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Problems and perspective of developing insurance in the international tourism business

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Abstract. An increasing number of tourists face risks and unforeseen situations while travelling: the limited availability of insurance products, deficiencies in risk coverage, and the failure to meet individual needs make relevant the issue of insurance in the international tourism business. The purpose of the article was to analyse current problems in the field of insurance at the international level and to highlight possible ways to solve them, as well as to determine the prospects for the development of this segment aimed at ensuring maximum safety and convenience for tourists. The article examines the state and prospects for the development of the international market of travel insurance services. With the application of the analysis method, a thorough review of the shortcomings in the activities of insurance companies was carried out, which made it possible to clearly determine the level of importance and provide practical recommendations for their solution. The abstract-logical method was applied to make conclusions based on the study of policyholders' behaviour, their tendency to risk, and the choice of insurance products. The increase in the volume of tourist trips in the world is accompanied by the increase in appropriate insurance. It causes insurance companies and tour operators a number of problems, such as insufficient adaptation of insurance products to the needs and risks of tourists, limited geographical coverage, and complex registration and compensation procedures. However, there are also prospects for the development: new technologies, such as artificial intelligence and blockchain, which can contribute to the automation and facilitation of insurance processes. Expanding geographic coverage and adapting insurance products to the specific needs of tourists can also ensure the growth of the insurance market in international tourism. The practical value of the conducted research is determined by the development of recommendations for international insurance companies aimed at overcoming problems and reducing risks in the field of travel insurance, both for representatives of the insurance business and for travellers

Keywords: insurance case; tourist activity; market of insurance services; insurance activity; international insurance companies

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INTRODUCTION

The increase in tourism flows around the world results in a number of challenges and problems, among which the issue of safety and insurance for travellers is of particular importance, necessitating the issue of solving problems and developing travel insurance. The changes in the world are accompanied by the changes in travel requirements and travel conditions. Political and military conflicts, natural disasters, pandemics affect the safety of tourists

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during travel and insurance is becoming an important tool for minimising risks. The growth of the international tourism market leads to an increase in the need for insurance to protect both the tourist himself and tour operators and other participants in the tourism business. The emergence of new forms of tourism, such as medical tourism, “dark”, military, extreme tourism, etc., challenges the insurance system. These forms of tourism may require a specific type of insurance. The development of technologies allows insurance companies to offer new, more efficient and affordable insurance products for tourists. Technologies can also help manage risks while travelling.

Tourism is becoming more and more popular and affordable to a wide range of people, and as O. Kirdan (2023) points out that this leads to an increase in the volume of tourist trips both within the home country and abroad. Such growth in tourism activity provides for protecting and ensuring the safety of tourists during their travels. With this growth in tourism activity, the need to protect and ensure the safety of tourists during their travels arises. Researcher I.V. Kravets *et al.* (2020) believe that the successful functioning of the tourism industry is largely determined by the efficient use of insurance protection mechanisms for consumers of tourist services and subjects of tourism activities, as the risk of undesirable events and their negative consequences in the tourism business is particularly high. In this context, insurance in the international tourism business gains special importance. The introduction of insurance policies for tourists provides for financial protection in case of unforeseen circumstances, such as medical and transport accidents, luggage loss, as well as cancellation or change of travel route. The pandemic has significantly affected the tourism industry and emphasised the importance of insurance protection in case of unforeseen circumstances, as noted by S.T. Lim *et al*. (2023).

Scientists O. Gatalyak & V. Stetskyi (2020) interpret the essence of insurance as a relationship of protecting the property interests of individuals and legal entities in case of unforeseen circumstances at the expense of the funds from the insurance premiums they pay. As O. Dadak *et al.* (2019) point out, the field of insurance contributes both to the improvement of the quality of tourist services and a favourable atmosphere during the trip. In their paper, L.A. Chvertko *et al.* (2020) defined the essence, types, and importance of insurance to provide insurance protection to the participants of the tourism market. Scientists H. Naseeb & A. Metwally (2022) defined the types of tourist insurance and the main risks covered by them. Insurance issues in the modern international tourism business are relevant and provide for the detailed research. However, it is worth mentioning that currently existing travel insurance products often have limitations and shortcomings that do not always meet the real needs of travellers. This brings about new challenges and prospects for the development of insurance in the international tourism business, as H. Mykhailichenko & A. Klimova (2020) put it in their paper. In particular, in the future it is possible to improve insurance products for tourists, taking into account their individual needs and wishes. It is also possible to expand the geographical coverage of insurance services, as well as the introduction of new technologies, such as instant applications for insurance policies through mobile applications and Internet platforms. The development of new technologies allows insurance companies to respond more quickly to the needs of tourists and develop more flexible and effective insurance products. T.-W. Yu & T.-J. Chen (2018) focused on the development opportunities of the insurance industry in international tourism and the potential prospects for insurance companies. The article examines the prospects for the development of insurance in the international tourism business and highlights the possible areas of improvement and expansion of insurance services for tourists in order to ensure their safety and comfort during travel.

For the stable development of the tourism industry and travellers’ safety, it is necessary to consider the problem and prospects of insurance development in the international tourism business at the current stage. Growing volumes of tourism flows and risks associated with international travel provide for a comprehensive approach to ensuring the safety and protection of tourists’ interests. It is also necessary to consider recommendations for representatives of the insurance business on improving tourism insurance services in the face of global challenges. The purpose of the study was to conduct a thorough analysis of existing problems in the field of international travel insurance and the identification of ways to solve them. This will make it possible to understand the difficulties faced by participants in insurance relations, as well as to find optimal strategies for improving this industry.

MATERIALS AND METHODS

Methods of analysis and synthesis were applied in the research to identify the main problems faced by insurance companies in the field of tourism, as well as to highlight key aspects of the development of this market as a whole. The comparison method was used to compare indicators for several previous years in order to obtain statistical data for the current moment, as well as to track the dynamics of processes in such a key indicator of the development of the international market of insurance services as the number of business entities depending on the type of economic activity. Methods of statistical analysis and synthesis were used. On the basis of the collected information, forecasts were developed regarding the future development of the insurance market in international tourism, and key directions of its transformation were identified. The literature review on the research topic was carried out by analysing scientific articles from economic, tourism, and insurance journals available in databases such as PubMed, JSTOR, EBSCO, and Google Scholar. A qualitative analysis of insurance problems in international tourism and possible ways to solve them was conducted.

The peculiarities of insurance companies’ activities operating on the international market have been analysed within the theoretical research. The method of data analysis made it possible to carry out detailed research of the problems of insurance companies providing services to travellers, in order to realise their importance and practical application of the received recommendations. The abstract-logical method was applied to form conclusions and recommendations for improving the activities of international insurance companies offering services in the field of tourism, such as optimising insurance products, expanding the range of insurance services, and introducing new technologies to improve customer service. The graphic method was used to analyse the dynamics of the travel insurance market volume. The use of the generalisation method made it possible to systematise and summarise possible ways of solving the problems of insurance development in international tourism.

On the basis of the data obtained during the study of the international insurance business (using the example of the USA, India, and Germany), the main problems of companies operating in this area were determined. Some insurance companies do not use effective marketing and sales strategies to promote their travel insurance products and do not inform potential customers about their services. A number of tourists face poor customer service when buying travel insurance, which can lead to negative experience and customer loss. A significant number of tourists consider insurance to be a significant expense, which affects their decision to purchase an insurance policy; therefore, the present article provides recommendations for reducing insurance costs using the abstract-logical method. Limited access to insurance services for certain groups of consumers is a barrier to travel; thus, companies should provide explanations of the range of their services and insurance coverage based on the descriptive method. The present research provides a description of possible solutions to the problem of maintaining a balance between risks and rewards, which can help insurance companies ensure an appropriate level of protection and stability of their business in the field of international tourism.

RESULTS

Travel insurance is a type of insurance that covers various risks during travel. This market covers the costs of medical services, flight cancellations, loss of luggage, and other damages that a travelling person (tourist) may incur during the trip. An insurance policy is issued to cover these risks and provides an additional level of protection against financial losses during travel. The insurance procedure is carried out in order to cover the risks of losses and provides for an additional level of protection against financial losses during the trip (Bakalo *et al.*, 2023). Insurance provides financial protection against expenses or losses incurred due to unforeseen circumstances during domestic or international travel. As a rule, travel insurance covers the cost of lost or stolen property, emergency medical care, accidental death, trip cancellation, and interruption. The insurance is valid from the day of travel until the insured returns home. Such insurance companies as Heymondo, SafetyWing, IMG Global, Travelex, Trawick International, and American International Group (AIG) Travel Guard provide travel insurance with 24/7 emergency services, in particular, replacement of lost passports, assistance with cash transfers, and rebooking of cancelled flights. Each of them aims to cover a large part of the market, offer a wide range of insurance services, implement technological innovations, apply an individual and flexible approach to each client, provide stable and guaranteed support during travel, and offer competitive prices and favourable conditions for clients, especially for regular customers. These companies also offer customisation options depending on the geographical location and according to the requirements of the insured persons (Kravets *et al.*, 2020; Travel insurance market report..., 2024). Accordingly, the travel insurance market includes income received by entities (organisations and private entrepreneurs), providing insurance services for luggage and personal belongings against loss, life and health insurance, etc.

The travel insurance market is fragmented, many international companies are present there. Some tourism-focused countries have made travel insurance mandatory for travellers, which will lead to organic and long-term growth in the travel insurance industry. Major players include Travelex, Allianz, InsureMy Trip, Nationwide, HTH, and AIG. According to Next Move Strategy Consulting (n.d.), the revenue of the global travel insurance market in 2030 will be almost eight times larger than in 2023. In 2023, the market will be approximately 15.3 billion USD, and by 2030, the market is expected to reach approximately 108.8 billion USD (Global travel insurance market size, 2023) (Fig. 1). This is due to the prediction that vaccination, increased business travel, and the availability of online booking sites will lead to the global tourism industry recovering from the coronavirus pandemic (Onyshchenko *et al.*, 2023).

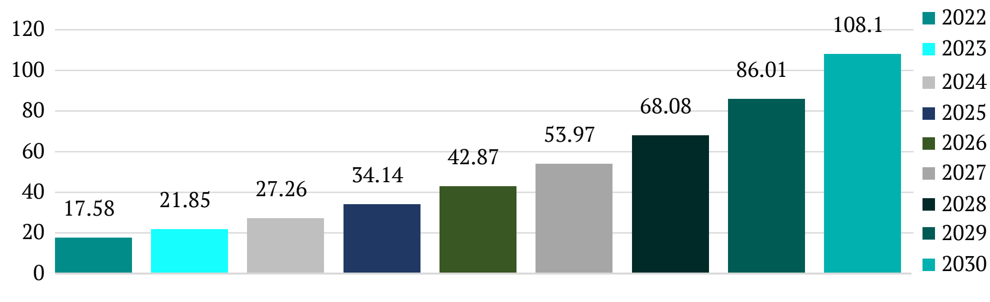

Figure 1. Dynamics of the volume of the travel insurance market from 2021-2030, billion USD
Source: compiled by the authors based on Global travel insurance market size (2023)

Europe's share became the largest in the global travel insurance market and accounted for about 34.7% and 4.6 billion in gross revenue in 2023. The volume of the European region is expected to be the largest in the future. This is largely due to the growing demand for travel and tourism in the European region. Moreover, it is expected that rapid economic growth in the region, coupled with increasing benefits provided by travel insurance companies to frequent travellers, will contribute to market growth in the region. Mandatory European government rules and regulations compel consumers to obtain travel insurance as a mandatory service before obtaining a visa. In addition, the growth of the tourism and travel industry has led to several consumer incidents, such as trip cancellations and medical emergencies (Global travel insurance market size, 2023).

The Asia Pacific market is expected to grow at the fastest rate between 2021 and 2030, owing to increasing demand from a growing number of organisations, promoting business travel for their employees through travel insurance programmes (Global travel insurance market size, 2023). Moreover, several countries in the Asia Pacific region, such as India, Pakistan, Bangladesh, China, etc., are witnessing rapid growth in the tourism sector, which is contributing to the growth of the regional market. In addition, growing consumer awareness about the benefits of travel insurance in the region is expected to drive market growth over the forecast period (Diakonidze, 2021).

The positive dynamics of the travel insurance market growth are stipulated by the development of the tourism and travel sector, an increase in natural disasters, an increase in the number of trips for the purpose of business tourism, caused by urbanisation, and an increase in consumer incomes. The COVID-19 pandemic, as well as restrictions and exclusions in travel insurance coverage, are among the negative factors affecting the growth of the insurance market (Lim *et al.*, 2023). In the future, the growing demand for embedded insurance services, awareness of the possible risks associated with travel, and the increase in the cost of medical care will significantly affect the market for insurance services. The consequences of the Russian-Ukrainian war and economic fluctuations are among factors that may restrain the development of the travel insurance market in the future.

The expected increase in demand for embedded insurance services in case of unforeseen circumstances during travel (illness, loss of luggage, cancellation of flights, etc.) can serve as the key driving force for the development of the travel insurance market. Embedded insurance, caused by unexpected events, refers to insurance coverage that is fully integrated into other products or services, such as travel bookings, to provide convenient and automatic protection during certain events or activities. The demand for these types of travel insurance reflects the needs and preferences of travellers, who are constantly evolving and looking for personalised and convenient options to cover certain events. For example, according to a report published by a European technology business, specialising in embedded insurance, in December 2022 embedded travel-related insurance products indicated strong consumer demand for flexible coverage caused by certain events, in particular: trip cancellation insurance for any reason (90%); baggage loss insurance (85%); flight delay insurance (84%) (Companijon, n.d.). The 25-44 age group requires embedded insurance with automated claims processing, instant payouts, and reliable service. Moreover, over 40% of consumers appreciate the chance to cancel purchases and receive an instant refund. Thus, the increase in demand for embedded insurance caused by certain events stimulates the demand for travel insurance in the future (Naseeb & Metwally, 2022). At the same time, it is worth mentioning that the Russian-Ukrainian war may be the main constraint to the development of the travel insurance market. The military actions have significantly undermined the insurance market and affected international insurance brokers, which in turn affected the tourism and travel industry. Increased risk and uncertainty, travel recommendations and restrictions, limited coverage of war-related events, and reduced demand have contributed to negative consequences for travel insurance (Kirdan, 2023).

However, the changes caused by the above-mentioned factors in the travel insurance market contributed to its adaptation to the challenges of the external environment, in particular, the development of digitalisation and mobile integration. Major companies operating in the travel insurance market are focused on introducing and offering digital platforms and mobile applications, allowing travellers to easily purchase, manage, and access their insurance policies and enabling key players to gain a competitive advantage in the market. Digital platforms provide a smooth and user-friendly experience, allowing travellers to study coverage details, submit claims, and receive real-time assistance on their mobile devices. For example, in March 2022, the British financial company Virgin Money presented a new digital insurance offer that includes COVID-19 coverage (Naseeb & Metwally, 2022; Travel insurance market…, 2023). Travel insurance policies have an additional option, including extended cover for COVID-19 and standard cover for cases of illness before the departure and overseas. Applying digital solutions, policyholders can conveniently purchase, update, and track their claims online.

In June 2021, British insurance software company Firemelon Ltd presented Magenta Insurance System, an online platform designed to enable Spanish travel insurance company Fit 2 Trip to provide travel insurance in Spain and Italy (Travel insurance global market report, 2024). The developed platform allows Fit 2 Trip insurance company to provide insurance policies that cover current illnesses, expanding the customer base and providing access to coverage for individuals with different medical issues and circumstances. By creating these new websites, Fit 2 Trip aims to expand its travel insurance services to audiences in Spain and Italy, regardless of their medical history.

Companies in the travel insurance market are focusing on using blockchain technology to offer additional services more transparently and securely, thereby strengthening their market positions. Blockchain technology refers to a centralised, distributed, and public digital system that records information on computers in a way that cannot be changed. Blockchain ensures transparency and security of insurance operations. For example, in January 2023, German decentralised insurance platform company Etherisc GmbH launched FlightDely, which is a flight insurance product on the Gnosis Chain Mainnet blockchain platform. This innovative proposal uses blockchain technology and Chainlink data feeds to autonomously issue insurance policies and process payments of those travellers who have experienced flight delays or cancellations (Halona *et al.*, 2023).

The study examined the peculiarities of the development of the travel insurance market in such countries as Germany, the USA, and India, as these countries are both tourist-providing countries and popular destinations among travellers. The German government has approved rules and regulations requiring consumers to obtain travel insurance as a prerequisite for obtaining a visa, which is expected to boost the growth of the German travel insurance market. Due to the increase in the number of trips to

Germany, incidents such as trip cancellations, loss of luggage and important documents, medical emergencies, and others may become more frequent. To reduce these risks, consumers buy travel insurance, which is the main driving force of the European travel insurance market (Glušac, 2021; Buryak *et al.*, 2023). In contrast, insurers in the region are expected to improve existing travel insurance distribution platforms to enhance productivity using such technologies as geolocation, application programming interface (API), artificial intelligence (AI), data analytics, global positioning system (GPS), and others (Kuchai, 2021).

Americans travelling to other countries for business or pleasure. Advances in aviation technology have made air travel safer and cheaper, encouraging more US residents to spend vacation abroad and purchase travel insurance to protect their travel investment (Sarman *et al.*, 2020). Moreover, the increasing globalisation of markets and corporate supply chains has increased the demand for business travel. International travel by US residents is expected to increase during the forecast period, creating an opportunity for the industry. The travel insurance industry has a low market share. Less than one-fifth of total industry revenue is expected to come from the top four industry operators. The fragmentation of the industry is caused by numerous sales channels and niche, localised operators. AIG is a leading provider of travel insurance through its Travel Guard brand. In the United States, travel insurance is regulated at the state level, and insurers are encouraged to obtain accreditation from the National Association of Insurance Commissioners. Travel insurance companies must comply with the regulations of the jurisdiction within which they sell travel insurance (Dadak *et al.*, 2019; Kravets *et al.*, 2023).

The Indian market accounts for less than 1% of the global travel insurance market. As people are becoming more mobile, travel has become an important part of their academic, business, and personal lives (Sharma, 2022). The main goal of travel insurance is to provide travellers with a stress-free experience, minimising risks. As a result, purchasing a travel insurance policy to mitigate the risks associated with travel is always a good option. Travel insurance covers travel-related emergencies such as loss of tickets and passports, cancellation, curtailment, interruption of a trip, loss/delay of luggage, etc. (Travel insurance market..., 2023). The coverage also covers any financial loss incurred during domestic or international travel, which is expected to help the travel insurance industry flourish in India. Additionally, the increasing number of natural disasters and medical crises are among the most common problems encountered during travel, which stipulates the need for travel insurance. However, during 2022-2023, the lack of understanding of insurance plans could become a significant barrier to the growth of the Indian travel insurance market (Chvertko *et al.*, 2020).

A significant niche of the travel insurance market is made up of corporate travellers, travelling regularly. Various organisations purchase travel insurance to provide coverage for their employees travelling on business abroad. Business travel is gradually resuming around the world as people get vaccinated and government travel restrictions are eased. Corporate travellers are finding it easier to return to their regular work lives, which contributes to the market growth. According to the Global Business Travel Association, the growth in annual travel spending slowed down in 2023 and will continue to slow down in 2024, however, it will remain higher than the historical average, with annual business travel spending exceeding 1.5 trillion USD by 2024 (Verhun *et al.*, 2022; Travel insurance market..., 2023).

Thus, it is worth mentioning that the domestic market will provide the biggest opportunities in the market for various types of travel insurance, reaching USD 11,618 million in global annual sales by 2027. Coverage opportunities will be available on the single-use travel insurance market, which will account for 12,563.1 million USD in global annual sales by 2027. The biggest opportunity of sales channels will be available on the insurance intermediary market, which will account for 9,870.7 million USD in global annual sales by 2027 (Dadak *et al.*, 2019; Bakalo *et al.*, 2023). The travel insurance coverage market will be available on the medical loss market, which will account for USD 10,006.2 million in global annual sales by 2027. The biggest opportunities on the end-user travel insurance market will be available on the family traveller market, accounting for 9,885.8 million USD in global annual sales by 2027. And the travel insurance market will see the biggest increase in the United States of America by 4,620 million USD. In order to take advantage of such promising opportunities, insurance companies, providing services in the field of tourism should focus on digitalisation and mobile integration, the application of blockchain technologies and technological platforms, and expand their activities in developing markets (Travel insurance market..., 2023). Also, it is worth paying attention to strategic partnerships and collaborations, making proposals at competitive prices, participating in exhibitions and events, using consumer-oriented advertising, growing with every year, targeting millennials and Generation Z, as well as online consumers (Ariny, 2018; Vojinović & Glavaš, 2019).

International tourism has become an integral part of the modern world. millions of people cross borders to visit new countries, learn more about other cultures, and have unforgettable experiences. Tourism both has a significant impact on the global economy and carries risks and challenges that can affect travellers. In this context, insurance plays an important role in international tourism. Figure 2 presents the main problems of insurance development in the international tourism business.

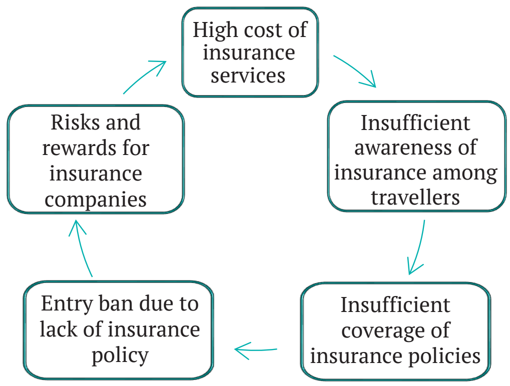

Figure 2. The main problems of insurance development in the international tourism business

Source: systemised by the authors

It is necessary to consider the main problems of the development of insurance in the international tourist business in more detail. First of all, there is an insufficient level of awareness about insurance among travellers. This problem is caused by the tourists' failure to understand the importance of travel insurance, resulting in ignoring it when planning and carrying out their trips. Unknown risks: many tourists are unaware of various risks associated with travel. They can include medical emergencies, luggage theft, natural disasters, or service complaints. Lack of understanding of possible threats can lead to tourists' failure to be prepared for them. Unforeseen circumstances: travel always comes with contingencies. Weather changes, transportation and medical problems, and flight cancellations or postponements are just a few examples of unforeseen circumstances that can cause losses or unexpected expenses. Lack of insurance awareness: a number of tourists may not be aware of how insurance can help protect them against these risks. They may not know that there are insurance policies that cover medical expenses, lost luggage, or other travel issues. Lack of awareness of insurance availability: even if tourists are aware of the importance of insurance, they may find it too difficult or expensive for them. This can lead to a refusal to take out insurance, considering it unnecessary or unattainable. Financial stress and losses: when tourists do not have adequate insurance coverage, they can find themselves in financial difficulties in case of unforeseen circumstances. Expenses for medical services abroad or recovery of lost luggage can significantly affect their finances (Bakalo *et al.*, 2023).

Solving the above-mentioned problem provides for certain actions. Effective information campaign: launching a broad information campaign on the importance of insurance and possible risks during travel for tourists. Information should be available and understandable for different groups of travellers. Including the insurance coverage in service packages: travel agencies and operators should actively offer insurance policies as a part of packages and tours. This will help make insurance more affordable and convenient for clients. Development of instructions and advice: before going on a trip, tourists should have access to detailed instructions and advice on insurance. This will help them better understand what risks may arise and how to protect themselves. Availability and transparency of insurance costs: reduction of insurance policy costs and development of transparent pricing for insurance. More transparency can make insurance more attractive to travellers. By solving this problem, it is possible to promote the awareness and responsibility of tourists regarding insurance and provide them with better security and financial stability during their travel (Aleskerova, 2022; Salam *et al.*, 2023).

The second significant drawback is the high cost of insurance services. This problem results from tourists considering insurance as a significant expense, and it can influence their decision as far as the purchase of an insurance policy is concerned. Financial barrier: for many tourists, insurance can seem like an additional expense, increasing the overall cost of the trip. It may deter certain audiences from purchasing insurance coverage. The need to assess cost: choosing an insurance policy can be an important task as tourists must consider various aspects of the policy's coverage and cost. This can increase the time and effort required to make a decision. Expensive types of insurance: some types of insurance, such as trip cancellation insurance or life insurance, can be particularly expensive. This can affect the overall choice of insurance coverage. The choice of options and additional services: tourists may find it difficult to choose between different options and additional services, which may include the cost of an insurance policy. This can create inconvenience and lead to increased costs (Aleskerova *et al.*, 2021). Solving this problem can make insurance more affordable and attractive to tourists and provide them with the financial protection they need (Fig. 3).

Reducing the cost of insurance

- Attempts to reduce the cost of insurance by increasing competition in the market. More insurance companies, offering affordable insurance policies can lower the financial barrier for tourists

Pricing transparency

- Insurance companies should make pricing more transparent and understandable for customers. This will help them better understand what they are paying for

Package offers and special offers

- Travel agencies and insurance companies can collaborate to create package deals and special discounts for customers. This can make insurance more affordable and convenient for tourists

Individual approach to choosing insurance

- Helping tourists choose an insurance policy that corresponds to their needs and budget. An individual approach can help them find the optimal solution

Figure 3. Recommendations on reducing the cost of insurance services in tourism
Source: systemised by the authors

The third problem that needs to be considered is the insufficient coverage of insurance policies in the field of international tourism. This problem is related to the fact that many tourists can choose insurance policies based on their price or other factors without customising them to fit their own needs. This can lead to cases when the insurance policy does not cover all possible risks or does not provide adequate protection (Gatalyak & Stetskyi, 2020; Onyshchenko *et al.*, 2023). Insufficient coverage of insurance policies provides for a number of circumstances. Choosing an insurance policy based on price: many tourists can choose the cheapest insurance policy without looking into the details of the coverage. This can lead to cases when certain risks are not included in the policy or the coverage is too limited. Inadequate coverage for specific needs: travellers may not be able to assess their specific needs and risks while travelling. For example, insurance, which only covers medical expenses, may not be sufficient for travellers who are planning active adventures or special events. Lack of understanding of policy terms: tourists may not read the terms of the insurance policy carefully and may not understand what is specifically included and excluded from the coverage. This can cause negative surprises during the trip. Confusion about exclusions and limitations in travel insurance terms and conditions: some insurance policies have exclusions and limitations that may not be obvious to travellers. For example, some policies may not cover risks related to extreme sports or geographic areas. To solve the above-mentioned problem, international insurance companies providing services in the field of tourism must follow a number of recommendations (Fig. 4). It is worth mentioning that the suggested actions can make insurance more effective and provide tourists with the appropriate level of protection and peace of mind while travelling.

