 7 is a tool designed to obtain the following objectives:

- gain customers' trust;
- establish a deeper relation with the customer;
- use customers' experience in the process of service;
- customize and streamline the process of service;
- gain better understanding of the customers' needs;
- reduce the time needed for the presentation of the trade offer;
- lessen the difference between the seller and the customer in terms of the knowledge of floor systems;
- unify the process of customer service.

Thanks to the map of needs, which the customer fills in on their own or assisted by a technical-sales assistant, they become aware of the unique characteristics of the product (cf. Unique Value Proposition, L. M. .Lodish, H. L. Morgan and S. Archambeau (2010, p. 25) as the essence of uniqueness. This awareness may later be used in the analysis of the available solutions on the market in the course of decision making and, ultimately, the purchase.

The introduction of the map of needs as the rudimentary element of the initial stage of sale is

widely attested in various sectors. Customers will perceive it as a tool facilitating the selection of a given product. In turn, an organization implementing it will expect the map to be a useful instrument in the pursuit of the strategic commercial goals, such as organic development resulting from improved quality of services rendered (Macko, 2016, pp. 28-34).

The study of determinants of selection of floor systems as well as the concept of a map of customers' needs reveal a potentially viable market product which is far more complex than a raw prefabricated element. According to Kotler (2005, p. 409), the complex product consists of three levels:

- basic product level – prefabricated element with specific technical and functional characteristics;
- expected product level – including, among others, price, quality, innovativeness, brand, personnel competence, materials and resources, customer service process;
- extended product level – including, among others, delivery and coordination, unloading and installation, guarantee, readiness to render the service, financing conditions, complaint handling process, product availability, additional services, adaptation of the floor service to the original project, instructions and technical documentation, CAD applications for designers.

The level of the potential product is naturally an open issue, yet it should be pointed out that the competition on the present-day market is not based on what the companies produce, but what they add to their products (Levitt, 1969, p. 2).

