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Methodological approaches to the management of retail and leisure centres in conditions of uncertainty: Crisis-resilient and adaptive strategies

Abstract. The study aimed to identify effective management models for shopping and entertainment centres based on an analysis of the interaction between the asset, tenant and visitor flow subsystems. The methodology included a comparative analysis of management strategies for shopping and entertainment centres, a systematic approach, and conceptual modelling. The main findings of the study are the formation of a comprehensive interpretation of the shopping and entertainment centre as an open, adaptive socio-economic system, the functioning of which is determined by the interaction of three key subsystems: asset management, tenant management and visitor flow management. During the study, the system of factors influencing shopping and entertainment centres was structured for the first time into five interrelated groups – macroeconomic, behavioural, urban, technological and social – which made it possible to substantiate the multidimensional nature of the environment in which they operate. It was found that the defining trend in their development is the transformation of their function from predominantly retail to a comprehensive one – with a focus on experience, leisure and services. As a result of a comparative analysis of management strategies, three basic types have been identified – traditional, adaptive and anti-crisis – and their fundamental differences have been established in terms of management logic, level of flexibility, rental policy and ability to respond to changes in the environment. The study demonstrated that the operational effectiveness of shopping and entertainment centres depends not on the use of a single strategy, but on the ability to combine strategies depending on the level of uncertainty. Within the scope of the study, conceptual models for managing the subsystems of shopping and entertainment centres have been developed, in particular an asset management model based on a combination of occupancy, profitability and spatial efficiency indicators; a tenant management model, which involves forming a balanced tenant structure taking into account their role in generating footfall; a visitor flow management model that takes into account consumer behaviour patterns and the spatial organisation of the facility. The practical significance of the study lies in the possibility of using the developed approaches and models to optimise the management of shopping and entertainment

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centres, particularly in the areas of formulating rental policy, managing tenant mix, spatial planning and analysing visitor behaviour

Keywords: letting policy; visitor behaviour; tenant mix; spatial layout; cost-effectiveness

INTRODUCTION

In an unstable economic environment, characterised by shifts in consumer behaviour, security risks and intense competition, the management of shopping and entertainment centres (SECs) requires flexible and effective decision-making approaches. Uncertainty affects footfall, financial performance, tenancy relationships, logistics and the organisation of service processes, requiring a swift response to external and internal challenges. Anti-crisis and adaptive strategies aimed at maintaining operational stability, retaining customer loyalty, improving resource efficiency and securing competitive advantages are becoming increasingly relevant. Research into methodological approaches to the management of shopping and entertainment centres makes it possible to identify effective tools for strategic development and to formulate practical solutions for the operation of enterprises in a changing environment. The management of retail and leisure centres in times of uncertainty is increasingly focused on combining economic performance, flexible service and the ability to respond quickly to changes in consumer behaviour. In this regard, A. Khalifavi *et al.* (2023) investigated the success indicators of commercial centres in the process of organising leisure-shopping spaces. The authors analysed the functional characteristics of retail properties and demonstrated that combining shopping and leisure enhances the centre's appeal, the length of visitors' stays and revenue levels. The effectiveness of management decisions also depends on a focus on the needs of a family audience, as highlighted by M. Junaid *et al.* (2024), who analysed the components of the family shopping experience and the principles for creating family-friendly shopping centres. The study demonstrates that easy navigation, safe rest areas and services for children enhance visitor loyalty and encourage repeat visits. Alongside service solutions, the indoor environmental parameters of buildings are substantial. This assertion was confirmed by X. Zang *et al.* (2023), who investigated the impact of different functional zones on customer thermal comfort in shopping centres in Northern China. Optimising the microclimate within specific zones of the centres will allow for the improvement of the perception of the space and of the experience of the visitors themselves. Such approaches to management include issues related to partnership and territorial development models. For example, R. Kirk (2023) examined how lifestyle centres are the new stage in the evolution of retail property. His work investigated the governance of these retail properties and the role of partnerships between public and private entities. He found that aligning the interests of business, government and the community increased the resilience of retail properties in the face of market fluctuations. Furthermore, the ability to accurately forecast sales during periods of economic crisis is crucial for such properties. H.-J. Kim *et al.* (2023) investigated models for forecasting offline sales during the pandemic, using a South Korean shopping centre as a case study. The use of analytical models can be used for the timely adjustment of marketing activities, stock levels and financial planning. Adaptive management also involves optimising the operating costs of facilities. G. Ramkumar *et al.* (2025) investigated improvements to the thermal management of multi-zone air-conditioning systems in a shopping centre. The application of intelligent control algorithms reduces energy consumption and improves operational efficiency. Optimisation was achieved through the automated analysis of temperature readings in various functional areas of the building, the forecasting of thermal loads, and the dynamic adjustment of cooling settings following visitor numbers, the time of day, and the intensity of use of the premises.

Despite the arguments put forward by the authors mentioned above, there remain gaps in the academic literature regarding a comprehensiv

justification of methodological approaches to the management of retail and leisure centres in conditions of uncertainty. The mechanism for combining anti-crisis measures with long-term adaptive strategies remain insufficiently explored, as do the tools for rapid response to changes in consumer behaviour, security risks and market fluctuations. Models for integrating digital analytics, scenario planning, resource optimisation and customer-centric management require further development to ensure the sustainable operation of such centres. The aim of the study was to examine how asset-related, tenant-related and visitor-related components interact within retail and entertainment centres and to define management approaches capable of adapting to changing market and functional conditions. The objectives of the study were to summarise theoretical approaches to analysis of shopping and entertainment centres and their structural organisation; to compare management strategies for shopping and entertainment centres and identify their differences under various operating conditions; and to substantiate models for managing key subsystems of shopping and entertainment centres and their interrelationships.