Apply an individual approach to choosing insurance

- Assist tourists in understanding their specific needs and risks and choosing an insurance policy that meets them

Provide a clear explanation of the policy terms

- Insurance companies must provide clear and understandable information about the terms of the policy, including exclusions and limitations

Provide advice and recommendations

- Helping tourists choose insurance coverage based on their individual needs and travel plans

Provide awareness of responsible coverage

- Conducting information campaigns that emphasise the importance of proper coverage and the consequences of an inappropriate choice

Figure 4. Recommendations to insurance companies

Source: systemised by the authors

The fourth problem, which is worth being considered, is the problem of limited access to insurance services for certain categories of tourists. Certain categories of travellers may have limited access to insurance services for various reasons, which may undermine their ability to obtain adequate travel protection (Gatalyak & Stetskyi, 2020; Halona *et al.*, 2023). Former medical problems or illnesses: a number of insurance companies may refuse to insure travellers with a record of former medical problems or chronic illnesses. This puts tourists with certain medical histories and needs at risk. Age: some insurance policies may have age restrictions, limiting older travellers' access to coverage. This can be especially problematic for retirees who want to travel. This can be especially problematic for those who are retired and want to travel. Certain types of travel: certain types of travel, such as travel to military bases or high-risk areas, may not be covered by standard insurance policies. This may deter tourists from planning such trips. Travel exceeding a certain period of time: some insurance policies may limit the length of travel. This may be unfavourable for tourists who plan to travel for a longer period. Extreme sports and dangerous activities: some insurance companies may not cover the risks associated with extreme sports or dangerous activities. This may influence those tourists who want to spend their vacation actively.

In order to expand access to insurance services for certain categories of tourists, the following measures are necessary. Extension of coverage: insurance companies may consider extending coverage for certain categories of tourists that are normally restricted. Specialised policies: development of specialised insurance policies for certain types of travel or groups of tourists, such as pensioners or people with former medical problems. Lowering age restrictions: lowering age restrictions in insurance policies for pensioners and senior tourists, drawing attention to this problem through public awareness and support for legislation, protecting the rights of different categories of tourists. Solving this problem will allow more tourists to get the protection they need while travelling and will contribute to the expansion of access to insurance services for everybody.

The fifth problem is concerned with the difference between risks and rewards for insurance companies in international tourism. International tourism can be a big field of activity for insurance companies, carrying at the same time certain risks and challenges for these companies. Contingency risks: international tourism is connected with such risks as natural disasters, political conflicts, medical emergencies, etc. These contingencies can lead to massive losses for insurance companies. Competition in the insurance market: international tourism puts a lot of pressure on insurance companies as many players compete for consumers. It can lead to lower costs of insurance policies and lower margins for insurance companies. Low premium in the insurance market: international tourism may have a high volume of transactions, while the premium in the insurance market may be low. It may lead to limiting the interest of insurance companies in providing services for tourists. Seasonality and variability of demand: international tourism can be seasonal, and demand for insurance services can fluctuate with peak seasons. This can complicate the planning and management of the insurance business. The need for innovation and adaptation: international tourism is constantly changing, and insurance companies must be ready to innovate and adapt to new challenges arising in the tourism industry. In order to reduce the difference between risks and rewards for insurance companies in international tourism, insurance companies should follow the following recommendations (Fig. 5).

Thorough risk analysis	• Insurance companies must conduct a thorough analysis of the risks associated with international tourism and develop effective strategies to manage these risks
Innovations and new products	• Development of new insurance products and services that can meet the changing needs of tourists
Improving education and awareness	• Informing tourists about the importance of insurance and the benefits of choosing the right coverage
Cooperation and partnerships	• Collaboration between insurance companies and industry players such as travel agencies to create integrated solutions for tourists

Figure 5. Recommendations to reduce the difference between risks and rewards for insurance companies in international tourism

Source: systemised by the authors

Solving this problem can help insurance companies to ensure the appropriate level of protection and ensure the stability of their business in the field of international tourism. Providing insurance services connected with the planning of foreign trips by travel agencies is a significant part of the tourism sector. Travellers are increasingly required to have insurance, as it provides them with safety and comfort when travelling abroad. Travel agencies offer insurance plans that can be customised to suit each client's needs. The given recommendations can help insurance companies and tourists reduce the risks connected with travel.

DISCUSSION

Insurance is a guarantee to cover losses caused to the property interests of the state, business entities, and population. According to African scientists F. Dayour *et al*. (2020), it largely relieves the budget from the burden of spendings on compensation for damages caused by devastating natural disasters, man-made disasters, accidents, pandemics, etc., protects entrepreneurs from property and commercial expenses, and ensures the maintenance of the standard of living of citizens. In turn, M. Stević (2023) points out that insurance is the pooling of risks of accidental losses by transferring such risks to the insurer (insurance company) that agrees to compensate the insured for such losses, provide other monetary payments in the event of losses, or provide services related to such risks. As already mentioned, insurance can be considered from several perspectives, namely economic, legal, and technical. The economic aspect is expressed by the goal that must be achieved (protection of the insured and his property), and this is observed through economic relations, established between certain individuals within the insurance activity. Namely, insurance companies, as specialised organisations, assume the risk of their clients in exchange for compensation in the form of an insurance premium. If the method of insurance is taken as a criterion, a distinction is made between voluntary and mandatory insurance. Voluntary insurance is concluded at the free will of the contractual parties, i.e., the insured person, who is interested in the protection of his property, health, or life. On the other hand, there are mandatory types of insurance provided by law. In addition to this, the authors of the current work distinguish between travel health insurance, accident insurance, and liability insurance.

Insurance plays an important role in the development of tourist activity due to the mandatory legal norms, obliging tourism enterprises to conclude insurance contracts in certain cases. Increasing awareness of the use of insurance in tourism, as well as in other aspects of social and economic life, has contributed to the formation and conclusion of a number of various contracts on voluntary insurance by releasing tourists or service recipients from responsibility for possible losses. Since tourism is a specific activity and the probability of losses is high, whereas the chances of individuals paying are low, voluntary contracts make these segments of economic life safer. If there were no such contracts, the losses would be compensated by tourism organisations or a physical entity. The importance of this contract is taken into account in the case when tourist relations are established abroad, as tourists manage to insure themselves against the highest level of risk that may arise when receiving tourist services. By concluding specific insurance contracts, both tourists and travel service providers have the opportunity to be comprehensively insured against any risk in order to avoid or reduce harmful consequences if an insured event takes place. It is worth mentioning that the insurance contract becomes legally binding within the next 24 hours after signing the insurance policy, which is stipulated in the terms of the insurance policy, unless otherwise stipulated in the contract. As O. Kuchai (2021) indicated, if the duration of the insurance is specified in the insurance contract, the insurance relationship is terminated according to the date specified in the contract.

Insurance is an important form of protection in tourism, as it provides financial security and assistance in the event of unforeseen events during travel. Taking into account the coverage of medical expenses, compensation for the cost of cancelled flights, loss of luggage, and other risks, insurance policies enable tourists to feel more confident and protected from possible financial losses. This is especially important in a changing international environment, where the lack of insurance can lead to significant financial losses and stress, as noted by D.G.D. Arini *et al*. (2018). C. Sava & D.-M. Iordan (2019) pointed out that travel insurance is a guarantee that the insurer provides for all contingencies related to insured events. Only an insurance company with an appropriate license can act as an insurer. A travel agency insures a tourist and, in turn, concludes a contract (agency contract) with the insurer. According to the agreement, the insurer undertakes to pay insurance compensation to insured tourists against insured events; provide a tour operator with necessary insurance forms; and provide him with the necessary information about the conditions and rules of insurance, changes in tariffs, advisory services, etc.

As Y. Choe *et al.* (2022) mentioned, tourists' risk perception plays a vital role in travel decision-making and subsequent behaviour. Several studies on tourism and travel health have discovered that tourists' risk perceptions negatively affect tourism demand and the intention to visit tourist destinations. At the same time, scientists have made a considerable effort to identify and describe different types of travel-related risks, such as natural disaster risk, physical risk, psychological risk, social risk, health risk, political instability, and terrorism. Among the different perceptions of risks, safety-related risks are the strongest factors influencing destination choice as they are directly related to people's physical well-being. Similarly, the relationship between the perceived risk and industrial tourism is mediated by attitudes toward COVID-19. This means that the perceived risk will change a person's attitude towards risk, which in turn will affect their intention to engage in industrial tourism.

Like any other entrepreneurial activity, activity in the field of restaurant and hotel business is accompanied by a significant number of risks that are the object of commercial insurance. As G. Myskiv & S. Nycz-Wojtan (2022) point out, the entire set of risks of restaurant and hotel businesses can be divided into general and specific. Computer reservation systems, resulting from the computerisation and digitalisation of the service sector, create the foundation for the development of tourism. Computer reservation systems simplify tourists' access to tourist services, provide ease and simplicity in their selection and booking. The study made it possible to analyse the modern world of the travel reservation system market and determine its hierarchical structure. Insurance contracts for hotel complexes are usually of a non-standard nature and are agreed individually with each client to take into account his interests as fully as possible.

As N. Bezrukova *et al*. (2022) mentioned, digital insurance provides clients with access to a variety of insurance products and services through an electronic or online platform. These platforms use a combination of online customer service and digital algorithms to write and price policies. The majority of insurance companies have a separate digital wing of their business for digital insurance platforms, while still following traditional practices. Digitalisation also provokes the emergence of new risks, among which insurance risks occupy a special place. As the practice suggests, those countries that actively develop and implement information and communication technologies, as well as invest in this process and all available potential of resources, are characterised by accelerated rates of economic growth.

Thus, solving insurance problems in international tourism can open up new opportunities for both insurance companies and tourists, who can travel with more confidence and peace of mind. Increasing awareness about insurance, stimulating competition in the market, and improving the quality of insurance services can improve the position of all participants in this process. In the field of international tourism, insurance services play a key role in protecting the interests of tourists and the industry as a whole. Understanding the problems and finding innovative solutions will help improve the quality of services and ensure greater safety for travel companies and tourists. Creating a more conscious approach to insurance in international tourism can change travel for the better for all participants in this process.

CONCLUSIONS

Summarising the above, it is worth mentioning that when organising international travel, the process of providing insurance services by travel companies is an important part of the tourism industry. Insurance is a key and mandatory service for tourists, providing protection and peace of mind when travelling internationally. This applies not only to medical cases but also to other situations such as lost luggage, trip cancellations, accident insurance, etc. Travel companies offer insurance policies that can be individually tailored to the needs of each client. It is necessary to highlight the importance of insurance to the international tourism business, as well as to identify the key challenges faced by this sector. It is recommended to solve the problem of insufficient awareness of insurance among travellers by conducting an effective information campaign about the importance of insurance and the range of services. Also, insurance companies need to review the pricing policy for the services they provide by offering a wide range of insurance policies, which will maintain a quality balance between insurance premiums and coverage. To solve the problem of insufficient coverage of insurance policies, it is recommended to use an individual approach to choosing insurance for each client, taking into account his needs and clearly explaining the terms of the insurance contract.

The entry ban to some countries due to the lack of an insurance policy emphasises the importance of adequate insurance protection, in particular: expanding coverage for certain categories of tourists, offering specialised policies for certain types of trips or groups of tourists, such as retirees or people with former medical problems, and reducing age restrictions. On the other hand, insurance companies face challenges, balancing between risks and rewards, which affects the formation of insurance policies and conditions, so it is worth carefully assessing possible risks, offering new services in accordance with the requirements of the insurance market, and establishing cooperation with partners and other insurance companies to reduce the possible costs. The study of new types of insurance, complying with modern challenges in the tourism business, is quite relevant and provides for further investigation and elaboration, which will be the goal of further scientific research.

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CONFLICT OF INTEREST

None.

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Проблеми та перспективи розвитку страхування в міжнародному туристичному бізнесі

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Анотація. Дедалі більша кількість туристів стикається з ризиками та непередбачуваними ситуаціями під час подорожей: обмежена доступність страхових продуктів, недоліки в покритті ризиків та несформованість відповідно до індивідуальних потреб роблять питання страхування в міжнародному туристичному бізнесі актуальним. Мета статті полягала в аналізі поточних проблем у сфері страхування на міжнародному рівні та висвітленні можливих шляхів їх вирішення, а також у визначенні перспектив розвитку цього сегменту, спрямованих на забезпечення максимальної безпеки та зручності для туристів. У статті розглянуто стан та перспективи розвитку міжнародного ринку послуг туристичного страхування. Застосовуючи метод аналізу здійснено ґрунтовний розгляд недоліків у діяльності страхових компаній, що дозволило чітко визначити рівень важливості та надати практичні рекомендації щодо їх вирішення. Завдяки абстрактно-логічному методу сформовано висновки на основі дослідження поведінки страхувальників, їх схильності до ризику та вибору страхових продуктів. Зі зростанням обсягів туристичних подорожей у світі зростає і потреба у відповідному страхуванні. Це ставить перед страховими компаніями та туристичними операторами ряд проблем, таких як недостатня адаптація страхових продуктів до потреб та ризиків туристів, обмежене географічне охоплення, складні процедури оформлення та відшкодування збитків. Однак, існують і перспективи розвитку: нові технології, як штучний інтелект та блокчейн, можуть сприяти автоматизації та полегшенню процесів страхування. Розширення географічного охоплення та адаптація страхових продуктів до конкретних потреб туристів також можуть забезпечити зростання ринку страхування в міжнародному туризмі. Практична цінність проведеного дослідження полягає в розробці рекомендацій для міжнародних страхових компаній орієнтованих на подолання проблем та зниження ризиків у сфері туристичного страхування, як для представників страхового бізнесу, так і для подорожуючих

Ключові слова: страховий випадок; туристична діяльність; ринок страхових послуг; страхова діяльність; міжнародні страхові компанії

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Causes of occurrence and ways of combating violations of customs rules

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Abstract. Violations of customs regulations by subjects of foreign economic activity and the smuggling of goods are pressing issues for the socio-economic development of Ukraine. The purpose of the article was to investigate the main causes of smuggling and to develop ways to prevent violations of customs regulations. The work analyses the statistics of customs violations and the volumes of smuggling, which are one of the factors in the significant shortfall of tax revenues to the budget. The method of generalisation was used to summarise the results of a survey by the Institute of Economic Research and Policy Consulting of foreign economic activity subjects regarding the impact of "grey import" problems and smuggling on their performance indicators. Using the chronological method and the analysis method, the chronological changes in the objects of smuggling were analysed according to criminal law, which affects the directions of customs authorities' work in the customs control process. The study summarises the foreign experience of criminal liability for smuggling, indicating more severe punitive measures than in Ukraine. The volumes of cigarette smuggling and the budget revenue losses from such smuggling were analysed using the statistical method. The results of the analysis indicate that the volume of cigarette smuggling in Ukraine is one of the largest in Europe. The causes of smuggling are identified and can be divided into those related to the activities of customs authorities and those related to the legislative and executive bodies of Ukraine. The main ways to counter smuggling and reduce violations of customs regulations are substantiated, which should be systematic and comprehensive and not only involve the control function of customs authorities but also improve the socio-economic development indicators of the state. The practical significance of the results lies in summarising the causes of smuggling and customs regulation violations and developing

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proposals for their prevention, which can be used in the work of customs authorities and in the implementation of the strategic goals of the National Income Strategy

Keywords: foreign economic activity; smuggling; illegal trade; loss of budget revenues; counterfeit products; motivation; unemployment

INTRODUCTION

One of the important tasks in the work of customs authorities is ensuring customs security and counteracting violations of customs regulations. Thanks to the work of customs authorities, two functions of the state's customs policy are realised: fiscal (replenishing the budget through customs duties and tariff regulation measures) and protective (establishing restrictions and prohibitions on the import/export of goods and implementing non-tariff regulation measures: licenses, permits, quotas, certificates, etc.). Violations of customs regulations have various origins. Firstly, they include imperfect tax and customs legislation, the norms of which are not always clear to taxpayers. Secondly, the high tax burden leads to the search for ways to evade paying taxes and customs duties, resulting in the growth of the shadow economy (the latest official data from the Ministry of Economy for 2021 indicated that the shadow economy in Ukraine amounted to 32% of GDP) and the decrease in budget revenues (Shadow economy trends, 2022). Thirdly, the high level of poverty and low social protection of citizens leads to their involvement in schemes of illegal goods circulation (mainly tobacco products and alcoholic beverages). Fourthly, the imperfect approach of the state regarding the motivation of customs officers to prevent and counter violations of customs regulations negatively affects the quality of their duties and increases corruption (primarily due to bribes). Violations of customs regulations also include smuggling of goods.

The issue of preventing smuggling becomes more acute every year because, due to "grey import" schemes, the state loses significant funds. According to Kantar, the volume of the illegal tobacco market increased to 26%, including: counterfeit products – 11.3%; the share of products marked Duty Free or intended for export but illegally sold in Ukraine – 12.9% (10175 illicit trade monitoring Ukraine, 2022). At the same time, the volume of tobacco products smuggling is less than 2% (The illegal market of tobacco products..., 2023). The shadow alcohol market reached 30% in 2023 (How much does the state lose..., 2023). Statistics indicate an unsatisfactory state of counteracting customs violations and preventing smuggling. The importance of complying with customs regulations and preventing goods smuggling has been considered in scientific works. For instance, in A. Krysovatyi (2020) monograph, the opinion is expressed that fiscal policy is an important factor in preventing and countering smuggling. The monograph lists several measures that can prevent smuggling and reduce the volume of customs regulation violations. A. Tymoshenko (2021) notes that to combat smuggling, legislative changes and improved coordination of actions between customs and other government bodies are necessary, which is an important task in the context of martial law and budget deficit. Additionally, in the customs clearance process, technical control means play a crucial role, which, according to the Accounting Chamber of Ukraine (2022) report, are mostly outdated.

H. Palamarchuk (2019) proposes understanding smuggling both economically (as part of the shadow economy) and legally (dividing smuggling into crime as a criminal offence and as a violation of customs regulations). This classification, according to the authors, is more successful as it considers different aspects of smuggling. R. Daniv (2021) believes that smuggling negatively affects the economic development of the state, requiring more decisive state actions to criminalise the smuggling of goods and excisable goods, which should reduce illegal goods movement schemes and the number of violations in the sphere of false customs value declarations. According to I. Hutsul (2021), resolving customs control issues in Ukraine should promote the harmonisation of EU and Ukrainian legislation, as provided by the Association Agreement between Ukraine and the EU. Special attention should be paid to information systems and customs control technologies to improve the efficiency of customs control and detect customs regulation violations. V. Khoma & V. Zhdanova (2022) emphasise the need to apply the experience of Poland and the United Kingdom to prevent illegal goods movement across the customs border, the main advantage of which is a logically built structure of customs authorities ensuring communication and interaction with other government bodies. According to L. Hanas *et al.* (2020), motivating customs officers should help reduce smuggling volumes. Along with incentive and motivation means, punitive measures should also be in place if there are facts confirming the involvement of customs officers in "grey import" and smuggling schemes that are negatively impacting the country's economy.

It can be seen that the majority of recent research topics were mainly about general issues of combating smuggling and customs regulation violations. Rarely did scientific works specify problems related to corruption in customs authorities, material support of their work, information systems, and customs control technologies. This prompted the authors to focus on finding comprehensive ways to counter corruption and reduce customs regulation violations. The article's aim was to justify possible directions for countering customs regulation violations by subjects of foreign economic activity (FEA). To achieve the goal, the research set the following tasks: to study the dynamics of customs regulation violations, including smuggling and "grey import"; to summarise foreign experience in countering smuggling and illegal goods circulation; and to develop recommendations for preventing smuggling in Ukraine.

MATERIALS AND METHODS

The theoretical basis of the study included fundamental principles of financial and economic sciences and the results of scientific developments and works by Ukrainian and international scholars. The work is largely based on the regulatory framework that defines the responsibility for customs violations and smuggling, as well as on analytical research by private companies on the state of combating smuggling. Various research methods were employed to solve the tasks of the study. Methods of analysis, synthesis, and generalisation were used to analyse scholars' opinions on the existing causes of smuggling and customs violations by FEA entities, as well as ways to counter such violations. Historical and chronological methods were used to analyse smuggling objects in criminal legislation, which allowed to identify the state's approaches to regulating customs violations. The graphic method was applied to visualise the research results and enhance their perception. Information on the volumes of smuggling and customs violations, the volume of cigarette smuggling in Ukraine and other countries, budget revenue losses from smuggling, and tax burden volumes are presented in tables and figures.

Statistical and economic methods were used to collect, process, and analyse the dynamics of indicators characterising the state of customs violations, tax burden, smuggling volumes in Ukraine and other countries, budget losses from smuggling, evaluation of the number of violations of Article 201 of the Criminal Code of Ukraine (2001) and assessment of the results of expert surveys on the place of "grey imports" and smuggling among the problems faced by FEA entities (Anhel *et al.*, 2022). This survey is conducted annually by the Institute for Economic Research and Policy Consulting and aims to gather exporters and importers' opinions on the main problems of their activities, the quality of customs authorities' works, and their prevention of smuggling.

For carrying out the analysis of tax revenues and determining the volumes of the tax burden, the Information of the Ministry of Finance of Ukraine on the implementation of the state budget of Ukraine for 2023 (2023) were used. Based on the analysis of reports from leading analytical and consulting companies (10175 illicit trade monitoring Ukraine, 2022; Illicit cigarette consumption..., 2022), as well as the Organisation for Economic Cooperation and Development (OECD, 2022), the problems related to the presence of the shadow sector for alcoholic beverages and tobacco products were summarised. Data from the State Statistics Service of Ukraine (2023) and The World Bank: Ukraine (2024) were used to assess the socio-economic status and poverty levels. Statistics on customs violations and violations of criminal law articles in Ukraine were formed based on the data from the State Customs Service of Ukraine (Reports on the implementation..., 2023). It is worth noting that at the time of the study, official statistics on the volumes of goods smuggling in 2022 and 2023 were unavailable, justifying the choice of part of the materials for the study.

The abstract-logical method was used to generalise recommendations on the ways to prevent smuggling and reduce customs violations and to formulate conclusions. The proposals and recommendations were prepared considering the strategic goals of the National Income Strategy until 2030 (2023) in the areas of "Customs Policy" and "Customs Administration", as well as Draft Law of Ukraine No. 6490-d "On Amendments to the Customs Code of Ukraine on Establishing Features of Service in Customs Authorities and Certification of Customs Officials" (2023), which provides for a significant increase in the remuneration of customs officials.

RESULTS

Violations of customs regulations are closely linked to the execution of foreign economic operations, primarily comprising export and import activities. During these operations, it is customs authorities that are entrusted with the primary control function, aimed at ensuring customs security and counteracting customs violations. Wherein, the activities of customs authorities must be coordinated with the State Tax Service (regarding tax payments and transfer pricing), the Ministry of Economy of Ukraine (regarding special and anti-dumping measures), the State Service of Ukraine on Food Safety and Consumer Protection (regarding prohibitions and restrictions on the import of food products and plant-based goods), and the Ministry of Health (regarding prohibitions and restrictions on the import of medicines and pharmaceutical products).

According to the Ministry of Economy of Ukraine, in 2022, compared to 2021, exports of goods decreased by 35.1%, and imports of goods by 24.1% (Foreign trade. Analytics, n.d.). In 2023, exports of goods decreased by 18.7% compared to 2022, while imports of goods increased by 12.5% (Foreign trade in goods..., 2023). At the same time, in 2023, according to the Reports on the implementation of the work plan of the State Customs Service (2023), there was a significant increase in customs violations, leading to an increase in the amount for which violations were detected (Fig. 1). This indicates an improvement in the quality of customs authorities' work during wartime but also reflects citizens' attempts to breach legal norms.

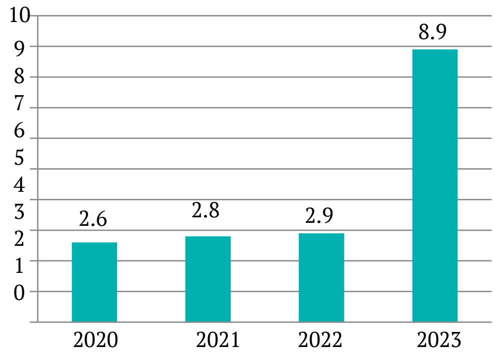

Figure 1. The amount for which violations of customs rules were detected in 2020-2023, billion UAH

Source: compiled by the authors based on Reports on the implementation of the work plan of the State Customs Service (2023)

Annual surveys conducted by the Institute for Economic Research and Policy Consulting on "Simplifying Trade Procedures in Ukraine: Business Assessments and Expectations" also address issues of smuggling and their impact on the state's economic security (Anhel *et al.*, 2022). On average, in 2022, the share of "grey imports" was estimated at 17.1% (compared to 21.1% in 2021, 24.2% in 2020, and 25.3% in 2018). This indicates that according to respondents, the share of smuggling is gradually decreasing, but the data on smuggling (Fig. 2) show an increase in its volumes, corroborating the research of K. Krysovata (2021). Furthermore, there has been a significant increase in the smuggling of alcoholic beverages and tobacco products (10175 illicit trade monitoring Ukraine, 2022; How much does the state lose…, 2023). The problem of "grey imports" is not considered important for FEA subjects, as it worries a little more than 40% of respondents (Fig. 3). At the same time, the main measure to take in order to reduce "grey imports" ("goods smuggling") is the simplification of customs procedures (Fig. 4).

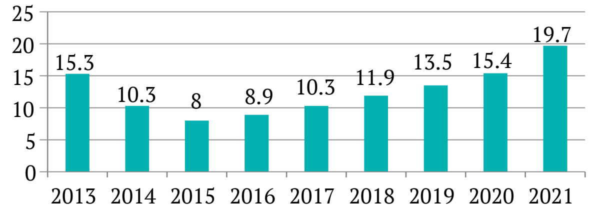

Figure 2. Volumes of goods smuggled into Ukraine, billion USD

Source: compiled by the authors based on K. Krysovata (2021)

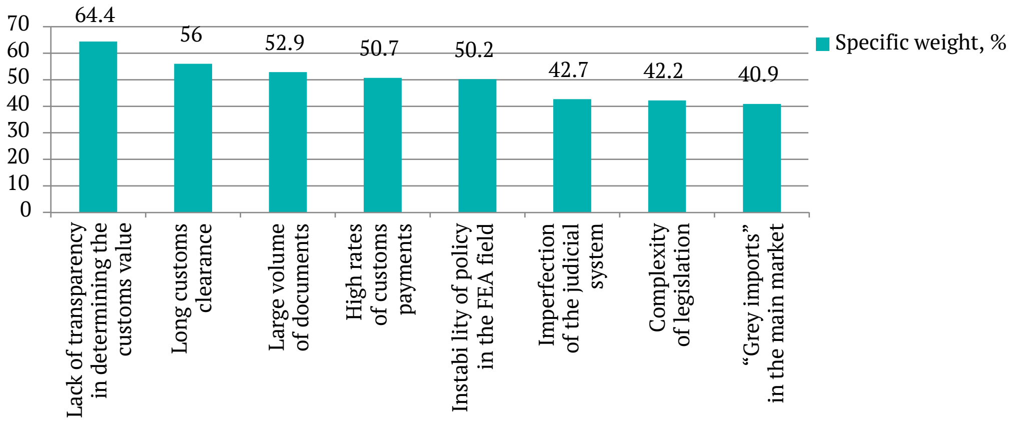

Figure 3. The place of "grey imports" (contraband) among the problems of foreign trade entities

Source: compiled by the authors based on Ye. Angel *et al*. (2022)

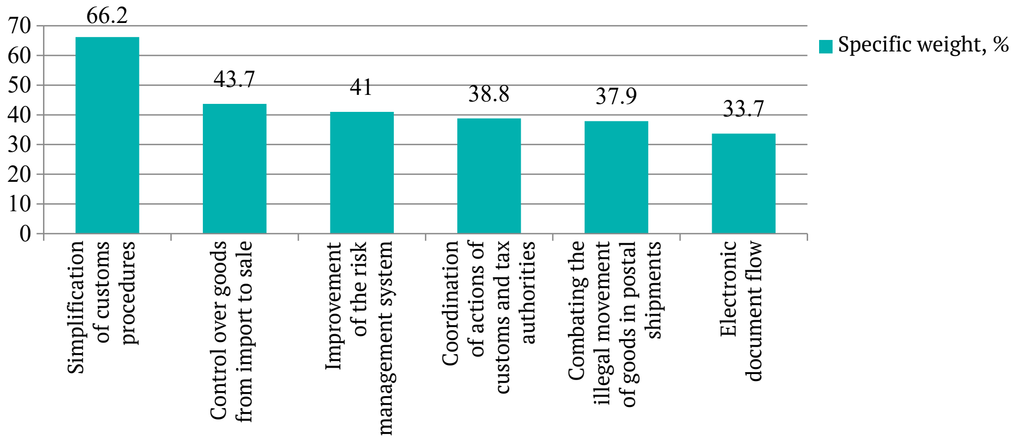

Figure 4. Main measures to reduce "grey imports"

Source: compiled by the authors based on Ye. Angel *et al*. (2022)

The main factor contributing to the increase in smuggling volumes, according to respondents in 2022, was the insufficient accountability of individuals violating criminal laws. Indeed, the current edition of the Criminal Code of Ukraine (2001) so far imposes relatively lenient penalties for smuggling. Moreover, there is currently no criminal liability for commodity smuggling. According to the amendments to the Criminal Code, which will take effect on July 1, 2024, criminal liability for the smuggling of goods and excisable goods will be regulated. The key changes concerning the objects of smuggling include: the exclusion of goods from the objects of smuggling from 2012 until July 2024; the inclusion of timber and valuable wood species as smuggling objects from 2019; the inclusion of excisable goods as smuggling objects from 2024; and the inclusion of goods as smuggling objects from July 1, 2024. The initial exclusion of goods from the objects of smuggling led to positive results, with smuggling volumes having almost halved in the first few years. However, subsequent years saw an increase in smuggling volumes, partly due to the ineffective performance of customs authorities.

