

Modern Technologies for Effective Communication between Apartment Owners and Apartment Building Managers in Latvia

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Abstract: - As in other sectors of the economy, the construction and operation of buildings are becoming increasingly technologically advanced. Different digital tools are used not only for design and construction planning but also for faster and more efficient communication in housing maintenance and management processes. These technologies can significantly speed up the flow of information, save time and money, and optimize decision-making. This way, the most sustainable solutions are chosen, which not only saves money but can also increase the value of the property. The aim of the study is to identify and analyze the problems and their causes in the communication between apartment building managers and apartment owners, as well as to provide recommendations for their elimination using modern technologies. In order to achieve the objective of the study, the following tasks were carried out: 1) to analyze the statistics, technical and legal aspects of the Latvian housing stock, 2) to assess the situation in the cooperation and communication of apartment owners with the manager, 3) to study and evaluate the use of the largest and most frequently used digital platforms in management activities. The analysis of the technical and legal aspects is based on the monographic or descriptive method and the analysis of secondary data. In order to find out the current situation and identify the main communication problems, the authors have carried out a survey of apartment dwellers. The study found that the most significant problems in managing apartment buildings are related to a lack of information among apartment owners, which contributes to confusion, disinterest, passivity, or conflict. Sometimes you may also encounter incompetence on the part of the manager. Problems are often caused by communication gaps between apartment owners and building managers, or even a lack of communication. With the communication that modern technology can provide, apartment owners and managers can work together effectively to address issues in an environment of understanding and mutual trust.

Key-Words: - multi-apartment residential buildings, residential building management, efficiency, modern technologies, communication, housing maintenance, digital platforms.

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1 Introduction

Housing is one of the most basic human needs and therefore an integral part of life. This concept encompasses not only the place to live, or the building product, but also the infrastructure, technology, and management throughout the life cycle of the building. The role and importance of housing are highlighted in various international and national laws.

The life cycle of a building consists of several stages: planning, design, construction, operation, and demolition, with the period of use being the longest, [1]. The success and thoughtfulness of this operation process determine the lifetime of the building. The importance of the maintenance phase is often not sufficiently understood and appreciated, especially in apartment buildings divided into flats.

After Latvia regained its independence in 1990, the privatization of real estate was launched, which had a significant impact and changed the situation in the housing sector. However, most people at that time had no real understanding of the acquisition of property through privatization and the level of responsibility for their own property, especially if it was an apartment in a block of flats. There was also a lack of understanding of the common property of the building and the obligations and responsibilities of the apartment owners in relation to it. The privatization of residential housing in Latvia was largely completed in 2003, but the management of multi-apartment dwellings and the problems associated with it are still topical issues.

It should be noted that similar processes in the field of real estate took place in other countries of

the former Soviet Union and socialist Eastern Europe, [2]. The housing management sector affects all levels of society, from the state to the individual, and has not only an economic and financial but also a social dimension that can have a significant impact on the real estate market and its development trends.

In Latvia, the principles of management of residential buildings, the relations between the parties involved in the process, the rights, duties, and responsibilities, as well as the competencies of the state and municipalities are laid down by law. The "Law on Administration of Residential Houses" is the basis for regulating the management relationship between the client (apartment owner) and the service provider (manager). The authors believe that the relationship between the apartment owners and the manager, as well as the quality of that relationship, plays an important role in the management of the building. To increase the efficiency of the management process, an appropriate level of communication is needed, which in turn provides information on the services requested and provided and prevents conflicts.

As in many other areas of the economy, housing management is embracing the latest technological solutions, and various digital tools are being used not only for design and construction planning but also for faster and more efficient communication in housing operation processes. Modern technology can significantly speed up the flow of information, save time and money, and optimize decision-making. This way, the most sustainable solutions are chosen, which not only saves money but can also increase the value of the property.

The study was carried out between 30 June 2023 and 20 February 2024. The aim of the study is to identify and analyze the problems and their causes in the communication between apartment building managers and apartment owners, as well as to provide recommendations for their elimination using modern technologies. In order to achieve the objective of the study, the following tasks were carried out: 1) to analyze the statistics, technical and legal aspects of the Latvian housing stock, 2) to assess the situation in the cooperation and communication of apartment owners with the manager, 3) to study and evaluate the use of the largest and most frequently used digital platforms in management activities.

The study uses data extraction and processing methods such as analysis of laws and regulations, secondary analysis of studies and publications, and compilation of statistical data. The authors applied the following data processing methods: descriptive method, data analysis, graphical analysis, and-

constructive method. In order to understand the current situation and identify the main communication problems, a survey was carried out among residents of apartment blocks of different series and numbers of apartments. A questionnaire for apartment owners in multi-apartment buildings was developed for the survey. The descriptive statistics method of data analysis was used to process the information obtained from the questionnaires.

