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ENGINEERING AND TECHNICAL SYSTEMS AS A DETERMINANT OF COMPETITIVENESS IN THE HOTEL INFRASTRUCTURE

The contemporary hotel industry is undergoing a period of significant growth and development within a highly competitive environment, characterised by the

increasing expectations of consumers regarding service quality. One of the key factors that determine the level of guest comfort and the efficiency of a hotel company is the technical condition of building structures and engineering equipment. A high level of operational reliability of engineering systems (water supply, electricity, ventilation, heating, air conditioning) has been shown to have a direct impact on the safety, comfort and satisfaction of customers, and thus on the competitiveness of the hotel.

The concept of hotel infrastructure is understood to denote a comprehensive array of material and technical resources that are deemed integral for the successful fulfilment of the primary function, namely the provision of quality hotel services that are in accordance with the established standards and regulations that are in place. In this context, the pivotal role of engineering and technical systems becomes evident, as they determine not only the level of comfort experienced by guests, but also the safety, energy efficiency, environmental friendliness and durability of the building. The quality and reliability of such systems is a pivotal factor in determining the competitiveness of contemporary hotels. The high-quality functioning of engineering and technical systems has been demonstrated to have a direct impact on the economic performance of the hotel. The implementation of energy-efficient technologies has been demonstrated to contribute to a reduction in operating costs. Furthermore, the integration of automated monitoring and control systems has been shown to enhance the reliability and durability of equipment. Consequently, the conception of hotel engineering systems should not be regarded as a subsidiary component of infrastructure. These factors are instrumental in determining the performance of the building, serving as a metric for evaluating service quality, and are of paramount importance in ensuring competitive advantages within the hospitality market. Consequently, engineering systems represent not only a fundamental component of operational processes, but also a crucial metric of competitiveness.

The performance of a hotel's building structures and engineering equipment is a prerequisite for the provision of quality service. These factors directly impact the levels of comfort, safety and customer satisfaction experienced by users. Consequently, these factors also influence the image and competitiveness of the company.

It has been demonstrated that a significant proportion of customer complaints are attributable to technical malfunctions or substandard engineering systems. Such issues encompass water supply instability, power outages, inadequate air conditioning efficiency, noise discomfort from ventilation units, and imperfect lighting. Consequently, the technical specifications of the equipment have emerged as a pivotal element in fostering customer satisfaction.

Achieving the right performance characteristics is essential for a hotel to meet international service standards (ISO 9001, ISO 14001, ISO 50001) and increase the likelihood of obtaining international quality certifications such as LEED or BREEAM. These certifications have been shown to engender consumer confidence and to function as a marketing tool to promote the hotel brand, thereby contributing to the growth of trust from consumers and travel operators. Furthermore, the technical condition of the equipment has been demonstrated to influence the psychological perception of the service. It has been demonstrated that customers tend to associate the stable operation of engineering systems with the overall quality of service and the professionalism of the staff. Frequent equipment malfunctions have been shown to engender a negative experience for guests, which has the effect of reducing the number of repeat visits and negatively impacting ratings on online platforms (e.g. Booking, TripAdvisor).

Investments in the modernisation of engineering equipment generally have a long-term effect. According to the World Tourism Organisation (UNWTO), the implementation of energy-efficient systems in the hotel industry has resulted in a 20-30% reduction in operating costs. In Ukraine, this aspect is of particular pertinence due to the high cost of energy and the necessity to optimise the cost of hotel services. A significant area of concern is the utilisation of public-private partnership mechanisms, green loans and EU energy efficiency programmes.

The assurance of optimal functionality in the context of building structures and engineering equipment within the hotel industry constitutes a multifaceted undertaking, necessitating a meticulous organisation of management processes. The objective is twofold: firstly, to ensure the continued functionality of individual systems; and secondly, to establish a cohesive technical management system with a focus on the

durability, safety and efficiency of the facility as a whole. The organisational and management mechanisms in this area encompass the following domains:

- scheduled preventive maintenance;
- technical condition monitoring system;
- life cycle management of buildings and equipment;
- certification and passporting of engineering systems and structures;
- innovative technologies for maintenance and repair;
- human resources and staff development.

The coordinated functioning of these elements of the organisational and management mechanism ensures that building structures and engineering equipment meet the regulatory parameters of strength, energy efficiency, reliability, safety and environmental friendliness. The implementation of Building Management Systems (BMS) in prominent hotel chains, such as Hilton, Marriott, and Accor, exemplifies the efficacy of such systems. The BMS facilitates real-time oversight of climate parameters, lighting systems, and energy expenditure, thereby enhancing operational efficiency and sustainability. From a scientific perspective, this approach aligns with the concept of preventive maintenance management, which aims to minimise operating costs and ensure the durability of hotel facilities without compromising on the quality of services.

In the European Union, green hotel standards are widespread, providing not only for energy efficiency but also for high quality maintenance. In the United States, LEED (Leadership in Energy and Environmental Design) certifications are utilised as a tool to enhance the market value of hotels and appeal to environmentally conscious tourists. For Ukraine, it is imperative to adapt this experience to the realities of post-war infrastructure reconstruction.

In the post-war period, the reconstruction of tourist and recreational facilities will become a key area of national economic policy. The implementation of energy-efficient technologies, innovative engineering systems and digital management platforms is expected to be a key priority. This will not only enhance the quality of hotel services, but also facilitate the integration of Ukrainian enterprises into the global

hotel market.

Consequently, it can be contended that the technological state of engineering apparatus represents a strategic factor in the competitiveness of hospitality enterprises. It is evident that a high level of operational reliability is instrumental in ensuring the stability of business processes, thereby reducing financial risks and contributing to a positive image. A systematic approach to the management of technical resources, combined with investments in modernisation and the implementation of international standards, is poised to enhance the appeal of Ukrainian hotels in both domestic and international markets. It is evident that the performance of engineering equipment is not solely a technical and economic consideration; rather, it is a multifaceted phenomenon that encompasses significant social and psychological dimensions. In this regard, it is imperative to recognise the pivotal role that this performance plays in fostering customer loyalty and enhancing the competitive edge of a hotel company.