MATERIALS AND METHODS

The methodological framework of the study comprises systems analysis, comparative analysis, the structural-functional approach, and the method of conceptual modelling. The combination of these methods was used for a comprehensive examination of shopping and entertainment centres as complex open socio-economic systems operating in a multidimensional and dynamic external environment and characterised by an internal multi-level structure. Within the framework of systems analysis, a decomposition of shopping and entertainment centres as open dynamic systems has been carried out. Attention was paid to identifying external and internal interrelationships, as well as the mechanisms of their mutual influence. The system's external environment was structured using factor classification. This classification made it possible to systematise the sources of uncertainty affecting the functioning of shopping centres, prioritise different types of risks, and fully account for the specifics of martial law in Ukraine, in particular the risks of physical destruction of facilities, logistical disruptions in the supply of goods, supply chain disruptions, and demographic shifts caused by internal and external population migration. A systematic analysis of the shopping centre was conducted based on the principle of decomposing the integrated socio-economic system into interrelated subsystems (asset management, tenant management and visitor flow management), followed by an examination of their functions, interrelationships and feedback loops within a single management mechanism. A comparative analysis was used to classify management strategies for shopping centres. The strategies were categorised into three main types: traditional, adaptive and crisis-response. The criteria for this classification were the level of stability of the external environment and the degree of adaptability of the management system. The criteria for the comparative analysis included management logic, letting policy, tenant mix, visitor behaviour and spatial planning, as these parameters reflect the interconnection between the economic, spatial and behavioural levels of shopping centre operation. Their selection is justified by the fact that they directly determine the shopping and entertainment centre's adaptability to changes in the external environment, the effectiveness of revenue generation, and the stability of visitor flows. This approach made it possible to identify differences between strategies, determine the conditions for their effective application, and justify the need for the combined use of different management models depending on the level of uncertainty. A structural-functional approach was used for a detailed analysis of the internal organisation of the shopping and entertainment centre. The internal structure of the system was decomposed according to criteria of functional interaction into three key subsystems, namely asset management, tenant management and visitor flow management.

The conceptual model of shopping centre management was operationalised through a system of quantitative indicators for the three subsystems: assets, tenants and visitor flows. For the asset subsystem, the key indicators are

defined as the occupancy rate (%) = (occupied area/total area) × 100, income per m^2 (Net Operating Income (NOI)/m^2, in monetary terms) and the vacancy rate (%) = (vacant area/total area) × 100; occupancy rates of ≥90%, vacancy rates of ≤5% and stable NOI were considered normal, whilst a drop in occupancy below 80% or a vacancy rate exceeding 15% triggered a review of rental rates and optimisation of space utilisation. For the tenant subsystem, the following indicators were used: tenant mix structure (% share of tenant categories), average lease term (months) and rental income per tenant; a single category's dominance of ≤40% was defined as the acceptable norm, whilst exceeding 50% required a rotation of the tenant mix, the introduction of new formats and a review of the commercial strategy. For the visitor flow subsystem, the following metrics were applied: throughput (people/hour), conversion rate (%) = (buyers/visitors) × 100, and average spend (in monetary units); a conversion rate of ≥25-30% was considered the standard, whereas a drop below 20% or a decline in traffic of more than 30% required adjustments to circulation routes, marketing incentives and the reorganisation of zones. Functional dependencies of both direct and cascading types exist between the subsystems: changes in visitor flows directly affect tenants' profitability, which in turn determines the occupancy rate of the assets and the need to review the letting policy; Similarly, an imbalance in the tenant mix alters the structure of demand and transforms behavioural patterns, requiring the spatial layout of the shopping centre to be adapted. The conceptual modelling method has become the primary tool for formalising the management subsystems of shopping centres.

The modelling process analysed key aspects of shopping centre operations, namely: asset management, tenant mix and visitor flows, which together form an integrated system of spatial, commercial and behavioural interactions. The expected outcome of the modelling is to identify mechanisms for transitioning between management strategies and to justify adaptive and anti-crisis tools for ensuring the sustainability of shopping centres under conditions of varying levels of uncertainty. The mechanisms of interaction between the shopping centre's subsystems were based on a system of feedback loops between asset management, tenant structure and visitor flows, where changes in one element triggered chain reactions in the others. External factors (macroeconomic, behavioural, urban and security) were integrated into the models as environmental variables that influenced the parameters of each subsystem and determined the level of adaptability of management decisions. Thus, the chosen methodological toolkit ensures the necessary systematic approach, comprehensiveness and scientific rigour of the analysis conducted.

RESULTS

Shopping and entertainment centres are among the most complex elements of urban commercial infrastructure, having emerged as a result of the evolution of the retail sector and the transformation of consumption patterns. The emergence of shopping and entertainment centres is linked to the shift from traditional shops to multi-functional spaces that cater to economic, recreational, social and cultural functions. In Ukraine in particular, these spaces have taken on additional functions and are transforming into multifunctional hubs of urban life (Nesterova & Brynzylo, 2024). The specific management of shopping and entertainment centres in Ukraine is influenced by the state of war in the country. The war has created a drastic level of uncertainty for the region and introduced a series of unique risks to these shopping and entertainment spaces. These risks include the threat of physical damage or destruction of these facilities due to shelling, the need to organise the evacuation of visitors during air raid alerts, the disruption of supply chains for logistics and the shift of the region's demographics due to population migration (Brynzylo, 2025). Due to these factors, traditional management methods have been proven to be insufficiently effective in managing these spaces, instead focusing on methods and strategies that aim to ensure the safety of individuals visiting the shopping and entertainment centres, the ability to restructure the activities occurring within the facilities and to preserve their economic viability. In order to address these challenges, it is necessary to diversify the

functions of shopping centres and to transform them into multi-functional hubs. According to S. Büyükşahin (2023), a multi-functional hub includes various functions beyond shopping and entertainment, such as commercial, social, cultural, educational, recreational and even humanitarian functions. Such a hub will become a site for social interaction, temporary accommodation, psychological relief and even educational and voluntary initiatives. The transformation of shopping centres into multifunctional hubs will provide them with a stabilising function during the crisis (Sepe, 2025). This will enhance their social significance for society and provide them with stability during difficult periods, as well as provide additional sources of income for these shopping and entertainment centres. Thus, shopping and entertainment centres in Ukraine are transitioning from a function that provides primarily economic benefits to a facility that serves a variety of social and security functions for the community, requiring new approaches to managing these spaces.