2 Latvian Housing Stock

2.1 Statistics, Technical and Legal Aspects of the Latvian Housing Stock

In developed economies, real estate is an essential national asset, as economic development is unthinkable without it. Everyone in a country needs a place to live as a basis for life. Access to quality housing is a key indicator of well-being and stability, as well as a way to address social and economic challenges. Real property has a close connection with the ownership, possession, lease, tenancy, or right of use of the immovable property in question, [3].

According to the Cabinet of Ministers Regulation No 326 "Regulations on Classification of Structures" (adopted in Riga on 12 June 2018), which defines the classification of structures by type of use in Latvia, structures are divided into buildings and civil engineering structures. Buildings are separately usable structures in which people may reside and which are intended for the shelter of people or animals or for the storage of objects. Engineering structures are all structures that do not meet the criteria of buildings. Buildings are divided into residential and non-residential. The residential buildings are:

- single-apartment buildings,
- two-apartment building,
- buildings with three or more apartments,
- co-housing for different social groups.

Housing provides for the life and development of the individual and is an essential basic need for every citizen in the country. Housing is a type of real estate that has undergone several changes during its evolution, [4]. Historically, various transformations have taken place in the form of ownership of the real estate, including residential property, to address socio-economic and political challenges, including nationalization, privatization, denationalization, and reprivatization.

According to the data of the State Statistics Bureau, as of 1 January 2024, there were 371 456 residential houses in Latvia, of which 39 485 were houses with three or more apartments.

As shown in Figure 1, single-apartment houses have the highest share of 85.3%, two-apartment houses account for 3.8%, and three-apartment and more houses account for 10.7% of the total. The share of co-housing for different social groups is negligible - 0.2%.

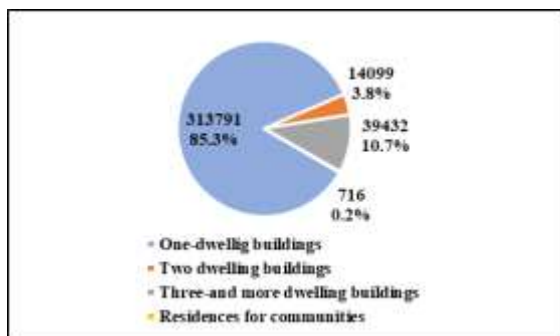


Fig. 1: Distribution of residential buildings in Latvia by number

In Latvia, 65.5% of the population lives in apartments in apartment blocks. Most of Latvia's apartment buildings have been in operation for more than 50-60 years, which has highlighted the need to renovate and improve the energy efficiency of these buildings. According to the Ministry of Economy and State Land Service, the total depreciation of residential buildings is 38.9%, [5].

Analyzing the multi-apartment buildings by the year of their construction (Figure 2), it can be seen that the majority (43.6%) were built before 1941. Between 1941 and 1960, 13.3% of all residential buildings were built, while most houses (23.9%) were built in the post-war years between 1961 and 1979. Between 1980 and 1992, a further 12.7% of buildings were built. However, the number of houses built after independence represents only 6.5% of the total number of all residential buildings.

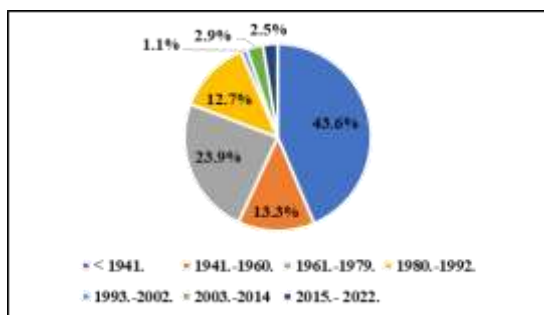


Fig. 2: Multi-dwelling residential buildings in Latvia by number

Until 1941, Latvia was dominated by apartment houses with wooden exterior walls, which accounted for about half of the total number, and 1-2 storey brick masonry buildings were also common, but 3-5 storey buildings were the most numerous. However, over time, the construction of wooden-walled dwellings has declined, and in the last five years, only a few houses of this type have been built. Similarly, the construction of wooden apartment buildings has recently been active in London, Vienna, Bergen, and other European cities, where a significant number of wooden residential buildings already exist. The first new wood-frame apartment building in Latvia was built in Brenguļi.

