

UNIVERSITY OF ECONOMICS – VARNA
FACULTY OF MANAGEMENT
MARKETING DEPARTMENT

Plamen Yankov Yankov

Marketing Effects of the Application of Information Technology

ABSTRACT

On a dissertation for awarding the educational and scientific degree of "Doctor"
in the field 3.8. Economics, scientific specialty "Marketing"

Supervisor:

Assoc. Prof. Dr. Maria Kehayova-Stoycheva

Varna 2026

The dissertation has a total volume of 174 pages and is structured in an introduction (6 pages), three chapters (145 pages), a conclusion (2 pages), contributions (1 page), a list of references (13 pages) and appendices (7 pages). The dissertation contains 38 tables, 32 figures and 4 appendices. The bibliography includes 203 sources, of which 135 have electronic access. Of the sources used, 41 are in Bulgarian, 2 are in Russian, and 160 are in English.

I. GENERAL CHARACTERISTICS OF THE DISSERTATION

1. Relevance and significance of the study

The relevance of the study stems from the influence of online presence in the decision-making process for choosing accommodation and from the need to clarify how it affects customer loyalty in urban tourism.

The significance of the study is determined by the need for accommodation establishments to optimize the management of their online presence, imposed by the conditions of strong competition and the growing role of digital channels in the choice of tourist service. In urban tourism, websites, online platforms, reviews, visual content and social media are involved in the formation of trust, expectations and re-election intentions.

2. Object and subject of the study

The object of the dissertation research is the marketing activities of tourist accommodation enterprises, functioning within an urban tourist environment and carried out through digital channels and platforms.

The subject of the study is the impact of online presence on customer loyalty in the context of digital marketing activities of accommodation in urban tourism.

3. Main Research Thesis

The main research thesis is that the online presence of accommodation establishments is essential for the formation of customer loyalty in the conditions of urban tourism. In accordance with this thesis, the study is aimed at assessing the importance of online presence and the customer loyalty management techniques applied by accommodation establishments, as well as at establishing the dependence between them. The quality of the service is included as a complementary factor for a more complete interpretation of the established dependencies.

4. Purpose and objectives of the study

The aim of the dissertation is to establish and substantiate the role of information technologies in the marketing activities of accommodation establishments through quantitative analysis, focusing on the impact of online presence on customer loyalty in the context of urban tourism.

To achieve this goal, the following research tasks have been formulated:

1. To clarify the theoretical aspects of marketing effects and their specifics in the context of the application of information technologies in tourism;
2. To identify and operationalize the main studied variables related to online presence, quality of service and loyalty, taking into account both the managerial and consumer perspectives on their manifestation;
3. To develop and test a methodological model for assessing the relationships between the studied variables in accommodation establishments in the conditions of urban tourism, combining the data from the survey among managers and owners with the results of the survey among guests;
4. To formulate basic conclusions and practical recommendations for improving the digital presence and increasing customer loyalty in tourism enterprises.

5. Restrictions

In order to narrow the thematic scope of the dissertation research, the following restrictions have been adopted in the development:

1. The study examines the marketing effects at the micro level of individual accommodations and their interaction with customers as an element of the external microenvironment. The scope is focused on the digital marketing activity of these business entities, manifested through their online presence and its relationship with customer loyalty;
2. The management perspective is derived from the opinion of managers and owners of urban accommodation;
3. The geographical scope is limited to the districts of Varna, Burgas and Dobrich;
4. The study focuses on the main service related to overnight stay;
5. Modern digital technologies and artificial intelligence are considered as part of the context of digitalization, without distinguishing themselves as an independent subject of empirical research.

6. Research methods

In the development of the dissertation, the systematic, complex and comparative approaches are applied. Analysis and synthesis, desk research, literature review, etymological, semantic, morphological and syntactic analysis, classification and systematization are used. For

a more in-depth clarification of the marketing effects, a scientometric analysis is applied, including an analysis of publication activity and keywords.

In the empirical part, surveys among managers, owners and guests of accommodation were used, as well as an online audit of attendance. The data were analyzed through descriptive statistics, cross-tables, χ^2 tests, contingency rate, Kramer coefficient, confirmatory factor analysis and linear-structural modeling.

7. Sources of information

The information necessary to fulfill the purpose and tasks of the dissertation research is provided through:

- Desk research of scientific publications of Bulgarian and foreign authors in the field of marketing effects, information technology, online presence, customer loyalty and urban tourism;
- Analysis of official statistical, normative and strategic documents, including data from the National Statistical Institute, the Ministry of Tourism, Eurostat, UNWTO and other institutional sources;
- Extraction and processing of data from public registers and online sources related to accommodation establishments in the districts of Varna, Burgas and Dobrich;
- Primary data collected through a survey among managers and owners of accommodation establishments;
- Supplementary primary data from a survey among guests of accommodation;
- Online audit of the presence of selected properties on websites, online travel platforms, social media and user review sites.

II. STRUCTURE OF THE DISSERTATION

The dissertation has a total volume of 174 pages and is structured in an introduction (6 pages), three chapters (145 pages), a conclusion (2 pages), contributions (1 page), a list of references (13 pages) and appendices (7 pages). The dissertation contains 38 tables, 32 figures and 4 appendices. The bibliography includes 203 sources, of which 135 have electronic access. Of the sources used, 41 are in Bulgarian, 2 are in Russian, and 160 are in English.

Content of the dissertation

Introduction

Chapter I Conceptual Statements on the Marketing Effects and the Application of Information Technologies in Marketing Activity

1.1. Content aspects of marketing effects

1.1.1. Main dimensions of effects in business

1.1.2. Specifics of marketing effects

1.1.3. General classification of marketing effects

1.2. Development of information technologies as a factor in the marketing activity of companies

1.3. Influence of selected information technologies on the manifestation of marketing effects

1.3.1. Nature and manifestations of marketing effects in the application of information technologies

1.3.2. Classification of marketing effects in the use of information technologies

Chapter II Methodological Framework for Research and Evaluation of Digital Marketing Effects

2.1. Urban tourism as a product

2.2 Measurement of Major Digital Marketing Effects in Companies in the Urban Tourism Sector

2.3 Algorithm for evaluating major digital marketing effects

2.4 Conceptual model for studying the marketing effects of the application of information technologies in the urban tourism sector

Chapter III Marketing Effects of the Application of Information Technologies in the Urban Tourism Sector in the Black Sea Regions of Bulgaria

3.1. Status and Trends of Urban Tourism in the Black Sea Regions of Bulgaria

3.2. Results of the surveys among managers, owners and guests of accommodation establishments in the districts of Varna, Burgas and Dobrich

3.3. Recommendations for increasing the marketing effects of the application of information technologies in the urban tourism sector

Conclusion

Contributions of the dissertation

References

Applications

Annex 1

Annex 2

Annex 3

Annex 4

III. CONTENT OF THE DISSERTATION

Introduction

The introductory part of the dissertation begins with an account of the impact that the application of IT has on the way organizations carry out their marketing activities, communicate with consumers and track the results of their actions. The digital environment provides an opportunity to more clearly manifest and monitor marketing effects.

Marketing effects are considered as the results of marketing influences, which are expressed both in the behavior of consumers and in the management results of organizations. Their functions, in addition to purely communicative, also have cognitive, behavioral and managerial dimensions. This necessitates in their study to make a clear distinction between the effects themselves and the indicators through which they can be observed, measured and interpreted.

The importance of information technologies in the study of marketing effects in view of the growing role of digital channels in the search for information, comparison of alternatives, sharing opinions and the formation of consumer choices is emphasized.

The choice of urban tourism as a sector of research is justified by its strong sensitivity to technological changes and the widespread use of digital solutions in it (Fotis, Buhalis and Rossides, 2012; Topsakal, Icoz and Icoz, 2021) the formation of the user experience both through the actual stay and through the preliminary expectations created in a digital environment (Mgiba and Chiliya, 2020), the importance of online platforms, social networks, metasearch engines and user reviews are involved in the process of selecting, booking and building an online reputation of properties (Labanauskaitė, Fiore and Stašys, 2020; (Bharata *et al.*, 2023; Skočajić *et al.*, 2024), the perception of digital payments and electronic service systems as part of the expected quality of the tourist service and their impact on the convenience, trust and re-choice of consumers (Chetibi and Zohra, 2024; Susanto *et al.*, 2022; Almeida, Almeida and Mota, 2019). The increased role of accommodation establishments in the urban tourism sector is taken into account, with an online presence being taken into account as an important element of their digital marketing activities.

The focus of the development is focused on the importance of online presence for the formation and maintenance of customer loyalty in accommodation. Online presence is seen as the starting point of contact in a digital environment, and customer loyalty – as a marketing result related to re-election, readiness for a recommendation and maintaining contact with the site. In the management model, the emphasis is placed on the relationship between the management assessment of the importance of online presence and the practices for forming and maintaining customer loyalty, and the quality of the service is included as a complementary factor.

Chapter I Conceptual Statements on the Marketing Effects and the Application of Information Technologies in Marketing Activity

1.1.Content aspects of marketing effects

1.1.1. Main dimensions of effects in business

Marketing effects reflect the way in which marketing actions and tools influence consumer behavior, market performance and positioning of enterprises in a competitive environment. Despite their relative autonomy as an object of scientific research, they should be considered in the broader business context in which they manifest themselves.

One possible approach is to consider them as a subsystem of business effects. In this case, marketing impacts matter insofar as they have an economic impact on the business. This implies a preliminary clarification of the more general category of business effects.

In economic theory and practice, business effects reflect the economic performance of organizations. They manifest themselves through changes in efficiency, sustainability, competitiveness, market performance and ability to create value. Their differentiation and classification provides analytical clarity and creates the basis for subsequent interpretation of more specific manifestations, such as marketing effects.

A clear conceptual distinction between business and marketing effects requires a high degree of terminological precision, which is achieved through the application of various analytical approaches. Therefore, etymological, morphological and syntactic analysis are added to the lexical analysis, which contribute to a more precise clarification of the semantic content.

The etymology of the word "effect" is traced, formed from the Latin words "eh" meaning "end" and "facere" meaning "do", "do" with the main meaning of result, fulfillment, consequence. Gradually, the effect acquires the meaning that the final result is related to the action or force that gave rise to it. It is summarized that in the modern scientific literature, the

effect is considered as the result of a certain impact – a change that occurs depending on specific conditions or stimuli (Gignac and Szodorai, 2016). The strength and scope of the effect can be expressed through measurable numerical indicators that indicate the extent to which one independent variable affects another dependent within the study. Thus, the concept of "effect" is defined in the context of business effects, which provides a conceptual basis for subsequent analysis.