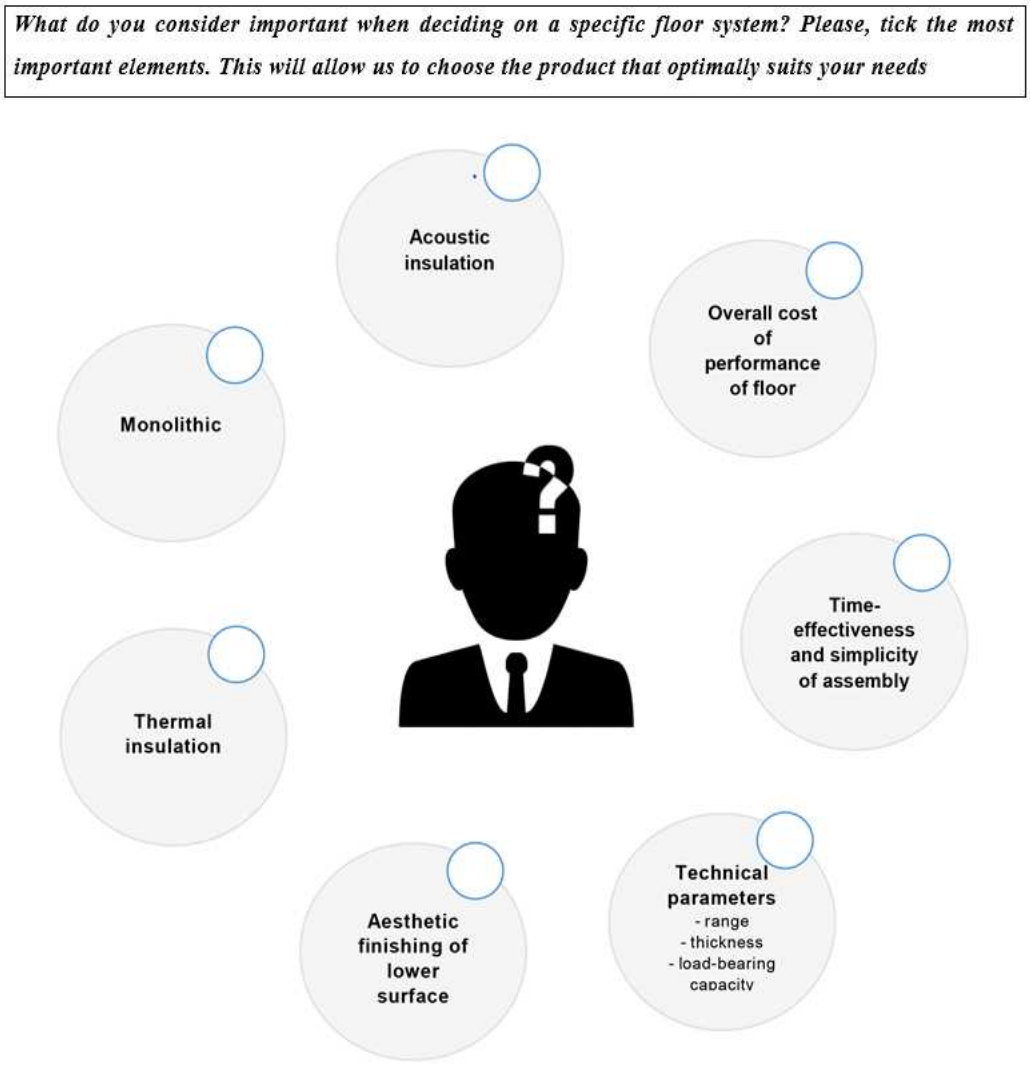

Fig. 7. Customer needs map on the example of floor systems

Source: Developed by the author.

Conclusion

The Polish market of flooring systems is static and characterised by relatively low potential for innovation. Thus, the most popular solutions are monolithic, multi-rib (mostly Teriva-type) floors and integrated (Filigran-type) floors. This state of affairs is also the consequence of the fact that the market of manufacturers is very scattered. The manufacturers do not invest in research and product development, and restrict themselves to copying solutions that have been known for decades. Given that both designers and contractors represent the same, conservative attitude, investors are not given the liberty of choice. Therefore, a special map of needs can help customers make better decision.

Selecting an accurate floor is an important decision, as it influences the volume of the investment at the stage of construction, as well as the parameters which will project on its subsequent exploitation. Thanks to good decisions, investors can save not only money and time during construction, but also energy consumed during exploitation, as well as the comfort of exploitation.

The conclusions drawn on the basis of the study are also interesting for the Ukrainian market, as the evolution of the Ukrainian building sector will follow the directions set by other European markets. In that sense, it is plausible to assume that it will depart from reinforced concrete channel slabs (nowadays, the dominating system on the Ukrainian market) towards more accessible and technologically more advanced solutions. The resulting niche may be filled by monolithic reinforced concrete floors, as well as prestressed concrete slabs. Other systemic solutions are also predicted to appear, e.g., integrated floors consisting of precast slabs and concreted formed on site. This issue constitutes a relevant research topic for further technical-economic studies and analyses.

References

1. Derkowski, W., Niesyczyński, M. (2016). Stropy betonowe. *Materiały Budowlane, 4*, 117-120.
2. Czarnecki, L., Kaproń, M. (2012). Budownictwo przyszłości ≡ zrównoważone budownictwo. *Materiały Budowlane, 1*, 72-73.
3. Czarnecki, L., Paszkowski, Z. (2015). *Utrzymanie budynków i rewitalizacja obszarów miejskich zgodnie z zasadami zrównoważonego rozwoju*, (pp. 193-230). XXX Jubileuszowe Ogólnopolskie Warsztaty Projektanta Konstrukcji. Szczyrk.
4. Hoła, J., Pietraszek, P., Schabowicz, K. (2007). *Obliczanie konstrukcji budynków wznoszonych tradycyjnie*. Wrocław: Dolnośląskie Wydawnictwo Edukacyjne.
5. Kotler, P. (2005). *Marketing*. Poznań: Rebis.
6. Levitt, T. (1969). *The Marketing Mode*. New York: Mc Graw-Hill.
7. Lodish, L. M., Morgan, H. L., Archambeau, S. (2010). *Marketing – to działa!* Warszawa: Wolters Kluwer Business.
8. Macko, M. (2016). Jak myślenie projektowe zmienia postrzeganie oferty. *Harvard Business Review Polska, 10* (164).
9. Michalak, H., Pyrak, S. (2011). Stropy. In L. Lichołaj (Ed.), *Budownictwo ogólne, elementy budynków, podstawy projektowania* (pp. 715-798). Warszawa: Arkady.
10. Mirski, J. Z., Łącki, K. (1998). *Budownictwo z technologią 2*. Warszawa: Wydawnictwa Szkolne i Pedagogiczne.
11. Pabian, A. (2012). Budowlany proces inwestycyjny w koncepcji sustainability. *Przegląd Budowlany, 10*, 50-52.
12. Piasecki, M. (2010). Metoda oceny budynku pod kątem zrównoważonego rozwoju. *Materiały Budowlane, 5*, 34-36.
13. Pyrak, S. (2003). Stropy. In J. Panas (Ed.), *Nowy poradnik majstra budowlanego* (pp. 472-507). Warszawa: Arkady.