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OPTIMIZATION OF HOTEL AND RESTAURANT SERVICES THROUGH BUSINESS ANALYTICS: CHALLENGES AND OPPORTUNITIES

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ОПТИМІЗАЦІЯ ГОТЕЛЬНИХ ТА РЕСТОРАННИХ ПОСЛУГ ЧЕРЕЗ
БІЗНЕС-АНАЛІТИКУ: ВИКЛИКИ ТА МОЖЛИВОСТІ

The relevance of the topic is driven by the fact that optimization of various managerial and service processes through business analytics is becoming increasingly important due to the expanding factors that ensure improved service quality, increased efficiency, and gaining a competitive advantage in the hospitality and restaurant services sector. According to the above, the study aims to identify the challenges and opportunities for optimizing hotel and restaurant services through business analytics. The research results demonstrate that hotel and restaurant services optimization should aim to improve operational processes and managerial strategies in business, focusing on enhancing service quality, efficiently utilizing resources, and achieving competitive advantages. The conclusion is drawn that optimization of hotel and restaurant services through business analytics provides the following opportunities for business entities: improvement of service quality (by understanding the needs and preferences of customers), efficient resource management (through the rationalization of resource utilization), increased competitiveness (by creating more attractive conditions for clients compared to competitors), customer attraction and retention (by attracting new clients and retaining existing ones), enhanced profitability (through increased production efficiency, optimization of prices, and other financial management strategies), adaptation to

changing market conditions (through swift responses to changes in market conditions), and ensuring consistency and standards (by establishing and adhering to service standards). Noted that the optimization of hotel and restaurant services through business analytics is associated with several problems and challenges, including: issues related to data collection and quality assurance; concerns about confidentiality and data protection; challenges related to data heterogeneity; practical implementation issues; insufficient integration of business analytics systems with existing management and other business systems; ambiguity in measuring performance; and practical challenges in implementing solutions.

Актуальність даної теми обумовлена розширенням кола чинників, що сприяють покращенню якості обслуговування, підвищенню ефективності та досягненню конкурентної переваги в галузі готельних та ресторанних послуг. Оптимізація різних управлінських та сервісних процесів через бізнес-аналітику стає все більш важливою в цьому контексті. Згідно з вищезазначеним, основною метою дослідження є виявлення викликів та можливостей оптимізації готельних та ресторанних послуг за допомогою бізнес-аналітики. Згідно з результатами дослідження підтверджено, що оптимізація готельних та ресторанних послуг сприяє вдосконаленню робочих процесів та управлінських стратегій у бізнесі, а також призводить до покращення якості обслуговування, ефективнішого використання ресурсів та досягнення значних конкурентних переваг. Зроблено висновок, що оптимізація готельних та ресторанних послуг через бізнес-аналітику забезпечує для суб'єктів господарювання наступні можливості: покращення якості обслуговування (через вираховування потреб та вподобань клієнтів), ефективне управління ресурсами (через раціоналізацію використання ресурсів), підвищення конкурентоспроможності (через формування привабливіших умов для клієнтів), залучення та утримання клієнтів, підвищення прибутковості (через покращення ефективності виробництва, оптимізацію цін та стратегій управління фінансами), адаптацію до змінених ринкових умов (через краще реагування на зміни в ринкових умовах), забезпечення консистентності та стандартів (через встановлення та дотримання стандартів обслуговування). Констатовано, що оптимізація готельних та ресторанних послуг через бізнес-аналітику пов'язане з рядом проблем та викликів, серед яких: складнощі збору та забезпечення належної якості даних; ризики для конфіденційності та захисту даних; неоднорідності у даних; складнощі щодо практичних аспектів реалізації управлінських рішень; недостатня інтеграція систем бізнес-аналітики з чинними управлінськими та іншими системами суб'єктів господарювання; неоднозначності у вимірюванні успішності; невизначеність практичних аспектів реалізації аналітичних рішень.

Key words: resource management, service quality, operational processes, competitive advantages.

Ключові слова: управління ресурсами; якість обслуговування; робочі процеси; конкурентні переваги.