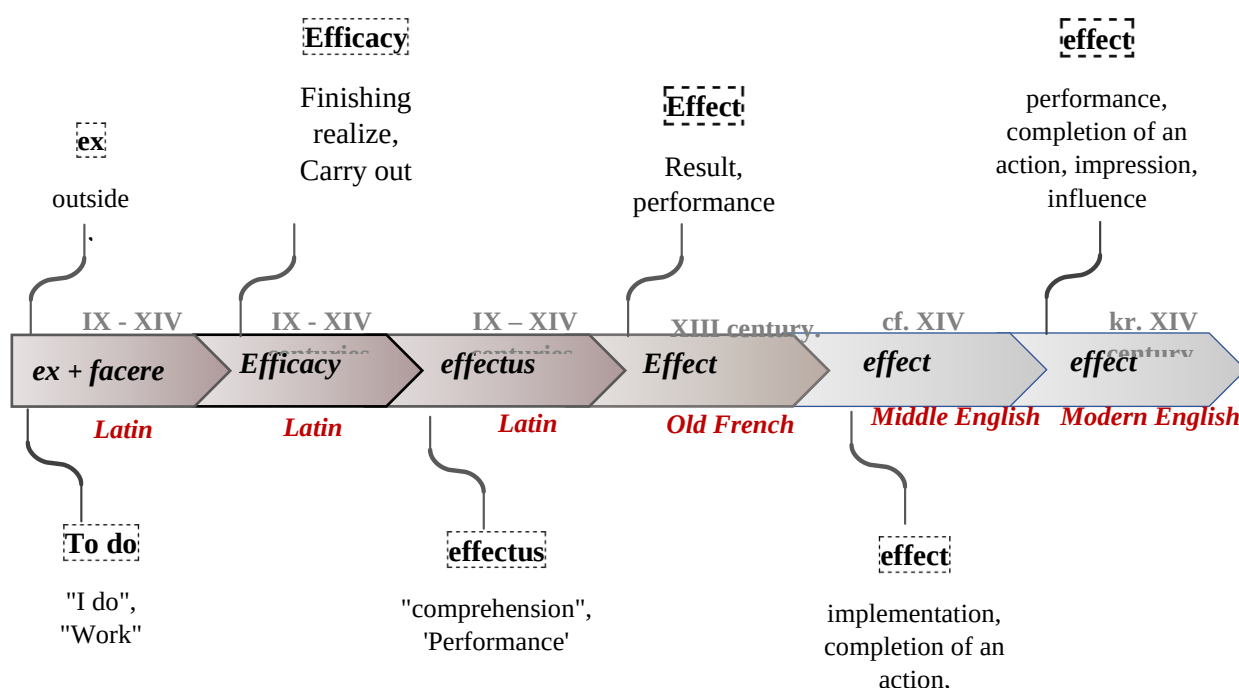


Figure 1 Etymological analysis of the term "effect".
Source: own research;

Next, the etymology and development of the concept of "business" is considered, to its modern meaning in the Bulgarian language and in the scientific literature, as it is the basis of the understanding of business effects. It is summarized that business in its modern meaning refers to the overall management and operation of an economic organization. Its purpose is to ensure that the company is profitable and sustainable in the long run. The systematic literature review highlights their various dimensions and manifestations of business effects, which requires their structuring and classification according to certain criteria. Based on specific characteristics of business effects listed in detail and described in several paragraphs, a classification is proposed.

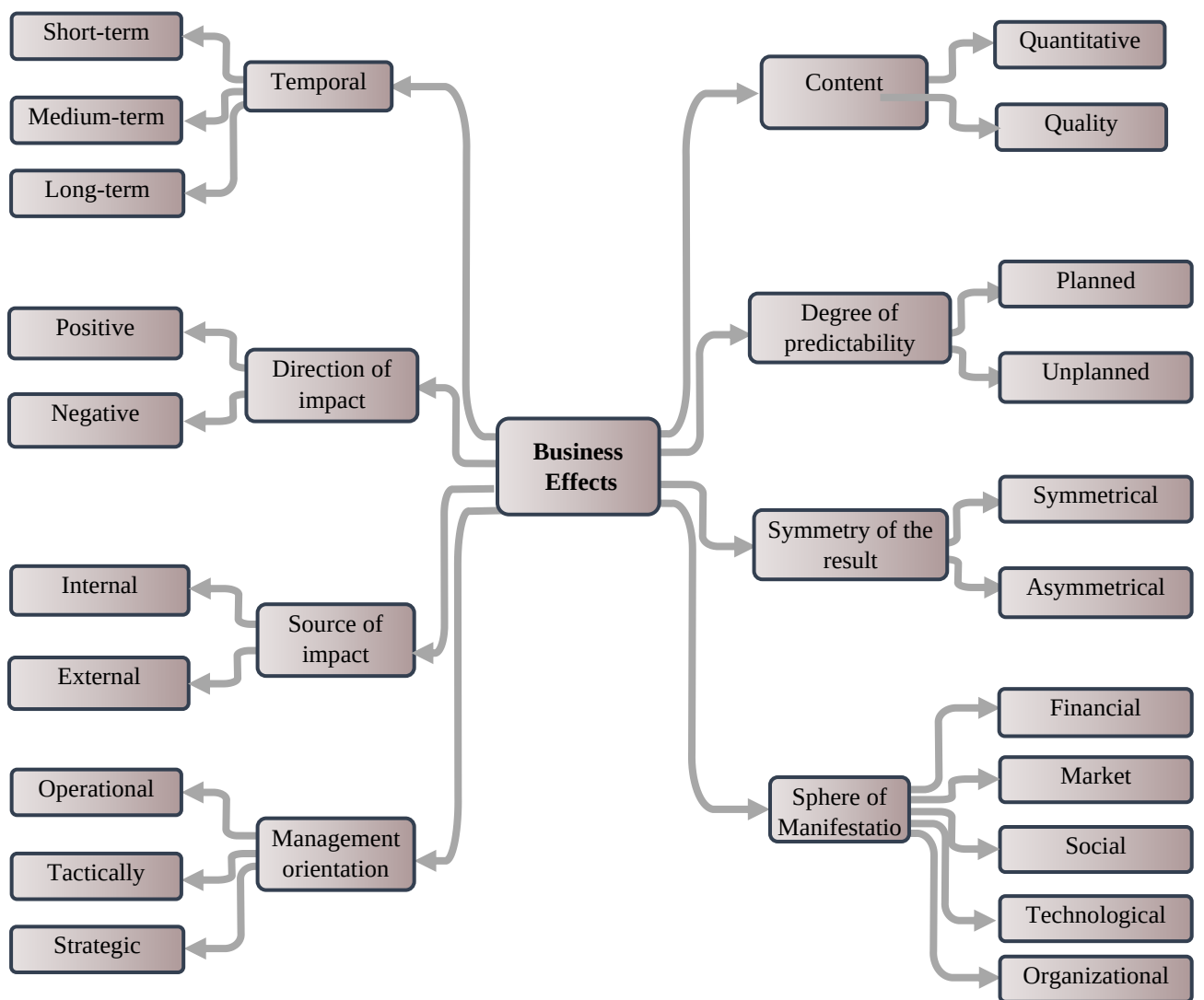


Figure 2 Classification of business effects according to basic criteria for manifestation and evaluation

Source: own development.

1.1.2. Specifics of marketing effects

To clarify the marketing effects in depth, scientometric analysis is applied. It highlights the leading thematic areas, key concepts and dynamics of scientific interest in marketing effects.

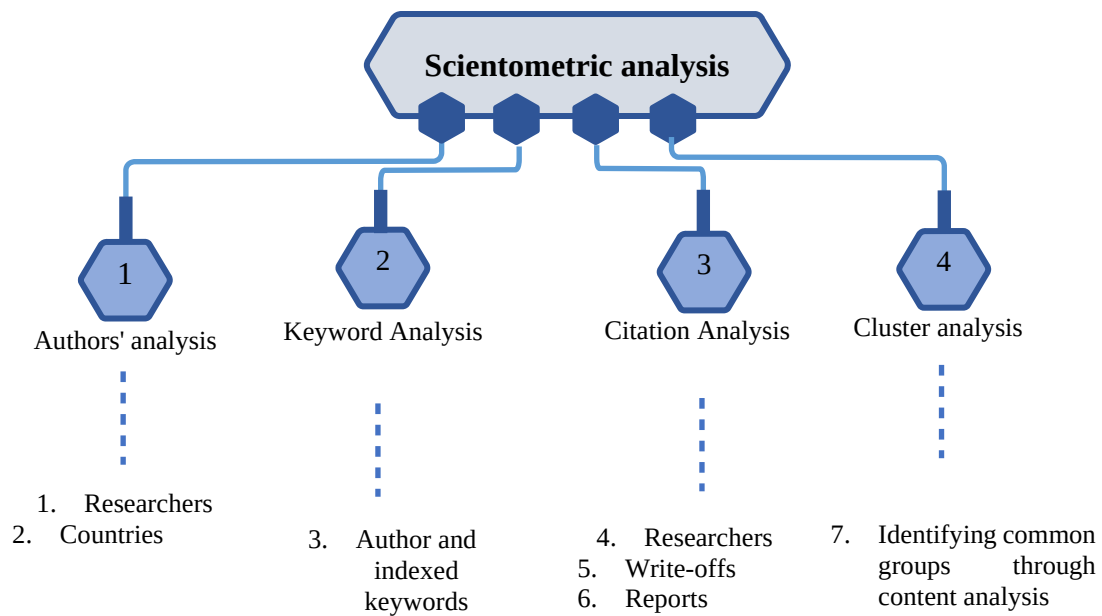


Figure 3 Scientometric analysis; Adapted from Zhong et al. (Zhong *et al.*, 2019)

The scientometric analysis is focused on publications related to the concept of "marketing effect" and its semantic variants. Scopus tracks the dynamics of publication activity for the selected keywords, with the search covering titles, abstracts and keywords. The results obtained show an increase in scientific interest after 2001 and a more pronounced publication activity in the last years of the period under review.

After outlining the general trend in publication activity, the analysis is focused on the content structure of the studied scientific field. For this purpose, keywords from relevant publications indexed in Scopus and Web of Science are extracted, and the links between them are visualized through the VOSviewer software. The obtained scientometric maps allow to highlight the main thematic areas and the interrelations between the concepts related to marketing effects.

Scopus contains a significantly higher volume of peer-reviewed publications compared to a number of other scientific databases, including Web of Science (Scots *et al.*, 2017). For the purposes of this analysis, 1249 documents containing a total of 5783 author and indexed keywords were extracted from Scopus. Keywords with a minimum frequency of six times were included in the analysis. Figure 4 shows their grouping into eight clusters based on the established links between them.