Beyond the concentration of various types of business within these centres is the interaction between those businesses, creating a synergistic effect in the attraction of visitors to the shopping and entertainment centre. The retail component of these shopping and entertainment centres contributes to the turnover of the centre and creates rental income for those who own the shopping and entertainment centre. The retail component is established upon the principles of commercial efficiency in that the main function of retail spaces within these shopping and entertainment centres is to create rental income through the letting of the commercial space. The entertainment component of these shopping and entertainment centres is established with the intention of creating emotional and behavioural engagement of the consumers of those spaces and products. Examples of these entertainment spaces include cinemas, children's entertainment zones, play areas, restaurants, food courts and other areas established for the provision of leisure activities for the visitors of the shopping and entertainment centre (Saidi *et al.*, 2026). While the main economic function of these areas is indirect, the entertainment component of these shopping and entertainment centres influences the length of the visit of the consumers of those spaces. Thus, these shopping and entertainment centres are not merely real estate developments but contain a socio-economic system that includes the commercial interests of the owners of the shopping and entertainment centre, the business interests of the tenants of the shopping and entertainment centre, and the behavioural system of the visitors of that location. The combination of these systems is what necessitates the study of these shopping and entertainment centres.

Furthermore, a shopping and entertainment centre is understood as an open, dynamic system, in constant interaction with its external environment. This environment includes macro-economic conditions, household income levels, demographic changes, development of e-commerce, urbanisation processes and changes in consumer habits. All these factors contribute to a high level of uncertainty that directly affects the operational efficiency of the shopping and entertainment centre (Ruth, 2024). The internal structure of the shopping and entertainment centre is multi-layered, and can be divided into three key subsystems: asset management, tenant management and visitor flow management. Such a decomposition transforms the analysis from a complex and holistic entity to a structured set of interrelated elements, each of which has a distinct functional role (Baghaee *et al.*, 2021). Asset management is the system for organising and using the centre's spatial and physical resources. This includes commercial premises, infrastructure facilities, logistics sites, car parks and common areas. As noted by M. Heptig (2023), the main function of this subsystem is to optimise the utilisation of space in terms of profitability, accessibility and investment value. Tenant management refers to the process of forming, structuring, and maintaining the commercial mix of a shopping and entertainment centre. This involves selecting the tenants that will operate within the shopping and entertainment centre, creating an optimal mix of such tenants, and regulating and maintaining the tenancy relationships within the shopping and entertainment centre (Chantarayukol, 2019). The tenant management subsystem determines the commercial profile

of a shopping and entertainment centre. Visitor flow management relates to the behavioural dimension of the operations of a shopping and entertainment centre. This subsystem involves analysing the number of visitors to a shopping and entertainment centre, the movements of these visitors within the shopping and entertainment centre, and the reactions of the visitors to the changes that occur within the shopping and entertainment centre. This management subsystem determines the operational effectiveness of the shopping and entertainment centre. According to S. Baghaee *et al.* (2021), the management of shopping and entertainment centre subsystems are interrelated. Each of these subsystems is interconnected with each of the others. For instance, changing the mix of tenants operating within a shopping and entertainment centre will impact the visitor patterns within that shopping and entertainment centre, which can impact the efficiency of the utilisation of the assets of that shopping and entertainment centre. These interrelationships between the different management subsystems create a single functioning mechanism within the shopping and entertainment centre that has numerous feedback loops that impact its development. Based on this approach, a transition is made to the analysis of management strategies for retail and leisure centres, which can be categorised according to their degree of stability and adaptability to the external environment. To this end, a comparative analysis was conducted, enabling a comparison of different types of management models; the results are presented in Table 1.

Table 1. A comparative analysis of management strategies for shopping centres

Parameter	Traditional strategy (stable environment)	Adaptive strategy (unstable environment)	Crisis management strategy (crisis environment)
Level of uncertainty and transition criteria	Occupancy rate ≥90%; footfall fluctuation ≤5%; stable external environment with no significant shocks	Occupancy rates of 75-89%; footfall fluctuations of 10-20%; changes in consumer behaviour and some volatility in demand	Occupancy rate <75%; drop in footfall >30%; disruption to operations or security threats
System status indicators (control signals)	Footfall is stable (±5%); vacancy rate ≤5%; NOI is stable; the tenant mix is balanced (no single category accounts for more than 40%)	Fluctuations in footfall of 10-25%; vacancy rates of 5-15%; changes in average spend of ±10-15%; dominance of a single category up to 45%	A drop in footfall of >30-50%; a vacancy rate of >20%; a decline in NOI; a single category accounting for >50% of the total
Leasing policy of the shopping centre	Long-term leases (3-5 years), fixed rents, low tenant turnover	Flexible contracts, a hybrid model (fixed fee + percentage of turnover), shorter terms (1-3 years)	Temporary agreements (up to 12 months), rent relief, and bespoke anti-crisis rates
Spatial layout of the shopping centre	Consistent functional zoning (retail/food/entertainment)	Partial conversion of areas (up to 20-30%), pop-up formats, temporary reconfiguration	Conservation or closure of areas (up to 40-60%), repurposing for core functions
Visitor flow management	Static flow planning, basic traffic zoning	Dynamic traffic management (heat maps, route analytics), traffic redistribution	Restricted access to certain areas, controlled traffic routes, safety first
Marketing tools for shopping centres	Mass advertising campaigns, standard loyalty schemes	Personalised digital marketing, audience segmentation, promotional campaigns	Crisis communication, information support, maintaining core demand
Tenant mix	Diversified structure: no category >40%	Partial concentration: up to 45-50% of a single category	Dominance of essential services (pharmacies, groceries): >50%
Key management tools for shopping centres	Planned yield management, strategic budgeting	Operational, data-driven, scenario-based planning	Crisis management, cost minimisation, liquidity protection

Source: compiled by the author based on S. Burnaz & Y.I. Topcu (2011), C.Y. Yiu & S.Y.S. Xu (2012), Y. Xu *et al.* (2022), Z. Wu *et al.* (2023)