TARGET SETTING

Optimizing various managerial and service processes through business analytics is becoming increasingly relevant due to the expansion of factors that ensure improved service quality, increased efficiency, and competitive advantages attainments in the hotel and restaurant services sector. Currently, business analytics enables hotels and restaurant needs of guests to understand and tailor their services to meet those needs. Business analytics enables effective monitoring of inventory and optimization of service production processes, thereby avoiding unproductive losses, achieving significant reductions, and improving customer service speed. The utilization of a comprehensive business analytics system integrated with modern technologies (such as reservation systems, loyalty programs, POS systems, and others) can enhance operational efficiency

and provide convenience for customers. During the use of business analytics systems, optimization processes are formed within a comprehensive approach to managing various aspects of the hotel and restaurant business. This approach considers customer needs, production efficiency, and competitive advantages.

ANALYSIS OF RESEARCH AND PUBLICATIONS

The question of applying business analytics and technological initiatives in the hotel and restaurant industry, as well as the prospects of service optimization through business analytics, was addressed in the work of Brukhansky R., Spilnyk I., Hafiya A. M., Dmytryshyna B. V., and Borovoy M. V. However, challenges and opportunities for service optimization in these sectors are currently underexplored.

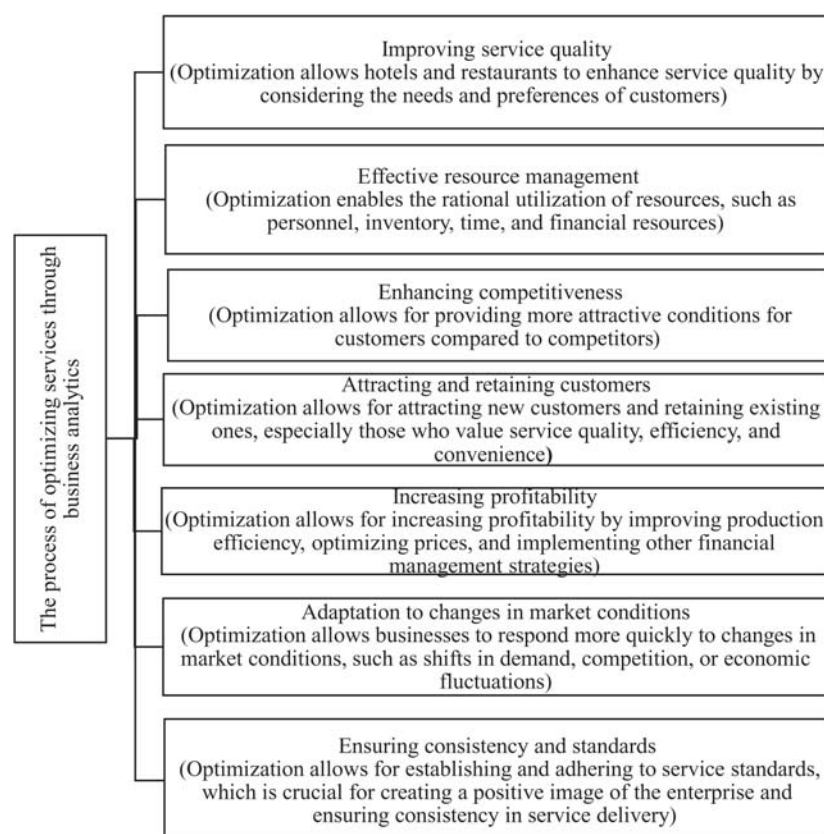


Figure 1. Circle of opportunities formed through the optimization of hotel and restaurant services through business analytics

Source: formed based on [1; 4—6].

THE WORDING OF THE PURPOSES OF ARTICLE (PROBLEM)

The aim of the study is to identify the challenges and opportunities for optimizing hotel and restaurant services through business analytics.