7	marketing strategy	Marketing Strategy	36	137	perceptions	Perceptions	19	72
8	purchase intention	purchase intent	30	100	marketing effect	Marketing effect	16	24
9	big data	Big Data	29	106	loyalty	Loyalty	15	69
10	virtual reality	Virtual reality	29	67	online	online	15	73
11	internet	Internet	26	80	e-commerce	E-commerce	13	41
12	customer satisfaction	Customer satisfaction	24	46	brand equity	Brand equity	12	53
13	consumer behavior	User Behavior	22	98	internet	Internet	12	53
14	brand image	Brand image	18	37	engagement	Engagement	11	52
15	brand equity	Brand equity	18	30	advertising	Advertisement	9	21
16	tourist destination	Tourist destination	16	63	big data	Big Data	8	22
17	brand loyalty	brand loyalty	16	34	image	Image	8	24
18	brand awareness	brand awareness	15	28	sales	Sales	15	49
19	marketing mix	Marketing Mix	13	11	intention	Intention	10	45
20	social networking (online)	Social networks (online)	44	199	marketing mix	Marketing Mix	5	25

Source: author's comparative analysis based on data from Scopus and Web of Science.

1.1.3. General classification of marketing effects

In the present study, marketing effects are systematized in a three-tier taxonomic structure consisting of type, class and type, as illustrated in Figure 6. This structuring logic aims to bring greater conceptual clarity and analytical consistency to the differentiation and study of marketing effects, creating a basis for their systematic comparison and empirical interpretation. At the highest level is the type that unites marketing phenomena that are similar in nature. The class provides a more detailed differentiation within the respective type, and at the level of the species, the specific manifestations of marketing effects subject to empirical study are highlighted.

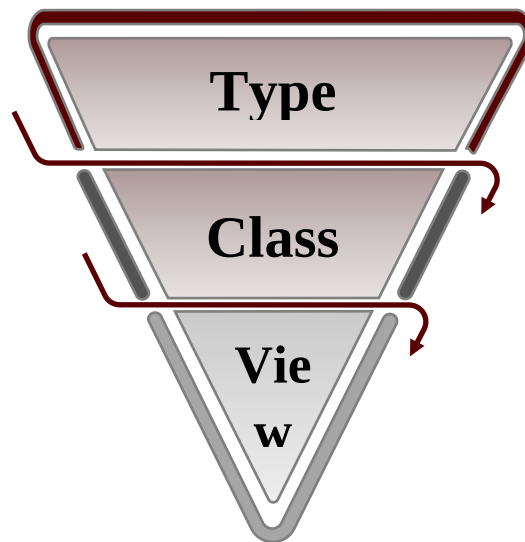


Figure 6 Hierarchical classification of marketing effects;
Source: own development

Based on the analysis made in the dissertation, a taxonomic scheme is developed, which does not present specific marketing effects, but categories for their systematization according to measurability, direction, time horizon, mechanism of impact, connection with the marketing mix, etc. The general hierarchy of classification is presented in Figure 7 and serves as an analytical framework for the subsequent analysis of marketing effects in the context of digitalization and urban tourism.

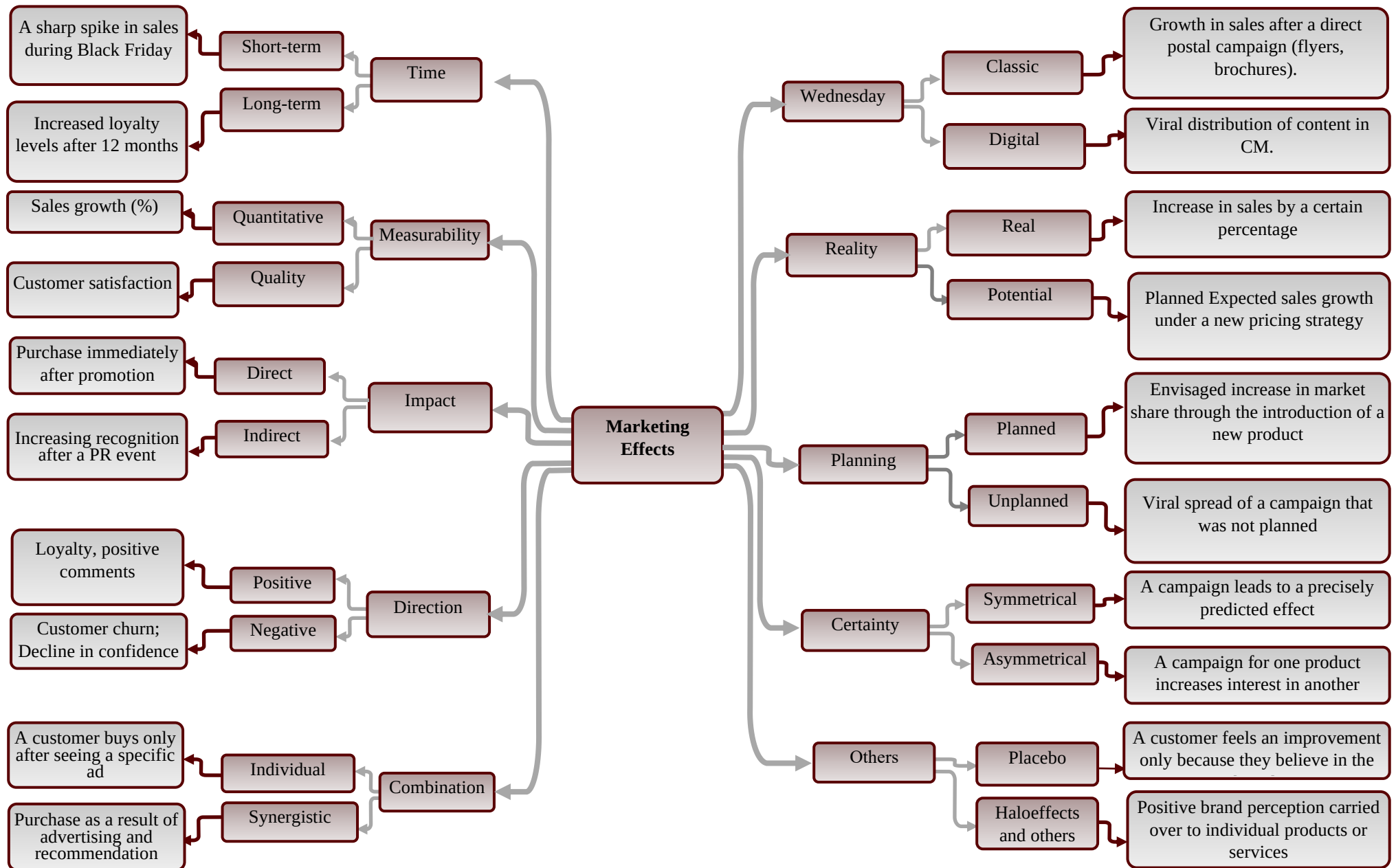


Figure 7 General classification of marketing effects; Source – author's development;

1.2. Development of information technologies as a factor in the marketing activity of companies

In a summarized form, the main directions of use of information technologies for marketing purposes are presented in Figure 8. The scheme systematizes the types of IT solutions according to their application – from programming languages and analytical tools to data management and automation systems. This classification illustrates the interconnections between the technologies that form the infrastructure of modern digital marketing.

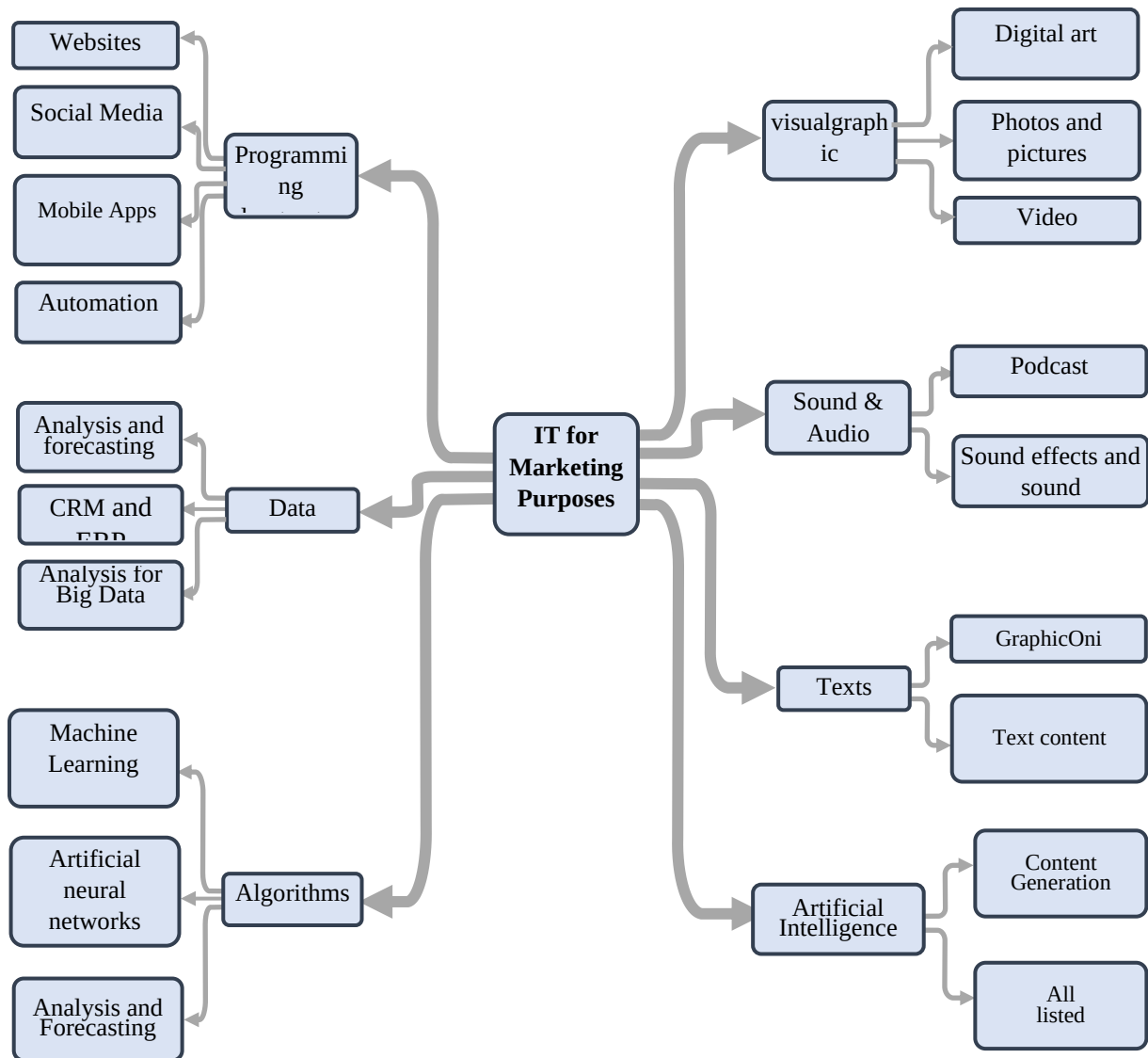


Figure 8 Main directions of the influence of information technologies on marketing processes; Source: author's work.