It is noteworthy that smuggling is a problem for economies of many countries, as evidenced by KPMG's report on tobacco products (Illicit cigarette consumption..., 2022) and the OECD (2022) report on alcoholic beverages. For example, the volume of tobacco smuggling in EU countries in 2022 amounted to 35.8 billion EUR, while the volume of alcohol smuggling in the EU accounted for 17% of total consumption. Although it is worth noting that the volume of tobacco smuggling in the EU has remained relatively stable over 2017-2022 (33.4-37.8 billion cigarettes), the volume of cigarette smuggling varies across foreign countries (Table 1).

Table 1. Volumes of cigarette smuggling in the total volume of consumption, %

EU countries	2017	2018	2019	2020	2021	2022
Austria	6.4	4.4	5.5	3.4	3.9	4.7
Belgium	3.7	5.7	7.5	5.8	4.6	9.8
Bulgaria	5.9	3.7	2.4	1.6	1.6	1.8
Croatia	2.1	6.3	7.4	6.6	6.0	4.2
Cyprus	6.0	8.2	14.3	8.6	14.4	12.8
Czech Republic	3.3	6.1	4.6	1.9	3.5	3.7
Denmark	1.8	2.8	3.9	2.7	6.5	3.9
Estonia	11.3	9.5	7.4	6.7	10.3	14.0
Finland	12.9	9.7	8.3	9.7	13.6	14.7
France	13.1	14.1	13.7	23.1	29.4	32.4
Germany	4.6	3.2	4.1	4.3	2.1	2.2
Greece	18.0	23.6	22.4	22.4	23.9	20.7
Hungary	5.4	6.5	7.2	4.1	4.2	7.2
Ireland	19.9	20.6	17.5	17.3	16.8	24.4
Italy	4.8	5.5	3.9	3.4	2.2	2.3
Latvia	21.1	19.5	14.1	19.1	16.2	15.2
Lithuania	17.8	17.0	17.7	20.2	19.0	19.2
Luxembourg	0.4	1.0	2.2	2.8	1.0	0.4
Malta	13.5	9.7	7.9	6.4	9.5	6.4
Netherlands	7.8	5.4	5.4	6.2	18.4	11.2
Poland	12.1	9.9	8.5	8.6	4.9	4.2
Portugal	2.0	3.7	5.6	4.4	7.0	2.1
Romania	15.4	15.1	12.3	8.0	7.9	6.4
Slovakia	4.8	5.0	3.8	2.6	2.7	2.8
Slovenia	10.6	12.4	10.0	5.4	7.6	3.6
Spain	5.0	4.3	3.6	4.2	3.3	3.7
Sweden	6.3	5.0	9.6	8.0	7.3	7.3
Great Britain	17.8	19.3	16.6	17.1	18.1	21.2
Ukraine	No data	4.7	6.9	9.9	17.2	19.9

Source: created by the authors based on Illicit cigarette consumption in the EU, UK, Norway, Switzerland, Moldova and Ukraine (2022)

The highest rate of increase in the share of smuggling in Ukraine was nearly fivefold. The largest volumes of smuggling were observed in France, Ireland, the United Kingdom, Greece, and the Baltic countries. At the same time, the revenue losses for EU countries' budgets due to smuggling were also varied (Fig. 5). It is noteworthy that Ukraine's budget losses from tobacco smuggling were only surpassed by those of France and the United Kingdom.

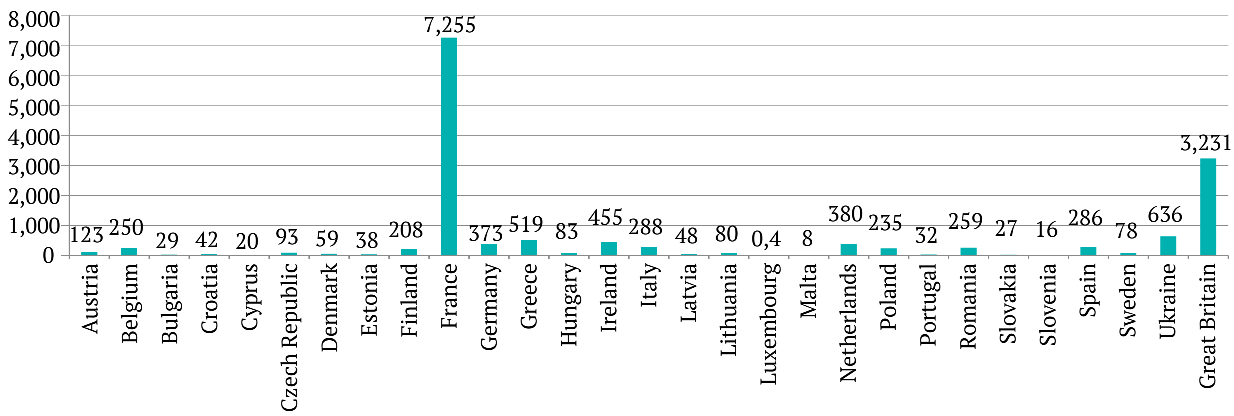

Figure 5. Budget losses of EU countries due to tobacco smuggling in 2022, million EUR

Source: compiled by the authors based on Illicit cigarette consumption in the EU, UK, Norway, Switzerland, Moldova and Ukraine (2022)

In the authors' opinion, the main problems that contribute to smuggling are the following. *Martial law*: Even under martial law, Ukraine remains a country with a high level of crime. At the same time, five cities in Ukraine (Odesa, Dnipro, Kharkiv, Kyiv, and Lviv) are among the top 100 most dangerous cities in Europe in terms of crime (Europe: Crime index..., 2023). *High level of tax burden on business entities*, which is defined as the ratio of tax revenues to GDP (Table 2).

Table 2. Volumes of the tax burden

Indicator	2019	2020	2021	2022	2023
GDP, billion UAH	3,977.2	4,222.0	5,450.8	5,191.0	6,537.8
Tax revenues, billion UAH	1,070.3	1,136.7	1,453.8	1,343.2	1,638.1
Tax burden, %	26.9	26.9	26.7	25.9	25.1

Source: compiled by the authors based on Information of the Ministry of Finance of Ukraine on the implementation of the state budget of Ukraine for 2023 (2023)

Despite the decrease in the tax burden, its level remains excessive in the current conditions and is one of the factors leading to an increase in the volume of smuggling. Although the tax burden on customs payments does not exceed 10%, it remains quite high (Fig. 6).

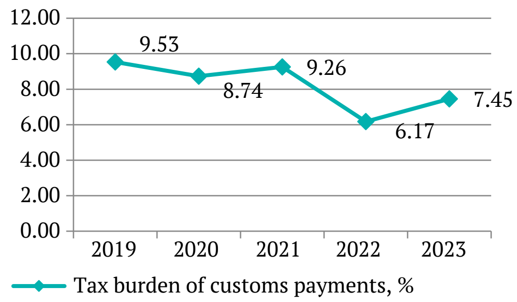

Figure 6. Tax burden on customs payments in Ukraine
Source: compiled by the authors based on Information of the Ministry of Finance of Ukraine on the implementation of the state budget of Ukraine for 2023 (2023)

Excise tax rates on tobacco products are increasing every year by 20%, and in 2025 they should reach the level of tax rates in the EU. Excise rates on alcoholic beverages are lower than in the EU, but not all goods containing alcohol are subject to excise tax in Ukraine; for example, some types of wine and perfumes. The increase in the rates of one of the customs payments encourages manufacturers and importers to look for ways to evade taxation, including by smuggling such goods.

Insufficient motivation of customs authorities to combat smuggling: the salary of customs officials is low and amounts to about 12,000-15,000 UAH per month (Customs patrol officer salary..., n.d.). At the same time, the Verkhovna Rada of Ukraine is considering Draft Law of Ukraine No. 6490-d "On Amendments to the Customs Code of Ukraine on Establishing Features of Service in Customs Authorities and Certification of Officials of Customs Authorities" (2023), according to which wages in customs authorities should increase. The Ministry of Finance of Ukraine has established strategic guidelines for the growth of wages in customs authorities (National Income Strategy until 2030, 2023).

Use of outdated technical means of customs control by customs authorities: the Report of the Accounting Chamber of Ukraine emphasised the unsatisfactory state of technical means of customs control (Report on the results of the analysis..., 2021). According to the results of 2021, at checkpoints across the state border of Ukraine, it was found that many technical means of customs control are technically defective, and the vast majority of scanning control systems are outdated. This situation increases potential corruption risks during customs clearance of goods, as well as risks of smuggling.

Absence of operative investigative powers of customs authorities during customs control: currently, customs authorities do not have the authority to carry out operative investigative actions during the implementation of the customs control procedure, which reduces the effectiveness of control and verification measures. The National Income Strategy until 2030 (2023) provides for the granting of customs authorities the right to conduct investigative actions and conduct pre-trial investigations in cases of smuggling of goods, which should increase the effectiveness of combating violations of customs rules.

Low fines for violations of Article 201 of the Criminal Code of Ukraine compared to the size of fines in foreign countries: the maximum fine stipulated by criminal law for smuggling is 2,040,000 UAH, or approximately 50,000 EUR. The criminal legislation of some foreign countries indicates that fines for smuggling are higher than in Ukraine: in the Netherlands – 82,000 EUR (Criminal Code, 2024); in Ireland – 125,000 EUR (Customs Act, 2015); in Austria – a fine of up to double the amount of the duty (Federal Law Consolidated..., 2024).

Socio-economic situation in the country: according to the Ministry of Social Policy of Ukraine in 2020, the poverty level in Ukraine was more than 20%. According to The World Bank: Ukraine (2024), the poverty level in 2022 was 24.1%. Despite the fact that the average salary in Ukraine was more than 14,000 UAH in 2023, according to the State Statistics Service of Ukraine (2023), in 2021, the share of the population with an income lower than salaries was almost 50% (data for 2022-2023 are not available). Such indicators encourage citizens to look for possible sources of income, which sometimes may violate the existing legal norms, including promoting smuggling. It also negatively affects the processes of compliance with customs regulations of unemployment, the level of which increases during hostilities.

Therefore, to address the existing issues of goods smuggling and improve the economic situation in Ukraine, the following measures are proposed. *Revise the approach to taxing import operations with customs duties.* Reduced rates of customs duties should be applied to goods necessary for ensuring the socio-economic development of the state (essential goods). This should allow for a reduction in the prices of such goods, slightly alleviate social tension in society, and become a driving force in reducing the volume of smuggling of certain goods.

Change the approach to the remuneration system for customs authorities by introducing special bonuses for detecting cases of goods smuggling. The draft law that proposes increasing the remuneration of customs authorities has only passed the first reading in the Verkhovna Rada of Ukraine (Draft Law of Ukraine No. 6490-d, 2023). The changes envisaged by this draft law require significant sources of funding, which is problematic under the current wartime conditions.

It is necessary to re-equip the customs authorities with more modern technical means of customs control, including thanks to artificial intelligence technologies, which should contribute to better control and countering the smuggling of goods and excise goods. The National Income Strategy until 2030 (2023) also provides for updating the technical means of customs control with an emphasis on new IT technologies but does not provide for direct measures to introduce artificial intelligence technologies.

It is necessary to implement, as soon as possible, the norms of the National Income Strategy regarding the rights of customs authorities to conduct investigative actions. For example, in Lithuania, the Customs Criminal Service investigates cases of smuggling (Customs of the Republic of Lithuania, n.d.), and in the United States, the Customs and Border Protection Service performs law enforcement functions, including those aimed at countering smuggling (US Customs and Border Protection, n.d.). In Italy, The Customs and Monopolies Agency (n.d.) vested with administrative powers to investigate illegal trade in tobacco products.

There should be an increase in fines for smuggling goods. The indicator regarding the qualification of crimes or offences should be reviewed separately, since the criminal legislation should operate with an individual indicator on the basis of which the degree of violation is qualified and not refer to the norms of the Tax Code of Ukraine. Also, the indicator on which the number of fines for smuggling depends should be revised: instead of 17 UAH, it is proposed to apply the minimum wage indicator, which will automatically increase the number of fines for smuggling goods and excise goods.

Reforming the social security system in the country, which will provide for social support for people who really need it. In addition, the income and expenses of such persons should be under control in order to monitor the expediency of providing such benefits. According to the experience of foreign countries, for example, France (France. Individual – taxes…, 2023), Germany (Germany. Individual – taxes…, 2023), Luxembourg (Luxembourg. Individual – taxes…, 2024), a transition to progressive taxation of citizens' incomes should be made, which will make it possible to realise the principle of social justice, reduce the level of poverty, increase the amount of revenues to the budget, and finance the social needs of citizens. Reducing the poverty level of the population should become one of the key factors in reducing the volume of smuggling of goods.

Strengthen the explanatory work of customs authorities for FEA entities regarding the rules of customs clearance and the prevention of violations of customs rules, as this negatively affects the implementation of the revenue part of the budget and reduces the state's ability to redistribute funds received in the form of taxes. Coordination of the actions of customs authorities and customs brokers who carry out the customs clearance procedure for many FEA subjects should be carried out. Changes to the criminal legislation at the end of 2023 were adopted under the influence of the International Monetary Fund and were not sufficiently justified for citizens and legal entities, although they provided for a significant increase in criminal liability for smuggling. According to I. Martyniuk & O. Dubovik (2021), not only the control function but also the preventive one should be implemented by the customs authorities thanks to the mass-explanatory work among the subjects of the FEA regarding urgent issues of customs clearance and declaration, which should increase the level of trust society has in the customs authorities. At the same time, customs clearance procedures, the cumbersomeness and complexity of which can also contribute to smuggling, should be gradually simplified.

DISCUSSION

The obtained results of this study prove the publications of other scientists, who studied individual aspects of combating violations of customs rules and reducing the volume of smuggling. A. Nguyen & H.T. Nguyen (2020) note that high taxes can contribute to the increase in smuggling, as tobacco manufacturers are obliged to include the amount of customs payments in the price of cigarettes, which in turn leads to higher prices and discourages buyers from buying expensive cigarettes and causes the growth of the shadow market counterfeit cigarettes, which cost much less. G.R. Paraje *et al.* (2023) develop this opinion, but at the same time note that, first of all, attention should be paid to the problems of taxation of tobacco products since they are easier to counterfeit and illegally import into the customs territory of a certain country than alcoholic beverages. The opinions of scientists prove the thesis of a high tax burden, thanks to which the volume of the shadow economy is growing, especially in the field of excise goods.

According to M. Zhang *et al.* (2023), low wages in the public sector negatively affect the quality of work of civil servants and promote corruption, which can lead to smuggling. According to the statistics Average customs officer salary in Germany for 2024 (2024), the annual salary of customs inspectors in Germany varies from 12,000 EUR to 47,000 EUR, in the USA – from 11,000 USD to 99,500 USD per year (Customs border…, n.d.), and in Great Britain – from 29,000 to 47,000 pounds per year (Revenue and customs inspector salaries, 2023). D. Kim & Y. Tajima (2022) emphasise that the volume of smuggling can be reduced in the absence of collusion between customs authorities and FEA subjects. This can be facilitated by the high level of payment of customs inspectors, due to which it will be unprofitable for smugglers to offer bribes to customs officials for participation in the smuggling scheme. As can be seen, scientists also consider it necessary to maintain a high level of remuneration of customs inspectors in order to reduce the risks of corruption schemes and the possible involvement of customs authorities in smuggling schemes.

E. Gwardzińska (2021) emphasises the importance of updating the means of customs control in order to increase the efficiency of the activities of customs authorities. Thanks to modern technical means and methods of customs control, the volume of violations of customs rules, including smuggling, can be reduced. I. Kafando (2020) emphasises that in the process of customs control, customs authorities should more widely apply artificial intelligence technologies, which should automate and speed up the processes of customs clearance and detection of contraband. B. Dangsawang & S. Nuchitprasitchai (2024), who proposed a model for detecting smugglers based on unstructured data in social networks that allows identifying persons who sell goods and services through social networks without authorisation, evading customs duty payments, developed the topic of using artificial intelligence in customs control. The works of scientists prove that the modernity of the means of customs control is an important component of its effectiveness, which coincides with the current manuscript, and the use of artificial intelligence technologies should ensure the effectiveness of the work of customs authorities in combating smuggling in the process of control and inspection procedures.

Every year in EU countries, a significant number of customs officials undergo training at the European Union Agency for Law Enforcement Training on modern methods of investigating fraud with excise duties and combating smuggling (Schröder *et al.*, 2021). V. Borsa *et al.* (2023) emphasise that the lack of powers of the customs authorities to carry out operational and investigative measures reduces the effectiveness of the activities of the customs authorities in Ukraine and makes it impossible to exchange information with foreign countries. M. Erkoreka (2020) defines the leading role of customs authorities in the fight against fraud. At the same time, the need to strengthen the convergence of risk management and control carried out by customs administrations in order to effectively fight against fraudsters and promote legitimate trade is emphasised. V. Franssen & A.L. Claes (2022) emphasise that the main law enforcement function in Belgium regarding violations in the field of excise goods belongs to the customs authorities, which have administrative and criminal investigation powers, which allows to effectively combat the smuggling of tobacco products. Such results of scientific works indicate and confirm the need to make changes to the powers and functions of customs authorities and to grant them the right to carry out operative and investigative actions in case of detection of facts of violation of criminal legislation from the point of view of smuggling of goods or excise goods.

O. Makarova (2022) believes that increasing the amount of criminal liability for smuggling of goods should allow to fill the budget and should gradually reduce the volume of such smuggling. V. Nalutsyshyn (2022) considers it necessary to take into account the experience of foreign countries regarding the amount of responsibility for smuggling goods, including the number of fines for such a criminal offence. M. Kärner (2022) emphasises that not all EU countries approach the establishment of criminal liability for customs violations in the same way. At the same time, fines can be considered both as punishment in the form of criminal liability and in the form of administrative liability. K. Buczkowski & P. Dziekański (2021) believe that criminal sanctions for smuggling should be strengthened in such a way that it becomes unprofitable for the guilty to break the law. At the same time, the authors emphasise that the problem of smuggling in Poland is perceived mostly as a fiscal problem, not a criminal one. As can be seen, low sanctions for violations of criminal legislation do not contribute to the reduction of violations of customs rules, which requires a review of the amount of criminal liability for smuggling in the direction of a significant increase in order to prevent violations of customs rules.

A. Tymoshenko (2021) considers unemployment in the border areas to be one of the reasons for committing smuggling, as there are mostly no industrial enterprises in such areas, which forces residents of such regions to go abroad to earn money. A. Krysovatyi (2020) notes that due to the low level of wages, residents of the border areas of Ukraine are increasingly involved in smuggling schemes. V.G. Ulep *et al.* (2021) prove that the volume of smuggling depends on the socio-economic indicators of the development of countries and suggest calculating an index that does not measure the scale of smuggling but allows diagnosing the ability of countries to solve this problem. E.-U.E. Nelson (2023) emphasises that indicators of socio-economic development of the state have a key influence on illegal trade and smuggling. The population's poverty is the driving force behind its participation in smuggling schemes for the supply of various groups of goods (drugs, cigarettes, alcohol, etc.). The socio-economic situation and an unsatisfactory level of income of the population can directly affect its involvement in smuggling schemes. Therefore, smuggling should be considered not only as a criminal phenomenon but also as a phenomenon caused by low indicators of socio-economic development, which is emphasised in the current study.

P. Tran (2022) emphasises the requests of businesses to customs authorities to carry out advisory work to provide FEA subjects with instructions on customs clearance, which should be open and officially published in official sources. A.M. Rbehat & H.B. Marafi (2024) believe that the activities of customs authorities should be aimed at ensuring the simplification of customs procedures while maintaining parity between the tasks related to the prevention of violations of customs rules and the acceleration of the customs clearance procedure for conscientious FEA subjects. The establishment of cooperation between customs authorities and payers of customs payments should have a positive effect on the state of customs discipline since a certain proportion of payers sometimes do not receive timely advisory assistance from state authorities, which in some cases can lead to an unintentional violation of customs rules and sometimes to smuggling. Therefore, the problem of combating violations of customs rules and smuggling should be of a systemic nature. It should include a set of actions that will be aimed at solving the issues of organising the work of customs authorities, such as motivation, expanding the powers of operative investigative work, updating technical means of customs control as well as prevention and avoidance of smuggling: solving socio-economic problems of the population, explanatory work, and increasing the number of fines for violations of criminal legislation.

CONCLUSIONS

The results of the study prove that the problem of smuggling in Ukraine is significant, especially in the case of alcoholic beverages and tobacco products. This is facilitated not only by the state of war but also by the lack of a systematic approach to combating smuggling. The results of the survey of foreign trade entities show that the problem of "grey imports" and smuggling is not the main problem for them, although it is smuggling that affects their activities since goods that compete with goods produced in the customs territory of Ukraine enter the territory of Ukraine. Therefore, the information and explanatory work of the customs authorities should be strengthened, which should prove to citizens that smuggling poses a danger primarily to the country's economy (shadow economy).

It was determined that the volume of smuggling of goods in most EU countries is significantly lower than in Ukraine. At the same time, in such developed countries as France, Ireland, and Great Britain (a former EU country), the volume of smuggling is several times higher than in Ukraine. But at the same time, the legislation of EU countries more severely punishes persons who smuggle supplies. Problems related to updating technical means of customs control and increasing the motivation of customs authorities in combating smuggling remain unsolved. The analysis proved that customs authorities in foreign countries use modern means of customs control, including artificial intelligence. At the same time, the salary level of customs inspectors in foreign countries is several times higher than that of Ukrainian customs officers.

The rationale of the state's strategic decisions regarding the granting of powers to the customs authorities for carrying out operational and investigative actions has been proven. Taking into account foreign experience, this should allow customs authorities to more promptly detect violations of customs rules, including facts of smuggling. The problem of smuggling should also be solved thanks to the solution of the socio-economic problems of the population. The transition to a progressive scale of income taxation regulated by the National Income Strategy should contribute to the social justice of taxation. But at the same time, the approaches to the application of tax benefits, which should primarily be applied to low-income sections of the population, must be revised. Prospects for further research should be issues related to the implementation of the National Income Strategy norms, as they relate to important issues of the state's customs policy and customs administration. With this in mind, attention will be paid to the issues of administration of customs payments and further implementation of EU legislation into the Ukrainian legal field, which will take place in accordance with the implementation of the tasks of the Association Agreement between Ukraine and the EU and should speed up Ukraine's accession to the EU.

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CONFLICT OF INTEREST

None.

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Причини виникнення та шляхи протидії порушенням митних правил

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Анотація. Порушення суб'єктами зовнішньоекономічної діяльності митних правил, здійснення контрабанди товарів є актуальними проблемами соціально-економічного розвитку України. Метою статті було дослідження основних причин виникнення контрабанди та розробка шляхів для запобігання порушень митних правил. У роботі проаналізовано статистику порушень митних правил та обсяги контрабанди, що є одним із чинників недоотримання бюджетом значної частини податкових надходжень. Методом узагальнення було узагальнено результати опитування Інституту економічних досліджень та політичних консультацій суб'єктів зовнішньоекономічної діяльності щодо впливу проблем «сірого імпорту» та контрабанди на показники діяльності суб'єктів. За допомогою хронологічного методу та методу аналізу проаналізовано хронологічні зміни предметів контрабанди відповідно до кримінального законодавства, що впливає на напрями роботи митних органів у процесі митного контролю. Узагальнено зарубіжний досвід кримінальної відповідальності за контрабанду товарів, який свідчить про більш суворі каральні заходи, аніж в Україні. Проаналізовано обсяги контрабанди сигарет та втрати доходів бюджету від такої контрабанди з використанням статистичного методу. Результати аналізу свідчать, що обсяг контрабанди сигарет в Україні є одним із найбільших у Європі. Виокремлено причини виникнення контрабанди, які можна поділити як на ті, що пов'язані з діяльністю митних органів, так і з діяльністю органів законодавчої та виконавчої влади України. Обґрунтовано основні шляхи протидії контрабанді та зменшення обсягів порушень митних правил, які мають носити системний та комплексний характер, і стосуватися не тільки виконання митними органами контрольної функції, але й покращення показників соціально-економічного розвитку держави. Практичне значення результатів полягає в узагальнені причин виникнення контрабанди та порушень митних правил, розробці пропозицій щодо запобігання їх виникнення, що може бути використано в роботі митних органів та в процесі реалізації стратегічних цілей Національної стратегії доходів

Ключові слова: зовнішньоекономічна діяльність; контрабанда; нелегальна торгівля; втрати доходів бюджету; контрафактна продукція; мотивація; безробіття

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Summarising directions for using fintech products in the field of financial sector development, in particular mortgage financing

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Abstract. Mortgage lending has become the most important part of the financial market. The most common use of a mortgage is the purchase of an apartment or a private house on credit by an individual. Given the importance of the chosen topic, the goal of the research is defined as follows: to identify promising directions for the development of mortgage financing using fintech products. The list of fintech products that can be used in the field of mortgage financing to improve the system of managing mortgage loan processes using methods of generalisation and systematisation has been elaborated. It has been discovered that the mortgage lending process provides for the analysis of a borrower's risks as well as more complex procedures for determining optimal interest rates for mortgage lending. When the analysis of discount rates is taken as a basis, it is necessary to analyse market volatility. These results have been achieved using methods of analysis and systematisation. Fintech tools are increasingly being used to facilitate the work on data analysis in the development of the mortgage lending system, as they enrich the toolkit for ensuring the security of the mortgage financing process both at the level of financial institutions and state regulation. The peculiarities of using fintech tools have been identified. Main trends and risks of the development of modern mortgage financing using the concretisation method have also been discovered. The possibilities of using fintech tools in the field of mortgage financing have been determined; in particular, an approach to creating a technical task of using fintech tools for further development of mortgage financing has been created. The author's approach will be of practical significance for both financial institutions providing mortgage financing and mortgage market regulators to minimise risks in the system of providing mortgage loans

Keywords: broker; default; interest rates; risk; volatility

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INTRODUCTION

A mortgage is the most important factor of socio-economic progress; its development is an obvious direction of further economic recovery for the country when overcoming an economic crisis or during a post-war period, when there is an acute need for new residential construction to replace the destroyed one. The need results from two main factors: an acute housing shortage for the country's population and low solvency of the population resulting from the fall in living standards due to military operations. Mortgage lending is a solution to the investment crisis, and it contributes to creating conditions for sustainable economic growth through investments in the housing sector and related industries. For this reason, a mortgage is one of the promising development directions of bank lending. Moreover, the development of mortgage lending makes it possible to create new jobs, and ensure the development of investment and financial sectors. Mortgage loans are used to finance, purchase, build, and repair residential and industrial buildings. A mortgage is one of the most effective tools for solving the most important problem of providing housing to the population. However, an important issue from this point of view is the revitalisation of the mortgage lending market with the help of modern digital tools.

