

Systematic review of meta-analysis studies in the tourism and hospitality literature

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Abstract

Referred to as "the analysis of the analyses", meta-analysis has become a popular research area in the tourism and hospitality literature, as well as in many different fields of science. This great interest in meta-analysis has led to many meta-analysis studies in the tourism and hospitality literature; however, no general systematic perspective has been established for these studies. This paper examines the meta-analysis studies published in the tourism and hospitality literature via various parameters and presents a comprehensive classification. Because this paper uses a theoretical scope to systematically scrutinize meta-analysis studies conducted in the tourism and hospitality literature, it not only presents state-of-the-art research, it can also become a roadmap and reference for future researches.

Keywords: systematic review, meta-analysis, tourism, hospitality, literature, review

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Introduction

Science refers to the total of cumulative efforts that comprise a combination of research methods conducted in certain disciplines. Systematically reviewing existing research helps ensure this integration and eliminates the necessity of "constantly reinventing the wheel" (Gretzel & Kennedy - Eden, 2012, p.459).

The empirical results achieved in individual studies on the same research subject can often be inconsistent with each other and are insufficient to provide general conclusions about the subject being studied (Hunter & Schmidt, 2014, p.18). Thus, meta-analysis is based on the idea of integrating evidence from a range of different sources in order to provide reliable answers to important questions. Meta-analysis can be defined as the process of systematically gathering the findings of research, synthesizing them according to certain principles, and analysing them collectively (Shelby & Vaske, 2008, p.98). Meta-analysis represents the combination of scientific efforts that are carried out independently of each other (Parker *et al.*, 2013, p.713).

The tourism and hospitality field is a relatively young area that involves several disciplines, methodologies and subjects. The complex nature of the structure of information in the field of tourism and hospitality makes it difficult to generalize research findings. Meta-analysis brings different results obtained in tourism and hospitality research together under one roof and gives the results a reliable and generalizable structure (Gretzel & Kennedy - Eden, 2012, p.466). Meta-analysis objectively analyses individual studies that are found with a comprehensive literature search within the framework of structured and standardized techniques. The findings obtained from meta-analysis studies help reveal the biases of individual studies, as well as their strengths and weaknesses (Russo, 2007, p.637).

In the existing literature, no research was found on the general development, history, and stereotypes of meta-analysis studies conducted in the field of tourism and hospitality. As the first scientific initiative to fill this gap in the literature, this paper aims to identify the meta-analysis studies carried out in the field of tourism and hospitality with a comprehensive literature review and to analyse these studies in a systematic framework. Examining these studies from a systematic perspective will provide an overview of the historical development, research themes, trends, effects, and intellectual structure of meta-analysis in the field. In addition, this paper, which filters a vast literature for researchers interested in the subject, is a guide to determining research gaps and opportunities in this field by examining meta-analysis studies in the light of various parameters.

This paper explains the generally-accepted methods of research synthesis and proposes the importance of meta-analysis in the context of research synthesis. In the following sections, general information on meta-analysis is presented and classified in terms of research design. Then, the paper presents the scope of the meta-analysis studies conducted in the tourism and hospitality literature and an examination of these meta-analysis through various parameters. Finally, the paper discusses findings in terms of their effects and contributions to the tourism and hospitality literature.

Literature Review

Research Synthesis Methods

Research synthesis studies can be defined as studies that summarize the research conducted on a specific discipline or subject and that provide important contributions to the development of knowledge (Kim, Bai, Kim & Chon 2018, p.49). Although there are several different typological approaches to research syntheses (Grant & Booth, 2009), there are three general approaches: narrative review, systematic review and meta-analysis.

Narrative review refers to studies that examine two or more studies published on a certain subject and synthesize their findings, results and evaluations (Neely *et al.*, 2010, p.6). In a narrative review, the researchers review existing research and summarize the findings. The findings of a narrative review are based on comparing studies with statistical significance and those with insignificant findings. Manuscripts prepared by people who are experts in their field are accepted as "expert opinion" and evaluated as the lowest level of evidence because of concerns regarding potential subjectivity in the selection and interpretation of studies (Quintana & Miami, 2006, p.839-840).

