Chapter 3

ENSURING COMPETITIVENESS OF RESOURCE POTENTIAL THE ECONOMIC ENTITIES

Chemakina Oktyabrina
PhD in Architecture, Associate Professor,
Academic and Research Institute of Airports
National Aviation University
Svirko Vladimir
Candidate of Psychology Sciences,
Ukrainian Research Institute of Design and Ergonomics
National Aviation University
Kuzmin Oleg
PhD in Engineering, Associate Professor,
Department of Technology of Restaurant and Ayurvedic Products
National University of Food Technologies
Kuzmin Anton
Student, Academic and Research Institute of Airports
National Aviation University
(Kyiv, Ukraine)

COMPETITIVE ADVANTAGES OF THE VISUAL INFORMATION SYSTEM OF TRANSPORT CENTERS

Introduction. The basis of modern design of visual information systems is design thinking. This involves the integrated integration of theoretical and practical knowledge, as well as design ideas into a coherent project.

With the expansion of volumes of machine production, there is a renovation of the subject-space environment of transport centers (Tavares A.S. et al, 2015; Mfenjou M.L. et al, 2018; Lois D. et al, 2018; Fedoseev A.A. et al, 2017; Pensa S. et al, 2014; von Richthofen A. et al, 2018; Masala E., et al, 2016; Zhang J. et al, 2011; Yam R.C.M. et al, 2001) [1-9]. This leads to a dissonance between the need to identify the progressive use of

visual information systems (Pensa S. et al, 2014; asala E., Pensa S.,2016; Chua, A. et al, 2014) [5, 7, 10] and their functional and aesthetic imperfections.

Today, the main problem of competitive products is the practical use of the scientific component of the design. This applies to the design of industrial systems (Tavares A.S. et al, 2015; Mfenjou M.L. et al, 2018; Lois D. et al, 2018; Fedoseev A.A. et al, 2017; Pensa S. et al, 2014; von Richthofen A. et al, 2018; Masala E., et al, 2016; Zhang J. et al, 2011; Yam R.C.M. et al, 2001) [1-9], the system of «man-machine», the system-wide activity, the design of systems that control human activities in certain situations.

The model of perception of the system of visual information (Pensa S. et al, 2014; Masala E., Pensa S., 2016; Chua, A. et al, 2014) [5, 7, 10] is flexible and multifaceted. The competitive advantages of this system are a variety of techniques and tools that model the structure of the combination of individual aspects of the provision and perception of information (Chemakina O.V., Lysiuk I.A., 2014) [11].

Analysis of recent research and publications. Different interpretations of principles, methods and means of compositional formation of an interior, as well as methods of its analysis, are given in the scientific literature. Cardinal rethinking of value orientations in the field of communications (Tavares A.S. et al, 2015; Mfenjou M.L. et al, 2018; Lois D. et al, 2018; Fedoseev A.A. et al, 2017; Pensa S. et al, 2014; von Richthofen A. et al, 2018; Masala E., et al, 2016; Zhang J. et al, 2011; Yam R.C.M. et al, 2001; Chua, A. et al, 2014; Chemakina O.V., Lysiuk I.A., 2014; Chemakina O.V., Vasylchenko O., 2014) [1-12] causes the rapid development of visual information systems in various spheres of life (Pensa S. et al, 2014; Masala E., Pensa S., 2016; Chua, A. et al, 2014) [5, 7, 10].

A fundamentally new design ergonomic approach is formed. Technocratic thinking is replaced by a communication outlook based on modern information technologies (Pozdniakov S. et al, 2018) [13, 14]. The normative documents specify the need to establish a relationship of communication design and modern technology. Therefore, the associative assimilation of various forms of sign information should be part of the professional activity of the designer.