The mortgage financing market is one of the most popular and developed in the financial sphere; however, this market provides for the participation of the state as a

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stimulator of investment processes, on the one hand, and the development of tools for diagnosing risks and counteracting their negative impact on the entire mortgage lending system, on the other. And in this context, fintech products are able to solve many issues faced by the field of financial services in general and mortgage financing in particular. Fintech tools for the development of the financial market are getting more and more widespread. Unburdened by numerous regulatory requirements, unlike banks and other financial institutions, fintech companies are able to establish strong relationships with clients and quickly adapt to market trends, radically changing the usual ways in which traditional market players operate. R.V. Ionescu *et al.* (2023) believe the fintech segment may face a blurring of boundaries in the future as a result of the post-pandemic period of 2020 with soaring inflation and capital appreciation around the world. As N. Kholiavko *et al.* (2021) pointed out, some fintech companies are already obtaining banking licenses or considering such a possibility. Whereas Ye. Ostropolska (2021) supposes that fintech companies, can go further and form their own position and create demand for the provision of banking services. It allows them to expand the scope of competition and avoid the need to comply with various regulatory requirements of different markets in which they operate. Banks are seeking partnerships with fintech companies and some are already working with them to take advantage of the opportunities offered by innovation and meet the demands of tech-savvy consumers.

According to R.D. Sousa *et al.* (2021), in a general sense, the process of digitisation of financial services and money, taking place nowadays, creates opportunities to expand the scope and increase the efficiency of financial services and boost economic development. Researchers I. Tarasenko *et al.* (2022) emphasise that countries should take advantage of these opportunities and implement economic policies, supporting and encouraging the development and implementation of secure financial innovations. Technological progress blurs the boundaries of financial companies and the financial sector. New types of infrastructure, service providers, products, business models, and market structures are shaping the market landscape in many ways. It is necessary to ensure the compliance of market conditions with the main tasks of economic policy in the process of further transformation of the financial sector and emergence of economic benefits and expenses.

Despite the significant attention of researchers to the given topic, there are still unresolved questions regarding the definition of certain fintech products that can be further used in the field of mortgage financing, and no single universal approach to the development of a technical task for using fintech tools for further development of mortgage financing has been created so far. Given the relevance of the research, it becomes possible to formulate the goal of the paper, which consists in determining the prospects for the development of mortgage financing using fintech products. To achieve the goal, it is necessary to solve the following tasks: to specify the list of fintech products that can be used in the field of mortgage financing; to identify main trends and risks of the development of modern mortgage financing; to determine the possibilities of using fintech tools in the field of mortgage financing, in particular, to devise an approach to creating a technical task of using fintech tools for further development of mortgage financing.

MATERIALS AND METHODS

In the process of research, a generalisation of approaches to the introduction of fintech products in the creation and development of the mortgage financing system in the modern conditions of the financial market development has been carried out. The research is stipulated by the increasing importance of managing the latest digital tools that can be used for the development of the mortgage financing system due to rapid changes taking place in the technique, technology, and provision of financial services. Scientific papers for the study have been selected by searching the main databases, such as Web of Science and Scopus. It is worth emphasising that both databases are widely recognised as the most authoritative and allow you to select literature on a wide range of scientific problems. Attention has been focused on scientific publications over the past five years to ensure the maximum relevance of the material used since the field of fintech and mortgage financing is quite dynamic and provides for the analysis of the most current scientific base to obtain accurate and comprehensive results. The time period for searching the database from January 2019 to April 2024 has been determined in the process of conducting research and selecting scientific papers. The research tools are created taking into account the need to implement the possibilities of using fintech tools for the development of the mortgage financing system, as well as the formation of approaches to the development of creating a technical task of using fintech tools for further development of mortgage financing. Theoretical, analytical, and research materials of leading scientists focusing their attention on the problems of using and developing innovations and modern technologies in the financial sector have been used in the process of research.

The main specific research method is the method of building business processes using the Unified Modelling Language (UML) notation, which made it possible to model the process of distributing the roles of participants in the process of using fintech tools to determine the possibilities of mortgage financing, as well as to identify the most relevant fintech products for the development of the mortgage financing system to increase business competitiveness in the field of financial services (Amjad *et al.*, 2021). The method of building business processes using the UML notation and creating a technical task is a systematic procedure for the hierarchical representation of elements, determining the essence of the function performed by each specialist in a certain process according to his position and role in the implementation of the entire business process. The method consists in decomposing the problem into simple component parts and further processing of the decision maker's sequence of judgments, in accordance with his position and decisions he is authorised to make. As a result, the relative degree of element interaction in the process of analysing possibilities of using fintech products to increase the effectiveness of mortgage financing processes can be expressed. Such an approach to solving the problem resulting from the analysis increases the effectiveness of decisions, as well as the criteria by which decisions are approved or rejected. Moreover, during the research, statistical material from the website of the mortgage corporation Mortgage Lenders (n.d.) has been studied, and data averages for all states separately for different types of loans have been determined on its basis. In particular, the types of "purchase" loans have been considered, i.e., financing the purchase of real estate; the size of loans ranges from 250 to 400 thousand US dollars (as the main range of housing costs for the middle class – the niche with the highest demand) for a good credit rating (good – 620-679). Such a set of data made it possible to identify the situation on the mortgage market for the most in-demand and liquid real estate.

RESULTS AND DISCUSSION

Classic mortgage financing becomes relevant, when an individual is going to purchase residential real estate at the expense of a bank and the real estate is a pledge itself. However, at this stage of development, the essence and content of the concept of "mortgage financing" has expanded significantly. In particular, a mortgage loan can also be obtained by legal entities for the purchase of commercial non-residential real estate. However, in most cases, when it comes to a mortgage, it means getting a loan. In modern economic literature, two approaches to understanding the financial category of "mortgage" can be found. A mortgage, as a type of credit transaction, is related to the acquisition of a real estate object at the expense of the credit resources of a commercial bank, during which the real estate object becomes a pledge itself. In a mortgage, as a form of securing the debtor's obligations, the object of the pledge is a real estate that remains in the use and possession of the debtor, and a commercial bank, in case of non-compliance with the terms of the mortgage agreement, has the right to retain it. In general, the following key characteristics of mortgage financing can be singled out: a mortgage loan is of special purpose; given that housing serves as a guarantee for a lending operation, the funds of the mortgage loan can be directed solely to the purchase of this object. A mortgage loan is issued for a long term, as a rule, from 15 to 30 years; however, the terms may change depending on the agreement terms. Real estate is always the object of a mortgage – it can be commercial and residential real estate, as well as land plots and everything related to them (perennial plantations, buildings, and constructions). When issuing a mortgage loan, in addition to the basic agreement, another document is drawn up – a security deposit, which is subject to state registration.

The development of mortgage lending has led to the so-called mortgage market. The mortgage market is a part of the financial market where financial resources secured by real estate are redistributed. There are primary and secondary markets for mortgage loans. All existing risks in the process of mortgage lending can be divided into two groups: the risks of a borrower and the risks of commercial banks. In the process of analysing possibilities and risks of granting loans, more and more attention is paid to the use of various fintech tools that are able to ensure the efficient and rational use of mortgage resources. Financial technologies have revolutionised the way consumers interact with money and financial services, opening up a new era of innovation and financial development. From blockchain to artificial intelligence (AI), fintech has brought about a wave of transformative technologies, changing the financial landscape (Murinde *et al.*, 2022; Wu, 2022). By understanding the latest developments in fintech, individuals and companies can use these innovations to streamline processes, expand access to financial services, and discover new possibilities for growth. The sphere of mortgage financing has not become an exception, as it has become the sphere of applying a number of financial instruments for the development and improvement of mechanisms for providing mortgage loans and regulating the system of mortgage loans at the macroeconomic level. Table 1 presents the main fintech tools that can be used to improve processes in the mortgage financing system.

Table 1. Fintech tools that can be used to improve processes in the mortgage financing system

Basic tools in the field of fintech	Characteristics related to the mortgage financing market
Blockchain and distributed ledgers technology (DLT)	A blockchain and DLT have revolutionised the world of finance. In fact, a blockchain is a decentralised digital ledger that records transactions across multiple computers, providing transparency, security, and stability. DLT extends this concept by allowing data to be shared and updated across a network of participants. This revolutionary technology has significant prospects for further application in various areas of the financial industry. There are many examples of blockchain-based fintech innovations. Cryptocurrencies such as Bitcoin and Ethereum have gained popularity as alternative forms of digital currency that utilise the security and decentralisation of the blockchain. Stablecoins, which are pegged to traditional currencies, provide stability and speed up cross-border transactions. Decentralised financial (DeFi) platforms use a blockchain to provide services such as lending, borrowing, and crop farming, eliminating the need for intermediaries. Accordingly, a blockchain can be considered as an alternative to classic mortgage financing through banks or mortgage non-banking financial institutions. A blockchain also plays a significant role in the formation and maintenance of secure payments for mortgage loans
AI and machine learning	AI and machine learning contribute to the development of fintech, automation, risk assessment, and personalisation of financial services. AI is the simulation of human intelligence in machines, allowing them to learn from data, make decisions, and perform tasks. Machine learning is a subset of AI, focusing on algorithms that automatically improve with experience. The role of AI and machine learning in fintech. Risk assessment and fraud detection benefit from AI-based algorithms that analyse large volumes of data, identifying patterns and anomalies to identify potential threats. Personalised financial services, such as investment recommendations and individual advice on the specifics of providing mortgage loans, can significantly reduce the risks of late or incomplete repayment of loans. Other examples of AI applications include robo-advisors, automated investment platforms, using algorithms to manage investment portfolios that have gained popularity due to their cost-effectiveness and ability to provide personalised advice. AI can also become helpful for consumers of mortgage loans. It also helps to determine the level of risk for each individual client, applying for mortgage financing

Table 1, Continued

Basic tools in the field of fintech	Characteristics related to the mortgage financing market
Open banking and the economics of applied programming	The concept of open banking, gaining popularity around the world, refers to the practice of sharing financial data through standardised application programming interfaces between banks and third-party providers. This openness creates numerous benefits and challenges for the financial ecosystem. Open banking provides such benefits as increasing competition, driving innovation, and giving consumers more control over their financial data. Giving fintech startups and other third-party providers access to bank data is encouraging the development of new services, from budgeting apps to loan comparison platforms. Open banking allows consumers to integrate their accounts easily, providing a holistic picture of their financial state and facilitating personalised financial management. Open banking can become a provider in the system of development of mortgage financing and control over losses on mortgage loan repayment

Source: created by the author based on T. Beck (2020), I. Aleksieienko *et al*. (2020), N. Hurzhyi *et al*. (2022)

The mortgage market in the world has been growing steadily for quite a long period of time. After the market crash in 2008-2009, the recovery took place quite quickly, and most of the companies remaining on the market have already resumed mortgage lending by the beginning of 2011 (Digital economy…, 2022). According to the public mortgage corporation Mortgage Lenders (n.d.), U.S. mortgage rates have been rising since the beginning of 2024 and have reached their peak since November 2000. The attention is paid particularly to the American mortgage lending market, as it is closely related to the stock market and is a reflection of the general situation in the US financial system. For example, the average interest rate for 30-year loans at the beginning of 2024 rose to 7.79% per annum, compared to 7.63% at the end of 2023. A year earlier, it was 7.08%. Fifteen-year loans are granted at an average rate of 7.03% per annum, against 6.36% a year ago. Freddie Mac calculates average rates based on data from approximately 80 mortgage lenders across the country. Rates do not take into account potential fees and other payments associated with the mortgage (Mortgage Lenders, n.d.). Traditionally, the value of mortgage loans with a small lag repeats the dynamics of the yield of American government bonds, which in turn reacts to the increase in the rate of the Federal Reserve System and forecasts of its dynamics in the future. The yield on 10-year US Treasury bonds amounts to approximately 4.99% per year at the beginning of 2024, compared to 4.62% at the beginning of 2023 (Mortgage Lenders, n.d.).

According to the world statistics on the volume of mortgage lending, the largest increase in the volume of mortgage lending was observed in 2023 in actively developing countries, in particular in Kazakhstan, Argentina, and India (57+ incredible fintech stats…, 2024). The growth is also observed in one of the world's largest mortgage lending markets – the USA, however, at a slightly slower pace. The development of fintech products is closely related to financial markets, so it is worth analysing the amount of income generated in the field of creation and implementation of fintech products. The volume of income generated in the field of fintech products has more than doubled during 2017-2024. Such an active development of the fintech sphere proves its importance and prospects for the modern financial market. The implementation of fintech tools in the field of ensuring the mortgage financing process provides for detailed planning of each action and the creation of a technical task for implementing such tools. The main business rule of the system of implementing digital financial methods is to solve the tasks of analysing financial risks and identifying open banking opportunities, which can be performed by certain persons authorised to make financial decisions (financial analysts and financial directors).

Solving problems in the system of analysing mortgage financing opportunities makes it possible to allocate functions to certain users of this information system. In this case, all previously performed operations (changes in the knowledge base, entered documents) must be saved to resume the workflow from the point of termination (Buss *et al.*, 2021; Hryhorash *et al.*, 2022). The list of possible functions of a specialist in the development of mortgage financing and the creation of financial tasks can be implemented by authorised programme users and developers of corresponding fintech products for mortgage lending. At the same time, specialists should take into account the fact that the experience and qualifications of each employee must correspond to their functional duties (Kholod *et al.*, 2021). A separate attention should be paid to the use of an electronic digital signature, which allows tracking changes made by users to the system and monitoring specialists, introducing corresponding changes (Lucato *et al.*, 2019; Sermuksnyte-Alesiuniene *et al.*, 2021).

For the effective operation of the system for introducing the latest digital technologies in the field of mortgage lending, an internal bank database must be created for further work with information about potential borrowers. Codes of financial indicators for analysis, evaluation, and forecasting are selected from the list of options offered by the programme. The list of groups of financial indicators for evaluating the creditworthiness of mortgage lenders appears in the list generated by an algorithm based on data entered by interested parties. This list is sorted in descending/ascending order according to the probability of selection (or in alphabetical order) calculated by the programme (Fedyshyn *et al.*, 2019). At the same time, access to data and the programme must be personalised to ensure an adequate level of protection of customers' personal data (Chen & Chan, 2022). Information must be verified and systematised to ensure the correct operation of the system (Kontokosta & Hong, 2021). The system's task is to create a unified approach to data entry for their further processing (Popelo *et al.*, 2021). The created electronic forms of documents can be checked (in terms of content) by the authorised programme's users – financial analysts and financial directors (Soltovski *et al.*, 2020; Bartlett *et al.*, 2022). If, during the analysis of financial indicators, deviations from the normative values are detected, the programme informs a financial analyst and financial director about the discrepancies and the need to promptly review the conditions for providing mortgage financing (Zhou *et al.*, 2021; Ouazad & Kahn, 2022).

Risk analysis is an integral part of any analysis. A risk is defined as the occurrence of an undesirable event that could endanger the project, in particular a default on mortgage payments. There are two groups of risks in the field of mortgage lending: risks related to external factors and risks related to systemic or systematic risks. They are also called systemic or systematic risks and result from external environmental processes and cannot be reduced by diversifying investments. Internal risks, on the other hand, reflect the quality and overall condition of the process management system. Unlike systemic risk, internal risk can be reduced by diversifying investments. A post-condition of the technical task of analysing possibilities of mortgage financing includes the following aspects: specific electronic documents and forms have been created and saved in the information system; specific tasks regarding the implementation of mortgage financing opportunities have been resolved. User roles in the process of stakeholder interaction with the task-solving module should be configured through the user role model, which provides for the delimitation of access rights and the possibility to create an unlimited/limited number of users for each role (Table 2).

Roles determine the level of user access to information resources and functions of the module. The same user can have one or more roles. Increasing the available roles for the user expands the interface of the information system. Figure 1 presents the general functioning model of the module "Using fintech tools to identify mortgage financing opportunities".

Table 2. Description of the roles involved in the model of "Using fintech tools to identify opportunities for mortgage financing"

Roles	Characteristics of functional duties
Financial analyst	Data collection, comparison with the plan, forecasting and analysis of financial indicators, formation of a database for AI training
Financial director	Summarising the results and forming a list of possible managerial decisions regarding the development of a system for analysing fintech tools to determine mortgage financing opportunities
Technical developer and engineer of fintech tools	As a result of communicating with a financial analyst and financial director, the development and implementation of fintech tools to determine mortgage financing opportunities is carried out. Separately, AI algorithms are adjusted to determine the risk level of a certain mortgage contract, and digital banking is adapted to the needs of the target audience
Director	Making managerial decisions

Source: created by the author based on X. Vives (2019), L. Cattaneo & D. Feir (2021)

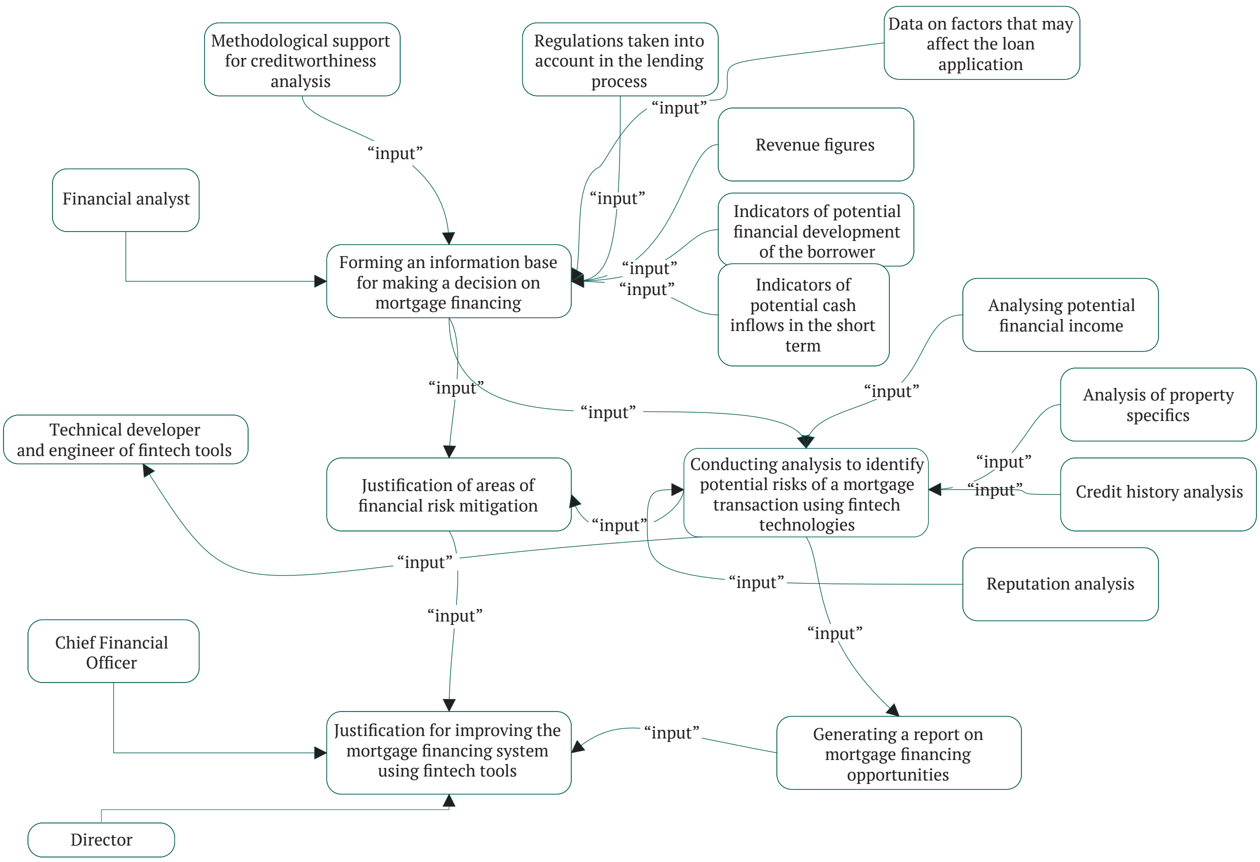

Figure 1. Distribution of participants' roles in the process of using fintech tools to identify mortgage financing opportunities

Source: created by the author

As a whole, when formulating a technical task, it should be taken into account that, as a result of comprehension and systematisation of existing approaches to the basic categories, shaping the systemic basis of mortgage financing, it can be considered appropriate to pay attention to the analysis of the borrower's potential solvency, using fintech tools, in particular based on AI. The use of fintech tools will allow more attention to be paid to risks before making a decision on financing. Summarising the results of the research, it is worth specifying promising directions for the development of mortgage financing using fintech products; in particular, the following should be highlighted: the use of fintech tools for the specific distribution of roles in the process of preparing and providing mortgage financing services; determining the cost and risks of mortgage lending with modelling loan repayment scenarios; and improving the efficiency of the mortgage financing service itself. The issue of using fintech tools in the field of investment financing is considered in sufficient detail in the literature, which was illustrated in the study; however, even in the conditions of such significant attention to the chosen topic, there are still many debatable issues related to the specifics of using fintech tools in various economic spheres. The fact that it has become easier for customers and suppliers to access information and move funds has contributed to the unbundling of financial services: specialised suppliers offer only one product, and customers can choose a whole group of suppliers, satisfying their needs.

S. Oneshko & L. Pashchuk (2021) and A. Martin *et al*. (2022) suggest that instead of using such products as deposit, payment, and credit offered by one institution, a customer can keep deposits in one institution (or several institutions), search for a better credit offer, and use different payment service providers for various purposes. Therefore, customers can collect sets of services themselves and combine them into packages in the form of programme icons on the smartphone screen. It is definitely worth agreeing with this point of view, as it is very important for a modern consumer of financial services to be able to make decisions quickly and choose the set of services that the client needs. R. Jarvis & H. Han (2021) emphasise that it is fundamentally important that similar advances in computing power, data, and communication enable service providers, lacking comprehensive financial relationships with customers (which banks used to have), to offer unified solutions and new packages of financial services or to rearrange financial services, combining them with other types of entrepreneurial or commercial activities. Whereas, L. Kolinets (2023) emphasises that the issue of attracting fintech tools should not be solely restricted to the business sphere, as they can be used by private clients as well.

Thus, fintech operates both at the B2B level (business to business) and at the B2C level (business to customers). It is also worth agreeing with this opinion, as in fact nowadays fintech is becoming a rather versatile set of tools that can be used in different areas and for different users. In response to the development of fintech tools, modern financial services are fragmented, unbundled, and restructured. Therefore, fintech tools are fundamentally changing business models and product economics, as well as the operating conditions of financial service providers. To gain remote access to an account, an account holder can choose a third-party application, thereby actually separating the institution where the account resides from the end product and user interface, and in many ways from the creation of consumer value. And in this context, it is worth mentioning T. Beck (2020) opinion, according to which modern financial services must adapt to the needs of customers and take into account their query in a certain specific situation.

In scientific periodicals, researchers Y. Chen & C. Bellavitis (2020) also pay attention to trends influencing the entire economy – for example, a wider use of software application interfaces in technological architecture and the spread of multilateral platforms in e-commerce, logistics, and other sectors facilitate the exchange of information and reconfiguration of financial services embedded in non-financial products and business processes. The use of variable and on-demand infrastructure, the development of automation, remote channels, and even embedded business models contribute to the reduction in customer costs. At the same time, H. Vives (2019) points out that client-oriented providers of a new generation will take away part of the margin that previously belonged to banks, even if normative regulation still requires the bank's participation in providing a product. Therefore, a debatable question arises regarding the creation of prerequisites for the existence and development of intermediaries by fintech tools that can ensure the price increase of the final service.

And here it is difficult to agree with L. Kolinets (2023), who suggests paying more attention solely to the information component of financial services without explaining to clients the specifics and features of the financial service itself. In particular, X. Cai *et al*. (2022) pointed out that one of the most promising directions for the development of the mortgage lending market is the increase in competition in this area. The market is represented by several large player banks, which limits borrowers' options. However, it should be emphasised that with the appearance of new players on the market, the conditions for providing mortgage loans are expected to improve and interest rates are expected to go down. Undoubtedly, the state plays a key role in solving these problems and developing promising directions. The state plays an active role in creating conditions for the development of mortgage credit as well as in assisting the population in home purchases. Correspondingly, it can be assumed that one of the main tasks of the state in the field of mortgage lending is the creation of a favourable legal and economic environment for banks and borrowers' operation, as well as the encouragement of financial institutions to use the latest digital technologies to optimise the field of mortgage lending.

As A. Fuster *et al*. (2019) point out, the high cost of housing loans is another problem related to the development and regulation of the mortgage market. It should be emphasised that interest rates on mortgage loans are significantly higher in Ukraine than in other developed countries. This is due to a number of factors, including high inflation, economic instability, and a lack of competition in the market. The active implementation of digital technologies can significantly improve the situation with mortgage loan costs since the implementation of digital technologies makes it possible to reduce the costs of paying specialists involved in granting loans.

The main goal of the research was to outline promising directions for using fintech products for the development of mortgage financing. At the same time, the main attention was paid to the possibilities of improving the mortgage financing system and simplifying procedures for allocating funds using fintech products, while the main emphasis was placed on the possibilities of improving the mortgage financing system using various fintech tools. When conducting the research, the main attention was focused on the specifics and effectiveness of the introduction of fintech products into the mortgage financing system and the creation of prerequisites for processing information and making optimal and balanced financial decisions. In the research process, special attention was paid to the development of a technical task for using fintech tools to determine the possibilities of mortgage financing.

