DIGITAL TRANSFORMATION OF OPERATIONS IN HOSPITALITY INDUSTRY – LITERATURE REVIEW AND SURVEY FROM MONTENEGRO

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Abstract: Tourism and hospitality is very complex and sensitive industry based on selling experiences, feelings, excitements and long lasting memories. With such a high stake, all hospitality companies need to thoroughly explore market needs and present themselves as most confident and reliable service providers, in order to be competitive, innovative and attractive to the guests, but at the same time to maintain efficiency, quality and sustainability of all daily operations. Digital transformation has proved itself to be powerful tool that enables companies to gain competitive advantages, such as improved customer services, more efficient cost control and creation of new business models. Purpose of this study is to explore how digital transformation of hospitality operations can be of benefit to these enterprises and which operations were significantly enhanced by this process.In addition to a literature review regarding the above mentioned issues, as a foundation of this research, a survey was also conducted among hospitality companies in Montenegro with purpose to explore the use of digital technologies in hospitality operations, namely food and beverage service, and their awareness on benefits of these tools for both quality of service and cost control. Results of the survey have shown that there is a high level of awareness about benefits of digital technologies for overall business results among hospitality companies in Montenegro, but the lack of skills in use of digital technologies for business purposes is still evident and represents a significant obstacle to adopting new solutions and developing new business models.

Key words: digital transformation, hospitality operations, food and beverage service, Montenegro

INTRODUCTION

Hospitality industry, as integral part of tourism, is extremely sensitive business and susceptible to the influence of wide range of internal and external factors. Global shifts and changes reflect strongly to hospitality business processes, which can significantly harm its market position or strongly improve it, depending on its ability to anticipate the

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needs of its target groups and innovating its business model according to them. Though many circumstances in recent years were more limitating or even restrictive factor of influence on hospitality industry (pandemic, war, inflation etc.), age of digital transformation enables hospitality establishments all over the world to overcome those obstacles by using all available technology solutions in order to ensure maximum efficiency and productivity of their operations, but still maintain customer-centric orientation along the way. Today we are witnessing such an extreme predictions, like the one made by Forbes magazine in 2021, that presented staff-less boutique hotels as future for Millenials and Gen-Z, who will use only their mobile phone to order and consume all hotel services that are at their disposal. In the aftermath of Covid-19 pandemic, all contactless options are still desirable from the guests' point of view, being at the same time cost effective for the management. In area of primary digital technologies, mobile phones and social networks are widely used as tool for searching / booking / reviewing hospitality services, while both the staff and the management rely on them as efficient marketing and promotion tool which also enables invaluable direct and immediate communications with potential guests. Cloud computing has found its purpose as storage of vast amount of financial and accounting informations, while big data analysis provides important reports on current trends and business results. Smart rooms equipped with various types of sensors are inevitable in sustainable tourism, which is imperative nowadays, so Internet of Things also has its important part in the whole process. It should be mentioned that hospitality industry is the second biggest buyer of IoT devices worldwide, after the health industry (Fischbach, A. 2019). When it comes to secondary digital technologies, first robot in hotel industry was robotic butler introduced by Aloft Hotel Cupertino in 2014, while Hilton and IBM as partners created concierge robot Connie, powered by IBM's super computer AI Watson. Also, having in mind that hotels are selling experience, rather than products or services, virtual reality has already being used as a marketing tool that enables potential guest to experience hotels rooms and facilities in advance, which will help them make fast and easy booking decision. All of the above mentioned is in line with key motive for this research – exploring the use of digital technologies in hospitality operations and digital transformation of hospitality processes as a great benefit for this industry, since it enables higher efficiency and lower business costs, while at the same time strenghtens guest relations and customer loyalty. In order to provide a better insight in this matter, this research is meant to identify scientific papers on the topic of digital transformation of hospitality operations and conduct a literature review where results of content analysis will present current state of digital transformation of hospitality operations in practice. Furthermore, it will explore the use of digital technologies in hospitality establishments in Montenegro, namely food and beverage service, and their awareness on benefits of these tools for both quality of service and cost control.

Within the research, answers should be provided for 3 following research questions:

- **RQ1**. Do available research papers provide strong enough framework of theory foundations for use of practicioners in hotel industry?
- **RQ2**. Which hospitality operations are being positively influenced by its digital transformation?
- **RQ3**. What is the level of awareness among hospitality companies in Montenegro in regards to benefits of digital technologies in operations?