A comparative analysis of management strategies for retail and leisure centres has shown that the traditional model operates in a stable environment, where occupancy rates exceed 90%, footfall fluctuations do not exceed 5%, and the tenant mix remains balanced (the share of any single category of tenants does not exceed 40%). Under such conditions, long-term lease agreements, fixed rates and a stable spatial layout without significant changes to functional zoning are applied. The adaptive strategy is implemented in conditions of heightened uncertainty, when occupancy rates fall to 75-89%, footfall fluctuations range from 10-20%, and individual tenant segments may account for up to 45-50% of the mix. This strategy involves flexible lease agreements, the transformation of retail areas to better suit the requirements of retail entrepreneurs (up to 20-30% of the retail space), pop-up formats for retail entrepreneurs, and the use of analytics to determine where visitors go in order to redistribute them across retail spaces to maximise commercial occupancy. This strategy is effective in striking a balance between the profitability of retail spaces and the need to adapt to changes in the retail market. The crisis management strategy is the most radical form of management. In this strategy, there is a complete overhaul of the leasing policy of retail spaces, the purpose of certain retail zones, and a change in the management of the property to ensure that the property can survive the crisis. The effectiveness of this management strategy is determined by how quickly the property management company can roll out this strategy and reduce losses caused by the crisis affecting the commercial property. Overall, the results of the analysis demonstrated that none of these strategies can be applied universally to commercial properties. The effectiveness of shopping and entertainment centre management is determined by the ability to combine different approaches depending on the level of economic and behavioural uncertainty. In stable conditions, it is advisable to use traditional models; in dynamic environments, adaptive ones; and in crises, anti-crisis management mechanisms. Thus, the key conclusion is that a shopping and entertainment centre functions as a system requiring multi-variant management capable of ensuring a balance between stability, flexibility and resilience to external influences.

The operation of shopping and entertainment centres is determined by a combination of external and internal factors that shape the conditions for their development, economic efficiency and the behavioural dynamics of visitors. Shopping and entertainment centres cannot be viewed as isolated commercial entities, as they are in constant interaction with the economic, social, technological and urban environment. This is precisely why analysing influencing factors is an essential step in analysis of the reasons behind the transformation of management models and changes in approaches to organising their operations. The most fundamental level of influence is provided by macroeconomic factors, which shape the general conditions for the functioning of the consumer market. C.I.-C. Lan & C.-J. Lee (2021) argued that these include the inflation rate, changes in household income, the unemployment rate, currency fluctuations and overall economic stability. Changes in these indicators directly impact the purchasing power of the population, which in turn impacts the footfall and spending in shopping and entertainment centres. During periods of economic instability, consumers tend to visit shopping and entertainment centres less frequently, spend less money within these centres, and shift their focus towards purchasing goods and services that are deemed as essential for their operations. In addition to the economic factors that impact the population's spending within shopping and entertainment centres, there are also behavioural factors to consider in relation to the shift in the technology industry. For instance, many consumers have changed their shopping habits and the way in which they make purchasing decisions due to the growth of the technology industry and its related technologies. Consumers are increasingly combining physical and digital shopping channels, using online platforms to compare prices, select goods and make purchases. This is leading to a decline in the role of traditional retail as the sole channel for consumption and is forcing shopping and entertainment centres to compete not only with one another but also with digital platforms. At the same time, the

structure of shopping centre visits is changing; it is not the purchase itself that is becoming increasingly relevant, but the experience of being there, leisure and social interaction (Ameen *et al.*, 2021). During the period of full-scale war in Ukraine, there was a decline in footfall at shopping and entertainment centres, with a drop in footfall of approximately 30-40% in 2022 compared to pre-war levels, followed by a partial recovery to a level that remained 8-16% lower than the figures for 2019-2021, even in 2024-2025. At the same time, a decline in operational efficiency has been recorded due to security restrictions and air raid alerts, leading to a loss of approximately 11-18% of shopping centres' operating hours across various regions of Ukraine (Attendance at Ukrainian shopping..., 2024). Structural changes in consumer behaviour are reflected in the redistribution of spending across product categories: the fashion, entertainment and discretionary spending segments saw a decline of approximately 10-20%, whilst the share of spending on essential goods increased, confirming the shift in the function of shopping centres as spaces for purpose-driven rather than recreational visits (Tyupka, 2026). At the same time, even during the market recovery phase in 2025, footfall at shopping centres remained on average 10-16% below pre-crisis levels, indicating the long-term impact of the crisis on consumer behaviour and the retail infrastructure (Budhouse Group, 2025).

A separate category is formed by urban factors that determine the spatial and territorial environment in which shopping and entertainment centres operate. These include urban density, transport accessibility, the development of public infrastructure, the level of car ownership among the population, and the overall organisation of urban space. Shopping and entertainment centres located in areas with high transport accessibility and heavy pedestrian traffic have greater potential to attract visitors. At the same time, changes in urban infrastructure, such as the development of new residential areas or transport hubs, can redistribute consumer flows between different venues. Technological factors, which have become systemic, are also substantial in the structure of these influences. The development of e-commerce, marketplaces, mobile apps and delivery services has transformed the competitive environment for shopping centres. Some consumer functions, which were previously conducted exclusively in physical retail spaces, have moved into the digital sphere. This has led to a reduction in the role of shopping centres as the sole venue for shopping and has strengthened their function as spaces for experience, leisure and social interaction (Borrallo-Jiménez *et al.*, 2020). At the same time, information and communication technologies have also made it possible to manage the shopping and entertainment centres themselves, as the technology can allow managers to analyse visitor flows and behaviours within the centres, and the efficiency of the utilisation of the space within the shopping and entertainment centres.

Another of the factors that is shaping the changing role of shopping and entertainment centres is the impact of social factors on those centres. Shopping and entertainment centres have, in many cases, become the places where individuals interact with others, participate in various leisure and recreational activities, engage in cultural interactions, and communicate with others. Changes in the lifestyles of individuals, the growth of the service economy, and a shift in the motivations of consumers towards experiencing activities rather than simply purchasing goods is contributing to the transformation of shopping and entertainment centres into spaces in which the social component of the shopping and entertainment centres is just as important as the economic component of those centres (Krey *et al.,* 2022). Thus, each of these factors interact with each other, and each of which has contributed to the development of the shopping and entertainment centre as it exists today. Each of these factors can be divided into groups of themselves, with the macroeconomic impacts on the shopping and entertainment centre, the behavioural factors that relate to consumers within the shopping and entertainment centre, the urban factors that impact the shopping and entertainment centre, the technological factors that impact the shopping and entertainment centre, and the social factors that impact the purpose and motivations of the shopping and entertainment centre. Each of these factors, however, has a combined impact

upon the shopping and entertainment centre that helps to create the necessity for the transformation of the management of those shopping and entertainment centres.

