

# Factor model of a comfortable environment for the consumption of cultural services

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**Abstract.** The article presents the results of the research on the comfort of the cultural services consumption environment. The scientific discourses in the segment of the research subject are analysed, and on their basis, 17 evaluation criteria for the empirical study of the comfort of the cultural services consumption environment are formulated. The sociological information about the evaluative judgments of the population was collected by an electronic questionnaire survey of 407 people by random sampling. Factor analysis was carried out using main components extraction with varimax rotation and Kaiser normalisation in the SPSS Statistics program (version 21). The developed factor model of the comfortable environment of cultural services consumption will help optimise the conditions of cultural and leisure activities in rural areas, which is extremely important for achieving Russia's national goals in providing a comfortable and safe environment for life and opportunities for self-realisation and development of talents of people throughout the country.

## 1 Introduction

Modern social management practices actively incorporate feedback methods from consumers of services provided by state and municipal organisations and improve activities based on consumers' requests and expectations. Organisations providing services in the sphere of culture and leisure are no exception. The relevance of these practices increases in connection with the declared national development goals of the Russian Federation for the period up to 2030. These include developing a comfortable and safe living environment and providing opportunities for the self-realisation and development of Russian talents. A Presidential Fund for Cultural Initiatives will be created to promote the expansion of cultural practices through grants for projects in the arts and creativity. Furthermore, this creative activity must take place in the comfort of cultural organisations and contribute to people's creative development. Building optimisation models based on consumer

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assessments make it possible to make systemic decisions considering the inhabitants' opinions of particular localities.

Creating a comfortable environment for the consumption of cultural services is essential for involving the population in active consumption of cultural institutions, which is essential for developing positive life strategies of people, improving the quality of life, and reducing lousy behavior practices. The comfort of the cultural services consumption environment is relevant not only for Russia but also for other regions of the world. The analysis of publications of research results evidences that.

Kwon Y.-I. touches upon an essential aspect of comfort in the consumption of cultural services in his article, which deals with the ventilation of the premises. Rooms characterise cultural institutions with different functional orientation: large auditoriums, auditoriums for chamber forms of leisure, auditoriums for rehearsal activity with a large functional load. However, for all auditoriums, the demand by visitors to events and rehearsals is related to the quality of air ventilation. This paper presents the results of a study of the influence of different air distribution system parameters on the air diffusion performance index (ADPI), the air exchange efficiency and the ventilation efficiency scale of return diffusers in an auditorium with a moving audience seating on a flat floor [1].

Another important aspect of comfort in the consumption of cultural services is the technical equipment of the premises for the consumption of cultural services that meet modern requirements. The author of Maasoumy M. emphasises that the complex integration of the infrastructure of civil engineering facilities - thermal, electrical, mechanical, control, communication subsystems should coexist and be operated in such a way that the overall operation is smooth and efficient [2]. Ultimately, the repeated choice to visit a particular cultural institution depends on this. If visitors encounter lighting, internet availability and quality, poor quality of audio-visual broadcasts and other similar failures of technical subsystems, the desire to attend cultural events is reduced, even if there is interest in their content.

Bernal O.A.V. raises the issues of maintaining a comfortable living ecosystem for people in his article. [3]. During the design of technological and service infrastructure, the target audience and the local community's views are essential. According to the author, the key requirements are cultural context, comfort, anthropometry, lighting and orientation to the activities to be developed in the future. The author stresses that ergonomic design and a comfortable ecosystem stimulate positive cultural practices of the population in a comfortable environment.

Strategies for achieving a higher level of comfort at a lower cost during the design of mechanisms and electrical equipment of cultural and sporting facilities are suggested by the authors of Davis, Ted, Kneisel [4]. As a result, the quality of attendance at cultural and sporting events is improved without significantly increasing the cost to the consumer. This approach has important implications for the regional economy of rural areas.

The relevance of the study of various aspects of consumption of cultural services can be traced in the publication of the authors' Duan Q., Wang M. [5]. Preservation of the ecosystem of a tourism object is connected with a proper understanding of the level of pressure in implementation of cultural and leisure activity of a large number of people and increase of safety and comfort of such objects. In addition, it is a question of sanitary and hygienic conditions, transport accessibility, and the general provision of visitors with a qualitative place for rest.

The authors of the article Orlov A., Chubarkina I. show the possibilities of the factor model in optimising social infrastructure objects in the areas of urban residential development. According to developers, the objects of social infrastructure worsen the economic efficiency of construction projects. The researchers Orlov A., Chubarkina I. propose an algorithm for optimising these projects due to the added value of social

infrastructure for consumers. The construction of a multifactor model with expert assessment of each element of social infrastructure contributed to the creation of added value for the consumer is proposed as a method [6]. In our opinion, this method is also relevant in solving the issues of creating a comfortable environment for the consumption of cultural and leisure services [7, 8].