THE PAPER MAIN BODY WITH FULL REASONING OF ACADEMIC RESULTS

Within the limits of research, attention is drawn to the fact that optimization of hotel and restaurant services is a process of refining operational processes and management strategies in the hotel and restaurant business. It is done to improve service quality, optimize resource utilization, and achieve a competitive advantage. Currently, the majority of hotel and restaurant businesses are implementing the process of optimizing their services through business analytics. It enables them to achieve optimal results in improving service quality and resource management, enhancing competitiveness and profitability, adapting to changing market conditions, and ensuring consistency and compliance with service standards.

In general, optimizing hotel and restaurant services through business analytics is currently a key element of successful business management in the hotel and restaurant industry, contributing to customer satisfaction and the sustainable development of the enterprise, as illustrated by the data in Figure 1.

The circle of opportunities formed through the hotel and restaurant services optimization through business analytics is quite extensive. For example, the Hospitality

and Restaurant Complex "Inturyst" in the Zakarpattia region utilizes a Hotel Property Management System (PMS) that gathers vast amounts of data on reservations, room rates, peak load periods, and other parameters. Thanks to this, the entity analyzes reservation data for different periods of the year, local events, competitors, and other factors to optimize room prices and determine periods when additional staff is needed to ensure effective service. Also, considering the demand for various services (such as the restaurant, fitness center, and conference halls), the hotel can plan staff schedules and decide which services to offer during different periods.

The outlined opportunities are created through the process of using business analytics in managing the production of hotel and restaurant services, with its components being:

1. Customer needs analysis (which involves collecting and analyzing data on customer preferences and expectations to properly address their needs in shaping hotel and restaurant services).
2. Demand forecasting and inventory management (utilizing analytical tools to forecast demand for rooms, meals, and other services, as well as optimizing inventory levels and conducting inventory audits).
3. Reservation management (using booking systems and analytical algorithms to optimize the process of receiving and processing reservations).
4. Pricing optimization (utilizing analytics to determine optimal prices for hotel rooms and restaurant services by market conditions and demand).

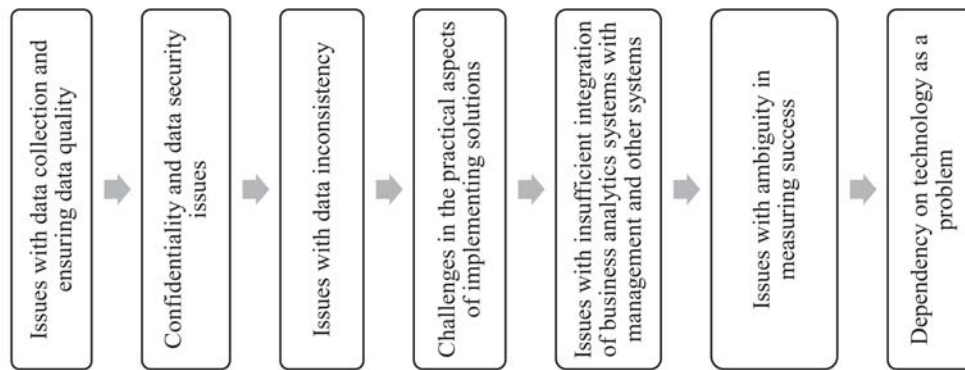


Figure 2. Problems and challenges of optimizing hotel and restaurant services through business analytics systems

Source: formed based on [1; 4–5].

Table 1. The specifics of configuring the system for effective data collection and storage, as well as quality control

Solution to the problem of data inconsistency		Outcome of the interaction between business analytics systems and existing systems
direction	specifics	
Insufficient data quantity	Facilitating data collection through additional sources, expanding the scope of collection, and employing data synthesis techniques	Representativeness and credibility of data analysis results
Low data quality	Establishing data quality standards, using quality control methods, automating data cleansing processes, and error detection	
Inadequate metadata volume	Providing proper documentation for data collection and processing, including their origin, structure, and collection methods	Well-designed and implemented data collection and quality control systems
Inconsistency in data formats	Standardizing data formats, using data exchange languages (e.g., JSON, XML), and establishing uniform rules for information representation	
Lack of data quality control	Implementing a data quality control system, conducting regular checks and audits, and applying automated tools for error detection	Systematic control over data quality
Absence of data collection standards	Setting unified standards for data collection and thoroughly examining their impact on data analysis	Consistency in data collection methods and formats

Source: formed based on [1; 6].