Visual information systems require a detailed, multilevel, and multifaceted description of their context (Pensa S. et al, 2014; Chua A. et al, 2014) [5, 10], clarifying the spatial and temporal boundaries of a particular communication situation. In doing so, social, cultural and psychological conditions, visual tools and technologies for the delivery of visual images

should be used. This is due to the historically unprecedented density of visual communications, with the volume of visual graphics that human culture did not yet know.

Therefore, it is necessary to look for new forms of expressiveness of visual information systems, which organically apply new design approaches (Chua A. et al, 2014) [10]. We need to move on to new methods of systematic design of high-quality science-intensive competitive products based on advanced efficient technologies (Chemakina O.V., Kuzmin A.O., 2018; Chemakina O.V., Minyailo I.V., 2014; Kuzmin O. et al, 2018; Levytska S. et al, 2018) [15-18]. The latest advances in scientific and design studies should be applied (Chemakina O.V., Kuzmin A.O., 2018) [15].

The purpose of the work is to formulate the principles of simulation of visual information systems and to identify the means, methods and methods of their adaptation to the conditions of transport centers.

Results and discussions. In the process of simulation of visual navigation systems in transport centers, the following parameters are taken into account: functional convenience; compliance with ergonomic, anthropometric, technical and technological requirements; efficiency of application of the newest visual technologies and materials; the ability to operate stably and efficiently; stylistic variety of forms of elements and components of the system; original design from the launch of the first models to the production of the product for the current production.

Evolution in production becomes a condition for constant technical development, followed by an incentive for new designer quest. By mastering these areas of simulation of visual information systems, it is necessary to take into account the human factor at the initial stages of design, the development of models of human activity in the environment of transport centers, the functional and planning organization of external and internal spaces, the visual organization of the subject-spatial environment.

To identify the structure, boundaries, spatial composition in the simulation of visual information systems in transport centers, a methodology for complex analysis is proposed that combines the known general scientific methods of analysis:

– structural-functional – graphoanalytical investigation of the functional and planning structure of the transport center with the allocation of parts of the functional processes of service of goods and passengers, studying the nature and intensity of passenger and freight flows, their actual and potential power, type of flow passage, type of prevailing flows;

– visual analysis of the spatial structure of the transport center with the definition of the visual framework of the perception of functional processes,

functional saturation of passenger flows, the location of transport and pedestrian streams, administrative, business, cultural functions, places of execution of certain actions, etc.;

– sociological – sociological study of the spaces of the transport center as a zone of social activity, which makes it possible to evaluate the composition of users of visual information systems in a qualitative way, to compile ratings of socio-demographic characteristics of visitors, to identify the dependence of the visit of the transport center on external socio-economic factors, to identify a list of functional benefits of system users, ratings of the intensity of the use of systems;

– composition analysis includes research of the spatial structure of the transport center in order to study the potential capabilities of the dominance and expressiveness of visual information systems in three-dimensional space, from the point of view of motion, approaches from the main directions of movement, identification of landmarks, perceptions of silhouettes and large delineations of system elements, textures and texture of surfaces, small elements;

– the analysis of economic efficiency contains the results of the above analysis methods in accordance with the characteristics of their economic efficiency – the effectiveness of the use of visual information systems of external and internal spaces of transport centers (territories, areas of premises, building volumes, etc.), the degree of investment attractiveness (state, private or mixed) systems in the presence of their universality, functional and informative saturation, availability of reserve resources.

According to the design methodology, the information center of the transport center should correspond to the physiological and mental capabilities of the person, to ensure its most efficient operation, not to create threats, to allow them to stay and act in space with minimum expenses of biological resources, to provide an opportunity for their renewal and development. The measure of the effectiveness of simulation of visual information systems in transport centers becomes a measure of compliance with the psychophysiological capabilities and needs of the user.

At the initial stages of modeling, functional-typological peculiarities of the transport center should be investigated, the principles of organization of human interaction with its subject-space environment should be determined, the nature and specificity of the actions of external and internal factors should be revealed. In the course of these studies, the idea of the system of visual information is clarified, the synthesis of its forming components is carried out, which organically combines the spatial structure of the transport center, connected with the environment and its subject-spatial environment.