The study of comfort parameters during summer entertainment events is presented in the article Rossi F., Anderini E., Castellani B., Nicolini A., Morini E. [9]. They show that there are several approaches to understanding comfort during the consumption of cultural services. These are thermal, acoustic and visual comfort conditions. Their innovative proposal is to combine acoustic, light and thermal comfort in outdoor cultural and leisure activities. A simple, innovative and inexpensive solution consists of a system of suspended modular and temporary acoustic banners. The relevance of such integrated and creative approaches can be seen in several publications [10, 11, 12].

Thus, based on a brief overview of the scientific discussion on consuming cultural services, thematic blocks of criteria for its assessment have been formulated.

Among them, we can single out:

1. Physical parameters of people's comfort in the room during the time of service consumption in the cultural institution: temperature, ventilation, temperature regime constancy, etc.;

2. Sanitary and hygienic conditions, transport accessibility, and in general providing visitors with a quality place to rest;

3. A comprehensive multi-factor understanding of the comfort of the consumption of cultural and leisure services and the use of consumer assessments and mathematical modelling methods in the preparation and implementation of social infrastructure projects;

4. the integration of acoustic, light and thermal comfort conditions in outdoor cultural and leisure activities.

In the sociological toolkit of the questionnaire survey, these thematic blocks were structured into 17 evaluation indicators.

## **2 Materials and methods**

The empirical part of the study of the comfort of the cultural services consumption environment was carried out among the rural residents of Stavropol Krai in March 2021. Sociological information on the population's evaluative judgements was collected using an electronic questionnaire (Google Form). A total of 407 people took part in the survey. The sample population is similar to the general population - the population of Stavropol Territory over 18 years of age, living in rural areas, sex and age structure and type of settlement. The survey data were processed using SPSS Statistics (version 21). Factor analysis was carried out by extracting the main components with varimax rotation and Kaiser normalization. The factor model of the comfortable environment of the consumption of the cultural service for the category of the rural population visiting the Houses of Culture was developed. The research toolkit included 17 evaluated conditions of the comfort of the cultural services consumption environment: illumination of the territory around the building; cleanliness of the territory around the institution; availability and convenience of the car park; availability/ convenience of the public transport stops; comfortable (not slippery, paved) paths near the institution; illumination, acoustic (sound) of the street events; illumination of the premises; illumination of the stage; acoustic (sound) of the main hall; temperature/ventilability; cleanliness of the premises; equipment of the main hall (incl. The main auditorium's facilities are (including comfortable seating, decoration, curtain, curtains); facilities (including seating areas - benches, seating in the foyer; information

signs, stands); cinema and video equipment; toilet facilities (cleanliness, hygiene facilities); cloakroom and changing rooms; safety of visiting the CDU, including for persons with disabilities. The participants estimated each of the comfort conditions for the attendees on a 5-point scale, where 1 point is a condition that does not meet the requirements for the comfort of visiting, and 5 points is a condition that best meets the requirements for the comfort of visiting. The developed factor model of the comfortable environment for the consumption of cultural services will make it possible to optimize the conditions of cultural and leisure activities in rural areas, which is extremely important for achieving Russia's national goals of providing a comfortable and safe environment for life and the opportunity for people's self-realization and development of talents throughout the country.

### 3 Results and discussion

The total explained variance for the category of survey participants from among the inhabitants of rural settlements of Stavropol Krai who regularly visit the Houses of Culture for leisure and consumption of cultural services is 55.7% and is determined by four components. Table 1 presents the data.

**Table 1.**Total explained variance of estimates of the conditions of consumption of cultural and leisure services in rural areas.

Component	Initial eigenvalues			Sums of extraction load squares			Sums of rotation load squares		
	Total	% Dispersion	Cumulative %	Total	% Dispersion	Cumulative %	Total	% Dispersion	Cumulative %
1	5.373	31.604	31.604	5.373	31.604	31.604	2.904	17.081	17.081
2	1.588	9.341	40.944	1.588	9.341	40.944	2.517	14.804	31.884
3	1.302	7.660	48.604	1.302	7.660	48.604	2.072	12.186	44.071
4	1.206	7.097	55.701	1.206	7.097	55.701	1.977	11.630	55.701
5	0.979	5.758	61.459						
6	0.956	5.625	67.084						
7	0.881	5.180	72.265						
8	0.758	4.460	76.724						
9	0.662	3.893	80.617						
10	0.638	3.754	84.371						
11	0.527	3.102	87.473						
12	0.501	2.950	90.422						
13	0.398	2.340	92.763						
14	0.336	1.976	94.738						
15	0.334	1.967	96.705						
16	0.296	1.742	98.447						
17	0.264	1.553	100.000						

The listed 17 conditions of consumption of cultural and leisure services in rural settlements, the significance of which was assessed on a five-point scale in the course of a

sample survey of residents of Stavropol Territory, were grouped into 4 factors as a result of factor analysis carried out by the Rotation Method: Varimax with Kaiser Normalization (Rotation converted in 7 iterations). Of interest is the generalised opinion of decision-makers, which significantly impacts the success of solutions to current problems and the prospects for socio-economic development of rural areas [13].