This paper is structured in a way that, after introduction, the methodology of the literature review is explained, followed by description of its results and a presentation of conducted survey. Next are limitations to the research process, recommendations for other researchers and at the end, conclusion based on delivered research results.

METHODOLOGY OF LITERATURE REVIEW

In order to conduct this research, first step was to perform a literature review as systematic data processing approach based on literature search and screening, as well as data extraction and analysis. A literature review is a way of synthesizing research findings to show evidence on a meta-level and to uncover areas in which more research is needed, which is a critical component of creating theoretical frameworks and building conceptual models (Snyder, H. 2019). In general, it demonstrates a starting point for existing knowledge of a study, which will enable establishing the research gap and be a laying foundation for composing background of the study, problem statement and purpose of the study (Mahrool, F. 2020). Following establishing of research protocol, article selection process was performed using the PRISMA method (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) which has presented the results of the process of searching, screening and extracting articles most relevant for the research topic. Above mentioned research steps were meant to provide answer to the first research question related to the current state of scientific papers in the area of digital transformation of hospitality operations. After the selection process, extracted articles were a subject of content analysis as a qualitative research technique which purpose is *to organize and elicit meaning from the data collected and to draw realistic conclusions from it* (Bengtsson, M. 2016). Content analysis of reviewed articles provided answer to the second research question related to digital transformation of specific hospitality operations. Research protocol was based on selecting literature from 4 digital databases – Summon, Scopus, Web of Science and Google Scholar and the search was conducted in December of 2022. Used search term was "*digital transformation of hospitality operations*" contained in the title and/or abstract and/or keywords, limited to journal articles. Open access to full text of the article was

mandatory search filter, as precondition for content analysis. The only database that didn't provide search filter "journal article" or "full text available" was Google Scholar, demanding manual analysis of offered papers, so the selection criteria was topic relevance, which resulted with selection of 12 articles among 70 top relevant be included in this research.

After selection process was completed, 14 articles remained to be included in the study and subjected to further analysis by full text review.

LITERATURE REVIEW RESULTS

Since one of the purposes of this research was to identify scientific papers on digital transformation of hospitality operations and conduct a literature review, following are the results that will present current state in research of above mentioned topic.
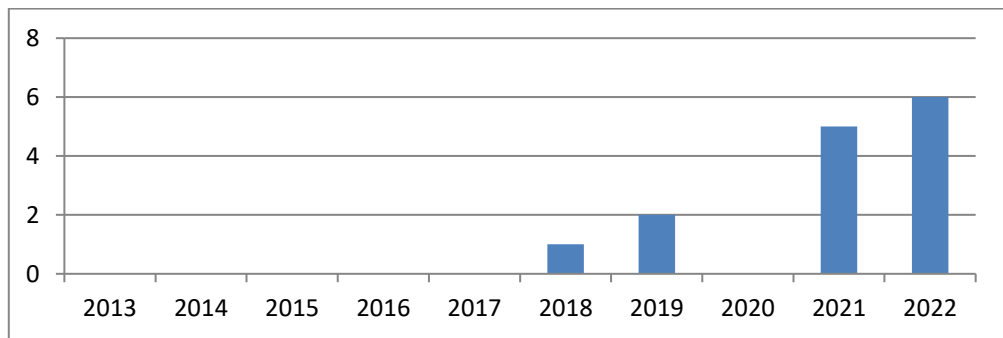

Fig. 1. Number of published articles 2013-2022

Though during the search no limitation has been set regarding the year of publishing, no article prior to 2018 was identified. There was only one article published in 2018, followed by 2 in 2019. In 2020 no articles were publish, probably because of the Covid 19 pandemic which had huge impact on hotel industry, but at the same time became new driver for many researchers whose articles published in 2021 and 2022 were mostly related to changes in business models and hotel operations caused by the pandemic. Number of articles increased after 2020, with 5 relevant articles published in 2021 and 6 in 2022.
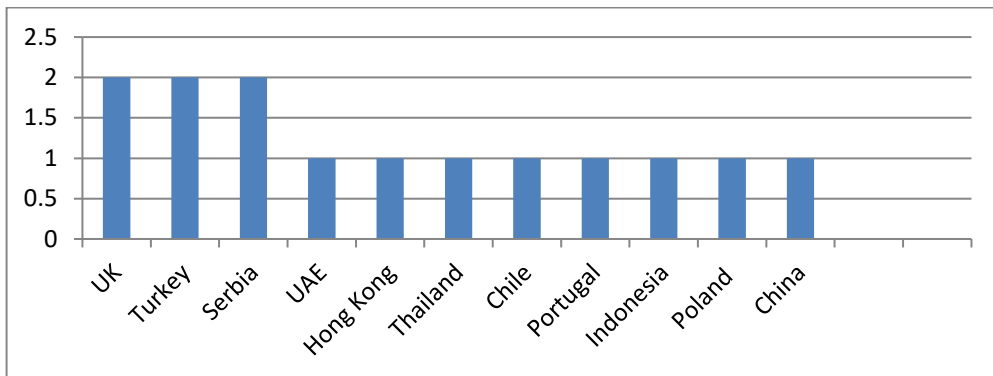
Fig. 2. Geographical distribution of research articles