The rapid development of apartment buildings took place between the end of the Second World War and 1961, due to the need for housing renewal and the availability of additional housing at that time. During this period, mainly 1-2 storey stone and timber buildings were built, as well as 3-5 storey buildings. A major period of growth was from the 1960s to the 1980s, when 3-5 storey buildings were built intensively. In the 1980s, houses with 6-9 storeys and 10 or more storeys were also developed, as it was necessary to provide apartments for a large number of inhabitants. However, the situation changed with the restoration of Latvia's independence, and between 1993 and 2003 the rate of construction dropped sharply, with only 429 apartment houses being built. Construction activity picked up again after EU accession, but the economic crisis of 2007-2010 halted this growth. After the crisis, the rate of construction of apartment blocks gradually picked up again, [6].

Although Latvia's National Development Plan 2021-2027 states that by 2050 all households in Latvia should have access to housing that meets high standards of energy efficiency, construction, safety, and amenity, the analysis of previous studies shows that residential houses do not undergo all the necessary maintenance and repair works that affect the compliance of residential houses with safety requirements, and are characterized by low energy efficiency, as almost 90% of energy certified residential houses meet the lowest energy efficiency classes E and F, [7].

The relations between apartment owners and managers are based on the "Law on Administration of Residential Houses", the "Law on Apartment Property" and their subordinate Cabinet Regulations, which regulate the principles of management, relations between the parties involved, rights, duties, and responsibilities, as well as the competence of the state and local authorities in this area.

Analyzing the legal aspects, the authors conclude that:

- the laws and regulations governing the principles and procedures for managing residential buildings are complex and unclear, often misunderstood and poorly understood by apartment owners,
- the regulatory enactments do not strictly define the requirements for the formation of apartment associations in multi-apartment dwellings and the responsibilities, rights, and actions of the managers, so they are not respected in some cases, which ultimately hinders and impedes the development of this area.

Apartment building management in Latvia is a free market - apartment owners can choose any manager. According to the Register of Enterprises, there are approximately 2,000 house management companies (LLCs and cooperative companies) operating in Latvia, of which approximately 40% are active. Management activities are open to legal and natural persons with appropriate education and qualifications who meet the criteria set out in the "Law on Administration of Residential Houses", [6].

2.2 Study on the Cooperation of Apartment Owners with the Manager

In order to assess the cooperation and communication of apartment owners with the manager, a survey was carried out among apartment dwellers, selecting houses according to a series of criteria and the number of apartments. The houses were selected on the basis of the following principles:

- Location - residential area of Riga.
- Number of apartments per house: three-storey houses with 12 apartments, five-storey houses with more than 50 apartments, and houses with more than five storeys with more than 100 apartments.

A questionnaire was prepared for the owners of flats in apartment blocks to carry out the survey. The questionnaire consisted of 25 questions covering a variety of topics related to apartment owners' attitudes and knowledge about working with the manager. It covered the legal, economic, and financial issues, as well as the social aspects and communication problems faced by apartment owners and their managers. The questionnaire was divided into three main blocks:

- Information section,
- Cooperation section,
- Problem section.

866 respondents from 3 different groups of building types took part in the survey: 56 from

three-storey houses; 325 from five-storey houses and 485 from nine-storey houses.

Below is a summary of the information gathered from the section of the questionnaire dedicated to the need for and provision of communication:

- Only 44% of respondents are aware of their responsibility for property management and are ready to make decisions in this area.
- More than 62.8% of respondents would prefer to receive information through modern means of communication, using platforms provided by the manager, 4% would prefer to receive information via email, while the majority of older respondents prefer printed information. 64% of respondents trust their manager, while almost a third have only some or no trust. Respondents point to the incompetence of managers on certain issues and their inability to explain ongoing management processes and activities.
- About 45% of respondents are aware of the monthly costs and how they are used, and more than 50% are aware of the actual costs. At the same time, shortcomings in timely information are pointed out.
- The majority of respondents (59.2%) believe that the activity of apartment owners influences the quality of management.
- 74.7% of respondents are aware of how their money is spent, which shows that they regularly keep track of their expenses.

Analyzing the activities and communication between apartment owners and building managers, the authors conclude that:

- Many apartment owners are not aware of their rights and obligations regarding the management of their home, the common property, and related issues,
- Apartment owners in multi-apartment buildings lack information on the formation of associations of apartment owners and on the choice of the building manager,
- A large proportion of apartment owners are inactive and disinterested in change when it comes to managing their homes,
- Incompetence, ignorance, and indifference on the part of both apartment owners and managers in managing and running the building,
- A large proportion of apartment owners are interested in using modern means of communication with the building manager.