**Table 2.** Rotated component matrix for the conditions of consumption of cultural and leisure services in rural areas.

	Component			
	1	2	3	4
1. Lighting of the area around the building	<b>0.458</b>	0.410	0.100	0.034
2. Cleanliness of the area around the institution	0.208	<b>0.768</b>	-0.054	0.068
3. availability and convenience of parking	-0.020	<b>0.648</b>	0.206	0.154
4. Availability/convenience of public transport stops	0.031	0.139	<b>0.538</b>	0.416
5. Comfortable (non-slippery, paved) pathways around the institution	0.168	0.227	<b>0.663</b>	-0.084
6. Lighting, acoustics (sound) of street events	<b>0.475</b>	-0.086	0.431	0.119
7. Ambient lightening of the premises	<b>0.813</b>	0.096	0.038	0.037
8. Stage lighting	<b>0.744</b>	0.131	-0.159	0.268
9. Acoustics (sound) of the main hall	0.440	0.285	0.188	<b>0.446</b>
10. Temperature/ventilation	0.117	0.161	0.017	<b>0.777</b>
11. Cleanliness of the room	0.214	<b>0.620</b>	0.147	0.153
12. Facilities of the main auditorium (including the comfort of the seats, decoration, curtain, curtains)	0.059	<b>0.672</b>	0.266	0.105
13. Interior design (incl. seating areas - banquettes, foyer seating; information signs, notice boards)	-0.028	0.221	<b>0.705</b>	0.219
14. Cinematography and video equipment	0.121	0.089	0.111	<b>0.778</b>
15. Condition of toilets (cleanliness, hygiene facilities)	0.390	<b>0.428</b>	0.304	0.411
16. Operation of cloakroom, changing rooms	<b>0.637</b>	0.161	0.199	0.134
17. Safety of attendance of cultural and leisure facilities, including for persons with disabilities	<b>0.593</b>	0.157	0.553	-0.053

The listed 17 conditions of consumption of cultural and leisure services in rural settlements, the significance of which was assessed on a five-point scale in a sample survey of residents of Stavropol Territory, were grouped into 4 factors as a result of factor analysis performed by Rotation Method: Varimax with Kaiser Normalization (Rotation converted in 7 iterations).

According to the content of the grouped conditions, we can say that a set of variables determines **the first factor**: room illumination (factor load **0.813**); stage illumination (factor load 0.744); cloakroom, dressing rooms operation (factor load **0.637**); safety of visiting cultural and leisure facilities, including for persons with disabilities (factor load factor **0.593**); illumination, acoustics (sound) of street events (factor load factor **0.475**); illumination of the area around the building (factor load factor **0.458**). Thus, the first factor

can be interpreted as the comfort of visual perception of the environment of cultural services consumption.

The set of variables determines **the second factor**: cleanliness of the territory around the institution (**0.768**); equipment of the main hall (including the comfort of the seats, decoration, curtain, backstage) (**0.672**); availability and convenience of car parking (**0.648**); cleanliness of the premises (**0.620**); condition of the toilet (cleanliness, availability of hygiene facilities) (**0.428**). Thus, the second factor can be interpreted as cleanliness and hygiene of the premises of cultural institutions and adjacent territory and ergonomics of the places of natural, cultural services consumption process.

The set of variables determines **the third factor**: equipment of the premises (including the availability of rest areas - benches, seats in the foyer; informed signs, stands) (**0.705**); comfortable (not slippery, paved) paths near the institution (**0.663**); availability/convenience of public transport stops (**0.538**). Thus, the third factor can be interpreted as the comfort and technical equipment of the accompanying zones of cultural services consumption.

A set of variables determines **the fourth factor**: cinema and video equipment (**0.778**), temperature/ventilation (**0.777**), acoustics (sound) of the main hall (**0.446**). Thus, the fourth factor can be interpreted as the technical quality of the audio-visual information stream.

## 4 Conclusion

In the course of the research, based on a brief review of the scientific discussion on the comfort of cultural services consumption, the following thematic blocks of the assessment criteria were formulated: physical parameters of the comfort of people staying in the room during the service consumption in the cultural institution: temperature, airing, temperature stability, etc.; sanitary and hygienic conditions, transport accessibility and, in general, providing visitors with a quality place to relax; a comprehensive multi-factor understanding of the comfort of cultural and leisure service consumption and the use of consumer assessments and mathematical modelling methods in preparing and implementing social infrastructure projects; combining conditions of acoustic, light and heat comfort in outdoor cultural and leisure activities. In the sociological toolkit of the questionnaire survey, these thematic blocks were structured into 17 evaluation indicators.

The 17 listed conditions of consumption of cultural and leisure services in rural areas, the significance of which was assessed on a five-point scale in a sample survey of residents of the Stavropol Territory, were grouped into four factors as a result of factor analysis, carried out by Rotation Method: Varimax with Kaiser Normalization (Rotation converted into seven iterations):

- comfort of visual perception of the environment of cultural services consumption;
- cleanliness and hygiene of the premises of cultural institutions and their surroundings and the ergonomics of the places where people consume cultural services;
- comfort and technical equipment of the accompanying areas of cultural services consumption;
- the technical quality of the audio-visual information flow.

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