Specifically for the tourism sector, information technology is establishing itself as a key factor in generating marketing effects. Their application covers a wide range of activities – from

web booking platforms and customer relationship management systems to analytical solutions supporting management decision-making.

In view of the specifics of the selected sector of research, there is a need to systematize and analytically distinguish the digital tools used according to their role and functionality. Figure 9 presents a classification of the main software solutions applied in tourism, grouped into four main areas.

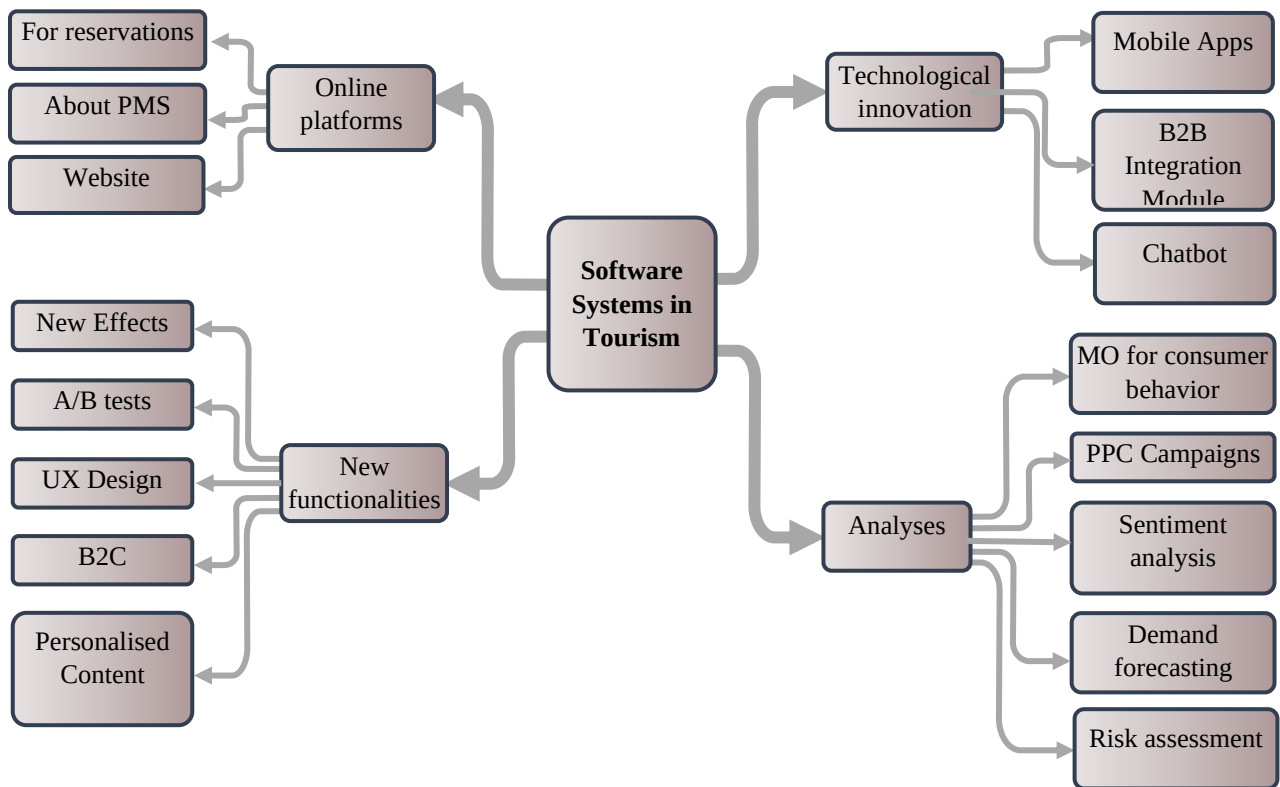


Figure 9 Classification of the main software systems in tourism.
Source: own development.

1.3. Influence of selected information technologies on the manifestation of marketing effects

1.3.1. Nature and manifestations of marketing effects in the application of information technologies

Item 1.3.1 considers the nature and manifestations of marketing effects in the application of information technologies. It is emphasized that information technologies themselves do not generate marketing effects, but function as a means through which marketing content reaches consumers, supports interaction with them and creates conditions for monitoring and measuring the results of marketing activities.

Particular attention is paid to the online presence, which is seen as the starting point of contact between accommodation establishments and potential guests. In the context of urban

tourism, it is essential, as the choice of accommodation often begins with an online search, comparison of alternatives, review of visual content, user reviews and ratings on booking platforms. In this way, the online presence performs an informational, communication and image function and creates prerequisites for the formation of trust and subsequent loyalty.

Loyalty is considered as one of the main marketing results related to re-election, readiness for a recommendation and maintaining contact with the accommodation. In the tourism sector, it is of particular importance, as it contributes to more sustainable customer relations, positive online ratings and higher effectiveness of marketing efforts. In the management model, the emphasis is placed on the relationship between the importance of online presence and management practices for the formation and maintenance of customer loyalty.

The quality of service is included as a complementary factor, as the actual guest experience matters for satisfaction, trust and subsequent behavior. This allows the online presence to be interpreted not in isolation, but in relation to the service provided and the way accommodations manage their customer relationships.

1.3.2. Classification of marketing effects in the use of IT

The manifestation of such multi-layered among the marketing effects of the IT application necessitates the search for more specific classification features. Practice shows that some of the effects differ in the way they manifest themselves over time, in the possibility of being measured and in the duration of their impact. As a result of advanced analytical tools, marketers can track in detail key indicators, such as the number of clicks, impressions, conversions and behavioral patterns of users. This ability provides empirical data on the effectiveness of campaigns, allowing for more precise targeting, personalization and optimization of marketing strategies. Careful systematization of the general characteristics of marketing effects allows them to be grouped by three key features: measurability, time variability and timeframe. The key features are briefly discussed in the sub-points below:

- **Measurability** – this trait looks at marketing effects in terms of quantitative (e.g., traffic, clicks, leads generated) and qualitative metrics (e.g., user experience, loyalty, trust) that determine the impact of digital marketing.
- **Variability** – encompasses the difference between static and dynamic effects, with static effects (e.g., online presence, image, and awareness) being relatively stable over time, while dynamic effects (e.g., engagement and sales) depend on active marketing campaigns and consumer interactions.

- Timeline – classifies effects as short-term (traffic, clicks) and long-term (loyalty, customer retention), which is essential for evaluating the effectiveness of marketing strategies in the long term.

This approach offers a more structured and applicable model for analyzing the impact of digital marketing, while taking into account its flexibility and interaction with different communication channels. Figure 10 graphically presents the classification described in the previous paragraphs.

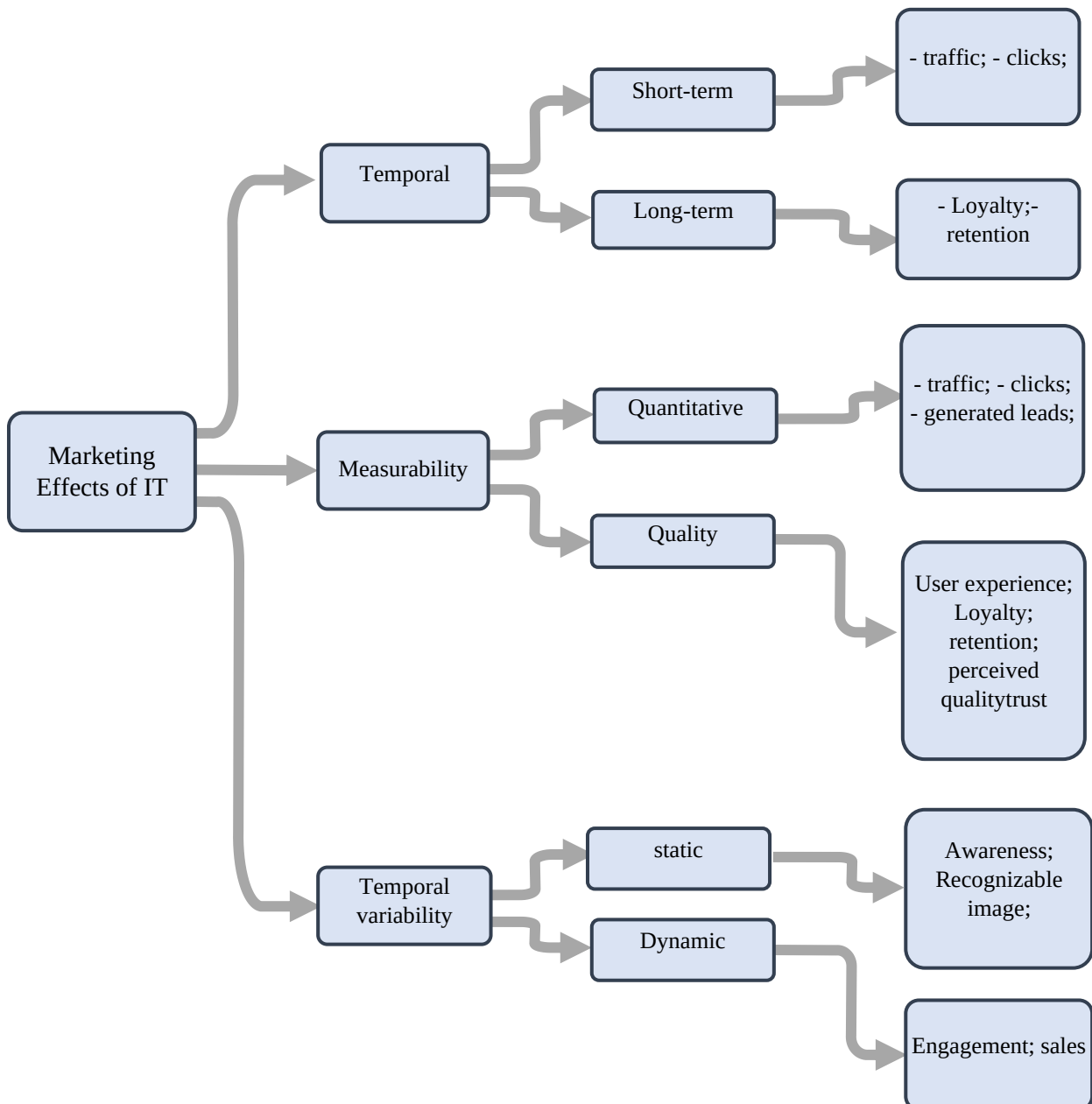


Figure 10 Classification of IT marketing effects; own research;

Chapter II Methodological Framework for Research and Evaluation of Digital Marketing Effects

2.1. Urban tourism as a product

The specific tourist resources of the city and the motives for visiting are among the main signs by which the different subtypes of urban tourism can be distinguished. The urban environment can combine cultural, business, entertainment, health, commercial, sports and other opportunities, which form a variety of tourist occasions and consumer expectations. On this basis, Figure 11 presents a classification of the main subtypes of urban tourism according to the leading motive for visiting and the nature of the tourist resources used (Vasileva, 2007).