5. Efficient personnel management (monitoring and analyzing staff productivity to optimize work hours, schedule planning, and improve service quality).

6. Service quality analysis (using customer feedback and ratings data to enhance the quality of hotel and restaurant services).

7. Implementation of technological innovations (utilizing innovative technologies such as the Internet of Things or artificial intelligence for process automation and production efficiency improvement).

8. Safety and compliance with standards (employing business analytics to monitor and ensure compliance with safety and service quality standards).

9. Marketing strategies and promotions (determining effective marketing strategies and promotions based on data analysis of demand and competitiveness).

The use of business analytics (utilizing data, analysis, and statistical methods to make informed business decisions) in managing the production process of hotel and restaurant services allows entities in the hospitality industry to optimize their internal processes and create a more convenient and personalized environment for customers. On the other hand, optimizing hotel and restaurant services through business

analytics systems is associated with a set of problems and challenges, the main ones of which are highlighted in Figure 2.

Among the outlined problems and challenges of optimizing hotel and restaurant services through business analytics are:

Table 2. The specifics of data standardization, integration, and the use of uniform formats and data structures within business analytics systems

Solution to the problem of data inconsistency		Outcome of the interaction between business analytics systems and existing systems
direction	specifics	
Data standardization	Establishing a unified structure and format for all data used by the business entity	Processing and analysis of data, unity, and accuracy in data processing
Data integration	Combining data from different sources into a single information system	
Use of uniform formats	Harmonizing the use of uniform data presentation formats, such as utilizing data exchange standards	More precise and reliable analysis leading to better strategic decisions in business
Implementation of data integration systems	Using specialized tools and systems that automate the processes of integration and standardization	

Source: formed based on [4; 6].

Table 3. The specifics of implementing functional integration solutions to maximize the interaction of business analytics systems with existing systems

Solution to the problem of data inconsistency		Outcome of the interaction between business analytics systems and existing systems
direction	specifics	
Systems of Descriptive Analytics	Focused on describing the current state of affairs and identifying patterns in historical data	Reports, dashboards, interactive reports, data analysis processes
Systems of Predictive Analytics	Utilize statistical algorithms and models to predict future events and trends based on historical data	Data forecasting and classification, regression analysis
Systems of Prescriptive Analytics	Provide recommendations for optimal steps to achieve a specific goal or solve a problem	Decision optimization, decision-making based on analysis
Real-Time Systems	Enable the analysis and response to events in real-time	Real-time monitoring, notifications, automated response systems
Online Analytics Systems	Analyze data generated in real-time during the execution of specific actions or processes	Real-time analysis, event monitoring, automatic trend detection
Interactive Analytics Systems	Allow users to interact with and analyze data in real-time.	Interactive dashboards, data exploration, self-service analytics
Data Visualization Systems	Focused on transforming complex data into understandable and effective visual forms.	Charts, diagrams, interactive visualizations
Deep Data Analytics Systems	Utilize deep machine learning for analyzing large volumes of data and identifying complex relationships	Deep machine learning, big data analysis, natural language processing

Source: formed based on [1—2; 5].

1. Data collection and quality assurance issues (arising from insufficient quantity or quality of data, which can complicate accurate analysis and lead to ineffective decision-making). The solution to this problem involves setting up systems for effective data collection and storage, along with quality control measures (see Table 1).

2. Confidentiality and data security issues (arising from insufficient process quality in collecting and processing customers' data, which occurs when confidentiality and data protection standards are not adhered to). The solution to this problem involves the security standards use and implementation, encryption, and other measures to ensure confidentiality.

3. Data inconsistency issues (occur when data comes from various sources and is presented in different formats, complicating their processing and analysis). The solution to this problem involves standardization and data integration, using uniform formats and data structures according to the specifications outlined in Table 2.