CONCLUSIONS

The conducted research made it possible to discover that digital transformation provides for the creation of a new infrastructure – for example, the use of fintech tools for the development of the mortgage lending system requires a clear definition of tasks and an understanding of the benefits that both financial institutions and consumers of financial services can receive from the implementation of fintech tools. The analysis of statistical material allows us to conclude that the development of mortgage lending and the boom of the fintech market are taking place in parallel in the modern financial sphere. It is difficult to imagine world financial markets without a targeted approach to consumers of financial services, which also becomes a driver of fintech tools development in the field of mortgage financing. The field of mortgage financing is no exception, as it can significantly benefit from the use of AI or the latest generation of internet banking. The creation of financial infrastructure is no longer an exclusive prerogative of the central bank, operators of traditional payment systems, and authorised credit bureaus or property registries. In countries with a developed market, improved communication between banking systems has made it possible to increase the speed of payments and financial decision-making.

In the process of research, the model of "Using fintech tools to identify mortgage financing opportunities" has been developed, which makes it possible to generalise the possibilities of using fintech to determine the conditions for the integration of fintech product developers into the system of financial decision-making and ensuring the operation of the mortgage financing system. As a result of the research, the general functioning model of the module "Using fintech tools to identify mortgage financing opportunities" has been created, giving a possibility to clearly define the roles of each individual specialist in a company, providing fintech services to facilitate the mortgage financing market, which positively affects the development process and competitiveness of the mortgage financing sector itself.

It is also worth mentioning the significant opportunities provided by the use of fintech products in ensuring the development of mortgage financing. And in this context, the importance of the dual use of fintech tools for the specific distribution of roles in the process of preparing and providing mortgage financing services has been emphasised. The possibility of determining the cost and risks of mortgage lending with the modelling of loan repayment scenarios should be specifically emphasised, as well as the general efficiency improvement of the mortgage financing service itself due to the right distribution of roles and risk reduction. The issues of discovering a universal method of assessing a borrower's solvency and identifying directions for banking institutions protection against the loss of funds resulting from unreliable developers can become a prospect of further scientific research in the field of mortgage lending development. The issue of assessing creditworthiness attracts the attention of many scientists, though the realities of the time impose their requirements for updating approaches to assessing borrowers' ability to repay the obtained mortgage resources in the future.

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CONFLICT OF INTEREST

None.

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Узагальнення напрямів використання фінтех продуктів у сфері розвитку фінансового сектора, зокрема іпотечного фінансування

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Анотація. Іпотечне кредитування стало найважливішою ланкою фінансового ринку. Найпоширеніше використання іпотеки – це купівля фізичною особою квартири чи приватного будинку в кредит. З огляду на важливість обраної теми, мета дослідження визначена наступним чином: встановити перспективні напрямки розвитку іпотечного фінансування із використанням фінтех продуктів. Конкретизовано перелік фінтех продуктів, які можуть бути використані у сфері іпотечного фінансування для збагачення системи управління процесом надання іпотечного кредиту зі застосуванням методів узагальнення та систематизації. Встановлено, що здійснення процесу іпотечного кредитування передбачає аналіз ризиків позичальника, а також більш складні процедури визначення оптимальних відсоткових ставок для іпотечного кредитування. Коли взято за основу аналіз облікових ставок, є необхідність аналізувати волатильність ринку. Цих результатів досягнуто з використанням методів аналізу та систематизації. Для полегшення роботи над аналізом даних у розвитку системи іпотечного кредитування дедалі частіше використовують фінтех інструменти, що збагачують інструментарій забезпечення безпеки процесу іпотечного фінансування на рівні фінансових установ та на рівні державного регулювання. Визначено специфіку застосування фінтех інструментів. Також встановлено основні тенденції та ризики розвитку сучасного іпотечного фінансування із використанням методу конкретизації. Визначено можливості застосування фінтех інструментів у сфері іпотечного фінансування, зокрема сформовано підхід до створення техзавдання використання фінтех інструментів для подальшого розвитку іпотечного фінансування. Авторський підхід буде корисним на практиці як фінансовим установам, що здійснюють іпотечне фінансування, так і регуляторам іпотечного ринку для мінімізації ризиків у системі надання іпотечних кредитів

Ключові слова: відсоткові ставки; ризик; дефолт; волатильність; брокер

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Modelling a financial literacy strategy as a life project concept

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Abstract. Financial literacy as a key element of ensuring sustainability and stability of economic systems is becoming important in the process of economic development. Financial literacy contributes to improving the well-being of citizens and the efficiency of financial resource management at the macro level. Thus, the purpose of the present study was to develop models for evaluating the effectiveness of various financial literacy strategies and their impact on the formation of life projects. A complex of scientific methods, including the analysis of statistical data and modelling of financial behaviour, was used to create a strategic model of financial literacy as a concept of a life project. A methodological approach, encompassing the decomposition of the stages of a person's life and the identification of the peculiarities, connected with the use of money at each of these stages, was implemented in the research. Approaches to financial literacy focused on various forms of interaction with financial resources were suggested, and effective strategies for improving financial literacy were identified. The concept of financial literacy was examined and specified through the lens of knowledge, skills, and confidence for making responsible financial decisions. The advantages and disadvantages of developing financial literacy in Ukraine were identified, and examples of successful strategies of leading countries were provided. The importance of financial education at different stages of a person's life was substantiated; the key periods of a person's life and development, when money can act as earnings, expenses, accumulation, preservation, and transfer, were specified. The assessment of the influence of financial literacy on economic behaviour was carried out, and a life project model that takes into account financial decisions and actions was developed. Monetary models of preservation and accumulation of parental income, pocket money, and earnings from employment were considered in detail. The results of this study can be applied in practice when creating a state strategy aimed at increasing the level of financial literacy of the population and ensuring economic security

Keywords: economic behaviour; economic security; efficiency; financial management; financial planning

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INTRODUCTION

Financial literacy has gained in importance as one of the crucial components for personal and professional success. The ability to effectively manage finances has become necessary to achieve stability and well-being in the conditions of increasing economic complexity and instability. In many cases, people lack both knowledge and a clear strategic plan for achieving financial goals. One of the potential methods of solving this problem is to consider the strategy of financial literacy as a concept of a life project. This approach includes both the preservation and effective management of financial resources, as well as the development of a comprehensive strategy covering various aspects of the lifeline. Researchers and practitioners are particularly interested in modelling the strategy of financial literacy as a life project, as it allows considering financial issues in the context of a general life strategy. It means that every financial decision is analysed and approved taking into account goals, values, and needs.

In the literature, the issues of studying and modelling financial literacy are reflected in a number of scientific papers. N.F. Chechetova & T.M. Chechetova-Terashvili (2019) interpret financial literacy as the result of successful management of personal finances. The authors took a comprehensive approach to the topic, having considered Ukrainian

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credit issues, citizens' legislation awareness, the possibility of using collateral to satisfy needs, and tax discounts. A.M. Klochko *et al.* (2021) defined financial literacy as a driving force of the country's activity, being the engine of economic and social development; scientists mention the poor financial awareness of the population, lack of knowledge about the financial institutions operation, and personal problems with the income and expenditure balance among the reasons for poor financial literacy in Ukraine; the lack of special procedures that can change the indicated negative trends at the national level is emphasised.

N.O. Doroshenko & V.V. Romaniv (2018) conducted the research of financial literacy, analysing the income part of the family budget as a key source of predictive analytics of the financial literacy level in Ukraine; the authors rely on the hypothesis, according to which the achievement of a high level of a citizen's financial literacy is beneficial for the well-being of the country. L. Ptaschenko & D. Kolinchuk (2021) emphasised the need to adopt nationwide financial literacy tactics and strategies, providing examples of similar innovations in strategic concepts of developed countries; the authors suggest a list of systematic measures to improve financial literacy, particularly stimulating the development of payment infrastructure, creating conditions for the development of remote channels for the sale of financial services, and ensuring free access to information about products and services of a financial nature. R. Happ *et al.* (2024) evaluate the possibility and expediency of using the American financial literacy test during military operations on the territory of Ukraine.

I. Abramova *et al.* (2023) opinion aligns with T.M. Povod (2021), making the conclusion that the development and reliability of the country's economy depend on the level of financial literacy of the population; thus, special attention should be paid to young people, as they are potential investors in the development and ensuring the stability of society. In other scientific works of Ukrainian authors, such as O.V. Pokatayeva & M.A. Slavkina (2019), S. Dombrovska (2022), and M. Dubina *et al.* (2023), there is a clearly expressed idea about the need to implement a national concept of financial literacy without proposing an actual plan for change. The presence of the National Strategy for the Development of Financial Literacy does not provide a detailed plan of action on the part of institutions and the population (Resolution of the National Securities and Stock Market Commission No. 542, 2024).

However, the discussed developments have significant drawbacks, particularly the works of Ukrainian authors, since they provide a theoretical basis for the concept of financial literacy, leaving aside any model developments based on practical experiments. That is, the proposed developments lack a thorough study of modelling strategic aspects of financial literacy, which provides a significant field for practical developments. The purpose of this study was to shape and analyse the concept of modelling a financial literacy strategy as a life project and to identify key aspects and components of the strategy by considering the possibilities and benefits of its implementation.

MATERIALS AND METHODS

To achieve the research goal, a comprehensive methodological approach was used, including such methods as analysis, modelling, and comparison. The analysis method was chosen for getting insight into the structure and dynamics of monetary resource use, which is a key aspect of financial literacy. This method made it possible to systematise knowledge and draw detailed conclusions about optimal financial management strategies. The analysis consisted of the decomposition of the main stages of a person's life and the identification of key features of the money use as tools of financial literacy. The theoretical vision of monetary funds through "aggregate states" (understanding of money as earnings, expenses, accumulation, preservation, and transfer) was implemented, which made it possible to carry out their categorisation and periodicity of use.

Modelling included the development of financial literacy algorithms with various models of interaction with finances at different stages of life. Modelling made it possible to test theoretical hypotheses in practice, taking into account specific conditions of the Ukrainian economy and the living conditions of the target audience, which allows drawing objective conclusions about the effectiveness of various approaches to financial literacy. This method made it possible to determine the most effective financial literacy strategies. As far as other aspects of the study are concerned, starting conditions of the first half of the year 2024 were used to carry out the research, taking into account historical specificity of the development of the world financial system and the financial system of Ukraine. The proposed algorithm has been designed for an average Ukrainian with an income, who was potentially brought up within the universal concept of a life project, having certain starting conditions for the development and plans for the accumulation of monetary resources (Average salary..., 2023). Otherwise, theoretical and practical findings of various authors have been taken into account; the proposed model is suitable for developing economies and citizens representing these countries. To implement this stage of the research, the spreadsheet processor Microsoft Excel and its add-ons were used for performing computational operations and constructing graphic materials.

For the final assessment, a comparison was used, which made it possible to choose the most effective simulated financial literacy strategy. A comparative infographic with the results was developed to this end, providing for taking into account key advantages and disadvantages of each approach, as well as systematising the obtained information and determining the best approaches for implementing financial literacy. The comparison was used to evaluate the effectiveness of the developed financial literacy strategies. This method made it possible to identify the best approaches and select the optimal strategy for further analysis and recommendations. A comparative analysis is necessary to choose the best strategy among the considered alternatives. This method provides for objectively assessing the advantages and disadvantages of each approach and drawing a conclusion about its suitability for practical use. Each of these methods was chosen based on their potential to provide objective results and a deeper understanding of the subject area. The analysis made it possible to systematise the existing approaches to the use of funds, the modelling made it possible to practically test the developed algorithms; and the comparison helped to determine the most optimal strategies.

RESULTS AND DISCUSSION

Scientific experience suggests that any human activity that is subject to cause-and-effect relationships tends to be planned. This is particularly noticeable through the lens of global and large-scale processes, such as globalisation, digitalisation, and technologisation. In this context, considering human life as one big systemic project consisting of numerous smaller sub-projects is a relevant and appropriate approach. Studying the issue of financial literacy is one of the priority areas of working with global research. The global financial literacy survey conducted by Standard & Poor's Ratings Services (S&P global finlit survey, 2024) is the largest in the world and analyses knowledge of four main financial concepts: risk diversification, inflation, interest calculation, and interest accrual. The analysis revealed a low level of financial literacy around the world at the beginning of 2024 (S&P global finlit survey, 2024). Only the countries of North America, Western Europe, and Australia demonstrated a high level of financial literacy. The obtained results emphasise the relevance of creating national and individual financial literacy strategies and their adjustment to the current life concepts of the population.

In the study described above, the inflation indicator played a key role in achieving financial literacy. It significantly affects the financial literacy of the population, making people adapt their financial strategies. When prices for goods and services rise, consumers are forced to plan their expenses and budget more carefully. It encourages citizens to learn the basics of financial planning, which includes effective budget management, cost optimisation, and increased savings. The analysis of the G7 countries and Ukraine revealed a constant, high level of inflation based on the results of the period from 2021 to 2023, presented in Table 1.

Table 1. Inflation growth rate in the G7 countries and Ukraine

Year	Canada	Germany	France	Italy	Japan	United Kingdom	United States	Ukraine
2014	1.91	0.8	–1.31	0.2	2.7	1.5	1.62	24.9
2015	1.13	0.7	–1.74	0.1	0.8	0.4	0.12	43.3
2016	1.43	0.4	–0.83	–0.1	–0.1	1	1.26	12.4
2017	1.6	1.7	1.12	1.3	0.48	2.6	2.13	13.7
2018	2.27	1.9	0.63	1.2	0.99	2.3	2.44	9.8
2019	1.95	1.4	0.25	0.6	0.47	1.7	1.81	4.1
2020	0.72	0.4	–1.25	–0.1	–0.02	1	1.23	5
2021	3.4	3.2	1.22	1.9	–0.23	2.5	4.7	10
2022	6.8	8.7	9.65	8.7	2.5	7.9	8	26.6
2023	3.88	6	3.46	5.9	3.27	6.8	4.5	5.1

Source: created by the author based on B. Steil & E. Harding (2023)

This comparison makes it possible to consider various aspects of a person's life, starting from daily routine tasks and ending with complex life decisions, as separate stages of a large project. Each of these stages has its own unique requirements, tasks, resources, and constraints. Thus, using a comparison with project management to understand and organise life processes is both appropriate and important, as the speed of changes and the complexity of challenges necessitate a systematic and purposeful approach to management. Financial literacy is a key prerequisite for developing an effective investment strategy. Having basic knowledge in the field of finance enables investors to understand market mechanisms better and assess risks and potential benefits from investment instruments. Due to financial literacy, investors can make more informed decisions, avoid common mistakes and manipulations in the market, which increases the probability of achieving financial goals. The lack of financial knowledge, on the contrary, can lead to ill-considered investments and significant capital losses. Figure 1 presents a graph of the complementary growth of indicators of world GDP, trade, and direct foreign investment, which indicates the interrelationship of these values.

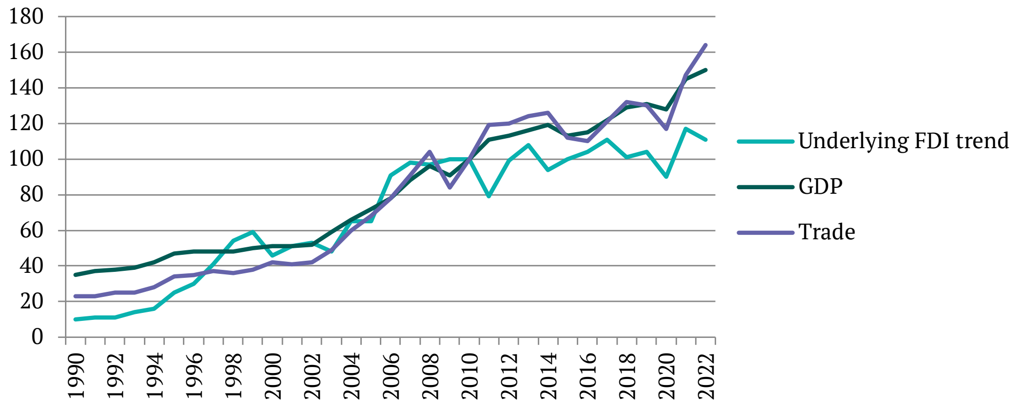

Figure 1. Development of the trend of world GDP, trade and direct foreign investment

Source: created by the author based on Shifting investment patterns: 5 key FDI trends and their impact on development (2024)

Financial literacy promotes the development of strategic thinking and long-term planning, which are important aspects of successful investment activity. Understanding the basic principles of financial planning, such as diversification, risk management, and investment objectives, allows investors to create balanced portfolios, matching their financial capabilities and risk appetite. Thus, financial literacy both contributes to the increase of investment income and ensures the stability and security of private and national financial future. The economic paradigm of the modern capitalist world makes it possible to consider it as a system where enrichment is a key idea. For hundreds of years, money has not lost its main exchange function, but over time it has also taken over the functionality of tools for satisfying basic human needs. However, its use is almost never accompanied by optimal allocation, which leads to significant losses of monetary funds in the current time and lack of benefit in the future. The model basis of the proposed approach considers human life as a long-term, integrated financial project, starting at the beginning of a person's life and continuing the entire life. This research provides a decomposition of the main stages of a person's life in several key periods, shown in Table 2. Money performs several key functions for a person and is actually in such "aggregate states" as presented in Table 3. Thus, the periods of a person's life can be decomposed according to the features, presented in Table 4.

Table 2. The list of key periods of human life and development

Stage	Age	Characteristics
Early childhood	0-7	Money as savings and accumulation
School years and youth	7-18	Money as savings and accumulation
Student years	18-23	Money as earnings Money as savings and accumulation Money as transfer
Work	23-60	Money as earnings Money as expenses Money as savings and accumulation Money as transfer
Retirement	60+	Money as expenses Money as transfer

Source: created by the author

Table 3. "Aggregate states" of money in a person's life

"Aggregate state"	Characteristics
Money as earnings	Funds that result from the activities during "work" and "student years" stages
Money as expenses	Funds that result from the activities throughout life
Money as accumulation	Funds that result from the activities throughout life
Money as savings	Funds that result from the activities throughout life
Money as transfer	Funds that result from the activities throughout life

Source: developed by the author

Table 4. Model characteristics of key periods of human life and development

Stage	Characteristics
Early childhood	Model 1 – preservation and accumulation of parental income
School years and youth	Model 1 – preservation and accumulation of parental income Model 2 – saving and accumulating pocket money
Student years	Model 1 – preservation and accumulation of parental income Model 2 – saving and accumulating pocket money Model 3 – earnings from employment Model 4 – saving and accumulating earnings Model 5 – life expenses
Work	Model 3 – earnings from employment Models 3.1, 3.2...3.N – earnings in the form of active, passive, mixed income system Model 4 – saving and accumulating earnings Model 5 – life expenses Model 6 – transfer of money for family life
Retirement	Models 3.1, 3.2...3.N – earnings in the form of active, passive, mixed income system Model 4 – saving and accumulating earnings Model 5 – life expenses Model 6 – transfer of money for family life Model 7 – transfer of money to younger generations

Source: created by the author

To implement the modelling of the financial literacy strategy, it is proposed to consider only the first four monetary models (M1-M4), since they are directly responsible for the generation of income and capital; instead, models M5 and M6-M7 are responsible for expenditures and distribution. Table 5 presents the intermediate results of the experimental part, suggesting the possibility of using different types of models (M1-M3), as well as the accumulated model M4. The obtained result had a cascade structure since M1-M4 are gradually implemented in a person's life.

Table 5. Model characteristics of key periods of human life and development (fragment)

Age	Months	M1		M2	M3		M1	M2	M3	M4 per year	M4 accumulation
		% of income (which the father/mother keeps to invest in the child, average per month)	Income of father/mother (UAH, average per month)	% of pocket funds (% of funds that the child saves from pocket money, average per month)	% of scholarship/salary (deduction for savings from income)	Child's scholarship/salary (UAH, average per month)					
0	9	10%	16,837	0%	0%	0	15,153	0	0	15,153	15,153
1	12	10%	18,521	0%	0%	0	22,225	0	0	22,225	37,378
2	12	10%	19,447	0%	0%	0	23,336	0	0	23,336	60,714
3	12	10%	20,419	0%	0%	0	24,503	0	0	24,503	85,216
4	12	10%	21,440	0%	0%	0	25,728	0	0	25,728	110,944
5	12	10%	22,512	0%	0%	0	27,014	0	0	27,014	137,958
6	12	10%	23,637	0%	0%	0	28,365	0	0	28,365	166,323
7	12	15%	24,819	15%	0%	0	44,675	6,382	0	51,057	217,380
8	12	15%	26,060	15%	0%	0	46,908	6,701	0	53,610	270,990
9	12	15%	27,363	15%	0%	0	49,254	7,036	0	56,290	327,280
10	12	15%	28,731	15%	0%	0	51,717	7,388	0	59,105	386,384
11	12	15%	30,168	15%	0%	0	54,302	7,757	0	62,060	448,444
12	12	15%	31,676	15%	0%	0	57,017	8,145	0	65,163	513,607
13	12	15%	33,260	15%	0%	0	59,868	8,553	0	68,421	582,028
14	12	15%	34,923	15%	0%	0	62,862	8,980	0	71,842	653,870
15	12	15%	36,669	15%	0%	0	66,005	9,429	0	75,434	729,304
16	12	15%	38,503	15%	0%	0	69,305	9,901	0	79,206	808,510
17	12	20%	40,428	20%	20%	4,000	97,027	13,861	9,600	120,488	928,998
18	12	20%	42,449	20%	20%	4,000	101,879	14,554	9,600	126,033	1,107,782
19	12	20%	44,572	20%	20%	4,000	106,972	15,282	9,600	131,854	1,301,618
20	12	20%	46,800	20%	20%	4,000	112,321	16,046	9,600	137,967	1,511,565
21	12	20%	49,140	20%	20%	4,000	117,937	16,848	9,600	144,385	1,738,747
22	12	20%	51,597	20%	20%	4,000	123,834	17,691	9,600	151,125	1,984,365
23	12	20%	54,177	20%	20%	4,000	130,026	18,575	9,600	158,201	2,249,694
24	12	0%	0	0%	30%	8,418	0	0	30,306	30,306	2,394,001
25	12	0%	0	0%	30%	9,260	0	0	33,337	33,337	2,548,705
26	12	0%	0	0%	30%	10,186	0	0	36,671	36,671	2,714,644
27	12	0%	0	0%	30%	11,205	0	0	40,338	40,338	2,892,731
28	12	0%	0	0%	30%	12,325	0	0	44,371	44,371	3,083,957
29	12	0%	0	0%	30%	13,558	0	0	48,809	48,809	3,289,404
30	12	0%	0	0%	30%	14,914	0	0	53,689	53,689	3,510,249
31	12	0%	0	0%	40%	16,405	0	0	78,745	78,745	3,768,443
32	12	0%	0	0%	40%	18,046	0	0	86,619	86,619	4,047,815
33	12	0%	0	0%	40%	19,850	0	0	95,281	95,281	4,350,251
34	12	0%	0	0%	40%	21,835	0	0	104,809	104,809	4,677,813
35	12	0%	0	0%	40%	24,019	0	0	115,290	115,290	5,032,758

Source: created by the author

A person can use only certain parts of M1-M3, which will become the foundation for the model of preservation and accumulation of earnings (M4). However, it is important for M4 to provide for the investment component and the possibility of investing the accumulated funds. In 2024, the amount of annual interest on the deposit was approximately 15% (Deposits of Ukrainian banks…, 2024), thus it is assumed that under the most pessimistic forecast, the average annual return on M4 will be only 5% per year. The result of the fund distribution for a 60-year life span (under constant starting and external conditions) was obtained (Fig. 2).

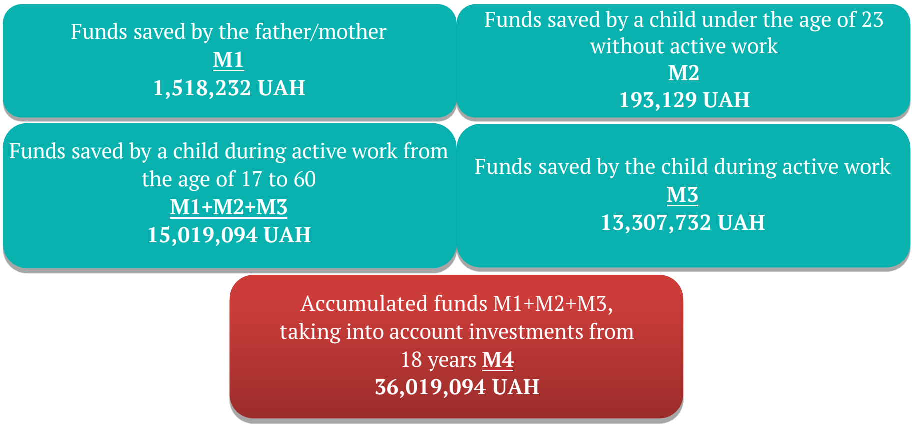

Figure 2. Capital allocation between income models within the framework of a financial literacy strategy
Source: created by the author

The resulting distribution between the models showed the importance of accumulating funds at each period of a person's life. In fact, the starting capital is parental (M1), then the child acquires working skills with pocket money and possibilities of its actual accumulation (M2); additionally, the knowledge base on financial literacy is formed in this period of life. Then M3 is the result of the independent work of a formed personality. When using these models and the investment component from the age of 18, a person can potentially maximise his own capital of almost 37 million hryvnias. Figure 3 presents the distribution between parental capital and capital, formed by a person later in life. The starting capital accounts for only 10%; it provides for necessary theoretical and model knowledge, which the child potentially receives during his early development. Figure 4 presents the "power" of long-term investments, which over a long period of time provides for generating almost 60% of the accumulated final capital.

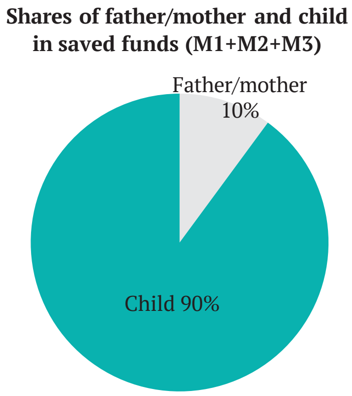

Figure 3. Distribution between parental and child's capital within the framework of financial literacy strategy
Source: created by the author

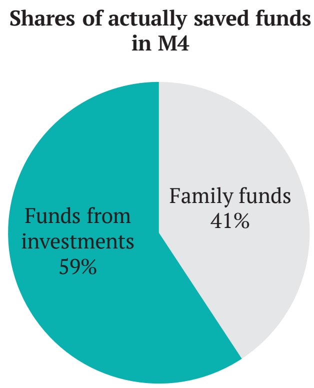

Figure 4. Distribution between actual accumulated capital and capital obtained from investments within the framework of a financial literacy strategy
Source: created by the author

An atypical approach to modelling a financial literacy strategy as a concept of a life project was applied. The paper analyses the influence of individual models, which is difficult to predict using standard approaches. The chosen implementation strategy made it possible to obtain practical results of modelling elements of financial literacy. The created experimental mathematical model made it possible to emphasise the advantages of parents investing in their child's future, to create a basis for the development of financial literacy skills of children up to 18 years of age, and to reproduce an investment model of accumulation until retirement. The developed model, tactics, and strategies of financial literacy can be used as individual, family action plans for deepening knowledge, as well as a foundation for forming national concepts of a high level of financial literacy among different generations.