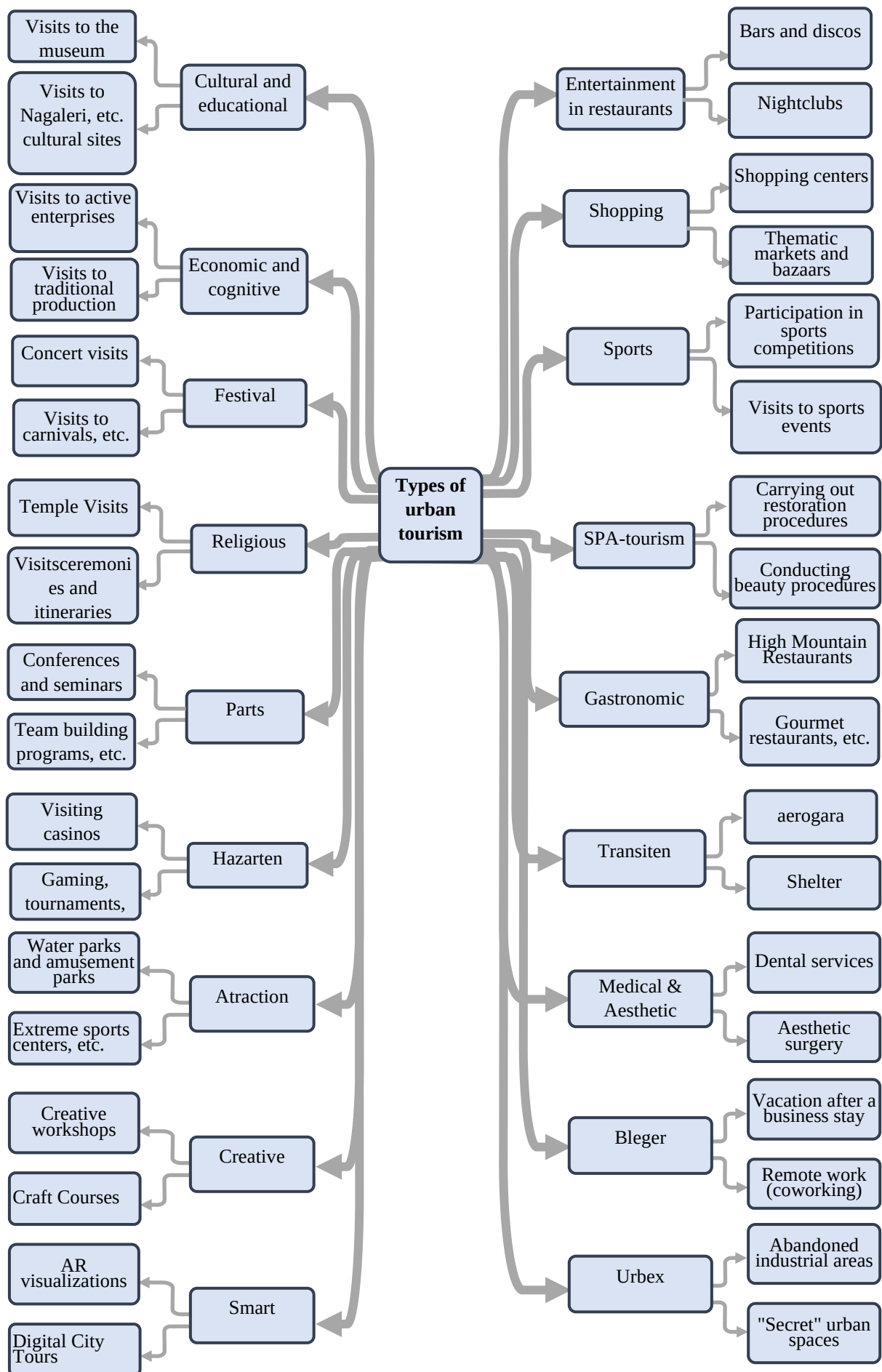


Figure 11 Classification of types of urban tourism; Source: own elaboration

The consideration of urban tourism as a complex product system implies that it should be analyzed not only through its types and motives for visiting, but also through the real dynamics of tourist supply and consumption. In this sense, statistical indicators for accommodation, bed capacity and overnight stays make it possible to outline some of the measurable parameters of the sector's development. They do not exhaust the content of urban tourism, but show its capacity, workload and changes over time.

2.2 Measurement of Major Digital Marketing Effects in Companies in the Urban Tourism Sector

LSM is gaining wide popularity as a method of studying various marketing effects in the urban tourism sector. This trend is confirmed by a desk reference of scientific publications in Scopus. The search criteria include LSM and tourism, both terms being written in English respectively (sem AND tourism). A total of 1530 full-text scientific publications with open access have been extracted, which correspond to the search criteria. As can be seen from the result in Figure 12 below, the number of research applied in the tourism sector has increased significantly over the past 5-7 years.

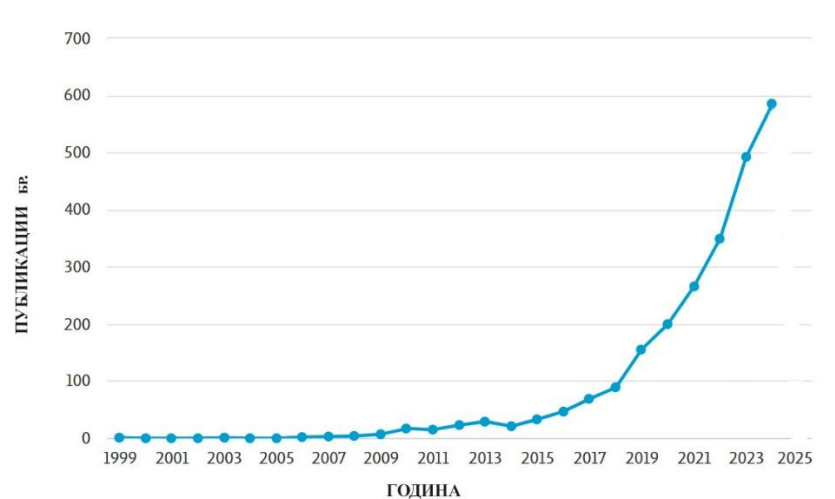


Figure 12 Number of publications with LSM research method in the tourism sector;
Source - Scopus

In this analysis, the population includes registered accommodation establishments in the districts of Varna, Burgas and Dobrich, which meet the restrictive criteria defined in the introduction. According to these restrictions, the study includes sites of the type of hotel, family hotel, hostel, guesthouse, apartments and guest rooms located only in an urban environment.

For this purpose, only the cities without their adjacent areas were selected through the built-in filters of the register. Based on these criteria, the initial registration framework of the survey was formed from the National Register of Accommodation Establishments, which as of July 7, 2024 includes 3,673 sites. Their distribution by type and category is presented in Table 3.

Table 3

Initially identified accommodation establishments by type of object

Accommodation class	Type of property	District		
		Varna	Burgas	Dobrich
A	Hotel	54	24	4
B	Semeen wanted	49	23	5
B	Hostel	12	2	2
B	Boarding	6	6	0
B	Guest House	62	27	0
In	Guest rooms	185	184	1
In	Guest Apartments	2157	850	20
Total		2525	1116	32
		3673		

Source: own research

When forming the empirical base, the official register of categorized accommodation establishments was used. At the first stage, 3673 sites operating in the three studied areas were identified. For the purposes of the survey, the general population is operationally defined as the accommodation establishments for which publicly available contact details are available – email address and/or phone number. 1150 sites meet this criterion. In the period July 15 – September 15, 2024, the questionnaire was sent to all sites of the defined general population, which is why a comprehensive approach was applied at the dissemination stage. 235 validly completed questionnaires were received, which represents a 20.4% return. The implemented empirical base is formed by the respondents and is used for the purposes of linear-structural modeling and the verification of theoretically justified dependencies between latent variables.

2.3 Algorithm for evaluating major digital marketing effects

Within the framework of this research, the algorithm covers the following main steps:

1. Conceptual clarification of the studied effects and variables through desk research and in-depth interviews with experts from the practice.

2. Development, expert assessment and meaningful validation of the questionnaire for the quantitative survey among managers and owners of accommodation establishments.
3. Determination of the operationally defined population population, pilot testing and exhaustive distribution of the questionnaire to all sites in this population.
4. Collection and preparation of data from managers and owners of accommodation establishments.
5. Evaluation of the measurement model by confirmatory factor analysis (CFA).
6. Evaluation of the structural model by linear-structural modeling (LSM) based on the data from the management study.
7. Conducting and analyzing the survey among guests of the accommodation establishments.
8. Comparison between the management and consumer perspectives and formulation of conclusions and recommendations.

2.4 Conceptual model for studying the marketing effects of the application of information technologies in the urban tourism sector

The conceptual model combines the management and consumer perspective on the studied marketing effects. The management perspective is based on data from managers and owners of accommodations, and the user perspective is based on a complementary survey among guests, and the two data sets are compared without combining them into a single statistical model.