Consideration of a shopping and entertainment centre as a management object requires a preliminary systematic analysis of its internal organisation and external links. This approach involves interpreting the shopping and entertainment centre as a holistic, open socio-economic system that operates in constant interaction with its environment and is in a state of continuous adaptation. Systemicity in this case means that a shopping and entertainment centre is not the sum of its individual elements (tenants, floor space, visitors), but rather an integrated structure where each component performs a specific function yet simultaneously depends on the functioning of other elements (Zhou *et al*., 2024). Consequently, any change in one part of the system inevitably triggers transformations throughout its entire structure. The open nature of the shopping and entertainment centre system is manifested in the constant exchange with the external environment of three main types of resources: economic (cash flows, rental payments, investments), information (consumer behaviour analytics, market trends, marketing signals) and behavioural (visitor flows, changes in consumer preferences, migration of demand between sales channels). This tripartite structure of flows determines the complexity of shopping centre management. The external environment for a shopping and entertainment centre is multifaceted and volatile. It is shaped by macroeconomic conditions, household income levels, inflationary trends, the development of e-commerce, urban transformations, as well as changes in the social behaviour of the population. None of these factors can be controlled by the shopping centre's management system, which creates a state of constant uncertainty.

A key feature of this phase is that the external environment becomes not only unstable but also non-linear. This means that even minor changes in individual factors can lead to disproportionately significant consequences for the operation of a retail and leisure centre. For example, a change in consumer habits can sharply reduce footfall in certain categories of shops, triggering a chain reaction of changes in the tenant mix and profitability. The internal structure of a shopping and entertainment centre is characterised by the presence of interrelated subsystems that form its functional architecture (Eroglu *et al.*, 2005). These subsystems do not exist autonomously but are in a state of constant interaction, where every change generates corresponding adaptive responses in other elements of the system. In the most general terms, three basic levels of internal organisation can be identified, namely the spatial-material level, which is determined by the structure of assets; the commercial-economic level, which is shaped by tenancy relationships; and the behavioural-consumer level, which reflects visitor activity. The spatial-material level determines the physical configuration of the shopping and entertainment centre. It includes the architectural structure of the building, spatial zoning, engineering infrastructure and the logic of movement within the facility. This level is fundamental, as it creates the physical conditions for the implementation of all other processes.

The commercial and economic level reflects the structure of the relationship between the centre's owner and the tenants. It determines which businesses operate within the shopping centre, how the retail space is allocated, what financial flows are generated, and how stable the economic model underpinning the facility's operation is. It is this level that ensures the transformation of spatial resources into financial results (Berezko, 2021). The behavioural and consumer level is the most dynamic and sensitive to external changes. It reflects the actual activity of visitors, their movement patterns, consumer preferences, level of engagement, and reaction to changes in the structure of the retail space. This level is the source of the economic efficiency of the entire system. A characteristic of the shopping centre system is the presence of complex feedback loops between all levels of its organisation. These links are non-linear in nature and form cyclical processes of mutual influence. For example, a change in spatial structure affects visitor behaviour, which alters profitability, which in turn influences the tenant mix and subsequent decisions regarding

asset utilisation. Thus, the system functions as a self-regulating mechanism in which there is no single centre of causality. Instead, there is a network of interdependent processes that constantly adjust one another (Krey *et al.*, 2022). This property determines the complexity of managing retail and entertainment centres and the need for a systematic approach. It is worth noting that a systematic analysis of shopping centres can cause a shift from describing individual elements to analysis of the logic of their interactions (Uscher-Pines *et al.*, 2013). This is a key prerequisite for the subsequent modelling of management subsystems, as models can only be constructed correctly provided there is a set interpretation of the system's structure and the nature of its internal relationships.

Further consideration of a retail and leisure centre as a management entity requires interpreting it not as a collection of separate commercial spaces, but as a single integrated system operating based on interdependent subsystems. Such a system is open, as it constantly interacts with the external environment, responds to market changes and adapts internal processes to new conditions. Notably, any retail and entertainment centre are not a static entity, but a dynamic structure that is constantly being reshaped by economic, social and behavioural factors. This is precisely why its effective functioning is only possible through the synchronised management of several interconnected subsystems. The asset management subsystem forms the foundational level of a shopping and entertainment centre's operation, as it defines the physical and spatial basis of the entire system. Assets are defined not only as physical property, but as the entire complex of resources capable of generating economic value: commercial spaces, infrastructure, communal areas, logistics spaces, and the architectural and functional organisation of the building. In fact, this subsystem determines how effectively the space is utilised and how it translates into financial returns. It is the key level that shapes the property's base capitalisation and its investment appeal. To systematise the elements of asset management and determine their functional role within the structure of a retail and leisure centre, the key components of this subsystem, their interrelationships and performance indicators have been summarised (Table 2).

Table 2. An expanded conceptual model for the management of a retail and leisure centre

System component	Contents and description	Functional role in a shopping centre	Interactions with other subsystems	Assessment criteria	Vulnerability issues
Retail space	Physical retail spaces used for business premises	Form the basis for generating rental income	Depend on the tenant mix and visitor flows	% occupancy, vacancy rate	High dependence on the quality of the tenant mix; a hidden issue is the risk of "nominal occupancy" coupled with low tenant yields
Infrastructure assets	Lifts, escalators, car parks, service areas	Ensure accessibility and ease of movement	Influence visitor behaviour	Bandwidth	Vulnerability to overcrowding during peak hours; a trade-off between visitor comfort and maintenance costs
Spatial organisation	Planning of zoning and traffic flow	Determines the efficiency of space utilisation	Related to visitor traffic	Conversion to purchases	Typical conflict between commercial density and safety/ evacuation considerations; the risk of inefficient "dead zones"
Investment value	Market valuation of the centre as an asset	Determines the long-term stability of the system	Depends on the tenants and the return on investment	Return on Investment (ROI), capitalisation	High sensitivity to external shocks (war, migration, falling demand), which sharply reduces market capitalisation

Table 2, Continued

System component	Contents and description	Functional role in a shopping centre	Interactions with other subsystems	Assessment criteria	Vulnerability issues
Space efficiency	Profit per unit of floor area	Reflects the efficiency of asset utilisation	Depends on the tenant mix	NOI, revenue per square metre	Hidden problem of short-term "overlapping" of returns due to unreliable tenants; the risk of income volatility

Note: all indicators in this model are measured in percentages (%), monetary units, profitability metrics (in particular NOI), turnover and vacancy rates, capacity units (persons/hour or m2/person), and time intervals (months, years), depending on the nature of the relevant parameter
Source: compiled by the author