Systematic review is the process of defining and evaluating many studies on a subject through a used systematic methodology. A systematic review fits empirical evidence to conformity criteria determined beforehand in order to answer a certain research question (Haidich, 2010, p.30). This type of review presents a transparent and impartial examination of existing information (Neely *et al.*, 2010, p.6). When statistical methods are applied to a systematic review, it is referred to as a meta-analysis (Koretz & Lipman, 2017, p.317). Quantitative meta-analysis statistically summarizes and interprets the theoretical results obtained from a systematic review (Quintana & Miami, 2006, p.839).

Since it was initially defined by Glass (1976), meta-analysis has gradually become a popular tool in evidence-based decision-making. Meta-analyses studies generally occupy the topmost place in the evidence hierarchy (Parker *et al.*, 2013, p.713). Meta-analysis produces objective evidence by reducing the subjective bias through the standardization it provides in the process from collecting individual studies in the sample unit to the statistical presentation of the analyses (Zhang *et al.*, 2014, p.214). By combining the results of individual studies with statistical methods, more accurate and reliable estimates of independently reported effect coefficients can be achieved. Meta-analysis has far greater power and scientific rigor in revealing real correlations because of the accumulation of estimated effect sizes (Garg, Hackam & Tonelli, 2008, p.253-254).

Meta-analysis

Since Gene Glass first used the term "meta-analysis" at the annual congress of the American Educational Research Association in 1976, meta-analysis has become popular in many different disciplines. The fact that meta-analysis reveals statistically stronger, reliable, and accurate findings increases its popularity (Shelby & Vaske, 2008, p.96). Meta-analysis is a method of research involving the analysis of analyses, as its name indicates (Gretzel & Kennedy - Eden, 2012, p.459). Meta-analysis is based on the fundamental values of scientific endeavour, as it involves quantitative methods, relationality and causality (Borenstein, Hedges, Higgins & Rothstein, 2009). The power of meta-analysis stems from its provision of reliable results through combining the results of individual studies that may be individually inadequate in terms of statistical significance (Russo, 2007, p.637).

As in any kind of research, the success of a meta-analysis study depends on the quality of data, careful coding and analysis and the complete understanding of the statistical assumptions (Gretzel & Kennedy-Eden, 2012, p.464). Along with being more valuable than a single study (Haidich, 2010, p.36), meta-analytical approaches are as good as the individual studies on which they are based and they enable researchers to consider the whole picture (Shelby & Vaske, 2008, p.105-106). Meta-analysis identifies differences in research findings and provides empirical support for how these differences originate. It also offers the possibility to define various factors that may affect the research findings as a moderator or subgroup (Quintana & Miami, 2006, p.839).

Meta-analysis studies focus on effect sizes and confidence intervals. The parameter of effect size addresses the actual relationship between two variables in a population. The confidence interval, in

contrast, is the expected interval of the effect size at a specific level of confidence (Quintana & Miami, 2006, p.840-841).

Because meta-analyses integrate a collection of different studies, an element of heterogeneity is often observed in meta-analyses (Parker *et al.*, 2013, p.713). The most prevalent statistical test used to measure heterogeneity is the Q test. According to whether the studies incorporated into the meta-analysis exhibit homogenous or heterogeneous structures, the mathematical combination of the results can be actualized under the assumption models of "fixed" effects or "random" effects (Garg *et al.*, 2008, p.257). If the individual studies incorporated into the meta-analysis exhibit a homogenous structure, the fixed-effects model should be chosen for the meta-analysis, whereas if they have heterogeneous structures, the meta-analysis should use the random-effects model (Neely, *et al.*, 2010, p.7; Celiker, Ustunel & Guzeller, 2019, p.5). The fixed effects model argues that all individual studies included in the meta-analysis have a common (true) effect size. Therefore, all factors that are likely to differentiate the actual effect size are the same in all the individual studies included in the analysis. This means that the real effect size is the same in all the studies (Borenstein *et al.* 2009, p.63) The random effects model emphasizes that the actual effect sizes of individual studies on different universal communities will differ (Neely *et al.*, 2010, p.10).