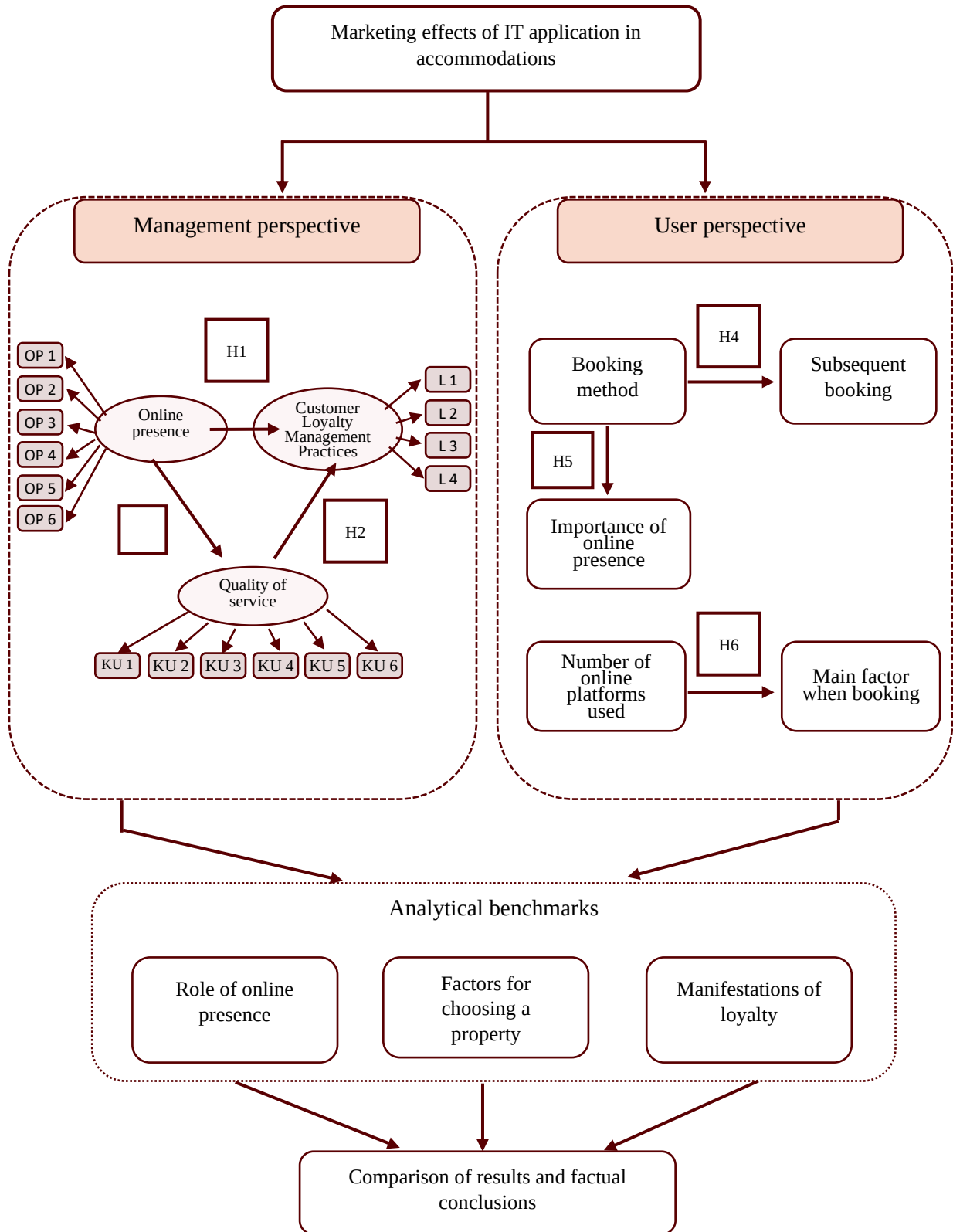


Figure 13 Conceptual model of the study, combining the management and consumer perspective on online presence and loyalty in accommodation. Source: own development.

For each of the formulated hypotheses, a corresponding null hypothesis is assumed, according to which there is no statistically significant relationship between the variables considered. Table 4 presents the alternative research hypotheses that are subject to empirical verification.

Table 4

Research hypotheses in the integrated conceptual model

№	Perspective	Formulation	Verification method	Criterion
H1	Management	The online presence has a positive impact on management practices for the formation and maintenance of customer loyalty.	LSM	$p \leq 0,05$
H2	Management	The quality of service has a positive impact on management practices for the formation and maintenance of customer loyalty.	LSM	$p \leq 0,05$
H3	Management	There is a statistically significant relationship between online presence and quality of service.	LSM / correlation link	$p \leq 0,05$
H4	Consumer	There is a statistically significant relationship between the booking method and the likelihood of a subsequent booking.	χ^2	$p \leq 0,05$
H5	Consumer	There is a statistically significant relationship between the significance of an online presence and the way you book.	χ^2	$p \leq 0,05$
H6	Consumer	There is a statistically significant relationship between the number of online platforms used and the main factor when booking.	χ^2	$p \leq 0,05$

Source: own development.

To test the formulated hypotheses, two main analytical approaches are used, consistent with the nature of the data in the two research perspectives. In the managerial perspective, the relationships between latent constructs are evaluated by linear-structural modeling. The standardized coefficients β interpret the strength and direction of the relationships between online presence, quality of service and practices for forming and maintaining customer loyalty. As a critical level of statistical significance, $p \leq 0.05$ is accepted.

In the user perspective, a chi-square test (χ^2) is applied because the dependencies examined are between categorical variables related to the booking method, the significance of the online presence, the number of online platforms used, the main booking factor and the likelihood of a subsequent booking. In the presence of a statistically significant relationship,

the strength of the relationship is interpreted in terms of appropriate association factors, including the contingency rate and Cramer's V.

The reliability of the measuring instrument is assessed by indicators of internal consistency, including the Cronbach's alpha coefficient. These checks are relevant for management quantitative research, as it operationalizes the latent constructs included in the linear-structural model.

Chapter III Marketing Effects of the Application of Information Technologies in the Urban Tourism Sector in the Black Sea Regions of Bulgaria.

3.1. Status and trends of urban tourism in the Black Sea regions of Bulgaria.

Within the framework of the online audit, the main indicators of digital presence at accommodation establishments in Varna, Burgas and Dobrich were tracked. In Varna, all surveyed properties have Google Maps and Booking.com profiles, the average rating in Booking is 8.41, and the average rating on TripAdvisor is 4.01. Activity on Facebook is reported in about 86% of the properties, and on Instagram - in 57%.

Table 5 summarizes the main indicators reflecting the degree of online presence of hotels, family hotels and guest houses in the districts of Varna, Burgas and Dobrich.

Table 5

Comparison of the indicators for online presence of accommodation establishments in the districts of Varna, Burgas and Dobrich

City indicator	Varna	Burgas	Dobrich
Having your own website	100%	100%	42,9%
Having a Google Maps account	100%	100%	100%
Availability of a Booking.com account	86%	100%	100%
Average rating in Booking.com	8,41	8,6	8,3
Availability on a TripAdvisor profile	100%	100%	100%
Average TripAdvisor Rating	4,0	3,7	3,8

Having an active Facebook account	86%	57%	57,1%
Having an active Instagram profile	57%	14%	28,6%

Source: own research.

3.2. Results of the surveys among managers, owners and guests of accommodation establishments in the districts of Varna, Burgas and Dobrich

The survey among managers and owners of accommodation establishments included 235 valid observations. The sample is dominated by guest apartments (127) and guest rooms (64), followed by hotels (18), family hotels (15), guest houses (5), hostels (4) and boarding houses (2). Territorially, the largest share of sites is from Varna (143), followed by Burgas (86) and Dobrich (6). These characteristics outline the profile of the empirical population, and detailed distributions are presented in the dissertation.

The results show that marketing activity is most often maintained personally by owners or managers (48%), followed by external marketing agencies (31%), internal departments (15%) and hired professionals (6%). Online travel platforms (OTAs) are the main tool for online visibility, indicated by 97% of respondents, while website optimization and paid online advertising have a significantly more limited application. The descriptive results obtained outline the context in which the measurement and structural models are subsequently evaluated.

At the next stage, confirmatory factor analysis was applied in order to assess the measurement part of the model and verify the relationship between the latent constructs and their indicators. The adequacy of CFAs was assessed using basic compliance indicators, the values of which are presented in Table 6.

Table 6

CFA adequacy criteria		
Model adequacy criteria	Established value	Recommended values
χ^2/df	0.57	<2.5
Comparative Fit Index (CFI)	1.0	>0.90
Root mean square error of approximation (RMSEA)	0.000	
RMSEA p-value	1.0	
Standardized root mean square residual (SRMR)	0.045	
Goodness of fit index (GFI)	0.990	>0.90
Tucker-Lewis Index (TLI)	1.00	>0.90
Bentler-Bonett Non-normed Fit Index (NNFI)	0.983	>0.90

Bentler-Bonett Normed Fit Index (NFI)	0.828	>0,75–0,80
Parsimony Normed Fit Index (PNFI)	0.980	>0,75–0,80
Bollen's Relative Fit Index (RFI)	1.0	>0.90
Bollen's Incremental Fit Index (IFI)	1.0	>0.90
Relative Noncentrality Index (RNI)	1.0	>0.90

Source: Author's processing based on empirical research data analyzed with JASP software.

The values of the listed indices demonstrate the adequacy of the model and confirm that the relationships between the latent variables and their observed indicators are statistically significant. Figure 14 shows the CFA diagram from JASP, in which the latent variables are visualized in circles and their relationships with the observed indicators in squares. The values that are indicated on the arrows indicate the factor loads and correspond to the strength of the relationships between them.

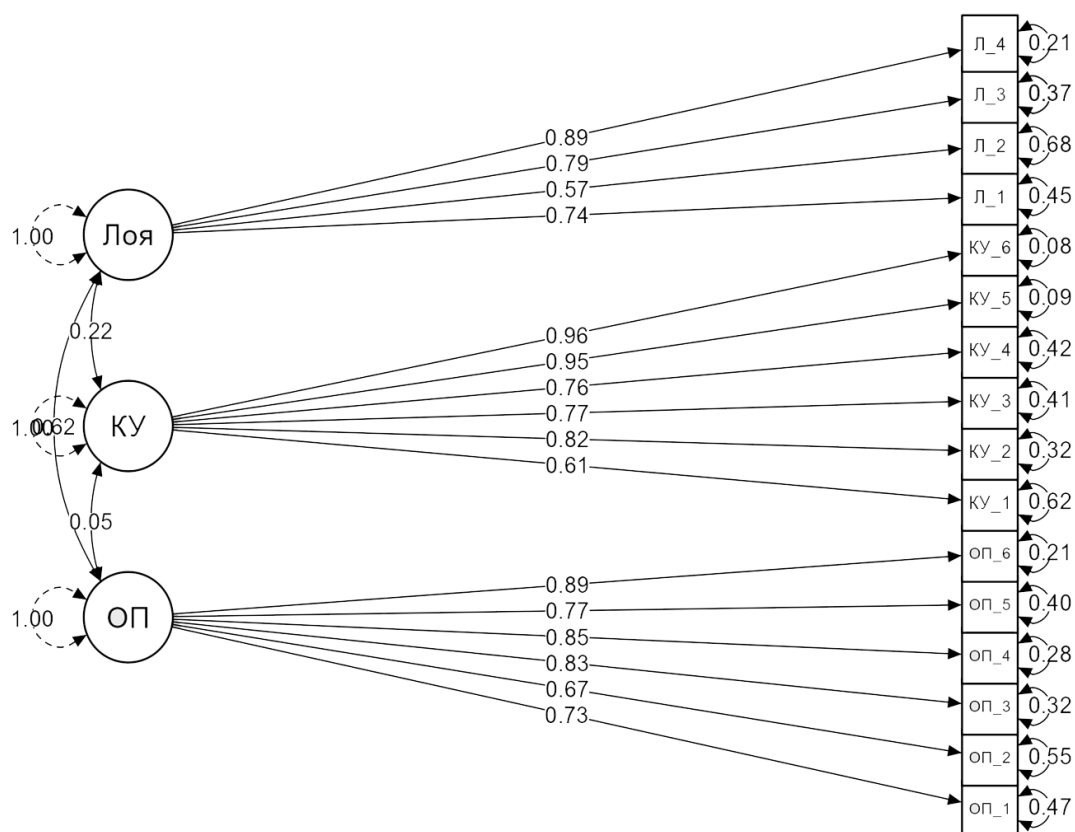


Figure 14 Confirmation Factor Analysis (CFA) diagram prepared with JASP software;
Source: author's work

After the evaluation of the measuring part, the structural model was checked using CFA. It analyzed the relationships between the latent constructs and checked the formulated research hypotheses. The calculations were performed with the JASP software package, applying the method of diagonally weighted least squares – DWLS.