An analysis of this model concluded that asset management cannot be viewed as an isolated technical function, as it directly determines the economic rationale of the entire retail and leisure centre. In particular, the occupancy rate is not a sufficient indicator of performance, as it does not reflect the quality of tenants and their ability to generate a steady flow of visitors. Moreover, it is the spatial structure that determines consumer behaviour; the location of entrances, anchor tenants, leisure areas and services shapes movement patterns, which directly influence the level of commercial activity. A summary of vulnerability issues indicates that the operational efficiency of a shopping centre is dependent on the quality of the tenant mix and the system's capacity to maintain a balance between commercial efficiency, operational safety and visitor comfort. high formal occupancy rate may conceal a decline in real profitability. Attention to short-term financial results increases the risk of income instability in the long run. These further increases sensitivity to external shocks and operational overloads which together reduce resilience and capitalisation appeal of the shopping and entertainment centre. Assets therefore serve an economic as well as a behavioural function. The tenant management subsystem is central to the development of a shopping and entertainment centre's commercial ecosystem. The tenants create the substance of the space and determine its market appeal. Tenant management involves not only the placement of businesses, but also the formation of a balanced tenant mix that ensures synergy between different categories of tenants. Such synergy lies in the mutual reinforcement of footfall; large anchor brands generate a flow of visitors that is distributed among smaller tenants, thereby increasing their sales. Furthermore, the systematisation of the tenant structure and an analysis of their role in shaping the commercial ecosystem of a shopping and entertainment centre are presented in Table 3.

Table 3. An expanded conceptual model for managing tenants in shopping centres

System component	Contents and description	Functional role	Interaction with other subsystems	Key effects	Signs of imbalance
Tenant mix	Mix of tenants of varying sizes	Develops the commercial profile of the shopping centre	Affects visitor traffic	Sales synergy	Dominance of a single category of tenants; a loss of balance between retail and services; a decline in diversity
Anchor tenants	Major retail brands	Generate most traffic	Other shops are boosting sales	Increase in visitor numbers	Risk of becoming dependent on 1-2 brands; significant loss of traffic should they withdraw; asymmetry in bargaining power
Small and medium-sized enterprises	Specialist shops and services	Increase diversity	Maintain the system's balance	Steady income	Displacement during crises; instability of rental payments; sensitivity to fluctuations in demand

Table 3, Continued

System component	Contents and description	Functional role	Interaction with other subsystems	Key effects	Signs of imbalance
Small renters	Local outlets	Ensure the system's flexibility	Depend on traffic	High adaptability	High turnover; unstable income; low resilience to external shocks
Retention policy	Tenant management system	Reduces vacancy rates	Related to profitability	Income stability	Formal nature of retention; underlying conflicts with tenants; a decline in the quality of the tenant mix when retention is artificial

Source: compiled by the author

An analysis of this model demonstrates that the tenants of shopping centres are not passive participants in the commercial real estate of these centres, but active participants in their economic dynamics. The type of tenants that populate these shopping centres have a direct impact upon the behaviour of the visitors to those shopping centres. Finding the right balance between stability and flexibility in the tenant population of shopping centres is crucial to ensuring the long-term success of those shopping environments. While too much stability among the tenants of shopping centres can create positive effects for those commercial properties, too much stability can also prevent those shopping centres from adapting to changes in the marketplace. Signs of imbalance in the shopping centre's tenant management system collectively reflect a disruption of the structural and functional equilibrium of the tenant mix, manifested in the dominance of certain categories of tenants, a reduction in diversity, and an imbalance between retail and services. Additionally, there is a critical dependence on a limited number of key brands, which increases the risk of losing footfall and exacerbates bargaining asymmetry, as well as the instability of medium and small tenants during periods of crisis and fluctuations in demand. The result is a decline in the overall resilience of shopping centres, accompanied by high tenant turnover, unstable income, hidden conflicts and a deterioration in the quality of lease portfolio management in the long term. Therefore, effective tenant management is a compromise between these two extremes. The visitor flow management subsystem is the most dynamic and behaviour-oriented component of a shopping and entertainment centre. It reflects the actual level of interaction between the system and the end consumer. Visitors not only generate demand but also determine the efficiency of space utilisation, as their movement patterns influence conversion rates in commercial areas. Accordingly, visitor flow management involves analysing traffic intensity, concentration zones and behavioural patterns. To summarise the behavioural characteristics of visitors and their impact on the efficiency of the shopping and entertainment centre, a conceptual model of this subsystem has been developed (Table 4).

Table 4. Extended conceptual model for managing visitor flows in shopping centres

System component	Contents and description	Functional role	Interrelationships	Economic impact	Risks in a time of war
Visitor traffic	Total number of visits to the shopping centre	Determines the baseline demand for space	Depends on the tenants and the security situation	Profitability, sales figures	Substantial decrease in visitor numbers due to air raid alerts, shelling and population displacement
Behavioural patterns	Typical visitor routes	Can be used for prediction of consumer behaviour	Relating to spatial structure and safety	Sales optimisation and zone allocation	Changes to routes through evacuation zones and restricted access to parts of the shopping centre

Table 4, Continued

System component	Contents and description	Functional role	Interrelationships	Economic impact	Risks in a time of war
Concentration zones	Places with the highest concentration of people	Identification of key selling points	Affect tenants and vice versa	Increasing conversion rates	Increased risk of casualties during air raid alerts, the need to disperse crowds
Time series	Breakdown of visitor traffic by time	Determines the load on the infrastructure	Relating to assets and security protocols	Space utilisation efficiency	Interruptions during emergencies, reduction in "peak" hours
Spatial routes	Layout of the shopping centre	Optimises interaction between visitors and tenants	Depends on the design and safety routes	Growth in sales and engagement	Traffic restrictions, closure of certain areas, and changes to logistics due to sheltering
Security scenarios (military component)	Provision of shelters, evacuation routes and alarm signals	Ensures the physical safety of visitors	Integrates with all shopping centre subsystems	Maintenance of visitor numbers even in times of crisis	Direct risks of physical harm, damage to infrastructure, operational disruption