Despite the important advantages of meta-analysis discussed above, there are certain limitations of this method; meta-analysis is not a key solution for everything. Meta-analysis, especially in the social sciences, is a relatively new methodology that is still early in development and is contentious because of potential biases and the risk of comparing things that are incomparable (Gretzel & Kennedy- Eden, 2012, p.459).

In meta-analysis studies, factors such as the violation of meta-analytical methods, errors in the selection process of the studies to be incorporated into the analysis, publication bias and small sample sizes can cause erroneous inferences regarding the relationships between variables. One of the most important negative aspects of meta-analysis is the possibility that the studies included in the analysis may contain errors or bias. It may not be appropriate to include different studies in meta-analysis in terms of measurement models, measurement types, measurement tools, and sampling characteristics. Another criticism is that a meta-analysis only incorporates published studies into the sample and that unpublished studies are ignored (Shelby & Vaske, 2008, p.106). Publication bias can occur if the researches included in a meta-analysis on a particular subject do not represent the population of studies conducted but not published on the same subject (Rothstein, Sutton & Borenstein, 2005, p.1). The biases of the studies incorporated into a meta-analysis can be tested using publication bias techniques such as a Funnel plot, Classic fail-safe N, Begg and Mazumdar Rank Correlation, Egger regression and Duval Tweedie's trim-and-fill (Celiker, Ustunel & Guzeller, 2019, p.11).

Meta-analysis According to Research Designs

Meta-analysis studies can be classified in three different ways in terms of research designs. These include correlation studies examining the relationships between the effect sizes of the variables, experimental studies on the differences between the experimental and control groups, and regression (meta-regression, etc.) studies evaluating the relationship between the variables of study level and effect size (Hedges & Olkin, 1985; Borenstein *et al.*, 2009; Hunter & Schmidt, 2014).

Correlational Meta-analysis

Correlational meta-analysis aims to determine the true strength and direction of the relationship between the two measurements (Pigott, 2012, p.11). In this context, they examine the correlation

coefficients (effect sizes) reported in individual studies on the relationships between two continuous variables (Neely *et al.*, 2010, p.10-11). In meta-analysis studies based on correlation, the correlation coefficients (r) obtained from individual studies are first converted into Fisher's Z scale (Borenstein *et al.*, 2009, p.41). According to these transformed values, average correlation and confidence interval calculations are performed, and the results are converted back into correlation and reported (Pigott, 2012, p.11).

Experimental Meta-Analysis

Experimental meta-analysis compares the mean scores of two independent or matched groups (experimental and control) (Borenstein *et al.*, 2009, p.20). In experimental studies, the fundamental statistic is not the correlation coefficient but the standardized difference between two groups (experimental and control groups). This is the difference between the two means in standard deviation units and it is referred to as the d-value statistic (Hunter & Schmidt, 2014, p.62). The standardized mean difference (d) is the effect size index, which reveals differences between two independent groups, such as the experimental and control groups (Pigott, 2012, p.10). In addition, if the summarized data is based on a binary result for two groups, the suitable effect size will usually be a risk ratio, odds ratio or risk difference (Borenstein *et al.*, 2009, p.18).

Regression-based Meta-analysis

As we use regression or multiple regression to examine the relationship between the independent variable(s) and a dependent variable, we can perform regression-based meta-analysis by defining individual studies as variables and determining the effect size as the dependent variable. In regression-based meta-analysis, the meta-regression model is commonly used. Meta-regression involves designating a weight to each study and choosing the suitable model (fixed-effect or random-effects). Further, the R^2 index, which is used to measure the variance ratio revealed by the covariables, needs to be modified in order to be used in meta-analysis (Borenstein *et al.*, 2009, p.187-203). Meta-regression is the suggested strategy when there is a sufficiently large effect size, because it has the power to examine the effect of more than one variable on the effect size (Pigott, 2012, p.25).