Geographical distribution of research articles according to the institution's country of origin shows that research topics on digital transformation in hotel industry were being mostly explored along European and Asian continent. It is consistent with statistics about world tourism ranking and most visited touristic destinations, where among top 10 sites, 7 are in Europe and 2 in Asia (China and Thailand). Countries with greatest number of international visitors have very well developed tourism industry, representing one of key drivers to their economy, which can be the main reason of continuous researches on topics that can significantly increase their competitiveness on tourism market.

Table 1. Types of research techniques used and size of the research sample

Research Topic	Research Technique	Size and Type of the Sample
"Voice Assistants in Hospitality: Using Artificial Intelligence for Customer Service"	Semi-structured interviews	7 hospitality technology providers 21 VA consumer (international)
"IT Strategy in the Hotel Industry in the Digital Era"	Literature review Content analysis	75 articles, reports and web blogs
"Digital Transformation in the Chilean Lodging Sector: Opportunities for Sustainable Businesses"	Semi-structured interviews Case studies	4 hotel managers from Chile

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"Hospitality Digital Marketing and Transformation Technology Challenges"	Questionnaire Analysis	41 hotel representative from Serbia
"COVID 19: The Catalyst for Digital Transformation in the Hospitality Industry?"	Questionnaire Analysis	51 hotel manager from Portugal
"Autonomous Enterprise as a Model of Hotel Operation in the Aftermath of the COVID-19 Pandemic"	Computer Assisted Web Interview Principal Component Analysis Cluster Analysis	273 hotel representatives from Poland
"Digital Transformation, Operational Efficiency and Sustainability: Innovation Drivers for Hospitality's Rebound in the United Arab Emirates"	Exploratory Analysis Technique Interviews	7 hotel managers from UAE
"Effects of Digital Transformation on Human Resources Planning in Hotel Businesses"	Qualitative analysis (interviews)	15 hotel human resource managers from Turkey
"The Development Model for Digital Transformation of Hotel in Thailand"	Quantitative Research (questionnaires)	260 hotel representatives from Thailand
"Sustainable Digital Transformation in Hospitality Industry: Study of the Hotel Industry in Indonesia"	Questionnaire Analysis	101 hotel and resort leader from Indonesia
"Digital Transformation and Revenue management: Evidence from the Hotel Industry"	Semi-structured interviews	23 hotel revenue managers from Jordan

"Readiness of upscale and luxury branded hotels for digital transformation"	Semi structured interviews	11 hotel representatives from Asia
"The Dilemma of Digital Transformation of China's Hotel Industry and the Construction of Technology Platform"	Literature review Case studies	China, number not identified
"Digital Transformation of Tourism"	Collection and analysis of available surveys	Serbia, number not identified

As presented above, most common used research tools were semi-structured interviews and questionnaires, that served as foundation for further qualitative or quantitative analysis. Semi-structured interviews are widely used in qualitative research, since there is no strict set of questions, as interviewer is rather to explore the framework of central themes, which can be more productive in data collecting process. On the other hand, same characteristics can make them less objective. When it comes to questionnaires, they have strict form of questions which enables data collection from large target audience whose answers can often be easier to measure and analyze, rather than using different research instruments. They can serve for both qualitative and quantitative research. Analysis of methodologies used in reviewed articles shows that authors mostly used research samples from their own country (11 of 14 did), while only 2 articles included international group of respondents (participants of international summit in first case and international travellers in second case). Other 12 authors based their research on case studies from hotel industry representatives in their countries, which may be considered as certain limitation, due to different law regulations, availability of various digital technologies, different types of tourism offers and similar factors that may vary from one country or region to another.