Source: compiled by the author

An analysis of this model concluded that visitors are not a passive element of the system, but an active factor that shapes the economic efficiency of a shopping and entertainment centre. It is through their behaviour that the link between spatial structure, letting policy and financial results is realised. Through reviewing each of the models for shopping and entertainment centres it becomes apparent that each centre comprises three main levels: spatial (assets), commercial (tenants) and behavioural (visitors). Each of these elements has a function within the shop or entertainment centre, but the effectiveness of the shopping and entertainment centre relates solely to the interaction of each of these components. Thus, the management of the shopping and entertainment centre should relate to the balance between spatial elements, business structure and consumer behaviour, as any alteration to any of these elements will have a transforming effect on the entire system of the shopping and entertainment centre. The war in Ukraine has contributed to a sharp drop in footfall in shopping and entertainment centres, as confirmed by official market research. According to research by the Ukrainian Trade Guild (UTG), footfall in shopping and entertainment centres in the capital city of Kyiv dropped to 291 visitors per 1,000 m^2 in 2022, compared to 506 visitors per 1,000 m^2 in the pre-war period. This represents a drop of 40-45% in footfall in shopping and entertainment centres (The vacancy rate..., 2023). Another indicator of the changes resulting from the war is the vacancy rate for retail space within shopping and entertainment centres. At the end of 2023, the vacancy rate for operating shopping centres in Kyiv reached 14.2%. If temporarily closed retailers are also accounted for, the vacancy rate increased to 19.7%. This means that 1 in 5 retail spaces in Kyiv were unused. For regional shopping and entertainment centres, the vacancy rate was even higher, reaching over 27%. In 2024, shopping and entertainment centres began to experience a recovery of their retail space. The vacancy rate in shopping centres in the capital of Ukraine dropped to 13.1% (Vacancy rate of operating..., 2024). However, there are still the consequences of the war in Ukraine visible within the retail and entertainment sector. For example, the footfall in shopping and entertainment centres is even throughout the country. Additionally, the rental income for these retail spaces has become increasingly unstable, as have the shopping and entertainment centres' sensitivities to external factors. As a result, changes in the management models of these retail spaces have developed in reaction to the war.

DISCUSSION

The findings of this study confirm that the management of shopping and entertainment centres in conditions of high uncertainty, particularly during martial law in Ukraine,

requires fundamentally new methodological approaches. The effectiveness of shopping and entertainment centres is determined not only by the commercial component, but also by the centres' ability to transform into multifunctional hubs, optimise internal subsystems (assets, tenants, visitor flows) and adapt quickly to external shocks. The findings are consistent with international research analysing anti-crisis strategies, resilience and the transformation of shopping centres in an unstable environment. The results of this study indicate that, in conditions of high uncertainty and crisis, the effective management of shopping and entertainment centres requires a shift from traditional to adaptive and anti-crisis strategies. The study determined that a balanced and well-thought-out tenant mix increases footfall, average spend, visitor dwell time and the centre's overall commercial performance. This is consistent with T. Kariya *et al.* (2023). Researchers have developed a tenant portfolio selection model for the risk-aware management of shopping centres. They have demonstrated that strategically selecting a tenant mix, considering risk correlations, can reduce revenue volatility and enhance the overall resilience of the property in times of economic uncertainty. Methodological aspects of optimising the tenant mix are also discussed by G.K.M. Alegría (2025). The author proposed multi-objective integer programming for the synergistic optimisation of the tenant mix. The study demonstrated that the use of mathematical optimisation methods can provide a balance between maximising rental income and creating commercial synergy among tenants. Algorithmic approaches to tenant management confirm the need for quantitative methods. This is consistent with H. Sawazaki *et al.* (2026). The authors developed a mechanism for allocating tenants in shopping centres based on a deferred acceptance algorithm. They demonstrated that the algorithmic approach ensures a fairer, more efficient and optimised allocation of tenants compared to traditional expert methods. The issue of the transformation and adaptation of shopping centres in a dynamic environment is examined by M. Hänninen & L. Paavola (2021). The authors conducted a case study of the management of organisational transformations at the large Itis shopping centre. The study identified key managerial, spatial and marketing changes necessary for the centre's successful adaptation to new market realities. One avenue for enhancing resilience is the use of artificial intelligence. This is consistent with D. Garanin *et al.* (2025). The authors analysed in detail the potential of artificial intelligence in the management of shopping and entertainment centres. They noted that the implementation of AI can improve demand forecasting, personalised offers, optimisation of retail space, and enhanced operational efficiency in shopping and entertainment centres. The study's findings also align with approaches to assessing resilience. This is consistent with an analysis by J. Zhang *et al.* (2025), based on partial least squares structural equation modelling (PLS-SEM) and machine learning tools to investigate the complex mechanism by which locational factors influence the resilience of retail properties. They found that different location attributes affect the long-term resilience of retail spaces in different ways, and that consumer attachment is one of the factors.

The socio-cultural role of shopping and entertainment centres in the urban environment is also significant. This is consistent with M.J. Grzegorzewski (2025). The author investigated the phenomenon of the "shopping mall city" and escapism in Jakarta's shopping centres. The study showed that shopping centres become spaces of private comfort and psychological relief, particularly in conditions of high urban density and social tension. The impact of e-commerce on the sustainability of commercial properties confirms the need to strengthen the agglomeration effect. This is consistent with the findings of X. Pan *et al.* (2024), who analysed the impact of e-commerce on the spatial resilience of large warehouse clusters. They found that the retail agglomeration effect mitigates the negative impact of online trade and helps to maintain the competitiveness of physical premises. General processes of transformation in the commercial property sector are also reflected by G. Wiejak-Roy (2025). The author examined the state of disequilibrium in the retail property sector. The study emphasises that the existing crisis is creating conditions for the

structural transformation of retail properties, which requires new management models. This is consistent with C. Oluigbo *et al.* (2025). The authors examined the issue of sustainable development of shopping and entertainment centres. They noted that the integration of sustainability principles into management strategy is becoming a prerequisite for the long-term viability of shopping and entertainment centres. Finally, a promising methodological approach to the redevelopment and modernisation of centres is the life cycle of facilities. This is consistent with J. Tamburić *et al.* (2025). The authors developed a model for the redevelopment of shopping centres based on the life cycle approach. The study proposes a systematic toolkit for planning service life design, which is particularly relevant for the crisis-response modernisation of shopping centres under conditions of limited resources. The non-linear nature of the interaction between shopping centre subsystems, with cascading effects of change, is partly illustrated by studies of the impact of external disturbances on commercial systems. In particular, D.G. Mogale *et al.* (2023), using the example of online retail, showed how simultaneous disruptions (changes in demand, closures of premises, supply chain disruptions) create a high level of uncertainty and require the development of adaptive response mechanisms.