Meta-analysis in Tourism and Hospitality Literature

The tourism and hospitality field has a considerable research archive in theoretical and methodological terms and the synthesis and critical evaluation of approaches has become a necessity. The approaches in the existing literature within this field have been carried out in the scope of different research themes (Gretzel & Kennedy-Eden, 2012, p.469).

Meta-analysis studies in the tourism and hospitality literature often focus on specific areas of interest, such as the tourism economy, recreation, eco-tourism, perceptions, attitudes, behaviour and behavioural intentions. Especially common are meta-analysis studies examining demand estimation, demand flexibility and tourist incomes (Crouch, 1994-1995-1996; Baaijens, Nijkamp & Montfort, 1998; Lim, 1999; Peng, Song & Crouch, 2014). In one of these, Crouch (1994) combined the experimental findings of 80 studies on international tourism demand in order to ascertain whether there is a systematic difference between long-term and short-term tourism. In the study, the income elasticity of demand, price elasticity, currency elasticity, transportation cost-awareness and the promotion expenditure-awareness of demand were examined and the growth rates of long-term travel were compared with those of short-term travel. Baaijens *et al.* (1998) focused on regional tourist multipliers, which measure the effect of tourism expenditure on the economy of a specific region and the differences between tourist income multipliers were examined on the basis of various studies carried out on tourist multipliers. Lim (1999) examined the 70 studies aiming to model international touristic demand within

the scope of the relationships between international tourism demand, income, transportation costs and tourism prices. Kim and Schwartz (2013) examined the relationship between tourism demand and data characteristics using a meta-analytical approach. The findings suggest that data characteristics can provide reliable indicators for which models are more accurate for which tourism estimation methods. In addition to economy-focused meta-analysis studies, there are meta-analysis studies on recreational experiences, opportunities, activities and leisure time motivations (Manfredo, Driver & Tarrant, 1996; Cisneros-Montemayor & Sumaila, 2010; Sato, Wood & Lindenmayer, 2013; Wang, 2013) as well as on the effects of tourism and tourist activities on various species in nature and wildlife (Anderson, Roccliffe, Haddaway & Dunn, 2015; Bateman & Fleming, 2017; Vaz *et al.*, 2018). For instance, Pierskalla *et al.* (2004) combined individual studies on recreation opportunities using meta-analytical techniques. Sato *et al.* (2013) examined the effects of winter recreation on faunal life and concluded that in areas affected by winter recreation, fauna variety is much lower than in natural areas.

In the tourism and hospitality literature, there are meta-analysis studies addressing the relationship between destination image, customer satisfaction and customer loyalty (Zhang, Fu, Cai & Lu, 2014; Dolnicar, Coltman & Sharma, 2015; Tanford & Jung, 2017), as well as customer satisfaction and the antecedents and consequences of customer loyalty (Ladeira, Santini, Araujo & Sampaio, 2016; Tanford, 2016). Zhang *et al.* (2014), examined the relationship between destination image and tourist loyalty and revealed that the general image has the most significant effect on tourist loyalty, followed by the affective image and cognitive image. Nghiễm-Phú (2018) examined the relationship of perceived destination qualities with satisfaction and determined that a destination's image, quality and attributes have a positive effect on tourists' overall satisfaction. Ladeira *et al.* (2016) aimed to specify the dimensions of satisfaction by evaluating its main antecedents and consequences. The findings obtained in the study show that satisfaction is influenced by factors such as quality, destination image, environment, perceived hedonic benefit, and monetary value. However, it has been concluded that satisfaction has important effects on individuals' purchasing intentions, loyalty, and trust levels. Tanford (2016) presented a theoretical framework for classifying the antecedents and consequences of hospitality loyalty and measured these components using a meta-analysis. The researcher presented the strong links between direct antecedents of loyalty (satisfaction, emotional commitment, service quality and trust) and general loyalty. In another meta-analysis, Tanford and Jung (2017) evaluated the factors contributing to festival satisfaction and loyalty. In the study, it was concluded that the festival (which includes the program, entertainment, and thematic activities) and the environment (including atmosphere, comfort, and facilities) are the most important factors in ensuring satisfaction and loyalty. As mentioned above, studies carried out on perception and behaviour have generally focused on tourists. Meta-analysis studies addressing the perceptions and behaviour of tourism and hospitality industry workers are limited. In a study conducted within this scope, Celiker *et al.* (2019) discussed the relationship between the emotional labour and burnout levels of tourism and hospitality industry workers.