Table 2. List of key hospitality operations that were identified in reviewed articles as positively influenced by digital transformation

Research Topic	Hospitality operations positively influenced by its digital transformation
"Voice Assistants in Hospitality: Using Artificial Intelligence for Customer Service"	Customer service, Room service, Front office, Maintenance
"IT Strategy in the Hotel Industry in the Digital Era"	Customer service, Front office, Reservations, Housekeeping
"Digital Transformation in the Chilean Lodging Sector: Opportunities for Sustainable Businesses"	Customer service, Front office, Reservations, Sales
"Hospitality Digital Marketing and Transformation Technology Challenges"	Customer service, Marketing
"COVID 19: The Catalyst for Digital Transformation in the Hospitality Industry?"	Marketing, Human resources
"Autonomous Enterprise as a Model of Hotel Operation in the Aftermath of the COVID-19 Pandemic"	Customer service, Reservations, Sales
"Digital Transformation, Operational Efficiency and Sustainability: Innovation Drivers for Hospitality's Rebound in the United Arab Emirates"	Customer service, Marketing, Front office, Food & beverage
"Effects of Digital Transformation on Human Resources Planning in Hotel Businesses"	Human resources
"The Development Model for Digital Transformation of Hotel in Thailand"	Customer service
"Sustainable Digital Transformation in Hospitality Industry: Study of the Hotel Industry in Indonesia"	Customer service, Marketing

"Digital Transformation and Revenue management: Evidence from the Hotel Industry"	Reservations, Finances
"Readiness of upscale and luxury branded hotels for digital transformation"	Customer service, Marketing, Sales
"The Dilemma of Digital Transformation of China's Hotel Industry and the Construction of Technology Platform"	Customer service
"Digital Transformation of Tourism"	Customer service, Reservations

Results presented above show that authors of 11 out of 14 articles that were included in this research recognize customer service as business process in hospitality that has been the most positively influenced by digital transformation and use of available digital technologies. It can be a matter of further discussion if customer service is business process for itself, as it was most often mentioned in these articles, or it is a common aspect of every hospitality operation, usually divided on front operations (guest relations) and back office duties (data management). For purpose of this review, common authors' opinion will be adopted and customer service will be considered as hospitality operation which implies communication with guests in order to make them confirm their reservation, upgrade teh sales during their stay, become a part of loyalty program as frequent guest and spread positive reviews about the establishment.
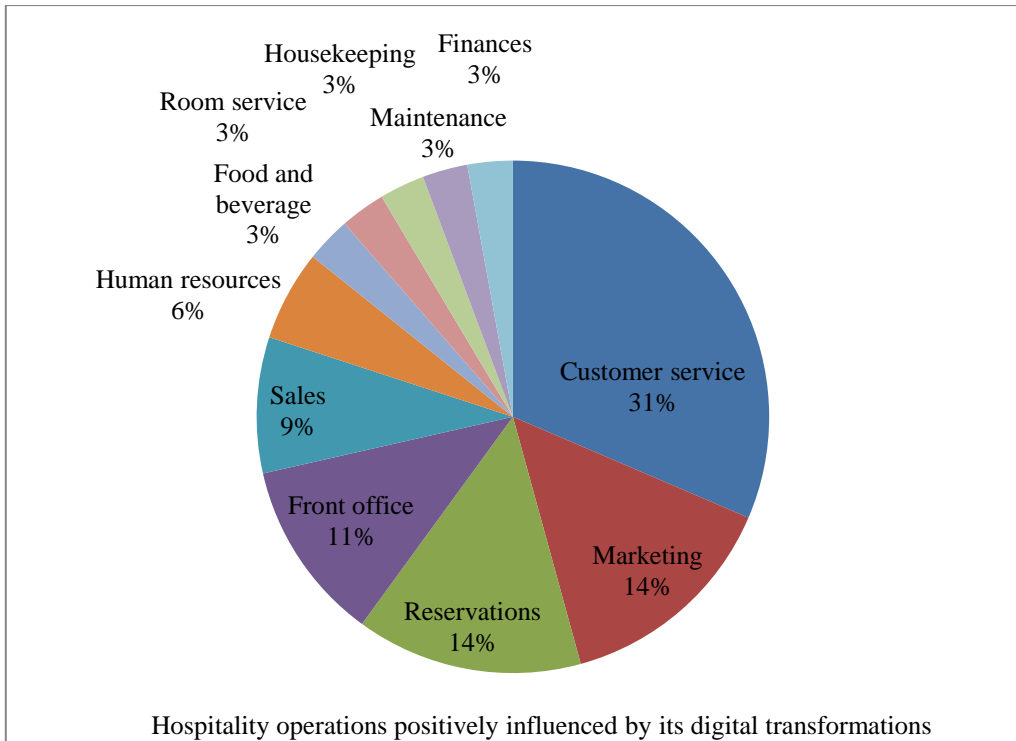
Hospitality operations positively influenced by its digital transformations