In order to stimulate the cooperation of apartment owners with building managers, it is necessary to promote the activity of apartment owners in solving management issues, carry out

educational activities, work on the dissemination of information, as well as to organize and improve the regulatory framework in this area. Modern technological solutions such as online portals can make a major contribution in this direction, as they enable the collection, storage, transfer, and circulation of the necessary information, as well as feedback.

3 Use of Modern Platforms for Management Activities in Latvia

The property management market has undergone significant changes in the last decade due to the rapid development of technology. Conservative and traditional management practices are increasingly influenced by the development and use of modern technologies. Artificial Intelligence (AI), Internet of Things (IoT) and GIS systems with machine learning algorithms are also becoming part of everyday real estate management, [8].

However, the development and application of digital strategies in management companies in Latvia is still in its infancy. So far, providers of management services have tended to focus on providing basic services rather than on the opportunities offered by modern technology. Creating a digital business model is key to defining and implementing the right management strategy, as it allows you to develop existing markets and discover new opportunities. Customer contact and knowledge are one of the core principles of digital strategy, as data and services based on it, not just products and/or services, are becoming increasingly important in the development of business models, [9].

Customers are becoming more demanding, they want service always, everywhere, and immediately, they expect special service, they demand speed, individuality, and adequate quality, they are not always loyal and cooperate well with the service provider [10]. A final social driver of digitization is the shift from an industrial to a knowledge-based society, which places greater demands on people to use and organize knowledge, [11].

One of the most important developments in the property management sector in recent years has been the emergence of online portals specifically designed for property management. These portals act as centralized resources where apartment owners can easily access information about their property, financial reports, maintenance schedules, important notices, and other data. These online resources provide quick and easy access to relevant

information, improve transparency, and allow owners to be informed about all management activities related to their property. Processes are automated and cover the entire information lifecycle, from data creation to data extraction to data use. This helps to build trust between owners and managers. The use of digital technologies enables entrepreneurs (managers) to carry out internal business processes more efficiently and flexibly and to monitor performance and productivity indicators more accurately.

Real-time communication channels are an important aspect of modern technology that can significantly improve communication between owners and managers. Through messaging platforms and mobile apps, owners can now contact property managers online, seek help, raise concerns, or give feedback. Such immediate accessibility speeds up the responsiveness of property managers and demonstrates their commitment to open communication, which is essential for building trust. By responding promptly to owners' questions, managers demonstrate their commitment to providing high-quality services and meeting customers' needs in a timely manner. The application and integration of new information technologies in the business environment are bringing about significant changes in business by connecting the digital and physical business worlds, [12].

An electronic construction information system (BIS) has been established at the national level in Latvia, which ensures the flow of information between the participants in the construction process, maintains registers necessary for the construction process, and e-services related to the construction process and registers. The system not only includes construction information but also provides a digital environment for housing managers and owners. The system allows you to store property management documentation, organize residents' meetings and surveys electronically, process building survey data, etc. BIS is continuously improving, and more and more services and processes are being digitized, [13].

An examination of publicly available housing management portals reveals that the amount of information available on them is often either incomplete or lagging far behind real-time. In this section of the study, the authors analyze two platforms that are available to customers in Riga. The choice of these platforms is based on the fact that they are the largest e-platforms in Latvia in terms of number of customers.

The first platform is "e-parvaldnieks.lv", which is administered and offered by the largest real estate manager in the Baltics - the municipal company SIA "Rīgas namu pārvaldnieks". The platform provides customers with a personal office where they can access the following services (Figure 3):

- provide meter readings for hot and cold water consumption,
- receive an electronic invoice for management and maintenance services,
- pay for the management and maintenance services,
- receive in electronic form a summary of the planned income and expenditure estimates and a list of the necessary repairs for future periods for mandatory maintenance and management work to be carried out in the dwelling,
- receive an electronic statement of the actual income and expenditure for the maintenance and management of the dwelling for the previous period,
- receive other information about the management of the building.

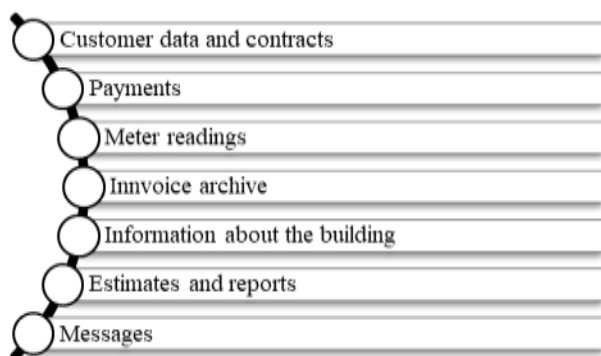


Fig. 3: Functions of the "e-parvaldnieks" portal

Analyzing and evaluating the platform, the authors consider that, overall, it fulfills its functions and includes the accumulation and circulation of key information. However, a closer look reveals the following shortcomings:

- The provisioning fund for repairs is shown with a large real-time lag of more than 73 days. In this way, owners have no information on the actual accumulation of funds at a given point in time,
- The proposed renovation plan is not transparent and does not indicate the decision on which it is based,
- Also, the actual work carried out is often presented with a large time lag, giving a false impression of the funds actually accumulated,

- The applications section is one-sided, with no immediate responses and no way to track the progress of the application.