In the structural model, the relationships between the management assessment of the importance of online presence, the quality of the service offered and the management practices for the formation and maintenance of customer loyalty are checked. The strongest relationship between the importance of online presence and management practices for loyalty is – $\beta = 0.612$. The relationship between the quality of service and management practices for loyalty is also positive and statistically significant, but with a lower value – $\beta = 0.195$. The results show that online presence has a more pronounced importance in the management model, and the quality of service plays a complementary role.

Table 7

Regression coefficients of latent variables in the model

Independent variable	Dependent variable	Standardized Beta Ratio (β)	p-value
Online presence	Loyalty	0.612	<0.05
Quality of service	Loyalty	0.195	<0.05

Source: own research at JASP

Next, the correlation between online presence and quality of service was examined. The results in Table 7 show a very weak correlation ($r = 0.047$), which, although statistically significant ($p < 0.05$), has no significant practical effect. This means that the increased online presence is not directly related to the quality of service offered, because the effect is minimal.

Table 8 Resource requirements

Correlation between online presence and quality of service.

Variables	Correlation coefficient (r)	p-value
Online presence -- Quality of service	0.047	0.005

Source: own research in Jasp;

The next index is the Standardized Residual Mean Square Criterion (SRMR). The recommended values practically overlap with those for the previous RMSEA index and range from 0 to 1.0, with the best-fitting models realizing values lower than 0.05 (Diamantopoulos

and Siguaw, 2000)(Byrne, 2013). Values in the range of 0.05-0.08 are considered acceptable (Hu and Bentler, 1999). On this indicator, the model has values of 0.052.

Figure 15 visualizes the linear-structural model that reflects the empirically established dependencies between the three latent constructs: online presence (OP), quality of service (SQ), and loyalty (Loy).

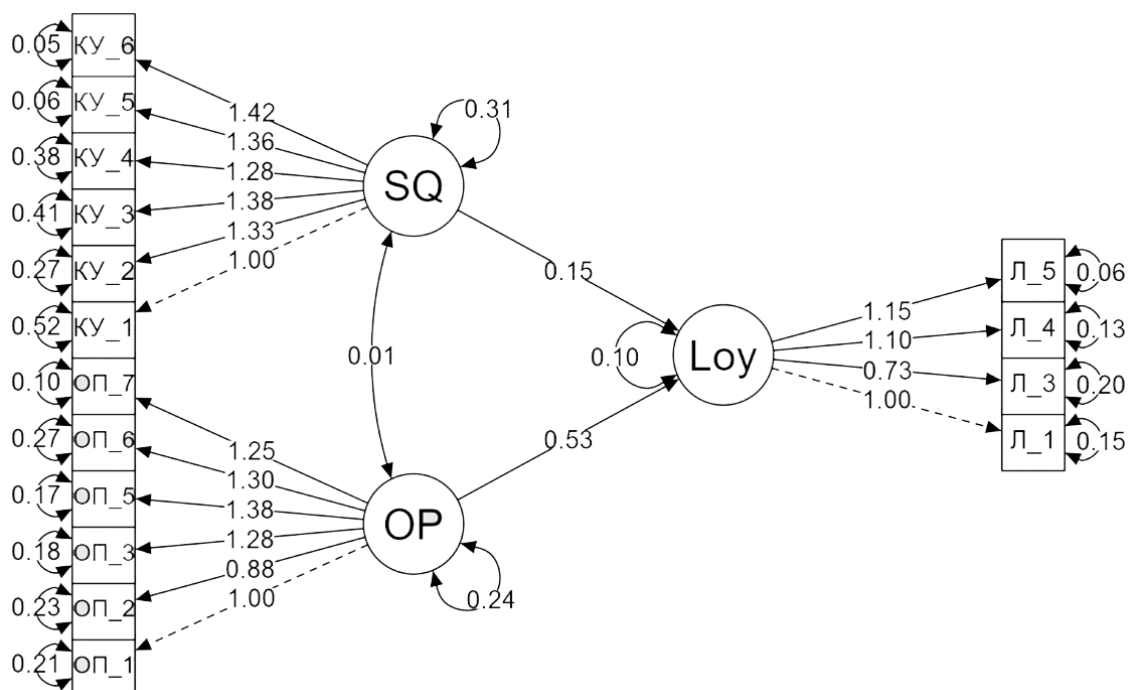


Figure 15 Linear-structural model of the relationships between management assessments of online presence, quality of service and customer loyalty practices.

Source – own research in Jasp;

The adequacy of the linear-structural model was assessed by established correspondence indicators between the theoretically defined model and the empirical data. The criteria used and the values obtained are presented in Table 9.

Table 9

Adequacy criteria for LSM

Model adequacy criteria	Established value	Recommended values
χ^2 p-value	1	>0.05
χ^2/df	0.57	<2.5
Comparative Fit Index (CFI)	1.0	
Root mean square error of approximation (RMSEA)	0.000	<0.08
RMSEA p-value	1.0	>0.05
Standardized root mean square residual (SRMR)	0.045	<0.08
Goodness of fit index (GFI)	0.990	>0.90
Tucker-Lewis Index (TLI)	1.00	>0.90
Bentler-Bonett Non-normed Fit Index (NNFI)	0.983	>0.90

Bentler-Bonett Normed Fit Index (NFI)	0.983	>0.90
Parsimony Normed Fit Index (PNFI)	0.828	>0,75–0,80
Bollen's Relative Fit Index (RFI)	0.980	>0.90
Bollen's Incremental Fit Index (IFI)	1.0	>0.90
Relative Noncentrality Index (RNI)	1.0	>0.90

Source: own research at JASP

The next stage of the surveys includes an analysis of the responses of guests to accommodation establishments in the districts of Varna, Burgas and Dobrich. As a complement to the management perspective, this survey is aimed at highlighting those manifestations of the application of information technologies in marketing activities that are perceived by consumers and participate in the process of selection, booking and subsequent evaluation of the stay. This creates an opportunity for more complete tracking of digital marketing effects and for comparison between the data received from guests and the ratings of the managers of the accommodation establishments.

In the user perspective, three hypotheses related to the method of booking, the importance of the online presence and the number of online platforms used were checked. For this purpose, a chi-square (χ^2) independence test was applied, and the strength of the connection was estimated using the contingency factor and the Kramer coefficient. The results are presented in Tables 10 and 11.

Table 10

Statistical metrics on the relationship between the booking method and the return visit intent

Chi-square test (χ^2)	18,696	Degrees of freedom (df)	9	Level of significance (p)	0,028
Contingency rate	0,325	Cramer's V coefficient	0,199	Sample size (N)	158

Source: Own empirical research processed using JASP software (N=158).

Table 11

Cross-table on the relationship between the booking method and the return visit intent (% of all)

How likely are you to book the same property again?	How did you make your current booking?				Total
	Online platform (Booking.com, Airbnb, etc.)	By phone or email	Social Media	Website of the site	
Very likely	84.000	16.000	1.000	1.000	102.000
	53.165 %	10.127 %	0.633 %	0.633 %	64.557 %
I can't judge	1.000	1.000	0.000	0.000	2.000

	0.633 %	0.633 %	0.000 %	0.000 %	1.266 %
Probably	28.000	16.000	2.000	3.000	49.000
	17.722 %	10.127 %	1.266 %	1.899 %	31.013 %
Unlikely	4.000	0.000	0.000	1.000	5.000
	2.532 %	0.000 %	0.000 %	0.633 %	3.165 %
Total	117.000	33.000	3.000	5.000	158.000
	74.051 %	20.886 %	1.899 %	3.165 %	100.000 %

Source: Own empirical research processed using JASP software (N=158).

The results of the statistical test show the presence of a statistically significant relationship between the variables considered ($\chi^2 = 18.696$; $p = 0.028$). The values of the contingency rate (0.325) and the Cramer's coefficient (Cramer's V = 0.199) indicate a weak relationship between the variables. This suggests that the booking channel is associated with loyalty as measured by the intention to revisit, but this relationship should not be interpreted as a leading or the only determining factor. A more in-depth review of the frequency distributions in the cross-table allows several more significant observations to be drawn.

The second research hypothesis examines the relationship between the way the booking is made and the importance that guests attach to the online presence of the accommodation. This relationship is essential as it allows us to assess whether the perceived value of the digital presence directs tourists to a particular booking channel. For this purpose, the Chi-square test (χ^2) for independence was applied (see Table 12), and the strength of the established relationship was assessed by the contingency factor and the Cramer's V coefficient. The summarized results of the cross-distribution analysis and the accompanying statistical indicators are systematized in Table 13.

Table 12

Statistical indicators on the relationship between the booking method and the importance of online presence

Chi-square test (χ^2)	17,769	Degrees of freedom (df)	9	Level of significance (p)	0,038
Contingency rate	0,318	Cramer's V coefficient	0,194	Sample size (N)	158

Source: Own empirical research processed using JASP software (N=158).

Table 13

Cross-distribution of respondents according to the method of booking and the importance of online presence

	How did you make your current booking?	Total
--	--	-------

How important it is for you to have an online presence (website, social media profile, reviews, etc.)	Booking platform (Booking.com, Airbnb, etc.)	By phone / email	Social Media	Website of the site	
Important	66.000	22.000	1.000	1.000	90.000
	41.772 %	13.924 %	0.633 %	0.633 %	56.962 %
Little	15.000	3.000	0.000	0.00	18.000
	9.494 %	1.899 %	0.000 %	0.00 %	11.392 %
Extremely important	25.000	4.000	0.000	3.000	32.000
	15.823 %	2.532 %	0.000 %	1.899 %	20.253 %
Neither important nor unimportant	11.000	4.000	2.000	1.000	18.000
	6.962 %	2.532 %	1.266 %	0.633 %	11.392 %
Total	117.000	33.000	3.000	5.000	158.000
	74.051 %	20.886 %	1.899 %	3.165 %	100.000 %

Source: Own empirical research processed using JASP software (N=158).

After presenting the one-dimensional distributions, the analysis proceeds to check the relationship between the number of online platforms used and the factor that most influences the booking decision. This dependence is important because it allows us to track whether a more active search for information in a digital environment is related to different motives in the choice of accommodation. For this purpose, a Chi-square independence test was applied, and the strength of the connection was assessed using the contingency coefficient and the Kramer coefficient. The analysis of the established relationship in depth is carried out through a cross-table between the number of online platforms checked and the factor that influenced the booking decision (Table 14).