Methodology

A systematic analysis is a clearly formulated inquiry that uses systematic and clear methods in order to define, select and critically evaluate the research within specific scopes, as well as collect and analyse the data obtained from the studies involved in the analysis process (Crocetti, 2016, p.3). The process of a systematic review should involve a comprehensive literature review, a declaration of the criteria of inclusion and exclusion for the defined studies, the application of a standard protocol to evaluate the studies, a summary of findings and suggestions for future studies (Koretz & Lipman, 2017, p.316).

Data Collection

The data collection procedure of this current paper comprised two stages. First, a search was carried out with the keywords "meta-analysis", "meta-analytic" and "meta-review" in two databases: Web of Science and EBSCOhost Hospitality & Tourism Complete. There are several justifications for selecting these two databases as the primary data collection tools. EBSCOhost Hospitality & Tourism Complete is one of the most important databases indexing research focused on tourism and hospitality. Web of Science is a comprehensive scientific search engine containing many databases (Emerald, JSTOR, Sage Journal, Springer-Link, Taylor & Francis, etc.) that indexes the journals focused on tourism and hospitality in a separate academic category. Taking data from the Journal Citation Report 2018 as a basis and excluding journals in the area of sports sciences out of the 50 journals indexed in the research category of Hospitality, Leisure, Sport & Tourism in the Web of Science, 51 studies were found from the search of 25 tourism and hospitality-focused journals. The search of EBSCOhost Hospitality & Tourism Complete returned 105 studies after excluding duplicates of the publications accessed in the previous search.

Second, a search was carried out using the Scopus database and Google Scholar search engine. These two search sources were selected in order to have a more comprehensive search result. Scopus is the most extensive refereed literature, abstract and citation database (Elsevier, 2019). Google Scholar is considered the most comprehensive search engine, with 389 million records (Gusenbauer, 2019, p.177). Furthermore, because Web of Science only contains those journals that are involved within the scope of SSCI and ESCI (Emerging Science Citation Index), a general search was needed to access studies published outside the scope of these journals. In order to exclude the meta-analysis studies applied to different fields and to prevent wasting time on unnecessary research, the "tourism" and "hospitality" keywords were added to the existing keywords. As a result of the review, after excluding the studies obtained from the databases in the first stage, 36 studies were accessed in the Scopus database and 21 studies were accessed using Google Scholar, thereby ensuring a more reliable and comprehensive literature review. In total, 213 studies were obtained for the literature review.

Inclusion Criteria

The 213 studies obtained for the literature review were evaluated for compliance with predetermined inclusion criteria. Accordingly, published meta-analyses that were the correct type, in English, conducted in the discipline of tourism and hospitality and had available full-text were included in the analysis unit. This paper had no year-interval limitation. As of the last date in which the literature review was carried out (June 2019), all studies meeting the inclusion criteria were incorporated into the sample. In the paper, the inclusion flowchart adapted from Moher, Liberati, Tetzlaff and Altman (2009) was applied and the process was completed by excluding ineligible studies for each criterion. Accordingly, studies that were outside the article type (24), were not in English (11), had inaccessible full-text (12), did not address the tourism and hospitality field (7) and did not involve meta-analytical methods in terms of literature review/narrative review/systematic review (113) were excluded from the analysis. Finally, a total of 46 meta-analysis studies were included in the analysis (Table 1).