The evaluation of the quality of the visual information system as an object of design modeling allows us to draw conclusions about the quality of the design solution and must contain a relevant criterion.

One of the characteristic features of the formation of visual information systems is their rather rapid moral aging. They are constantly in need of expansion, development, modernization and improvement. It is now time-consuming to create a more maneuverable visual navigation system for transport centers, which will be viable for any change in social requests. The decision of this side of the problem of the creation and development of visual information systems may be the application of flexible volumetric spatial modular structures that can be adapted in time, as well as the development of techniques and tools that enable the transformation and modification of elements of the system in a phased manner in accordance with the change of functional- scheduling organization of the transport center. Such an approach to the formation of a visual information system is not only economically feasible, but also aimed at a person.

To achieve this result you need: to define the special requirements and conditions of adaptability of the system of visual information; to identify the means, methods and methods of their adaptation that meet these requirements; formulate the principles of modeling visual information systems.

The key concept of «modeling» within modern design theory and practice has several meanings: as a synonym for mockup, meaning full-scale simulation or creation of a 3D spatial object model; how to build a model by means of computer simulation; as one of the initial stages of the design process, in which the graphical and schematic form is determined by the functional and figurative content of the design object.

The invariant model becomes the bearer of conceptual characteristics of different versions of the project implementation, depending on specific economic and social situations. For designing visual information systems that can be adapted to certain changes, the simulation stage is most urgent and relevant, since it provides for verification and prediction of qualitative and quantitative indicators for each individual project design option.

An adaptive system of visual information is formed, taking into account the analysis of the factors influencing its users and aims at achieving maximum compliance with the requirements of operation and perception.

Requirements for simulation of visual information systems with the possibility of their adaptation when changing conditions and possibilities of use are as follows:

– functional diversification – the ability to use system elements for a

variety of functional processes occurring in transport centers and whose change can be foreseen;

– taking into account changing conditions of exploitation (external – natural, urban and environmental characteristics of the system, internal – design and technological characteristics). This involves monitoring data on the factors affecting the existence of the visual information system;

– continuity of formation – the possibility of optimizing the system during its operation.

The analysis of existing visual information systems in the transport centers of Kyiv (airports, bus terminals, railway stations, metro) showed that the implementation of the above requirements can be realized on the basis of the following means of adaptation of system objects: variability, resource redundancy, space transformation, typification and unification of system elements.

Variance as the quality of a system or structure of visual information provides the development of various versions based on a single invariant solution embedded in the model. Achievement of variability involves the following techniques:

– consideration at the stage of simulation of as many possible scenarios of the functional and planning organization of the environment and variants of the three-dimensional solution of the visual information system based on the functional diversification of the external and internal spaces of the transport center;

– correction and modernization of the system throughout the life of the operation, depending on the new conditions.

Resource allocation technology involves the following techniques:

– reservation of appropriate spaces for the alleged redeployment or mobility of system elements;

– expansion of the system using the provided external spaces with the expansion of the relevant infrastructure;

– reservation of internal resources of territories and spaces to increase the potential capacity of the system;

– maintenance of the strength of structures, life support systems (heating, water supply, electricity supply, etc.).

The transformation of spaces involves the following tricks and possibilities:

– changes in the functional and planning organization of the transport center, associated with its urban or spatial transformation (capacity change, capacity increase, optimization of technological processes);

– transformation of internal elements of transport centers or

transformation of their internal spaces;

– reduction of internal planning elements, transformation of design schemes of transport centers.

Typization and unification of elements of visual information systems is provided by opportunities and techniques of a design approach to modeling.

The need for the adaptation of the visual information systems to the changing conditions of its operation requires the universalization of system elements.