The experience of foreign members of the scientific society suggests that their thoughts are aimed at improving the high level of the population's financial literacy rather than at the elaboration of its strategy. The evidence for this can be found in the work of M. Jones *et al.* (2024), where the authors focus on the formation of a highly efficient investor's portfolio using cryptocurrencies as regulators of its riskiness and profitability. The researchers studied the relationship between knowledge of digital assets and understanding of financial concepts; they discovered a positive relationship between cryptocurrency literacy and general financial literacy, suggesting that a better understanding of cryptocurrencies contributed to more effective financial decisions. This approach significantly correlates with the study of a financial literacy strategy in the present paper, as it describes the probability vector of a person's investment activity.

M. Niţoi & M.-M. Pochea (2024) discuss different levels of trust in standard investment approaches in the banking sector by individual investors, pointing out low returns and elements of underdeveloped financial literacy. In particular, the authors emphasise that financially literate people are more inclined to trust central banks, which contributes to building personal wealth. At the same time, financially literate citizens express less trust in the government; that is, trust in the central bank is not a complete indicator of trust in the government. Such a study deals with the trust in the central bank in 10 countries of Central, Eastern, and South-Eastern Europe, which have common features with the Ukrainian banking sector. Within the framework of the research, the authors developed a clear experimental sample, which made it possible to rely on the banking sector as a reliable element of the financial system for the storage and accumulation of funds.

Research by H.V. Nguyen *et al.* (2022) is remarkable for studying the influence of socio-economic factors on the financial literacy of adult residents of Vietnam. The study gives evidence for younger adults having better cash management, credit, savings, investments, and general financial management skills in comparison to older adults. In contrast, higher-income participants manage savings and overall finances more effectively. The findings of this article strongly support the idea of early financial literacy training and give evidence for people with higher income managing their finances and savings more easily, which echoes the views expressed in this article.

Other regional concepts of South Korea, Japan, and New Zealand are described in the works of T. Kawamura *et al.* (2021), I. Choi & W.C. Kim (2023), and J. Noviarini *et al.* (2023). In South Korea, lack of understanding of financial products has become a major problem, contributing to the financial literacy gap. The authors' methodology converts complex financial information into understandable visual formats, which allowed people to make informed decisions. This approach helped to decompose complex processes and to present financial literacy as a list of simple and consistent actions that undoubtedly correlate with the results of the present paper. In Japan, people with high levels of financial literacy are often prone to excessive risk-taking, overborrowing and a naive attitude towards finance, which suggests that financial literacy can lead to bold and reckless financial actions. Such a vector was not considered in the present article and may be a prerequisite for studying risky investments within the concept of a life project. In New Zealand, the authors examined the relationship between financial literacy, fear of debt, risk tolerance, and resource allocation decisions among pensioners. In fact, retirement age acts as the final stage of the financial accumulation process, and avoiding debt in old age is key to long-term well-being, which coincides with the assessment of the results of using the financial literacy strategy as a concept of a life project. In their work, A. Paraboni & N. Da Costa (2021) examined the effectiveness of short-term financial literacy training of Brazilian students and presented the positive dynamics of financial literacy perception by a selected cohort. The results confirmed that the participants of the course significantly increased their level of financial literacy in three directions: financial knowledge, attitude, and behaviour. It means that even a short-term orderliness of financial knowledge makes it possible to improve the situation with the understanding of financial literacy among the younger generation.

Summarising scientific findings, it is worth emphasising the effectiveness of the proposed approaches and future prospects of using the intermediate and final results of their research, which have not been used in the present article so far. It concerns the results of H.H. Kim *et al.* (2021), studying the impact of financial literacy on older Americans' demand for financial advice and discovering that more financially literate individuals seek financial help from professionals. Also, based on the hypothesis, according to which women are less financially literate than men, the group of scientists G. Tinghög *et al.* (2021) developed a policy to reduce gender inequality and improve women's financial behaviour. A. Zaimovic *et al.* (2024) developed a national questionnaire to determine the level of population financial literacy, which allows distinguishing group and individual behavioural factors affecting the level of financial literacy. The above-mentioned studies illustrate various aspects of financial literacy in different countries. Foreign members of the scientific society focus their efforts on improving a high level of financial literacy, emphasising modern investment tools.

CONCLUSIONS

The paper explores the possibilities of applying analytical, empirical, and comparative methods to implement the concept of modelling a financial literacy strategy as a life project. The resulting model was tested on the basis of a practiced experiment. The modelling results made it possible to identify the key stages of a person's life with a focus on financial and monetary aspects, to determine "aggregate states" of money in a person's life, to single out key models of interaction between a person and money, and to form a basic strategy of financial literacy through the concept of a life project. An unconventional approach to modelling a financial literacy strategy as a concept of a life project has been applied. The chosen implementation strategy made it possible to obtain practical results of modelling components of financial literacy. The developed experimental mathematical model emphasised the advantages of parental investments in children's future, created a basis for the development of children's financial skills, and recreated the investment model of savings until retirement, which included a step-by-step system of models (M1, M2, M3, M1+M2+M3, M4). This model, along with related financial literacy tactics and strategies, can be used as guidelines for improving financial literacy. They can also become the basis for the development of national concepts for increasing the level of financial literacy among different generations.

The conducted research suggested the dependence of a high level of accumulation with a high level of theoretical and practical training of a person in childhood and confirmed the opinion that most of the capital is formed due to a competent investment strategy. Research and discussion of foreign authors' works revealed the importance of socio-economic factors in the formation of the population's financial literacy. Even short-term educational initiatives had a positive impact on the perception of financial literacy. Research has emphasised the importance of an adaptive approach to increasing financial literacy, taking into account regional characteristics and modern challenges of the financial environment. The prospect of further research is the development of simulation and optimisation models for testing and adjusting changes caused by internal and external risks of the functioning of national economies.

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CONFLICT OF INTEREST

None.

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Моделювання стратегії фінансової грамотності як концепції життєвого проєкту

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Анотація. В умовах розвитку економіки зростає важливість фінансової грамотності як ключового елементу забезпечення стійкості та стабільності економічних систем. Фінансова грамотність сприяє підвищенню добробуту громадян і ефективності управління фінансовими ресурсами на макрорівні, тому метою дослідження була розробка моделей, що дозволяють оцінити ефективність різних стратегій фінансової грамотності та їх вплив на формування життєвих проєктів. У роботі використано комплекс наукових методів, що включає аналіз статистичних даних та моделювання фінансової поведінки для формування стратегічної моделі фінансової грамотності як концепції життєвого проєкту. У дослідженні було реалізовано методологічний підхід, який включав декомпозицію етапів життя людини та виокремлення особливостей використання грошових коштів на кожному з цих етапів. Було запропоновано підходи до фінансової грамотності, орієнтовані на різні форми взаємодії з фінансовими ресурсами, та визначено ефективні стратегії підвищення фінансової грамотності. Розглянуто та деталізовано поняття фінансової грамотності через призму знань, навичок та впевненості для прийняття відповідальних фінансових рішень, визначено переваги та недоліки розробок фінансової грамотності в Україні та наведено приклади успішних стратегій провідних країн. Обґрунтовано значення фінансової освіти на різних етапах життя людини, деталізовано ключові періодів життя та розвитку людини, коли гроші можуть виступати як заробіток, витрати, накопичення, збереження та передача. Проведено оцінювання впливу фінансової грамотності на економічну поведінку, розроблено модель життєвого проєкту, що враховує фінансові рішення та дії. Детально розглянуто грошові моделі збереження та накопичення батьківського доходу, збереження та накопичення кишенькових коштів, заробіток у формі найманої праці й збереження, та накопичення заробітку. Результати цього дослідження можуть бути використані на практиці для формування державної стратегії, спрямованої на підвищення рівня фінансової грамотності населення та забезпечення економічної безпеки

Ключові слова: ефективність; економічна безпека; економічна поведінка; управління фінансами; фінансове планування

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Small and medium-sized enterprise brand development in an emerging economy: The view of the owner/manager

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Abstract. Small business branding is a relatively under-researched field, and available research largely excludes the African region. As a result, the brand development of small and medium enterprises (SMEs) in emerging markets is a topical issue. The aim of this study was to analyse whether brand development factors such as brand barriers, brand characteristics, perceived advantage, and brand perceptions are perceived by owners/managers as having a positive effect on retail SME brand development. A cross-sectional survey method was used to obtain data from 265 owners/managers of SMEs in South Africa using a self-administered questionnaire. Data were analysed using structural equation modelling, with the results showing that brand barriers, brand characteristics, and brand perceptions have a significant positive effect on brand development, while the effect of perceived advantage was found to be insignificant. It is recommended that SME owners/managers invest more resources in brand development efforts and management develop better attitudes towards branding, as the study revealed that owner/manager perceptions of the brand and the branding process have the biggest impact on brand development. Further, SMEs are encouraged to find innovative ways to engage in brand development, considering that brand barriers do not seem to particularly affect a firm's ability to engage in brand development. This study contributes towards an understanding of SME brand development in emerging markets, hence SMEs in these markets can benefit from its findings. The practical findings of this study should be of interest to SME owners/managers, as they carry the responsibility for the SME brand development process

Keywords: developing markets; barriers; perceptions; retail sector; perceived advantage

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INTRODUCTION

In the dynamic landscape of emerging economies, small and medium enterprises (SMEs) play a decisive role in stimulating economic growth. SMEs foster innovation while simultaneously contributing to the creation of employment opportunities. Emerging economies have helped reshape the global economy, and SMEs have been the key drivers

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of economic development. Emerging markets are currently facing substantial socio-economic, cultural, and regulatory changes while simultaneously expanding from edges to the core of marketing practice. SMEs often battle with challenges such as resource constraints, skills shortages, less established market infrastructure, and managerial incompetencies, with one of the significant challenges faced by SMEs being the development and management of their brand. While larger organisations have the resources, the experience, and the managerial competencies to handle the brand development process, SMEs may not be in a similar position.

Scholars have examined brand development/management in SMEs in various contexts. H.-H.S. Chang *et al*. (2024) examined the performance of SMEs in Taiwan by assessing marketing capabilities and strategies. They found that the main antecedents of brand capability and strategy are entrepreneurial orientation, capability for social media, and capability for market knowledge. S. M'zungu *et al*. (2019) examined SME brand management from the strategic and operational perspectives. The authors uncovered that there are primarily four types of SME brand management, i.e., brand identity, operations, brand image, and opportunistic driven. Their study emphasised the role of both strategy and firm capability in the brand development process. The weight of studies in SME branding literature focus on how the shortcomings of SME enterprises affect their brand management practices. S. M'zungu *et al*. (2019) attributed this to the fact that although SME branding is considered to be a strategic entrepreneurial activity, it is relatively simpler in smaller organisations because they have limited financial resources available for market research (SME entrepreneurs tend to believe that branding is inaccessible to them – an attitude that is often reflected in their behaviour. SMEs typically regard their brand as secondary to sales). Consequently, SMEs typically limit their branding to visual identity elements and simple marketing methods.

E. Mandizwidza-Moyo (2020) examined the role of owner/manager personal characteristics in the brand development process in Zimbabwe. The findings revealed that the owner/manager's inherent characteristics, such as ethnic identity, extraversion, and creativity, affect brand identity conceptualisation, while demographic factors, agreeableness, and neuroticism have no impact. A.K. Tewary & R. Mehta (2021) investigated the entrepreneur's role in the brand development process in India and found that entrepreneurial characteristics such as passion, logic, and prior experience, together with brand-related factors such as the name of the brand, brand finance management, and owner exit strategy, play vital roles in SME brand development. R. Mijan *et al*. (2020) considered strategic branding resources for SMEs in Malaysia and determined that the strategic utilisation of inherent organisational resources such as a unique brand, differentiated products, employees, brand symbolism, organisational culture, and internal communications are crucial for SME success in branding.

Despite the growing importance of SMEs in emerging markets, research on building SMEs' brands and the factors influencing successful brand management in SMEs is still limited (Mandizwidza-Moyo, 2020; Tewary & Mehta, 2021). The branding field is still typically dominated by large businesses. According to J.-E. Chung *et al*. (2019), evidence indicates that branding studies on small businesses continue to lag in the marketing literature. Given the vast differences between SMEs and their multinational counterparts, branding data from big businesses cannot be generalised to SMEs, hence the need for SME-specific branding-related research. Literature on organisational performance has long recognised the role of firm capabilities (e.g., branding), yet S. M'zungu *et al*. (2019) assert that there are still some deficiencies in the literature on building brands in the SME sector.

The most obvious of these is a gap in the literature regarding branding in SMEs compared to the vast literature on branding in large organisations, as well as the paucity of emerging markets research on SME branding (Lin *et al*., 2019). The current study sought to advance the current SME branding literature by investigating the brand development of SMEs in an emerging market by assessing how owners/managers perceive the influence of internal factors such as brand barriers, brand characteristics, perceived advantage, and brand perceptions on the brand development process. The study proposed four hypotheses to advance the objective of the study: H1: Brand barriers have a significant negative effect on the brand development process; H2: Brand characteristics have a significant positive effect on the brand development process; H3: Brand perceptions have a significant positive influence on brand development; and H4: Perceived advantages have a positive effect on brand development.

LITERATURE REVIEW

The ability to establish a strong brand is paramount to an organisation's success. According to A.T. Rosário (2023), branding helps companies to build trust in the market, simplifies customers' decision-making processes, and reduces risks for the organisation. M. Mudanganyi *et al*. (2020) assert that SMEs in the retail sector use branding to beat competitors' prices and to offer added value to customers to distinguish them from larger retailers. C.N. Osakwe *et al*. (2020), L. Piha *et al*. (2021), and A.K. Tewary & R. Mehta (2021) suggest that SMEs can improve the branding process by adopting both brand and market orientations. There has been a greater effort to study brand building/brand development by SMEs from the perspective of brand and management-related perspectives. C.N. Osakwe *et al*. (2020) studied SME brand building, brand orientation, and brand identity in North Macedonia and found the three concepts to be significantly related, with brand orientation being a multidimensional concept.

P. Ranjan (2024) investigated how branding capabilities can be used to boost the performance of SMEs that are brand oriented. The author found that the relationship between brand orientation and the performance of exporting firms is mediated by both internal and external branding capabilities. R. Odoom & P. Mensah (2019) researched the relationship between brand orientation and performance of SMEs in Ghana by studying how social media and innovation capabilities moderate the relationship. The authors recommended that SME owners/managers should select appropriate combinations of enterprise capabilities based on their size to maximise their complementarity with brand orientation initiatives. N.M. Hodge *et al*. (2018) investigated how brand orientation is enacted in SMEs and found that SMEs needed to approach brand orientation deliberately.

These studies indicate that SMEs recognise the importance of brand building and brand orientation in their enterprises.

Studies on brand development in SMEs have also taken an interest in the relationship between the SME owner/manager and the brand development process, as well as the effect of owners/managers' views on the brand development process. SMEs are typically managed by their owners. As a result, the owner's resource commitments towards brand building determine how successful the firm is in building a strong brand (Osakwe *et al.*, 2020). E. Centeno *et al*. (2019) examined the brand-as-a-person metaphor by investigating the potential relationship with owners/managers. They found that owners/managers by intuition, will attach human qualities to their brands, seeing them as an extension of themselves. SMEs have a pivotal role in South Africa's economy. SMEs act as a catalyst for change, providing an avenue for entrepreneurship and generating employment opportunities (Driving success in SMEs..., 2024). The country's National Development Plan has earmarked SMEs as "instruments for the achievement of the socio-economic goals and innovation", as noted by W. Matekenya & C. Moyo (2022). Currently, between 2.4 and 3.5 million small, medium, and micro enterprises (SMMEs) operate in South Africa (Freeing small businesses, n.d.). In 2023, SMMEs contributed 40% of the country's gross domestic product (GDP) (SMEs make up 40% of SA's GDP..., 2024). The retail sector in South Africa is the second largest employer after government and accounts for close to 20% of the country's GDP (Retail sector report, 2023).

SMEs are the lifeblood of the country's economy, employing 50% to 60% of the country's workforce in 2023 and being responsible for about a quarter of private sector job growth (Driving success in SMEs..., 2024). SMEs have been touted as one of the solutions to the high rate of unemployment and inadequate economic expansion (Botha *et al*., 2021). SMMEs are envisioned to account for 90% of jobs by 2030 (Matekenya & Moyo, 2022). However, despite their importance in the South African economy, SMEs still face many challenges and therefore suffer from high failure rates (Ogunsanya *et al*., 2020; Botha *et al*., 2021). According to the University of the Western Cape, 70% to 80% of SMEs in South Africa do not survive the first five years after formation (How can South African entrepreneurs..., n.d.). Compared to other developing nations, SMEs in South Africa have one of the highest failure rates (Mhlongo & Daya, 2023). Consequently, the current study sought to make a contribution to the survival strategies of SMEs.

MATERIALS AND METHODS

The research that served as the basis for this article used an exploratory methodology, gathering data from a variety of SMEs in Gauteng, South Africa, through a survey. The study used a structured questionnaire and a quantitative, cross-sectional survey design to statistically test the hypotheses against empirical data. The survey questionnaire included sections on SME background information (position, number of years in operation, number of employees, and business location), as well as measures on the predictor and outcome variables. Measures adopted for the study examined SME owners/managers' perceptions of the factors that influence using the following constructs: brand barriers, brand characteristics, brand perceptions, and perceived advantage. Measures for all variables, including dependent and independent, were adapted from the literature using a seven-point Likert scale, anchored by 1 = strongly agree to 7 = strongly disagree. Brand barriers were measured using seven items developed by the researchers from the literature (M'zungu *et al*., 2019; Tewary & Mehta, 2021). Brand barriers measured were financial; human resources; time; responsiveness to publicity; uninspired marketing that addresses nothing and flies under the radar of your audience; and lack of branding strategy. The items were coded BB1-BB7. One of the items (BB2) was removed during the analyses as its factor loading was too weak. Brand characteristics were measured using nine items, with measures developed by the researchers based on the literature review. These measures included variables like price, availability, guarantee, innovativeness, reliability, communication, image, attitude, and performance of the brand. The items were coded BC1-BC9.

Brand development was measured using seven items, including awareness of the brand; of products or service quality; repeat purchases; brand image development; competitive advantage; overall marketing strategy; and solid reputation. The items were coded BD1-BD7. Perceived advantage was measured using nine items with variables adopted from various studies and was operationalised to include factors such as "it adds value that customers are prepared to pay for", "it inspires customer loyalty", and "it leads to positive word-of-mouth". These items were coded PA1-PA9. The brand perception construct was operationalised using twelve items, including variables such as "it is important to brand a business", "strong brands exert a halo effect", and "strong brands represent different values, traits and characteristics". The items were coded BP1-BP12. Two of the items were removed during data analysis as their factor loadings (FL) were too weak. The rest of the items in the questionnaire are listed in Table 1.

To be eligible for the study, respondents had to be owners or managers of retail SMEs. In 2022, it was estimated that only 37% of SMEs in South Africa were considered formal (OECD, 2022). This means that 63% are either not registered or captured in a database. Consequently, there is no comprehensive database that can be used as a sampling frame. Non-probability sampling was therefore used to select SMEs in the Tshwane metro in South Africa. Convenience sampling was deemed appropriate for the study given the lack of a sampling frame. Trained field workers hand-delivered 300 questionnaires to SMEs. 265 useful ones were returned, representing an 88.3% return rate. Data for the study was collected in a three-month period from July to September 2022. Before data collection, the ethical clearance to conduct the proposed research was obtained from the affiliated institution. The study was to be conducted according to the Policy on research ethics of University of South Africa (2016). In a cover letter attached to the questionnaire, the participants were informed that the survey has been developed to be anonymous, that they are under no obligation to complete the survey, and that they can withdraw anytime from the study. A consent form was included in the front page of the questionnaire, with the researchers' contact details. The form required the demographic details of the respondents, including age, gender, position (whether owner, manager, or both), business tenure, number of employees, and business location.

SmartPLS was used to screen and analyse the data according to the pre-established research protocols. The testing of the measurement and structural models was conducted using SmartPLS software. Prior to analysing the structural model and testing the hypotheses, the validity of the measurement model was established. Prior to the testing of the models, the demographic information of respondents was analysed. Using the Fornell-Larcker criterion, discriminant validity was evaluated (Fornell & Larcker, 1981). The heterotrait-monotrait (HTMT) ratio was used to evaluate discriminant validity in addition to the Fornell-Larcker criterion. The hypothesised relationships (H1-H4) were tested using structural equation modelling. The bootstrapping method was used to get the *t* statistics and *p* values for each of the test statistics calculated, which gives an indication of the statistical significance of the FL. The path coefficients were examined as they measure the effect of a causing factor (independent variable) on a dependent variable; that is, they explain how strong the effect of one variable is on another variable. In addition to the path coefficients, the R^2 was assessed. The degree to which input factors (predictor variables) explain the variance of output variables (predicted variables) is explained by the R^2, also known as the coefficient of determination. The values are between 0 and 1.

RESULTS

The demographic profile of the respondents revealed that 35.1% were female while 64.9% were male. Regarding their positions within the SME, the sample comprised 107 (40.4%) owners, 83 (31.3%) managers, and 67 (25.3%) owners/managers. A few of the respondents (3.0%) did not indicate their position within the business. When it came to the number of employees, a significant portion of the respondents had between 1-10 employees (207, 78.1%), followed by 11-20 (47, 17.4%), and then 21-50 (8, 3%). Four (1.5%) of the respondents did not indicate the number of employees. Among the respondents, 109 (41.1%) had been in business for one to five years; 90 (34.0%) for six to 10 years; 59 (22.3%) for 11 to 24 years; and 3 (1.1%) for 25 years or more. Four (1.5%) of the respondents did not indicate business tenure. These figures indicate that the owner managers collectively had sufficient experience in the SME sector to provide reliable insights into the topic under consideration. Overall, the demographic data revealed that the sample was sufficiently representative.

In validating the measurement model, the internal consistency, validity, and reliability were examined. The results of the reliability analysis in Table 1 revealed that Cronbach alpha (CA) values for the constructs ranged between 0.752 (brand barriers) and 0.982 (brand characteristics). These Alpha values were above the 0.7 recommended threshold for construct reliability, thereby confirming that the constructs were reliably measured (Hair *et al*., 2019). Standardised FL, composite reliability (CR), and average variance extracted (AVE) were then used to establish convergent validity, as seen in Table 1. For convergent validity to be confirmed, the FL must, in ideal circumstances, be significant and > 0.7, the CR > 0.7, and the AVE > 0.5 (Hair *et al*., 2019). The results displayed in Table 1 indicate that the values for CR ranged from 0.817 (brand barriers) to 0.988 (brand characteristics), while AVE values ranged from 0.413 (brand perceptions) to 0.899 (brand characteristics). While the CR values were well above the acceptable thresholds, the AVE values were lower than the 0.5 threshold. However, some authors, including the originators of the concept, agree that AVE values of 0.4 can be accepted if the CR > 0.6 (Fornell & Larcker, 1981; Suprapto *et al*., 2020). These results therefore confirm that the measurement model had convergent validity.

Table 1. Reliability and convergent validity

Variable/Item	FL	CA	CR	AVE
Brand Barriers		0.752	0.817	0.433
Financial	0.600			
Human resources	0.791			
Time	0.659			
Responsiveness to publicity	0.609			
Uninspired marketing addresses nothing and flies under the radar of your audience	0.706			
Lack of branding strategy	0.471			
Brand Characteristics		0.982	0.988	0.899
Price of the brand	0.931			
Guarantee of the brand	0.971			
Availability of the brand	0.990			
Innovativeness of the brand	0.988			
Reliability of the brand	0.982			
Communication of a brand	0.927			
Image of the brand	0.978			
Attitude towards the brand	0.963			
Performance of the brand	0.946			
Brand Development		0.850	0.888	0.531
Brand awareness	0.736			
Quality of products/services	0.724			
Repeat purchases	0.720			
Brand image development	0.805			

Table 1, Continued

Variable/Item	FL	CA	CR	AVE
Achievement of competitive advantage over competitors	0.724			
Evaluation of overall marketing strategy	0.715			
Building of a solid reputation	0.686			
Perceived Advantage		0.846	0.872	0.441
It adds value that customers are prepared to pay for	0.608			
It inspires customer loyalty	0.762			
It leads to positive word-of-mouth	0.665			
The brand owner can charge higher prices	0.342			
Better access to distribution	0.614			
The customer will memorise the product/service	0.686			
Less risk for the customer	0.530			
The brand provides an image of quality	0.780			
The brand provides an image of reliability	0.711			
Brand Perceptions		0.863	0.873	0.413
It is important to brand a business	0.486			
Strong brands exert a halo effect	0.498			
Strong brands represent different values, traits, and characteristics	0.605			
Strong brands serve as a platform for expansion	0.682			
Existing retail brands strengthen brand awareness and differentiation from the competition	0.606			
Branding unlocks profitability	0.449			
Brands prompt consumer selection	0.628			
Brands lead to name awareness	0.684			
Branding signals increased customer loyalty	0.690			
Branding signals trust	0.713			

Source: calculated by the authors

After verifying the measurement model's convergent validity and reliability, the Fornell-Larcker criterion was the final quality measure used to assess discriminant validity. According to this processing criterion, the values of the inter-correlation between the constructs must be less than the values of the square root of the AVE (Ali *et al.*, 2023). Stated otherwise, the AVE's square root ought to exceed the correlation value between that construct and all other constructs (Harris & Gleason, 2022). The Fornell-Larcker criterion posits that the diagonal value should be larger than all values in the same row and column for discriminant validity to hold. The results in Table 2 indicate that the square root of AVE for each of the constructs exceeded its correlation with other constructs; therefore, discriminant validity was confirmed. Then the HTMT ratio was adopted as an additional measure of validity. The HTMT ratio of correlations method is used for discriminant validity assessments. This method assesses the discriminant validity between each pair of variables (Ali *et al.*, 2023). Discriminant validity between two reflective constructs has been demonstrated if the HTMT value is less than 0.90. Table 3 below shows that all but one of the diagonal values are greater than all values in the same row and column. The two measures indicate that the discriminant validity requirement is met.

Table 2. Discriminant validity: Fornell-Larcker criterion

Constructs	Brand barriers	Brand characteristics	Brand development	Brand perceptions	Perceived advantage
Brand barriers	**0.658**				
Brand characteristics	–0.200	**0.948**			
Brand development	0.287	0.137	**0.728**		
Brand perceptions	0.149	0.014	0.584	**0.642**	
Perceived advantage	0.217	0.025	0.450	0.568	**0.664**

Source: calculated by the authors

Table 3. Discriminant validity: HTMT ratio

Constructs	Brand barriers	Brand characteristics	Brand development	Brand perceptions	Perceived advantage
Brand barriers					
Brand characteristics	**0.244**				
Brand development	0.362	**0.129**			
Brand perceptions	0.226	0.089	**0.655**		
Perceived advantage	0.297	0.133	0.547	**0.695**	

Source: calculated by the authors

A structural model assessment was used to substantiate the measurement model assessment by way of testing the hypothetical assumptions. Figure 1 below shows the results of the structural model, which tested the relationships between the constructs. The p values for the FL were statistically significant at a 5% level. Model fit indices, coefficient determination (R^2), and the path coefficient were examined to test the structural model.