Table 1. Meta-Analysis Studies Included in Systematic Analysis

Research Title	Author (s) & Publication Year	Published Journal	Research Area*	Design
Demand Elasticities for Short-Haul versus Long-Haul Tourism	Crouch (1994)	Journal of Travel Research	E&F	Experimental
A Meta-Analysis of Tourism Demand	Crouch (1995)	Annals of Tourism Research	E&F	Regression
Demand Elasticities in International Marketing A Meta-Analytical Application to Tourism	Crouch (1996)	Journal of Business Research	E&F	Regression
Measuring Leisure Motivation: A Meta-Analysis of the Recreation Experience Preference Scales	Manfredo & Driver (1996)	Journal of Leisure Research	D_TMS	Correlation
The Quantitative Integration of Research: An Introduction to Meta-Analysis	Lynn & Mullen (1997)	Journal of Hospitality & Tourism Research	M&S	Correlation
Explanatory Meta-analysis for the Comparison and Transfer of Regional Tourist Income Multipliers	Baaijens <i>et al.</i> (1998)	Regional Studies	E&F	Regression
A Meta-Analytic Review of International Tourism Demand	Lim (1999)	Journal of Travel Research	E&F	Experimental
Meta-Analytic Methods for Comparative and Exploratory Policy Research: An Application to the Assessment of Regional Tourist Multipliers	Baaijens & Nijkamp (2001)	Journal of Policy Modeling	E&F	Regression
Understanding Relationships Among Recreation Opportunities: A Meta-Analysis of Nine Studies	Pierskalla <i>et al.</i> (2004)	Leisure Sciences	TOUR_SEC	Correlation
A global estimate of benefits from ecosystem-based marine recreation: potential impacts and implications for management	Montemayor & Sumaila (2010)	Journal of Bioeconomics	TOUR_SEC	Experimental
Are Travelers Willing to Pay a Premium to Stay at a "Green" Hotel? Evidence from an Internal Meta-Analysis of Hedonic Price Premia	Kuminoff <i>et al.</i> (2010)	Agricultural and Resource Economics Review	E&F	Regression
Estimating the risks of acquiring a kidney abroad: a meta-analysis of complications following participation in transplant tourism	Anker & Feeley (2012)	Clinical Transplantation	TOUR_SEC	Experimental
Tourism and GDP: A Meta-analysis of Panel Data Studies	Castro-Nuño <i>et al.</i> (2013)	Journal of Travel Research	E&F	Experimental
The Accuracy of Tourism Forecasting and Data Characteristics: A Meta-Analytical Approach	Kim & Schwartz (2013)	Journal of Hospitality Marketing & Management	E&F	Regression
Valuing outdoor recreation activities using a meta-analysis model in China: an empirical study	Wang <i>et al.</i> (2013)	Tourism Economics	TOUR_SEC	Regression
The Effects of Winter Recreation on Alpine and Subalpine Fauna: A Systematic Review and Meta-Analysis	Sato <i>et al.</i> (2013)	Plos One	TOUR_SEC	Experimental
Constraints to Park Visitation: A Meta-Analysis of North American Studies	Zanon <i>et al.</i> (2013)	Leisure Sciences	TOUR_SEC	Correlation
The income elasticity of air travel: A meta-analysis	Gallet & Doucouliagos (2014)	Annals of Tourism Research	E&F	Regression
Destination image and tourist loyalty: A meta-analysis	Zhang <i>et al.</i> (2014)	Tourism Management	MS&P	Correlation
A meta-analysis of international tourism demand forecasting and implications for practice	Peng <i>et al.</i> (2014)	Tourism Management	E&F	Regression
Systematic review and meta-analysis of the economic impact of smoking bans in restaurants and bars	Cornelsen <i>et al.</i> (2014)	Addiction	E&F	Experimental
The Role of Tourism and Recreation in the Spread of Non-Native Species: A Systematic Review and Meta-Analysis	Anderson <i>et al.</i> (2015)	Plos One	E&C	Experimental
Do satisfied tourists really intend to come back? Three concerns with empirical studies of the link between satisfaction and behavioural intention	Dolnicar <i>et al.</i> (2015)	Journal of Travel Research	T&V_Beh	Correlation

*(D_TMS) Development of theories, models and scales, (E&C) Environmental and cultural issues, (E&F) Economic and financial aspects, (M&S) Methodologies and statistics techniques, (MS&P) Marketing strategies and practices, (TOUR_SEC) Specific sectors of tourism, (health tourism, event tourism, outdoor recreation, leisure, marine, cruises. (T&V_Beh) Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention.