The versatility of the visual information system at the transport centers involves a high level of unification, which, besides satisfying the requirements of technologists, allows designing ideas to be developed without detailed knowledge of technology and equipment. Based on this approach, visual information systems are divided into three groups according to the general principle of their spatial organization:

– on the principle of flexibility – a flexible spatial organization;

– on the principle of freedom – free space;

– on the principle of modularity – the block-modular structure of the visual information system.

The principle of flexibility is one of the most important principles of modern design and means of transforming the spaces of the transport center for the purpose of multipurpose use, as well as adapting them to changing conditions.

One of the means of implementing this principle is to reduce the share of permanent components of visual information systems that are not subject to change or destruction. Such components are located, equipped and have such design solutions that do not interfere with the transformation and transformation of the entire system.

Spatial organization of visual information systems is based on the differentiation of its components by the degree of complexity of their transformation and re-equipment. System components are divided into three groups:

– groups that are easily transformed without complex equipment;

– groups that have an average complexity of transformation are equipped with technical devices that can be disassembled or modified without disturbing the functioning and perception of systems;

– hardly transformed groups, full of technological equipment, complex engineering equipment, and special equipment.

One more means of achieving flexibility is the state of the functional and planning organization of transport centers, which allows to transform the premises under the conditions of changing their functional purpose without

changing the constructive scheme of visual information systems or the use of mobile, interchangeable, suspended its elements.

The principle of freedom – the free space of the organization of visual information systems – is realized through designer techniques of constructive decision of elements of systems that allow them to achieve their versatility and diversity in accordance with changed conditions and requirements. According to this principle, visual information systems can be used in large-sized premises, they use rational expositional and structural materials, thus achieving high cost-effectiveness of design solutions.

The use of this principle has become quite widespread in transport centers with vast expanses, where the visual organization of the architectural environment allows optimizing visual information systems in the areas of economic use of resources and aesthetization of perception.

The principle of modularity – the block-modular structure of the visual information system – is used in architecture and design for more than 50 years, which allows us to determine that the module in the system of visual information of transport centers is a conditionally selected element of a system or a group of elements that have a meaningful dependence and interconnections with system and relative spatial and functional independence.

The formation of the block-modular structure of the visual information system involves the use of elements and products with a high degree of factory readiness that are produced at specialized enterprises, which significantly reduces the volume of installation work and the cost of the whole system as a whole.

Conclusions. Thus, the advantages of using these principles of simulation of visual information systems in transport centers is the possibility of their adaptation to requirements and conditions that change over time, the possibility of multifunctional use both of the elements of the system and of the spaces in which they are located. Such approaches to the design of visual information systems make the latter necessary not only when modernizing or re-engineering the transport centers, but also by redeploying to new places in the future.

References

1. *Tavares, A.S., Gálvez, C., de Albuquerque, L.W.N., Almeida, A.L., Barros, R.Q., Soares, M., Villarouco, V. (2015). Information on public transport: a comparison between information systems at bus stops, Procedia Manufacturing, № 3, pp. 6353-6360.*
2. *Mfenjou, M.L., Ari, A.A.A., Abdou, W., Spies, F. (2018). Methodology and*

trends for an intelligent transport system in developing countries. Sustainable Computing: Informatics and Systems, № 19, pp. 96-111.