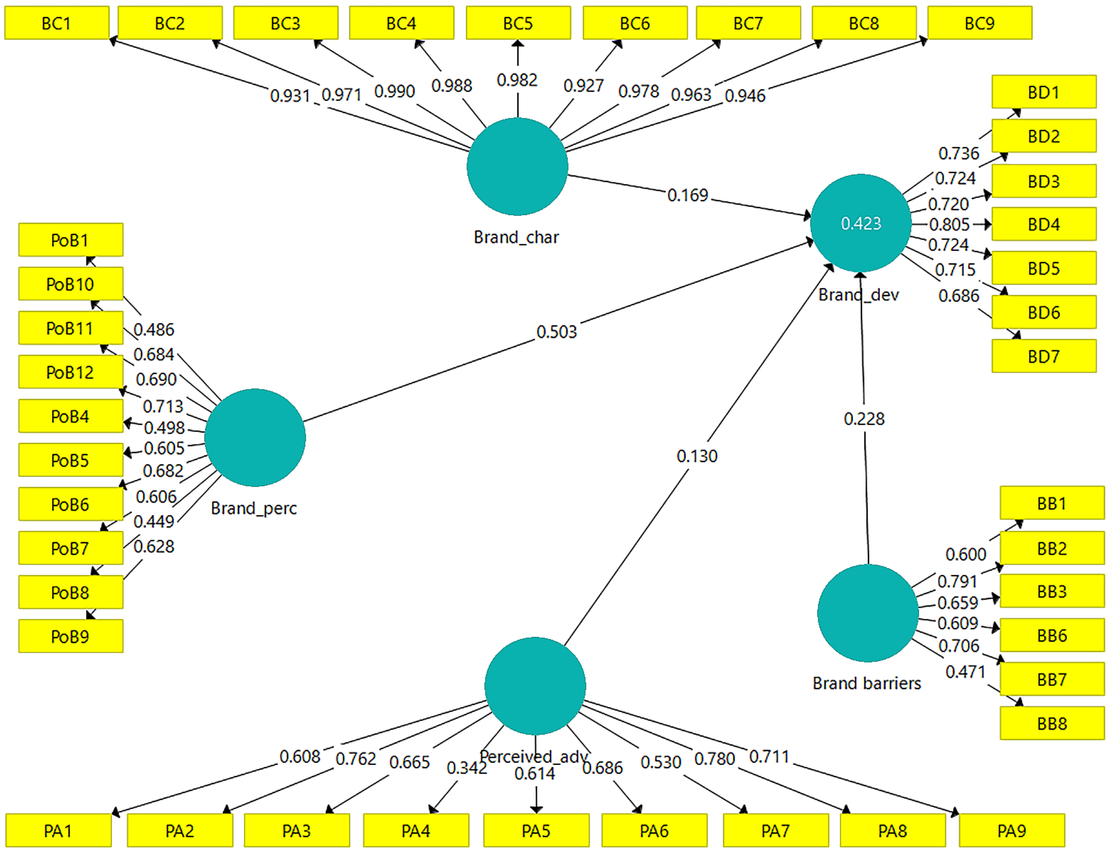

Figure 1. FL and path coefficients

Source: calculated by the authors

Table 4 shows the statistical results for the four proposed hypotheses. The results show that two of the four hypotheses were accepted. The hypothesis tests revealed the significant positive effects of brand barriers on brand development (H1: $\beta = 0.228$; $t = 3.512$; $p = 0.000$). Given that the relationship was positive, H1 was therefore rejected. The results further revealed that brand characteristics had a significant positive effect on brand development (H2: $\beta = 0.169$; $t = 2.239$; $p = 0.026$), while brand perceptions also had a positive effect on brand development (H3: $\beta = 0.503$; $t = 7.801$; $p = 0.000$). An insignificant effect was found for the relationship between perceived advantage and brand development (H4: $\beta = 0.130$; $t = 1.890$; $p = 0.059$). Therefore, hypotheses H2 and H3 were accepted while H1 and H4 were rejected.

Table 4. Hypothesis testing

Hypothesis	Coefficient	*SD*	*t*	*p*	Decision
H1: Brand barriers → Brand development	0.228	0.069	3.512	0.000	Rejected
H2: Brand characteristics → Brand development	0.169	0.063	2.239	0.026	Supported
H3: Brand perceptions → Brand development	0.503	0.059	7.801	0.000	Supported
H4: Perceived advantage → Brand development	0.130	0.067	1.890	0.059	Rejected
	Statistic	***SD***	***t***	***p***	
Adjusted R^2	0.414	0.053	7.755	0.000	

Note: p value: $^{*}p < 0.05$, $^{***}p < 0.001$, $^{\dagger}p < 0.1$

Source: calculated by the authors

For this model, the R^2 is 0.414, which means that 41.4% of the variation in brand development is explained by brand barriers, brand perceptions, brand characteristics, and perceived advantage. This suggests that there are other factors other than the ones considered by the study that may contribute to the brand development process. With validity and reliability established for the constructs, the overall model fit was assessed to establish whether the model was a good fit or not. The squared Euclidean distance (d_ULS), the geodesic distance (d_G), and the standardised root mean square residual (SRMR) are approximated model fit metrics. The average magnitude of the differences between the observed and expected correlations can be evaluated as an absolute measure of the (model) fit criterion using the SRMR. For partial least squares structural equation modelling, SRMR is a goodness of fit metric that can be used to prevent model misspecification. The SRMR is compared to a threshold of 0.10 or of 0.08 (Benitez *et al.*, 2020). A value less than the threshold indicates a good model fit. Table 5 shows that the SRMR is 0.079, which is below 0.08 and therefore indicates a good model fit.

Table 5. Model fit

	Statistics	95%	99%
SRMR	0.079	0.076	0.096
d_ULS	4.391	4.998	7.980
d_G	2.503	3.246	5.064

Source: calculated by the authors

Model fit was also assessed using the d_ULS, and the d_G are exact fit measures. For a good model fit, the d_ULS and d_G values should be lower than the upper value of the 95% confidence interval (Sun *et al.*, 2024). Therefore, to show that the model fits well, the upper bound of the confidence interval should be greater than the initial value of the precise d_ULS and d_G fit requirements. Table 6 shows that the d_ULS value is 4.391, which is higher than the 95% value (4.998). The d_G value is 2.503, which is lower than the 95% value (3.246). This indicates that this estimated model has a good fit.

DISCUSSION

Consensus exists among SME branding researchers such as S. M'zungu *et al.* (2019) and A.K. Tewary & R. Mehta (2021) that SME brand development is an under-researched topic. More precisely, little research has been done on how entrepreneurs contribute to the development of brands inside SME frameworks, as noted by R. Odoom & P. Mensah (2019). To remedy this, four hypotheses were formulated in this study with the purpose of determining the influence of brand barriers, brand characteristics, perceived advantage, and brand perceptions on brand development. Three of these hypotheses were confirmed by this study. The discussion of the results is guided by these hypotheses.

Existing studies on branding strategies have primarily been conducted in Western contexts, which, according to J.-E. Chung *et al.* (2019), may not be applicable to non-developed markets because of the inherent differences between them. Concurrently, much of the research on brands and branding has been from the perspective of the customer. Recently, however, there has been increased researcher interest in brand building from an organisational perspective. A.R. Ismail & B. Mohamad (2022) investigate how brand, market, and entrepreneurial orientations can be amalgamated to improve SME performance and find that collectively they are paramount for superior performance. H.-H.S. Chang *et al.* (2024) investigated how marketing capabilities and brand orientation strategy can be used to improve SME performance, finding that entrepreneurial orientation to be one of the key antecedents of SME performance. Given the role of owners/managers in the brand development process, the current study sought to discover their perceptions of what contributes to brand development, as this undoubtedly has an influence on SME branding initiatives. SME branding research has been limited due to the challenges associated with SME branding. This has resulted in a poor and imprecise conceptualisation of SME branding development, as well as unclear theoretical perspectives on how brands are formulated in these enterprises. This study thus develops a model for SME brand development from the perspective of owners/managers.

The H1 revealed that brand barriers have a significant, positive influence on the brand development process. The hypothesis was rejected as the researchers had anticipated that the effect would be negative. These findings indicate therefore that instead of being a hinderance, brand barriers can play a crucial role in shaping the trajectory of brand development and influence how a brand establishes and maintains its market presence. This finding is inconsistent with prior research. For instance, S. Cardinali *et al.* (2019) investigated how to increase brand orientation and brand capabilities and found that brand barriers reduce an SME's chance of adopting a profitable brand strategy. This suggests that brand barriers can either facilitate or impede a brand's growth and sustainability. A. Ogunsanya *et al.* (2020) explored entrepreneurial brand orientation and customer perceptions of SME brand positioning and asserted that brand barriers inhibit an SMEs brand enactment plan. The results of the current study reveal, contrary to past research, that brand barriers can actually play a positive role. This suggests that even in the face of resource restrictions, SME brand development is possible.

The H2 confirmed that brand characteristics and the brand development process are positively related. These results confirm the findings of previous studies concerning the impact of brand characteristics on brand development. For instance, F.J.F. Coelho *et al.* (2020) examined the ways in which functional brand attributes, such as innovation and quality, influence the personality and experience of a brand and ultimately affect perceived value. The authors found that the functional characteristics of brands play a vital role in brand development, as do the intangible ones. Similarly, S. Joo & A. Guèvremont (2024) found that when building a new brand, brand characteristics such as virtuousness, proximity, and transparency have a significant effect on brand authenticity. The results of the current study imply that SMEs should make an effort to craft and communicate brand characteristics that are meaningful to their target audience, as these play a major role in the brand development process from an external perspective.

The H3, confirmed by the study, revealed that owner/manager perceptions of the branding process have a significant effect on brand development. This hypothesis related to how the owner/manager himself perceives the importance of branding. According to E. Centeno *et al*. (2019), owners/managers make decisions about how their brands are produced, use their brands as a vehicle for self-expression, and guide the process from the outset. A qualitative study of 20 SMEs by A.K. Tewary & R. Mehta (2021) showed that SME owners have a crucial role to play in the process of establishing a brand because they are the ones who start it, and that start is founded on the realisation that a strong brand is a valuable asset to the company. The current study contributes to the discussion of the role of the entrepreneur by revealing that the owner/manager's perceptions of branding will significantly influence the brand development process.

The result that was not anticipated in the H4 was that SME owners/managers do not think perceived advantages play a role in the brand development process. In this study, perceived advantages were conceptualised to include factors relating to how the brand is perceived by consumers and how they perceive the brand development process. Customer perceptions wield significant influence over the trajectory of brand development as they determine how a brand is received in the marketplace. Consumer perceptions are formed through a complex interplay of experiences, interactions, and brand messages. Understanding, monitoring, and actively shaping customer perceptions through consistent brand experiences and messages are pivotal components of effective brand development strategies. The results of the study suggest that SME owners/managers do not necessarily consider the perceptions of their customers when designing their brand development strategies.

Taking all the findings into consideration, this study encourages SMEs to prioritise their brand development efforts and to invest in understanding the brand development process and the factors that inhibit or promote brand development. SMEs should direct resources towards brand development processes that enhance their brands in the market. Additionally, SME owners/managers' attitudes towards brand building need to change, as these have a significant influence on the outcomes of their brand development processes. A key implication of this study is that owners/managers' perceptions about their brands and the brand-building process have the greatest impact on the brand development of SMEs. This means that how the owners/manager perceives the brand and brand building has the biggest impact on brand development efforts. To increase the brand development capabilities of SMEs, owners/managers are advised to be cognisant of the role of their own mindset in the brand development process. In relation to brand characteristics, the study encourages SME brand managers to impress consumers by developing and emphasising brand characteristics that highlight the ability of the SME within the retail sector. Considering how competitive the sector is, SMEs need to emphasise their own strengths and capabilities within the sector.

CONCLUSIONS

In spite of the growing importance of SMEs in developing economies around the world, studies on SME branding are still limited. The study contributes to the literature on SME branding by empirically testing the effects of brand barriers, brand characteristics, brand perceptions, and perceived advantages on brand development. The study was conducted against a backdrop of limited empirical evidence of the factors influencing brand development from the perspective of owners/managers in South Africa. The study developed a methodological approach to understanding brand development based on secondary and empirical research involving owners/managers. As a result of the statistical analyses and the review of the literature, the study revealed the important factors that influence the brand development process in SMEs.

The results obtained indicate that from the perspective of owners/managers, brand barriers, brand characteristics, and brand perceptions have a significant impact on brand development, but perceived advantage does not. Accordingly, the study emphasises the importance of managing brand barriers and characteristics while promoting the owner/manager's role in the brand development process. It has been established by the study that, from the perspective of owners/managers, internal branding factors play a more significant role in the brand development process than external factors. The results also reveal that, from their perspective, their own perception of the brand and the branding process play the most significant role in the brand-building process. The results obtained in this study allow for recommendations to be made to SMEs for how to handle the brand development process. The application of the recommendations of this study will provide opportunities for SMEs to strengthen their brand-building efforts, something that is often overlooked in SMEs. Further research in this area should be aimed at including other regions that are socio-economically and culturally different from the region in which the data were collected as well as data from other industries other than the retail sector to enable the data to be generalisable. Further research should also be aimed at investigating factors outside the owner/manager that may influence brand development.

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CONFLICT OF INTEREST

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Розвиток бренду малих та середніх підприємств в економіці, що розвивається: погляд власника/менеджера

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Анотація. Брендинг малого бізнесу є доволі малодослідженою сферою, а наявні роботи здебільшого не охоплюють африканський регіон. Як наслідок, розвиток брендів малих та середніх підприємств (МСП) на ринках, що розвиваються, є актуальним питанням. Метою цього дослідження було проаналізувати чи фактори розвитку бренду, такі як перешкоди для бренду, характеристики бренду, відчуття переваги та сприйняття бренду, розглядаються власниками/менеджерами як такі, що мають позитивний вплив на розвиток бренду МСП роздрібної торгівлі. Методом перехресного опитування за допомогою анкети, яку респонденти заповнювали самостійно, отримано дані від 265 власників/менеджерів МСП у Південній Африці. Дані проаналізовано за допомогою моделювання структурних рівнянь, і результати показали, що перешкоди бренду, характеристики бренду та сприйняття бренду мають значний позитивний вплив на його розвиток, тоді як вплив відчуття переваги виявився незначним. Рекомендовано, щоб власники/менеджери МСП інвестували більше ресурсів у розвиток бренду, а керівництво розвивало краще ставлення до брендингу, оскільки дослідження показало, що сприйняття бренду власниками/керівниками та процес брендингу мають найбільший вплив на розвиток бренду. Крім того, МСП заохочуються до пошуку інноваційних способів участі в розвитку бренду, оскільки бар'єри, пов'язані з брендингом, не суттєво впливають на спроможність компанії брати участь у розвитку бренду. Це дослідження є внеском у розуміння розвитку брендів МСП на ринках, що розвиваються, отже, його результати можуть бути корисними МСП на цих ринках. Практичні підсумки цього дослідження будуть цікаві власникам/керівникам МСП, оскільки саме вони відповідають за процес розвитку брендів МСП

Ключові слова: ринки, що розвиваються; бар'єри; сприйняття; сектор роздрібної торгівлі; відчутна перевага

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Methodological approaches to the functioning of the passenger transportation market: Airline, road and railway segments

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Abstract. Passenger transportation plays a critical role in ensuring efficient functioning of the economy, as it provides labour mobility, access to markets, cultural, and social services, and promotes the development of international tourism and social integration. Thus, the purpose of the research was to analyse methodological foundations of the functioning of the passenger transportation market and to assess the war impact on the condition and development of air, bus, and rail passenger transportation. With the help of the bibliographic method, key scientific papers have been analysed in the article to study the theoretical foundation and identify problematic issues, calling for improvement and development. Using the generalisation method, leading organisations, ensuring the functioning of the passenger transportation market, have been identified and summarised, and the general principles of its functioning have been formulated. Using comparative and grouping methods, methodological approaches to air, bus, and rail passenger transportation in the context of economic, regulatory, technological, ecological, and social foundations have been proposed. The necessary prerequisites for the effective functioning of the passenger transportation market have been determined by grouping the most significant aspects, such as liberalisation and competition, state regulation and standardisation, investments and innovations, as well as effective cooperation between stakeholders in the field of passenger transportation. Using tabular and graphical methods, the war impact on air, bus, and rail passenger transportation has been considered through the lens of the caused damage, the amount of destruction, and the necessary restoration and reduction of passenger traffic. The peculiarities of enterprise operation in wartime have been identified with the emphasis on strategically important features of functioning and development, and patterns in passenger transportation have been revealed with the help of the content analysis method. The results of the research can be useful for specialists in the field of passenger transportation and tourism when analysing the passenger transportation market, forming strategies, and considering development trends

Keywords: airline; digital technologies; information and communication technologies; strategy; tourism; tourist; transport connection

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INTRODUCTION

The modern economy and society depend on an efficient and convenient system of passenger transportation, where their constant improvement and adaptation to transformations and new realities are crucial for ensuring sustainable development. The transformational changes that took place under the influence of the COVID-19 pandemic and the war in Ukraine significantly affected the passenger transportation market. The development of each type of transportation, particularly air, rail, and bus, affects the population mobility, the economic development of regions, and the overall transport infrastructure. The relevance of methodological approaches to each of these segments provides for efficient use of resources, ensuring passenger safety and reducing the impact on the environment.

The issue of passenger transportation is quite important: leading scientists in the field of tourism and transport connections highlight the impact of the pandemic on changes in passenger transportation in their scientific papers. V. Koba & O. Pylypenko (2021) considered the consequences of such an impact on the main resulting indicators of Ukrainian air carriers' operation by sectors. The authors proposed measures that, from the standpoint of the short- and long-term perspectives, should mitigate the impact of global events on air transportation and service providers. It is worth mentioning that, according to researchers, the growth in the number of passenger air transportation in Ukraine depends significantly on the available routes and price policy, where the introduction of low-cost carriers contributed to the growing popularity of air transportation. The work of T. Prymak *et al*. (2020) also gives evidence for the strategic nature of all stakeholders' actions related to charter transportation and external events, suggesting an action algorithm for all participants in the tourist services market for improving the effectiveness of marketing interaction and a methodology for identifying causes for the destabilisation of the charter air transport market in the tourism sector. The authors of the paper prove that the increase in passenger transportation was due to the dynamic growth of non-regular flights for the Ukrainian market, where state regulation and effective interaction can serve as incentives for such growth, or, on the contrary, the lack of proper regulation can lead to a failure to fulfil obligations and result in negative consequences.

The growth in the number of tourists and the formation of demand for tourist products is strongly influenced by bus transportation, where, as a result of the war, bus tours began to gain particular popularity; therefore, I. Krupenna (2023) sees the solution of transport problems in tourist offers for bus tours. According to the researcher, apart from financial savings, the use of bus tours creates opportunities for opening new tourist routes that previously were not very attractive or too expensive. V.A. Khudaverdiyeva (2022) believes that the transport component plays a significant role in tourism development and examines the features of four types of transport connections when selling basic and auxiliary services in tourism, as well as identifies the most significant factors when choosing each of them. It is worth mentioning the research of O. Matusevych *et al*. (2022), where attention is paid specifically to the methodology of managing rail passenger transportation by developing a unified change management mechanism in this segment. From the authors' point of view, rail transportation in wartime can be improved by implementing better practices and using the optimal mechanism of rail transportation operation.

Thus, the issue of passenger transportation is quite important from the scientific perspective, although methodological issues are insufficiently reflected in scientific findings, mostly focusing on one type of transportation without considering the relationship between different types of passenger transportation and their impact on tourism development. The purpose of the study was to analyse methodological foundations of the functioning of the passenger transportation market, taking into account various segments, and to assess the war impact on the condition and development of air, bus, and rail passenger transportation. This purpose is achieved through the following objectives: to analyse the prerequisites and create a methodological basis for the functioning of the passenger transportation market, as well as to study the impact of the war in Ukraine on passenger transportation.

MATERIALS AND METHODS

A wide range of sources and materials, which are relevant and reliable, were used to conduct the research, which made it possible to ensure a high level of reliability of the results. The main sources of information were presented by the scientific works of leading scientists, official reports, statistical data, and information resources related to the market for passenger transportation. In particular, literature on air, road, and rail transport was analysed, as well as data on the impact of the military conflict on these sectors, which was studied in detail in the works of T. Prymak *et al.* (2020), I. Krupenna (2023), and V. Ishchenko & V. Kharuta (2024). In order to formulate the conceptual foundations of passenger transportation regulation and determine approaches to their functioning, information from international organisations, regulating the passenger transportation market – The International Air Transport Association (n.d.), The International Rail Transport Committee (n.d.), and the Ukrainian – Ministry for Communities, Territories, and Infrastructure Development of Ukraine (n.d.) – was used. To analyse the condition and war impact on the passenger transport market, statistical reports from Ukrainian and international organisations were used, which provided information on the volume of transportation, financial losses, and infrastructure restoration, in particular the State Statistics Service of Ukraine (Passenger traffic by means of transport, 2022), World Tourism Organisation (Impact assessment of the COVID-19 outbreak…, 2023), Kyiv School of Economics ($155 billion…, 2024), and the World Bank (2024). The process of conducting the research included the stages of data collection and analysis, assessment of the war impact on the passenger transportation market, as well as the development of methodological approaches to improving the market's functioning with the authors' recommendations for improving the functioning of the passenger transportation market, taking into account the uncertainty of the operating environment and various perspectives, and being more realistic and better reflecting the complexity of the problem under investigation.

The work used a combination of scientific methods for an in-depth analysis of the functioning of the passenger transportation market, taking into account theoretical and practical aspects. To achieve the set goal and identified objectives of the research, a comprehensive approach was used in the paper based on a combination of: bibliographic method – for analysing modern scientific findings and identifying key problems in the passenger transportation market; generalisation method – for determining common features in the functioning of air, bus, and rail transportation and formulating problems; comparative method, which made it possible to compare the bases of legislative regulation, the level of damage caused in the transport infrastructure, and the dynamics of passenger transportation; grouping method – for formulating the methodological bases of the transportation market with economic, regulatory, technological, ecological, and social components as the most significant ones, as well as when highlighting the key aspects of this market functioning; graphic method, which made it possible to visualise the proposed recommendations and the obtained results; tabular method – for better information interpretation; and content analysis method – for quantitative and qualitative analysis of textual and statistical materials to identify patterns and trends. The complex use of various scientific methods enabled a comprehensive and detailed analysis of the passenger transportation market, providing both for considering various aspects of its functioning and identifying key problems and trends of further development.

RESULTS

Modern transportation systems are focused on the integration of various types of transport, which provides more convenient access to various transport services and promotes the efficient use of infrastructure. The new generation of consumers has significant expectations and demands for convenience, speed, and personalisation of services. Accordingly, transport companies are forced to adapt to these demands, introducing new service models and improving customer interaction through mobile applications and digital platforms. In addition, global transformations, such as the transition to sustainable development and the integration of new forms of mobility, provide for the adaptation of existing approaches.

According to M. Rudenko (2024), transformations in the passenger transportation market suggest that modern carriers must adapt to new realities, look for innovative solutions, and adapt their business models for recovery and sustainable development in the conditions of post-pandemic and geopolitical instability. The introduction of travel restrictions, border closures, and business and tourism travel restrictions led to a sharp decrease in demand for air and other types of transportation, causing significant financial losses for airlines and other carriers (Impact assessment of the COVID-19 outbreak..., 2023). Therefore, post-pandemic recovery provides for both a review of routes and transportation networks to meet new conditions and changed needs, and methodological prerequisites for market functioning, taking into account different contingencies, including war with increased security issues and requirements for rest. Also, an important step towards the successful functioning and further development of the passenger transportation market should be the introduction of digital technologies, where the most relevant are contactless registration, electronic tickets, automated security systems, and other new technologies that simplify the process of interaction with the consumer of transport services, ensure safety and comfort of passengers, reduce waiting time, and increase data accuracy. The active growth of the smart electronic ticket market, where the market volume in 2023 was estimated at 10.8 billion dollars, and already in 2024 it is expected to grow by 14.4% (Smart ticketing market size..., 2024) proves the idea above. These technologies contribute both to convenience and reduction of service costs, in particular through savings on ticketing systems and resource optimisation. That is, the implementation of digital initiatives in the field of passenger transportation has a significant potential for further development and modernisation of the global transport infrastructure.

Passenger transportation is within the competences of the following major international organisations: the International Air Transport Association, which is responsible for the regulation of international civil aviation, including safety standards, operating rules, and passenger rights; the International Rail Transport Committee, which is an association of railway companies engaged the in development and standardisation of rail transport, including passenger transportation (Ukrzaliznytsia became a participant in 1992); and the International Maritime Organisation, which determines international standards and rules for maritime transport, including passenger ships. The European Aviation Safety Agency, which specialises in air traffic safety in Europe, including the coordination of passenger transportation. The European Aviation Safety Agency is responsible for regulating the safety and efficiency of the aviation industry in the European Union, including passenger transportation. In Ukraine, regulation of transport, including passenger transportation, is carried out by the Ministry for Communities, Territories, and Infrastructure Development as an executive body, shaping and implementing state policy in the field of road, rail, and other types of transport. Moreover, state authorities regulating and controlling passenger transportation functioning report to it, including the State Aviation Service of Ukraine, the State Service of Ukraine for Transport Safety, the State Agency of Auto-Roads of Ukraine, the State Service of Maritime and River Transport of Ukraine, and the State Agency for Infrastructure Projects of Ukraine.

The issue of the functioning of the passenger transportation market in Ukraine is regulated by a number of regulatory documents; among the most significant ones are the following: Order of the State Aviation Service of Ukraine No. 1239 "On Approval of the Aviation Rules of Ukraine 'Rules of Air Transportation and Service of Passengers and Baggage'" (2018); Law of Ukraine No. 2344-III "On the Road Transport" (2001), which determines the general principles of the organisation and functioning of road transport in Ukraine, including rules related to passenger transportation; Law of Ukraine No. 273/96-BP "On the Railway Transport" (1996); Resolution of the Cabinet of Ministers of Ukraine No. 176-97-p "On Approval of the Rules for the Provision of Passenger Road Transport Services" (1997); Order of the Ministry of Transport and Communications of Ukraine No. 1196 "On Approval of the Rules for the Carriage of Passengers, Baggage, Cargo and Mail by Railway Transport of Ukraine" (2006), etc. These legislative acts are aimed at ensuring passengers' safety and comfort, regulating transportation conditions, and establishing responsibility for violating requirements. They include the rights and obligations of carriers and passengers, as well as conflict resolution mechanisms.

From the perspective of comprehensiveness and strategic nature of passenger transportation, it is worth mentioning the National Transport Strategy of Ukraine, which identified the increase in demand for transportation, the implementation of environmental and social initiatives, as well as ensuring the efficiency of passenger transportation, as priority tasks (Order of the Cabinet of Ministers of Ukraine No. 430-р, 2018). Therefore, taking into account the environmental variability and different contingencies, the regulation and functioning of the passenger transportation market must be supervised constantly by both central and local authorities with the involvement of major business representatives in this area. Methodological approaches, covering a wide range of aspects, where economic, regulatory, technological, ecological, and social aspects are among the most important components, should be of great significance in the functioning of the passenger transportation market. These methodological approaches often interact with each other and may vary depending on the country, regional characteristics, and type of passenger transportation (air, bus, rail, etc.). Their integration contributes to ensuring efficient and stable functioning of the passenger transportation market with maximum comfort and safety for passengers.