Fig. 3. shows which hospitality operations in selected research papers were most commonly mentioned as the ones with the significant positive impact by being digitally transformed

SURVEY RESULTS

One of the purposes of this research was to explore what is the level of awareness among hospitality companies in Montenegro in regards to benefits of digital technologies in hospitality operations.

In order to do so, survey was selected as primary method of data collection which is a unique way of gathering information from a large cohort. Advantages of surveys include having a large population and therefore a greater statistical power, the ability to gather large amounts of information and having the availability of validated models.

Survey consisted of 20 questions with multiple choice options on predefined answers, as the best model for proper measurement and comparing the results and also enabling the participants to be time efficient. It was distributed among 40 different hospitality establishments in Montenegro between April 15th and May 15th of 2023, having in mind seasonality in their work and the fact that most of them start their business in late spring, preparing for high season which usually starts in mid July.

Structure of survey participants was as follows:

- 75% hotels and restaurant categorized with 4* and 5*, so establishments promising high quality of service;
- most of the companies small and medium sized – 80% have capacity up to no more than 300 guests;
- based on location, 82,5% situated in more developed cities, such as Podgorica, Budva, Kotor and Tivat;
- 77,5% of participants have declared that they are mostly satisfied with current dynamics of their business operations.

In regards to use of digital technologies, results are following:

- 77,5% consider that use of digital tools can improve business results;
- 80% of participants confirmed they are already using various mobile of web applications in food and beverage service;
- if use of digital tools would save in number of employees and time for food and beverage preparation and service, 57,5% participant confirmed they would use it;
- among 42,5% of participants who were against using the digital tools, 70% didn't want to elaborate further on that matter, while remaining 30% have opted for different reasons (employees are not qualified – 15%, cannot afford extra costs – 10%, not familiar with digital technologies – 5%).

LIMITATIONS AND RECOMMENDATIONS

Key limitation of this study, in regards to conducted literature review, is a small number of articles related to research topic with open access, as it negatively affect the representativeness of the sample. However, since full text reading was necessary to enable qualitative analysis of research material, excluding this search filter was not an option. This research has discovered a lack of scientific papers that provide holistic approach to digital transformation of operations in all hospitality departments, but rather explore different aspects of digital transformation of certain processes or services. There was no case study available on digital transformation of operations in all departments (overall business experience), which can provide insight in complexity, pre-requisites, as well as advantaged and disadvantages of this process to the practitioners. Recommendation for future researches is to further explore the topic of digital transformation of hospitality operations, in order to increase the number of available research results which can be strong and reliable framework of theory foundations for development of business strategies and decision making in hospitality industry. In

regards to conducted survey in Montenegro, limitations were identified in research sample which should be expanded and for research model also to be changed in order to be more representative (possibly semi-structured interviews with decision makers). Since there is a high level of awareness about benefits of digital technologies in hospitality industry, while the lack of skills in their use is still evident, recommendations are directed towards further education of target groups about efficient use of digital tools and techniques in all business processes.

CONCLUSIONS

Implementation of new technologies is a requirement for hospitality industry which is constantly being challenged to change and transform according to needs and demands of their guests, as well as to turbulent market trends. While it is convenient to use digital tools to solve a problem or to facilitate a certain situation, it is not until the whole process is being digitally transformed, when full benefits of the new operation model can be recognized.

As "experience based industry", it is not realistic to expect that all hospitality operations and services can rely exclusively on digital technologies, but it has to be acknowledged that they can improve operational efficiency, productivity and sustainability. Most evident positive impact by digital transformation was made in the area of customer service, providing direct communication to customers all over the world, enabling them to present guests with a preview of their product and highly personalized service during their stay. The conducted literature review has shown that researchers recognize benefits of digital transformation to customer service processes in this industry, though its impact on other hospitality operations (both front and back office) still remains to be further explored. When it comes to exploring awareness of practitioners in hospitality industry in Montenegro, further education about benefits of digital technologies is highly recommended, together with upgrade of knowledge and skills in use of digital tools and services.

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