3. *Lois, D., Monzón, A., Hernández, S. (2018). Analysis of satisfaction factors at urban transport interchanges: Measuring travellers' attitudes to information, security and waiting, Transport policy, № 67, pp. 49-56.*
4. *Fedoseev, A.A., Golovnin, O.K., Mikheeva, T.I. (2017). An approach for GIS-based transport infrastructure model synthesis on the basis of hyperspectral information, Procedia Engineering, № 201, pp. 363-371.*
5. *Pensa, S., Masala, E., Arnone, M., Rosa, A. (2014). Planning local public transport: a visual support to decision-making, Procedia-Social and Behavioral Sciences, № 111, pp. 596-603.*
6. *von Richthofen, A., Knecht, K., Miao, Y., König, R. (2018). The 'Urban Elements' method for teaching parametric urban design to professionals, Frontiers of Architectural Research, № 7(4), pp. 573-587.*
7. *Masala, E., Pensa, S. (2016). Detecting spatial features from data-maps: the visual intersection of data as support to decision-making, Research in Urbanism Series, № 4, pp. 93-110.*
8. *Zhang, J., Wang, F.Y., Wang, K., Lin, W.H., Xu, X., Chen, C. (2011). Data-driven intelligent transportation systems: A survey, IEEE Transactions on Intelligent Transportation Systems, № 12(4), pp. 1624-1639.*
9. *Yam, R.C.M., Tse, P.W., Li, L., Tu, P. (2001). Intelligent predictive decision support system for condition-based maintenance, The International Journal of Advanced Manufacturing Technology, № 17(5), pp. 383-391.*
10. *Chua, A., Marcheggiani, E., Servillo, L., Moere, A.V. (2014). FlowSampler: Visual analysis of urban flows in geolocated social media data, In International Conference on Social Informatics, pp. 5-17, Springer, Cham.*
11. *Chemakina, O.V., Lysiuk, I.A. (2014). Theoretical modeling as a research method of a relaxation center at the airport, The sixth world congress aviation in the XXI-st century' «Safety in Aviation and Space Technologies», Vol. 3, pp. 10.21-10.25.*
12. *Chemakina, O.V., Vasylchenko, O. (2014). Basic characteristics of open public spaces on the territory of civil airports organization, The sixth world congress aviation in the XXI-st century' «Safety in Aviation and Space Technologies», Vol. 3. pp. 10.46-10.48.*
13. *Pozdniakov, S., Kiiko, V., Kuzmin, O., Akimova, L. (2018). Technologies of development and implementation of systems of internal managerial information, Management of innovative development the economic entities: collective monograph, Vol. 2, pp. 177-189.*
14. *Pozdniakov, S.V., Kuzmin, O.V., Kiiko, V.V., Korenets, Y.M. (2018). Definition of the role of business modelling in the building of a management information system, Strategies for Economic Development :*

The experience of Poland and the prospects of Ukraine : collective monograph, Vol. 2, pp. 231-245.
15. *Chemakina, O.V., Kuzmin, A.O. (2018). Designing functional planning solutions for hotels of family type in Ukraine, Engineering sciences: development prospects in countries of Europe at the beginning of the third millennium: collective monograph, Vol. 1, P. 426-447.*
16. *Chemakina, O.V., Minyailo, I.V. (2014). Features of the formation of first-aid medical centers with using air ambulance, The sixth world congress aviation in the XXI-st century' «Safety in Aviation and Space Technologies», Vol. 3, pp. 10.26-10.29.*
17. *Kuzmin, O., Pozdniakov, S., Kiiko, V., Akimova, L. (2018). Development of quality management systems in the hotel-restaurant business, Transformational processes the development of economic systems in conditions of globalization: scientific bases, mechanisms, prospects : collective monograph, Vol. 1, pp. 221-232.*
18. *Levytska, S., Krynychnay, I., Akimova, A., Kuzmin, O. (2018). Analysis of business entities' financial and operational performance under sustainable development, Financial And Credit Activity: Problems Of Theory And Practice, № 2 (25), pp. 122-127.*

Mitsenko Natalia
Dr. of Economics, Professor, Chair of Department of Economics
Mishchuk Igor
Dr. of Economics, Associate Professor, Chair of Department of Business, Trade and Logistics
Marii Olga
Postgraduate
Lviv University of Trade and Economics (Lviv, Ukraine)

ECONOMIC CONNECTIONS IN LOGISTIC FORMATION SALE POTENTIAL REALIZATION

To a large extent, the problems of trade enterprises activities are connected with the system of economic relations organization established in recent years, focused on a combination of weakly systematized wholesale purchases of goods from wholesale companies and local commodity producers and the supply of goods by well-known brands to distribution companies. This led to a low level of planning and