From the perspective of economic methodological foundations of passenger transportation market functioning, it is expedient to single out two main approaches to the analysis of the passenger transportation market. The neoclassical approach, which is based on the principles of classical economic theory, in particular ideas about the rationality of market participants actions, competition, and making choices based on utility maximisation. Within the framework of this approach, market efficiency, the role of prices in the coordination of supply and demand for passenger transportation, emphasised by the research of V. Druzhinina & O. Chernikhova (2024), as well as the impact of various forms of competition on prices and service quality, reflected in the work of J. Chen *et al*. (2023), are in the focus of the research. The institutional approach, which determines the importance of institutional rules, regulating the passenger transportation market, is applied by S. Dombrovska (2020). Studies, conducted within this framework, pay attention to the influence of regulation, monopolies, or state-owned enterprises on market functioning, as well as to the role of legal institutions in protecting consumer rights and stimulating competition. It is worth mentioning that the study of the economic aspects of the passenger transportation market's functioning is a prerequisite for the analysis of political measures effectiveness in this field. From the scientific perspective, the analysis of the rationality of market participants actions in terms of the segmental division of the passenger transportation market made it possible to formulate the key methodological foundations of its functioning (Table 1).

Table 1. Approaches to the functioning of passenger transportation

Division by characteristics features / Type of transportation	Methodological foundations				
	economic	**regulatory**	**technological**	**environmental**	**social**
Air	airlines pricing policy, market competitiveness, income from additional services, economic efficiency of routes	aviation safety, regulatory requirements for the technical condition of aircraft, rules for passengers and baggage transportation, international regulations (standards) on international flights	modern navigation and communication systems on aircraft boards, introduction of flight automation systems, innovative developments in safety and energy efficiency, "smart" electronic tickets, registration and baggage handling systems, innovative technologies for passengers	reduction of CO_2 emissions and other pollutants, biofuel use, efficient engines, reduction of noise during take-offs and landings	accessibility for disabled, delay management and passenger service policies, safety and comfort initiatives
Railway	ticket prices, pricing strategies, seasonal and group discounts, revenues from commercial services, efficiency of logistics solutions, and transportation management	train traffic safety, transportation rules, vehicle and personnel certification standards	modernisation of electrified networks, implementation of train traffic control systems, use of information technologies for managing schedules and ticket systems, e-tickets, mobile applications	use of electric or hybrid locomotives, energy efficiency of power flow management, waste and noise management	accessibility for people with reduced mobility, passenger comfort and safety management policy, integration with infrastructure
Bus	tariff management, discounts for different categories of passengers, vehicle efficiency, routes optimisation	route regulation, passenger and staff safety requirements, time and safety regulations	innovative systems for monitoring routes, implementation of information technologies for creating routes, security, integration of mobile applications to improve passenger service	replacing diesel buses with electric or hybrid ones, introducing energy recovery technologies, reducing congestion and emissions	accessibility for all population categories, including youth, the elderly, and the disabled, road safety initiatives and improved service quality

Source: created by the authors

The functional aspects of the passenger transportation market from the standpoint of regulatory frameworks include price regulation as the most significant aspect, which is a part of economic prerequisites and is closely related to government regulation, where, following the experience of the United States, the passenger air transportation market changed radically after the weakening of air travel prices. One of the key stages was the deregulation of air transport in the USA in 1978 under the Aviation Deregulation Act, which abolished price and route fixing, studied in detail by S. Smerichevskyi & I. Mykhalchenko (2015), and allowed airlines to set prices on flights depending on market conditions and competition. Airlines became more flexible in managing their resources and capabilities, which has contributed to the overall improvement of service and availability of air transportation. The price weakness of air travel resulted in a significant development of the passenger air transportation market in the USA, and subsequently, it was reflected in other markets as well. It is worth mentioning that increased competition among airlines has spurred innovations in service, including more convenient schedules, new routes, and improved passenger service. It was deregulation in the US that became a transformative stage in air transportation, which enabled the market to undergo radical changes and adapt to new conditions, reducing prices and increasing the competitiveness of the main market players.

Based on the information presented in Table 1, it is worth mentioning that for a successful functioning of the passenger transportation market, a complex combination of all components is important, since without a proper regulation of the state and other relevant authorities, normal transportation is impossible, as well as with unsubstantiated economic grounds, passenger transportation will not be profitable, or without sufficient funding, it is impossible to implement innovations or social initiatives. Thus, when developing a methodology for the functioning of the passenger transportation market, the basic components should be taken into account (Fig. 1).

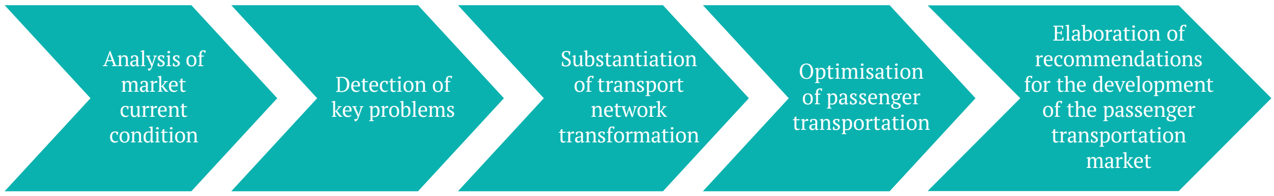

Figure 1. Suggested components of methodological foundations for the passenger transportation market
Source: created by the authors

Therefore, the effective functioning of the passenger transportation market in Ukraine, like in any other country, should be based on key aspects, such as: ensuring free access to the market for various carriers, i.e., liberalisation and competition; clear regulation and standardisation of safety, service quality, passenger rights, and other aspects of carrier activity; investments in the development and maintenance of infrastructure (roads, railways, airports) and the introduction of modern technologies (e-tickets, monitoring systems, etc.); cooperation between state authorities, private companies, and the public, that is, all stakeholders in the field of passenger transportation. In comparison with the world Transportation industry standards (2024), Ukraine is actively carrying out reforms in the field of transport infrastructure and transportation, in particular bringing its practices closer to European standards (Order of the State Aviation Service of Ukraine No. 1239, 2018). However, there are certain challenges, such as the need for further infrastructure modernisation and optimisation of traffic flow management, which remain relevant for the further development and improvement of the passenger transportation system in Ukraine.

The pandemic and the war in Ukraine significantly affected the transportation market, where air flights were completely suspended with the start of hostilities and rail and bus transportation underwent significant transformations. According to a study conducted by the Kyiv School of Economics, the total amount of damage caused to Ukraine was estimated at 155 billion dollars, 3.1 billion of which fell on transport in January 2024 ($155 billion..., 2024). According to the Kyiv School of Economics, aviation infrastructure suffered the most damage; first of all, 19 out of 35 airfields were destroyed, followed by the destruction of transport highways and railway tracks (Report on damages..., 2024). The preliminary estimated number of damages to the aviation industry (in particular, airports, runways, planes, and equipment) is estimated at 2.04 billion dollars, the automobile industry – 26.7 billion dollars, and the railway industry at direct costs of more than 4.3 billion dollars. The war in Ukraine led to an increase in the cost of passenger transportation, where rail fares increased by almost 20% in certain periods (Economic forecasts..., 2024). Table 2 presents a summary of losses for each segment by region of Ukraine.

Table 2. Indicators of the level of economic security of Ukraine by components (percentage of the optimum value)

Region / Damage	Roads, %	Bridges, %	Railways, %
Zhytomyr	< 1	3	< 1
Kyiv	6	11	< 1
Chernihiv	6	9	< 1
Sumy	6	3	1
Kharkiv	22	12	15
Luhansk	11	10	9

Table 2, Continued

Damage Region	Roads, %	Bridges, %	Railways, %
Donetsk	14	11	36
Zaporizhzhia	17	4	23
Kherson	12	28	10
Mykolaiv	7	7	1

Source: created by the authors based on Report on damages to infrastructure from the destruction caused by Russia's military aggression against Ukraine as of January 2024 (2024)

As of 2024, it is difficult to estimate the cost of damage to vehicles, which are accounted for by corresponding authorities; however, as the airline industry reports, the cost of the "Mriya" aircraft is 300 billion dollars, and according to experts, the cost of a new aircraft will be much higher (Report on damages..., 2024). According to the research conducted by the World Bank (2024), the development rate of Ukraine's economy is expected to slow down to 3.2 in 2024 (for comparison, in 2023, the growth rate was 4.8%), and the number of damages and necessary needs during 2024-2033 is estimated at 486 billion dollars, 33.6 billion dollars of which is for transport infrastructure (The World Bank in Ukraine, 2024). At the same time, work is constantly being carried out on the restoration of transport connections, and road and railway connections were repaired in Kharkiv, Chernihiv, Kyiv, and Sumy regions during 2022-2023. During this time, 115 roads were reconstructed, almost 30 roads, and more than 45 railway bridges were built. According to the World Bank (2024), although Ukrainian enterprises have suffered serious losses, they remain quite resistant to the war impact on business activity (Table 3). In order to objectify the war impact in Ukraine on the passenger transportation market, we will analyse and compare the passenger flow before and during the war (Fig. 2).

Table 3. Enterprise operation in wartime

Characteristics	Performance, %			
	Not operating	Temporarily not operating	Partly operating	Constantly operating
Stability	3	18	20	59
	Use of information and communication technologies, %			
Adaptability	Improved the quality of goods/services	Created a new product/service	Work with new clients	Greater use of ICT
	17	17	34	39
	Repair and restoration of critical infrastructure and services, country/association			
International cooperation	Administrative and fiscal support	Restoration of critical infrastructure and services	Administrative and fiscal support and restoration of critical infrastructure	Support of private business
	Finland, Denmark, Great Britain, the USA	Canada, Republic of Korea	Belgium, Iceland, Latvia, Lithuania, Austria, Sweden, Switzerland, Germany, Spain, Netherlands, Norway, Japan	The EU, World Bank, Switzerland, Netherlands, Norway

Source: created by the authors based on World Bank (2024)

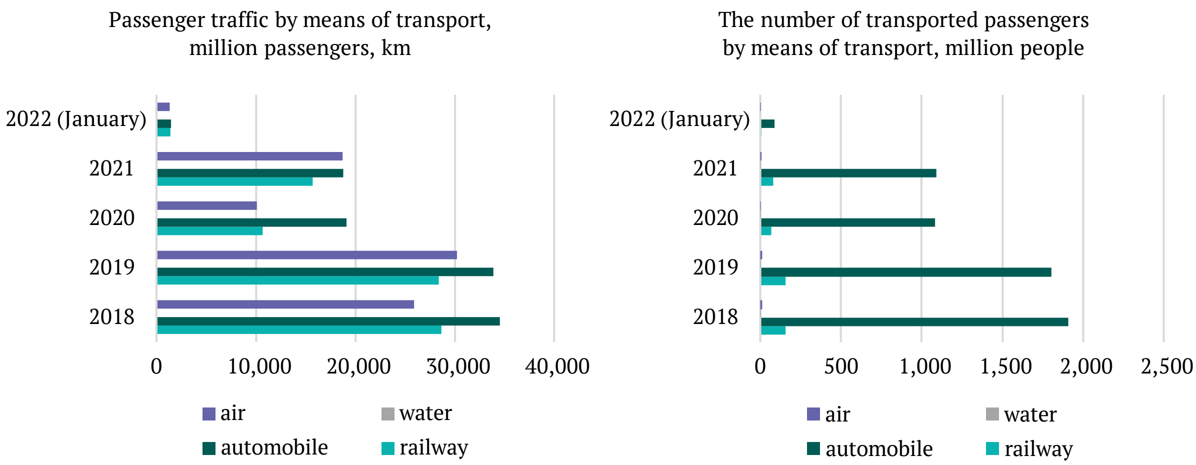

Figure 2. Dynamics of passenger transportation in Ukraine, 2018-2022
Source: created by the authors based on The number of transported passengers by means of transport (2022)

In 2022, the total number of passengers transported by all means of transport amounted to 1,600.6 million people; in 2023, this number reached 2,039.4 million people. Regarding the final data, it is appropriate to take into account the fact that due to the war, a significant number of people were forced to leave, using various types of transport, so the statistical data may vary at the moment. The war led to negative consequences in all spheres of the economy and people's lives, including the reduction of transportation. During the war in Ukraine, rail transportation turned to be relevant and enabled people to leave the territories where hostilities were taking place. Although the final statistical data for the first half of 2024 have not been published for all segments of passenger transportation, it is advisable to build relationships between air, bus, and rail passenger transportation in the conditions of war in Ukraine to understand the real situation. Their construction, from the perspective of a methodological approach, provides for a comprehensive approach, which should include an analysis of the war impact on each of these types of transport, their interaction, and statistical information on changes in passenger traffic. A visual representation of the relationships between the three types of passenger transportation is presented in Figure 3.

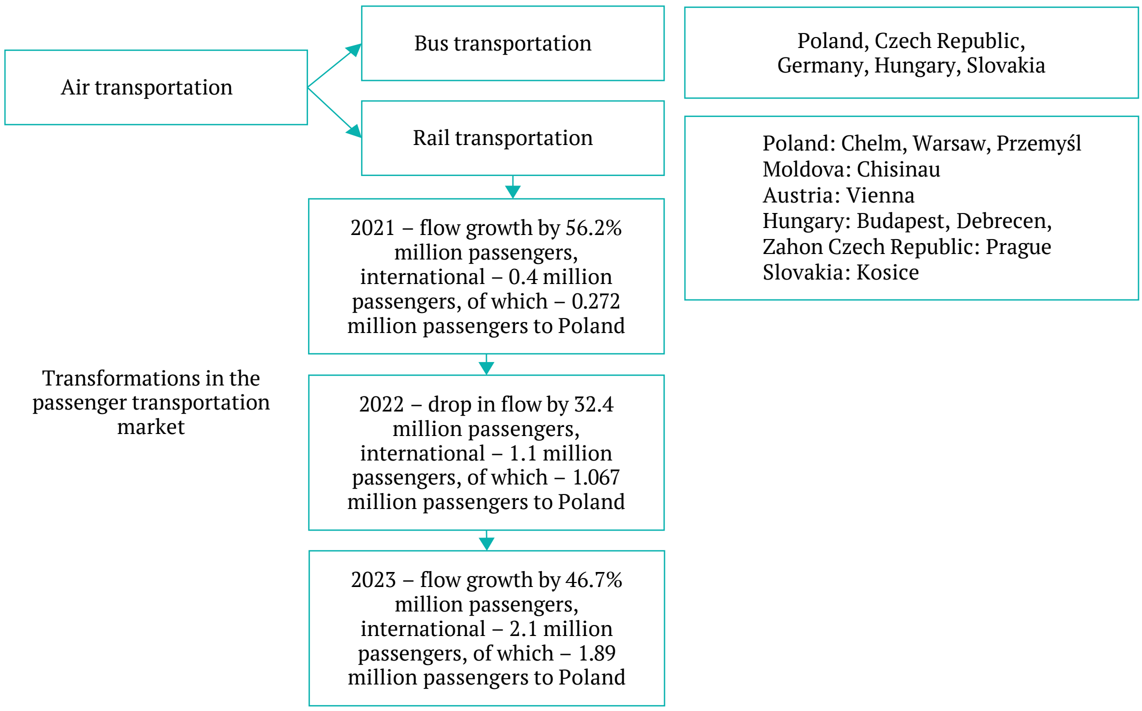

Figure 3. Transformations in the market of passenger transportation in Ukraine

Source: created by the authors

Due to restrictions on air travel, the demand for bus and rail transportation has increased significantly, particularly for international routes that cannot be covered by airline service. Table 4 reveals changes in Ukrainians' visits to other countries, giving evidence for tourism in 2021 and dominance of tourist destinations.

Table 4. Peculiarities of passenger transportation, 2021 – H1 2024

Type	2021	2022	2023	H1 2024
Air	Turkey, Egypt	suspended	suspended	suspended
Bus	Turkey, Bulgaria, Montenegro	Poland, Moldova	Germany, Poland, Czech Republic, Austria, Netherlands	Poland, Czech Republic, Germany, Hungary, Slovakia
Railway	EU countries	Poland	Poland	EU countries
Peculiarities	65% of air transportation	over 95% of rail and bus transportation	100 % of rail and bus transportation	100 % of rail and bus transportation

Source: created by the authors

If to consider global trends, the most significant negative impact was caused by the pandemic, for example, the reduction of global passenger traffic by 65.8% in 2020; however, already the following year there was an increase in the flow by 64.3% (Annual growth..., 2024). Bus transportation has also undergone changes under the influence of COVID-19. However, the war in Ukraine also contributed to the reduction in the number of passengers travelling by bus. With a 1% reduction in the volume of passenger traffic in 2022, demand is forecast to grow by 18.32% in 2024 with an increase in the number of passengers to over 620 million people in 2030 (Number of users…, 2024). As far as rail passenger transportation is concerned, a stable upward trend has been observed since 2017, with 970 million passengers using this type of transport around the world in 2023 (Worldwide number…, 2024).

In view of the rapid development of technologies in the world, such as electronic platforms for transportation management and innovations in vehicles, as well as the devastating impact of the war in Ukraine on passenger transportation, arises the need to constantly review and update management strategies. To improve the functioning of the passenger transportation market, it is firstly necessary to strengthen the adaptability of transport systems to crisis situations by developing flexible management models and preserving critical transport routes. Second, it is important to invest in infrastructure modernisation and the introduction of new technologies, such as autonomous vehicles and traffic management systems, to increase the efficiency and safety of transportation and reduce risks, including the implementation of additional security measures and evacuation plans. Third, the focus should be on integration of different means of transport into a single digital platform to improve accessibility and coordination of transport, which will be particularly relevant after the end of the war. Moreover, it is necessary to develop strategies to reduce the environmental impact, including the transition to electric and hybrid vehicles. Equally important is the creation of support programs for conflict-affected regions, which will ensure the continuous maintenance and restoration of transport services. Finally, it is necessary to take into account new consumer preferences, focusing on the service customisation and the improvement of communication through digital channels in order to respond to modern challenges and needs.

DISCUSSION

The condition and development of the passenger transportation market is a topical issue, requiring new approaches both to its functioning and consideration of new trends and changes taking place in the external environment. It is particularly worth mentioning that in the conditions of constant changes resulting from technological progress and global challenges, such as war and climate change, the implementation of strategic development and interaction of all stakeholders in the field of passenger transportation market functioning is an important issue of scientific findings. The conducted analysis of the war impact on passenger transportation makes it possible to understand the overall situation on the corresponding market. However, in the future, it is expedient to establish economic dependencies of the war impact on passenger transportation. R.K. Akamavi *et al*. (2023) made attempts to conduct such an analysis, thoroughly examining the impact of wars, terrorism, and political instability on tourism. In this study, the authors assess both direct threats and consequences of negative events, as well as analyse indirect and derivative consequences of such effects. According to the research carried out by A.M. Martins & S. Cró (2024), whose approach is supported in the study on the war impact on all participants in passenger transportation, the war in Ukraine has quite significantly transformed market participants in the field of air transportation, where, from an economic point of view, quite serious losses have been incurred by airlines, whose market value was significantly reduced.

The destruction of the transport infrastructure in Ukraine led to the redistribution of the tourist flow, which is revealed by C. Chu *et al*. (2024). The authors fairly and reasonably point out that many participants were affected, some of whom were even forced to completely suspend flights, while others saw an increase in the cost of transportation, which also negatively affected tourists. At the same time, in some airports, which are the closest to the war territory or military conflicts, the situation with air transportation is improving, which was reflected by Á. Kovács *et al*. (2024) in their scientific paper. Agreeing with A. Borucka & E. Kozłowski (2024) approach regarding the need to quantify the war impact on transportation, further work in this direction is required. After all, using mathematical tools, the authors of this research draw attention to the validity of the obtained results, which can be used when making forecasts and taken into account when determining and implementing the appropriate strategy. Comparing the conducted research with the scientific papers mentioned above, it is worth pointing out that all of them are aimed at determining the war impact on the passenger transportation sector, since the understanding of these processes can be useful for developing recommendations that will be important from a practical perspective.

The issues of the dependence of the country's economic growth on the level of transport infrastructure development provide for further investigation and are within the focus of F. Zhang & D.J. Graham (2020) work, where the interaction channels of air transport with the economy of the region have been summarised. A. Raihan *et al*. (2024) point out in their study it is airlines that have a significant impact on the economy both through population employment and provision of tourist demand through the introduction of new flight programs. To support the idea of transport impact on the tourism development, A. Papatheodorou (2021) provides information of a tourist choosing a flight program not to fly but to get to a tourist destination. At the same time, the issue of the environmental aspect in the vehicle operation is strongly highlighted in the scientific literature, in particular in M.Y. Salman & H. Hasar (2023) research, which should become a part of the strategic activity of both airlines and providers of bus, rail, or sea transportation, which was also emphasised in the work through the lens of methodological foundations and necessary components. Emphasis on strategic importance through the lens of environmental sustainability for the transportation sector is also carried out by A. Aytekin *et al*. (2024), believing that identifying factors, affecting demand in the field of transportation and creating an appropriate strategy, providing for compiling the necessary components, are among the most important issues.

The integration of digital technologies into all aspects of the passenger transportation market deserves special attention, as these technologies have a significant potential to significantly improve the efficiency, safety, and convenience of transportation, in particular through the introduction of modern traffic management systems, the development of mobile applications for convenient travel planning and ticket purchase, as well as using big data analytics to optimise routes and schedules. Since transportation is a part of the tourism sphere, the issues of their interaction, state support, and implementation of innovative digital solutions become relevant, as highlighted by F. Ekici *et al*. (2022). The use of modern digital solutions makes passenger transportation efficient, where, according to V. Ishchenko & V. Kharuta (2024), as the comparative analysis of projects in the field of passenger transportation suggests, the introduction of innovations plays a significant role. The importance of implementing digital solutions in the field of tourism and transportation is highlighted by G.G. Şahin (2024), considering the integration between these areas as a key to success. It is also worth considering A.A. Yilmaz (2024) work, suggesting the development of transport connections for a successful functioning of the tourism sector and the implementation of a digital strategy as a necessary component for their efficiency.

Within the framework of the conducted research, the issues of digital solutions were only partly considered, in particular from the standpoint of their importance in this area, however, the main attention was paid to the development of methodological approaches to the functioning of the passenger transportation market, the interpretation of war consequences for Ukraine, and the development of authors' proposals for the functioning of this market, taking into account management. Comprehensiveness in the functioning and development of the passenger transportation market provides for in-depth scientific research with actualising the key problems of air, bus, rail, and other types of transportation with the development of effective mechanisms for solving them and effective proposals to strengthen the competitiveness of interested parties.

CONCLUSIONS

In the course of the research, it was discovered that transformational processes in the world and in Ukraine led to significant changes in the passenger transportation market, where the COVID-19 pandemic and the war in Ukraine were the most significant factors of change. The analysis of the fundamentals of the functioning of the transportation market made it possible to identify key issues that need to be settled and improved. For a successful functioning of the passenger transportation market, it is proposed to take into account the economic, regulatory, technological, ecological, and social components, indicating the methodological bases of each for air, bus, and rail transportation. It was found out that for a successful functioning of the passenger transportation market, it is necessary to analyse the current state for each type of transport, identify key problems in the relevant segment, and, as a whole, carry out transformation and optimisation of passenger transportation with further elaboration of recommendations for improving the condition, as well as the development, given changes in the external environment and the impact of digital technologies. The key aspects that should be taken into account when making changes in the functioning of the passenger transportation market have been suggested, in particular the issues of effective pricing policy, security of both passengers and personal data, technological capabilities of each type of passenger transportation, mobility, and availability, for people of different categories, where sustainability, adaptability and international cooperation should also play a significant role.

The regional analysis of damage and destruction made it possible to identify the most affected regions, such as Kharkiv, Kherson, Zaporizhzhia, Luhansk, and Donetsk regions, specifying losses incurred by each means of transport. The highest percentage of destroyed roads is observed in Kharkiv Region, destroyed bridges are in Kherson Region (28%), and railways are in Donetsk Region, which accounts for 36% of their total number. To assess the impact of the war in Ukraine on air, bus, and rail passenger transportation, their dynamics during 2018 and the first half of 2024 were analysed, and the main structural changes in each type of transportation were determined. The transformational changes that took place in the passenger transportation market and the main countries to which Ukrainians travelled from 2021 to the first half of 2024 have been presented. Under the influence of the war, the flow of passengers from the airline segment in Ukraine was distributed mostly between bus and rail transport, with Poland, Moldova, and Hungary being the most popular countries. This can be explained by the availability of airports in these countries, which makes them attractive for vacation among Ukrainian tourists. Comparing the main destinations of the Ukrainians in 2021, such countries as Turkey, Egypt, and Montenegro were among the vacation favourites, whereas from 2022 the focus of choosing a country was shifted to Poland, Moldova, Germany, the Czech Republic and Slovakia. Global trends in the passenger transportation market have been considered. The closure of airspace and the destruction of airports, highways, and railway connections require effective efforts and investments for the development of transport infrastructure, which is a part of the economy and a significant component of the tourism sector. Therefore, the prospect of further scientific research will be the study of the economic and socio-ecological impact of the war on the development of passenger transportation and tourism with the construction of corresponding mathematical forecasts and models, as well as the issue of implementing digital technological solutions for the development of passenger transportation.

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None.

CONFLICT OF INTEREST

None.

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Методологічні підходи до функціонування ринку пасажирських перевезень: авіаційний, автобусний та залізничний сегменти

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Анотація. Пасажирські перевезення відіграють критичну роль у забезпеченні ефективного функціонування економіки, оскільки вони забезпечують мобільність робочої сили, доступ до ринків, культурних та соціальних послуг, розвитку міжнародного туризму та сприяють соціальній інтеграції. Відповідно метою дослідження був аналіз методологічних основ функціонування ринку пасажирських перевезень та оцінка впливу війни на стан і розвиток авіаційного, автобусного та залізничного пасажирських перевезень. За допомогою бібліографічного методу в роботі проаналізовані ключові наукові праці з метою дослідження теоретичного базису та визначення проблемних питань, які потребують удосконалення та розвитку. Використовуючи метод узагальнення, було визначено та узагальнено провідні організації, які забезпечують функціонування ринку пасажирських перевезень, сформульовано загальні принципи його функціонування. Запропоновано методологічні підходи до авіаційного, автобусного та залізничного видів пасажирських перевезень у контексті економічних, регуляторних, технологічних, екологічних і соціальних основ, для чого було використано методи компаративних зіставлень і групування. Встановлено необхідні блоки ефективного функціонування ринку пасажирських перевезень із групування найбільш значимих аспектів, таких як лібералізація та конкуренція, державне регулювання та стандартизація, інвестиції й інновації, а також результативна співпраця між стейкхолдерами у сфері пасажирських перевезень. Розглянуто вплив війни на авіаційні, автобусні та залізничні пасажирські перевезення через призму завданих збитків, обсягів руйнувань, необхідного відновлення та скорочення пасажиропотоку зі застосуванням табличного та графічного методів. Сформульовано особливості роботи підприємств в умовах війни з виділенням стратегічно важливих ознак функціонування та розвитку, а також виявлено патерни в пасажирських перевезеннях через призму застосування методу контент-аналізу. Результати дослідження можуть бути корисними фахівцям у сфері пасажирських перевезень та туризму під час аналізу ринку пасажирських перевезень, формування стратегій та врахування тенденцій розвитку

Ключові слова: туризм; транспортне сполучення; авіакомпанія; турист; цифрові технології; інформаційно-комунікаційні технології; стратегія

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