The distinction between the spatial, commercial and behavioural levels of shopping centre operation is partly consistent with Y.-H. Fang & C.-Y. Li (2025). In omnichannel retail, the authors, drawing on Uncertainty Reduction Theory, demonstrated how consumers interact with different levels of the retail system and attempt to reduce transactional uncertainty, which is relevant to the management of multichannel interaction in shopping centres. Shaping a shopping centre's commercial profile through its tenant mix is a key element of resilience. This is consistent with the findings of J. Luo (2023), who analysed crisis management strategies in the US fashion retail market. The study highlights the role of the business structure and tenant balance in supporting the sustainability and market position of retail properties during a crisis. The systematisation of multidimensional factors influencing shopping centres (economic, social, technological, urban and behavioural) is consistent with R. Zayadin *et al.* (2023). The authors investigated how entrepreneurs make decisions under conditions of perceived environmental uncertainty, highlighting the multifactorial nature of influences and their interaction with business systems. Differences in the logic of shopping centre management strategies depending on the level of environmental stability were illustrated by F.S. Akerele *et al.* (2022). A study of spatial adaptation strategies in Nigerian entertainment centres showed that the operational efficiency of such facilities directly depends on their ability to adapt to changing conditions and fluctuations in demand. A synthesis of the comparative analysis results indicates the presence of consistent conceptual overlaps between the findings and scientific approaches to the study of retail and entertainment systems. The systemic nature of the functioning of retail and entertainment centres, their dependence on a multidimensional environment, and the interconnection of spatial, commercial and behavioural components have been confirmed. At the same time, it has been established that the key factor in effectiveness is not the isolated optimisation of individual elements, but the coordination of their interaction, which determines the adaptability and stability of the system in a changing environment.

CONCLUSIONS

The research resulted in the development of a theoretical framework for shopping and entertainment centres as a system, the functioning of which is based upon the interaction of its commercial, spatial and behavioural elements. Shopping and entertainment centres should be viewed as more than a commercial property, but as an environment in which economic, behavioural and social interactions take place. As part of the study, the management system of a retail and entertainment centre was broken down, resulting in the identification of three key subsystems: asset management, tenant management and visitor flow management. It was established that each of these subsystems fulfils a distinct functional role, yet their effectiveness is only realised through their interaction. A key

outcome of this approach was the identification of the non-linear nature of the interrelationships between the subsystems, where changes in one trigger cascading transformations in the others. A comparative analysis revealed fundamental differences between these approaches, particularly in terms of parameters such as management logic, letting policy, tenant structure, spatial organisation, and the nature of interaction with visitors. The analysis revealed differences between the strategies in terms of the degree of management flexibility and the level of response to changes in the external environment, which determined the nature of the tenancy policy, tenant structure and spatial organisation. The study also found that the level of adaptability of management decisions varied from a consistently fixed approach in the traditional model to a rapidly transformative one in adaptive and anti-crisis strategies. The study also developed conceptual models for managing the main subsystems of shopping centres, which provided a detailed analysis of their internal structure and functional interrelationships. The study established that the effectiveness of asset management is determined not only by the occupancy rate of the premises, but also by their profitability and their ability to shape visitors' behavioural patterns. In the area of tenant management, the key role of a balanced tenant mix was identified, which ensures synergy between different business categories and contributes to the stability of financial flows. Regarding visitor flow management, it was established that consumer behaviour patterns are a determining factor in the effective use of space and the generation of economic results. Prospects for further research include the development of quantitative models for assessing the effectiveness of shopping centre management and their practical testing, considering the specific characteristics of different markets and property types.

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Методичні підходи до управління торговельно-розважальними центрами в умовах невизначеності: антикризові та адаптивні стратегії

Анотація. Метою дослідження було визначення ефективних моделей управління торговельно-розважальними центрами на основі аналізу взаємодії підсистем активів, орендарів і потоків відвідувачів. Методологія включала порівняльну характеристику управлінських стратегій торговельно-розважальними центрами, системний підхід, а також концептуальне моделювання. Основні результати дослідження полягають у формуванні комплексного уявлення про торговельно-розважальний центр як відкриту адаптивну соціально-економічну систему, функціонування якої визначається взаємодією трьох ключових підсистем, управління активами, управління орендарями та управління потоками відвідувачів. У процесі дослідження вперше структуровано систему факторів впливу на торговельно-розважальні центри за п'ятьма взаємопов'язаними групами – макроекономічними, поведінковими, урбаністичними, технологічними та соціальними, що дозволило обґрунтувати багатовимірність середовища їх функціонування. Виявлено, що визначальним трендом розвитку є трансформація їх функції від переважно торговельної до комплексної – із домінуванням досвіду, дозвілля та сервісів. У результаті порівняльного аналізу управлінських стратегій ідентифіковано три базові типи – традиційні, адаптивні та антикризові – та встановлено їх принципові відмінності за логікою управління, рівнем гнучкості, орендною політикою та здатністю реагувати на зміни середовища. Обґрунтовано, що ефективність функціонування торговельно-розважальних центрів залежить не від використання окремої стратегії, а від здатності до їх комбінування залежно від рівня невизначеності. У межах дослідження розроблено концептуальні моделі управління підсистемами торговельно-розважальних центрів, зокрема модель управління активами, що базується на поєднанні показників заповненості, дохідності та просторової ефективності; модель управління орендарями, яка передбачає формування збалансованої структури орендарів із урахуванням їх ролі у формуванні трафіку; модель управління потоками відвідувачів, що враховує поведінкові патерни споживачів і просторову організацію об'єкта. Практичне значення дослідження полягає у можливості використання розроблених підходів і моделей для оптимізації управління торговельно-розважальними центрами, зокрема у сфері формування орендної політики, управління структурою орендарів, планування простору та аналізу поведінки відвідувачів

Ключові слова: орендна політика; поведінка відвідувачів; структура орендарів; просторова організація; економічна ефективність