4. Challenges in the practical aspects of implementing solutions (arising in new technologies and analytical solutions adoption faces resistance from personnel, a shortage of qualified staff, or high costs). The solution to this problem involves providing adequate support for personnel, training, and phased implementation, considering the specificities of the business.

5. Challenges of insufficient integration of business analytics systems with existing management and other systems in the hotel and restaurant industry (arising in new business analytics systems integration with existing management and other systems proves to be complex). The solution to the problem involves developing and implementing functional integration solutions for maximizing the interaction of business analytics systems (which can be used separately or in combination) with existing systems according to the specifications outlined in Table 3.

6. Ambiguity in performance measurement arises because it is not always clear how to measure the success of optimization measures and determine their impact on the business. This uncertainty can stem from vague or loosely formulated goals and key performance indicators (KPIs), choosing incorrect or insignificant metrics for measurements, and relying on subjective assessments for performance measurement. Different stakeholders may have varying perspectives on success. The solution to this problem involves defining clear key performance indicators (KPIs) and establishing a robust measurement system.

Table 4. The specifics of developing contingency plans and training personnel to make manual adjustments in unforeseen situations

Solution to the problem of data inconsistency		Outcome of the interaction between business analytics systems and existing systems
direction	specifics	
Contingency plans	Development of contingency plans for technical malfunctions, including recovery processes, working techniques on backup resources, and minimizing losses during disruptions	Business Continuity Process Techniques
Availability of backup resources	Ensuring the availability of additional servers, hardware, and software, partnering with cloud service providers for instant access to additional resources	Ensuring the availability of backup technical resources for use in unforeseen situations
Planning with consideration of technical constraints	Developing strategies and plans that allow for quick adaptation to changes in the technological landscape and utilizing alternative technical solutions	Ability to quickly adapt to new technical solutions or use alternative approaches
Personnel training	Conducting training and workshops for staff on manual intervention, utilizing backup resources, and effectively addressing technical issues	Formation of skills in personnel for manual intervention in case of technical malfunctions.
Testing and simulations	Conducting regular tests and simulations of intervention scenarios to check the effectiveness of backup plans and personnel skills	Formation of backup plans to mitigate the impact of technical failures on business operations.

Source: formed based on [1; 3—4; 6].

7. The problem of technological dependency arises because reliance on technology limits the functioning of the business entity in the event of technical failures or the absence of necessary resources. The solution to this problem involves developing contingency plans and training staff to make manual adjustments in unforeseen situations, according to the specifics outlined in Table 4.

Optimizing hotel and restaurant services through business analytics requires careful resolution of these issues to achieve successful and sustainable results.

CONCLUSIONS FROM THIS STUDY AND PROSPECTS FOR FURTHER EXPLORATION IN THIS AREA

It is proved that optimizing hotel and restaurant services should ensure the improvement of work processes and management strategies in business, aimed at enhancing service quality, resource utilization efficiency, and achieving competitive advantages. The following conclusions are outlined:

1. Optimization of hotel and restaurant services through business analytics provides the following opportunities for business entities: improvement of service quality (by understanding the needs and preferences of clients), efficient resource management (through the rationalization of resource utilization), increased competitiveness (by creating more attractive conditions for clients compared to competitors), attracting and retaining clients (through attracting new clients and retaining existing ones), increased profitability (through enhanced production efficiency, optimization of prices, and other financial management strategies), adaptation to changes in market conditions (by quickly responding to changes in market conditions), ensuring consistency and standards (by establishing and adhering to service standards).

2. Optimization of hotel and restaurant services through business analytics is associated with a range of problems and challenges, including: data collection and quality assurance issues; confidentiality and data protection problems; data heterogeneity challenges; practical implementation issues; insufficient integration of business analytics systems with existing management and other systems of business entities; ambiguity in measuring success challenges; practical aspects of solution implementation challenges.

Prospects for further research lie in the continued improvement of methods and tools for optimizing hotel and restaurant services through business analytics, as well as in the development of new strategies that take into account contemporary trends and challenges in the service industry.

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