The authors recommend that the platform maintainers take these shortcomings into account and improve the functionality of the platform in the foreseeable future in line with the wishes and needs of the clients of the managed houses.

The second platform reviewed by the authors is "e-saimnieks.lv", which is offered to clients by the management groups "Civinity" and "MansParvaldnieks.lv", as well as the largest state real estate manager "Valsts nekustamie īpašumi" and the building manager "Teche". The platform also includes a personal office where you can submit utility meter readings, report problems, get up-to-date bills, and view the billing archive. You can also see the amount of debt, the amount of funds accumulated, and the planned renovation plan. As can be seen, the functions offered by this portal (Figure 4) are quite similar to those of the "e-parvaldnieks" portal.

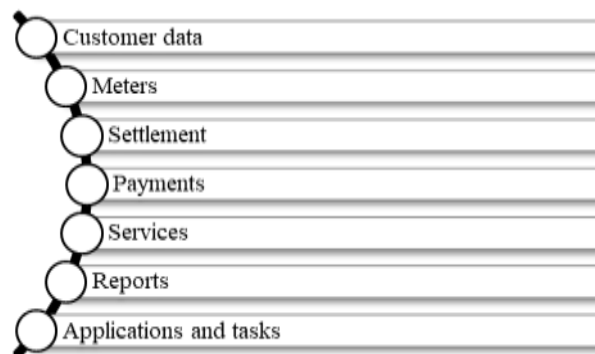


Fig. 4: Functions of the "e-saimnieks" portal

However, on deeper analysis, the authors point to several advantages:

- the provisioning fund for repairs is shown in real time (for the previous day), which helps customers understand the actual provisioning.
- the proposed repair plan is linked to the actual backlog and documentation of decisions taken.
- as a very big advantage is its automatic linking with the Construction Information System (BIS), where, according to the current legislation, every manager has to post information about the "Building file" of the managed property.
- in addition, digital maintenance rules for home appliances and equipment are available, as well as visual and technical home inspection reports.

The authors of the article rate the portal "e-saimnieks.lv" as the most advanced house

management system in Latvia. The positive assessment can be justified by the fact that the portal has been developed in cooperation with the building managers and according to the wishes of the clients of the managed houses.

4 Conclusion

The authors conclude that:

- The management of apartment buildings is an important part of the real estate sector in Latvia, faced by more than half of the population.
- Most apartment blocks have been in operation for more than 50-60 years and are characterized by low energy efficiency. Many problems in managing of apartment buildings are linked to the lack of awareness among apartment owners of their rights and obligations regarding the management of the building and the common property. These problems are also the result of incomplete or missing communication between apartment owners and the manager.
- The results of the survey show that a large proportion of apartment owners are interested in using modern means of communication with the building manager.
- The property management sector is increasingly using digital technologies (online portals, mobile apps, etc.) to collect, store, accumulate, and access the information you need when you need it.
- Modern technology offers a wide range of opportunities for communication and trust between apartment owners and managers. Through online portals, real-time communication channels, digital maintenance tracking systems, smart home technologies, data analytics, and community engagement platforms, operational and communication efficiency between owners and managers is increased.
- In Latvia, digital technologies are used in housing management both at the national level (Building Information Systems) and at the company level (e-platforms of management companies).
- The largest digital platforms used in Latvia for utility management include the ability to submit utility meter readings, report problems, receive up-to-date bills, and view a billing archive, as well as view a home's debt, backlog, and planned repair plans.
- The main shortcomings identified in the digital management platforms are the real-time delay of information, non-transparent and non-decision-

based repair plans, and non-transparent information flow on customer applications.

- The development and improvement of the digital platform should be carried out in cooperation with the building managers and taking into account the wishes of the customers of the managed houses.

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- Rosita Zvirgzdina is the lead author.
- Ervins Straupe is the creator of the theoretical base and data analyzer.
- Iveta Linina, Velga Vevere are the data analyzers.

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The authors have no conflict of interest to declare.

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