Table 14

Cross-distribution of respondents according to the number of online platforms checked and the factor that influenced the booking decision

Factor that influenced the booking decision	Number of platforms verified			Total
	2-3 platforms	1 platform	4-5 Platforms	
Competitive Price	54.000	13.000	2.000	69.000
	34.177 %	8.228 %	1.266 %	43.671 %
Online comments	24.000	20.000	3.000	47.000
	15.190 %	12.658 %	1.899 %	29.747 %
Previous experience	14.000	5.000	1.000	20.000
	8.861 %	3.165 %	0.633 %	12.658 %
Positive comments	9.000	0.000	0.000	9.000

	5.696 %	0.000 %	0.000 %	5.696 %
Recommendation from a relative/acquaintance	7.000	4.000	2.000	13.000
	4.430 %	2.532 %	1.266 %	8.228 %
Total	108.000	42.000	8.000	158.000
	68.354 %	26.582 %	5.063 %	100.000 %

Source: Own empirical research processed using JASP software (N=158).

Table 15

Statistical indicators on the relationship between the number of online platforms checked and the factor that influenced the booking decision

Chi-square test (χ^2)	17,32 7	Degrees of freedom (df)	8	Level of significance (p)	0,027
Contingency rate	0,314	Cramer's V coefficient	0,234	Sample size (N)	158

Source: Own empirical research processed using JASP software (N=158).

The results of the Chi-square test show the presence of a statistically significant relationship between the factor that influenced the booking decision and the number of online platforms used ($\chi^2 = 17.327$; $p = 0.027$). The value of p is below the accepted significance level of 0.05, therefore the null hypothesis of independence is rejected. The values of the contingent factor (0.314) and the Cramer's coefficient (Cramer's $V = 0.234$) show a weak to moderate relationship between the variables. The distribution in the cross-table allows us to highlight several clearer trends in the behavior of respondents.

Within the framework of the study, a comparison was made between the management and consumer perspectives on similar analytical indicators. Table 16 presents the main points of intersection and discrepancies between the two points of view, without aiming at a direct comparison of identical issues.

Table 16 Resource requirements

Comparative Analysis of the Management and Consumer Perspective on the Marketing Effects of IT in Urban Tourism

Analytical indicator	Management perspective (IT marketing effect)	User perspective (perceived effect)	Interpretation of the juxtaposition
----------------------	--	-------------------------------------	-------------------------------------

Role of online presence	The online presence is perceived as a strategic marketing resource for visibility and positioning of the site. The results of the LSM confirm a positive and statistically significant impact on management practices for customer loyalty – $\beta = 0.612$; $p < 0,05$.	The online presence functions as the main source of information and a guide for the initial choice	There is a coincidence in the importance of the online presence, but there is a difference in its function – for managers it appears as a strategic management resource, and for users as a guide for the initial choice.
Factors for choosing a property	Emphasis on Own Online Content and Active Online Communication as a Means of Marketing Impact	Dominant influence on competitive price, image and trust	Management expectations for the marketing effect do not fully coincide with real consumer motives
Use of digital platforms	Focus on basic IT channels (website and booking platforms), with more limited and non-systematic activity in social networks	Preference for booking platforms and meta-aggregators as more reliable comparison tools	There is a discrepancy between the channels in which investments are made and those through which the real marketing effect is realized
Manifestations of consumer loyalty	Loyalty is seen as the result of managed marketing tools (repeat bookings, loyalty programs)	Loyalty is manifested through trust, satisfaction, recommendations and positive online ratings	The marketing effect of IT is interpreted as a managed outcome versus an experienced effect
Role of trust and image	Trust and image are perceived as the result of consistent communication and operational practices	Trust and image function as a precondition for choice	Different Time Logic of the Marketing Effect – Achieved Result vs. Starting Factor

Source: own systematization based on a survey.

3.3. Recommendations for increasing the marketing effects of the application of information technologies in the urban tourism sector.

In connection with the conclusions of the qualitative research on the importance of visual communication and online content management for the formation of marketing effects, it is recommended that the visual content on the platforms of online travel agencies be authentic, without excessive beautification, and reflect the real proportions and condition of the premises, in order to avoid the formation of misconceptions among potential guests.

It is also recommended that accommodation establishments do not abandon online travel platforms, but gradually develop their own digital channels as a complementary source of bookings. The potential benefit of this approach for smaller establishments for which Booking.com provides significant visibility is highlighted, but at the same time own channels allow for a more direct connection with guests and greater control over communication. It is recommended to integrate a convenient direct booking system into the website, maintain up-to-date content and offer incentives for direct bookings, such as more flexible conditions, package offers or a guaranteed best price. It is pointed out that this increases the likelihood of direct bookings while reducing long-term dependence on intermediary platforms.

Attention is paid to the importance of active written communication with users as an important element of online presence management and it is pointed out that review management is important for online reputation and for the way potential guests perceive the tourist site.

In parallel with the guidelines related to improving the online presence, based on the results of the survey, specific recommendations for increasing loyalty among the guests of the accommodation establishments are formulated. Based on the attitudinal and behavioral dimensions of loyalty analyzed in the study, key areas for its construction and maintenance are summarized, systematized in Table 16.

Table 17

Guidelines for improving loyalty among property guests

Focus	Effect	Guideline
Feedback Management	Increasing satisfaction; reducing negative experiences;	Active collection of ratings after downtime; quick and professional response to reviews; analysis of recurring problems and their systematic elimination.
Personalized communication	Repeat bookings; higher engagement	Sending personal offers according to guests' preferences; automated follow-up messages; segmentation based on behavior.
Loyalty program	Long-term retention; increase in CLV	Creating a program with clear and achievable benefits (discounts, early check-in, bonus services); incentives for direct bookings.
Consistent online presence	Creating and maintaining trust; Positive attitude towards service/brand	Up-to-date content across all channels; unified visual style; maintaining accurate and complete information across platforms.

Optimization of communication before, during and after downtime	Increase in user satisfaction	Clear pre-arrival instructions; availability of administration during the stay; follow-up thanks messages and an invitation to a future visit.
--	-------------------------------	--

Source – Author's work based on the results of the empirical research

In connection with the highlighted importance of the quality of service as an additional factor influencing user behavior, general recommendations related to improving operational processes, increasing professional communication, personalized attitude towards guests and ensuring consistent standards of service are proposed.

The possibility of the study to serve as a basis for future more in-depth research in the following areas is discussed:

- Impact of artificial intelligence (AI) on the personalization of tourism services;
- Sustainability of urban tourism through the use of smart technologies;
- Social media and their influence on the choice of destination in urban tourism;
- The role of virtual and augmented reality (VR/AR) in promoting urban tourist attractions and creating engaging experiences;
- Big Data analysis to predict the flow of tourists, preferences and needs;
- Development of "smart cities" and their impact on tourism strategies.

In this regard, it is clarified that it is appropriate to trace in future studies both in the behavior of tourists and in the management practices of accommodation. It is pointed out that this would allow a more in-depth analysis of the factors influencing loyalty in the context of IT implementation.

Conclusion

The conclusion summarizes the main thesis of the dissertation on the consideration of the online presence of tourist sites in urban environments not only as an element of marketing communication, but also as a management resource for maintaining contact with customers and for promoting their loyalty, ascertaining its confirmation from the results of the conducted research. The positive and statistically significant relationship established by the LSM between the online presence and the management practices for the formation and maintenance of customer loyalty is noted, namely the standardized coefficient $\beta = 0.612$, which shows that the

attaching of greater importance to the online presence by the managers of the accommodation establishments is associated with more pronounced management practices to promote loyalty.

The role of the quality of the service as a complementary factor for a more complete explanation of consumer behavior is also pointed out and it is concluded that the marketing effects of the IT application are more sustainable when the digital presence of tourist sites is combined with a good quality of the service actually provided.

The practical value of the dissertation is highlighted, which is expressed in the guidelines for optimizing the digital presence of accommodation establishments, for more effective management of online content and user feedback, as well as for stimulating direct bookings and long-term relationships with customers.

Possible directions for future research are outlined, e.g. the inclusion of additional aspects of loyalty in the research model and the study of online presence in the context of a wider system of factors influencing consumer behavior.

IV. REFERENCE FOR THE CONTRIBUTIONS TO THE DISSERTATION

With the fulfillment of the tasks set and the achievement of the main research goal in the dissertation, the following contributions can be distinguished:

1. Theoretical and conceptual contribution:

The content of the concept of "marketing effect" has been clarified and a classification framework for marketing effects has been developed, including a specific classification of the effects of the application of information technologies according to their measurability, time variability and time horizon. In the context of the selected research field, modern forms of urban tourism, including hybrid and niche areas related to the digitalization of the tourist environment, have also been systematized.

2. Methodological contribution:

An integrated research approach for evaluating digital marketing effects in accommodation has been developed and tested, which combines a management and consumer perspective and allows a comprehensive study of online presence, quality of service and customer loyalty.

3. Practical and applied contributions:

Empirically, a positive and statistically significant relationship between online presence and practices for the formation and maintenance of customer loyalty in accommodation establishments has been established ($\beta = 0.612$; $p < 0.05$), and the results are complemented by

the consumer perspective study. On this basis, practical guidelines for managing online presence and customer loyalty in urban tourism have been formulated.

V. List of publications on the dissertation

The following publications have been made on the topic of the dissertation:

Scientific articles:

1. Yankov, P. (2025) "The Impact of Online Presence on Loyalty: A Quantitative Study in the Context of Urban Tourism", *Business & Management Compass*, 69(2), pp. 24–36. doi:10.56065/vyt7y117.

Scientific reports:

1. Yankov, P. (2023a) "Analysis of consumer comments in the urban tourism sector for the city of Varna", in: *Remarketing of Reality: Collection of Papers from an International Scientific Conference Dedicated to the 25th Anniversary of the Establishment of the Department of Marketing at the University of Economics – Varna*, 17 June 2022, Varna: Science and Economics Publishing House, pp. 281–290. ISBN 978-954-21-1134-4.
2. Yankov, P. (2023b) "Unified Classification of Marketing Effects", in: *Remarketing of Reality: Proceedings of an International Scientific Conference Dedicated to the 25th Anniversary of the Establishment of the Department of Marketing at the University of Economics – Varna*, 17 June 2022 Varna: Science and Economics Publishing House, pp. 795–805. ISBN 978-954-21-1134-4.

Published chapter of a collective monograph:

1. Yankov, P. (2020) "Concomitant Effects of the Digitalization Process", in: Petrov, P. et al. *Digitalization of Business Processes in Construction and Logistics*. Varna: Knowledge and Business, pp. 207–251. ISBN 978-619-210-049-0.