Table 1. (Continued)

Research Title	Author (s) & Publication Year	Published Journal	Research Area*	Design
A Meta-Analysis of International Tourism Demand Elasticities	Peng <i>et al.</i> (2015)	Journal of Travel Research	E&F	Regression
A Meta-Analysis of the Antecedents and Consequences of Satisfaction in Tourism and Hospitality	Ladeira <i>et al.</i> (2016)	Journal of Hospitality Marketing & Management	T&V_Beh	Correlation
A meta-analysis of behavioral intentions for environment-friendly initiatives in hospitality research	Gao <i>et al.</i> (2016)	International Journal of Hospitality Management	T&V_Beh	Correlation
Antecedents and Outcomes of Hospitality Loyalty: A Meta-Analysis	Tanford	Cornell Hospitality Quarterly	T&V_Beh	Correlation
Travel motivations of seniors: A review and a meta-analytical assessment	Patuelli <i>et al.</i> (2016)	Tourism Economics	T&V_Beh	Regression
Are innovations relevant for consumers in the hospitality industry? A hedonic approach for Cuban hotels	Pena <i>et al.</i> (2016)	Tourism Management	MS&P	Regression
Frontier Analysis: A State-of-the-Art Review and Meta-Analysis	Assaf <i>et al.</i> (2016)	Journal of Travel Research	E&F	Regression
Promoting Sustainable Hotel Guest Behavior: A Systematic Review and Meta-Analysis	Nisa <i>et al.</i> (2017)	Tourism Review International	T&V_Beh	Experimental
Are negative effects of tourist activities on wildlife over-reported? A review of assessment methods and empirical results	Bateman & Fleming (2017)	Biological Conservation	E&C	Experimental
Festival attributes and perceptions: A meta-analysis of relationships with satisfaction and loyalty	Tanford & Jung (2017)	Tourism Management	TOUR_SEC	Correlation
Roles of perceived behavioral control and self-efficacy to volunteer tourists' intended participation via theory of planned behavior	Lee & Kim (2018)	International Journal of Tourism Research	T&V_Beh	Correlation
An indicator-based approach to analyse the effects of non-native tree species on multiple cultural ecosystem services	Vaz <i>et al.</i> (2018)	Ecological Indicators	E&C	Experimental
Correlation between tourists' perceptions/evaluations of destination attributes and their overall satisfactions: Observations of a meta-analysis	Nghiêm-Phú (2018)	European Journal of Tourism Research	T&V_Beh	Correlation
A review of wildlife tourism and meta-analysis of parasitism in Africa's national parks and game reserves	Odeniran <i>et al.</i> (2018)	Parasitology Research	E&C	Experimental
Electronic word of mouth and hotel performance: A meta-analysis	Yang <i>et al.</i> (2018)	Tourism Management	MS&P	Regression
The relationship between emotional labour and burnout: a meta-analysis	Celiker <i>et al.</i> (2019)	Anatolia	T&V_Beh	Correlation
Antecedents and outcomes of work–nonwork conflict in hospitality: a meta-analysis	Xu & Cao (2019)	International Journal of Contemporary Hospitality Management	T&V_Beh	Correlation
Residents' impact perceptions of and attitudes towards tourism development: a meta-analysis	Gursoy <i>et al.</i> (2019)	Journal of Hospitality Marketing & Management	T&V_Beh	Correlation
A meta-analysis of the direct economic impacts of cruise tourism on port communities	Chen <i>et al.</i> (2019)	Tourism Management Perspectives	E&F	Regression
Significance bias in the tourism-led growth literature	Fonseca & Rivero (2019)	Tourism Economics	E&F	Regression
Tourism and Economic Growth: A Meta-regression Analysis	Nunkoo <i>et al.</i> (2019)	Journal of Travel Research	E&F	Regression
Publication bias and genuine effects: the case of Granger causality between tourism and income	Fonseca & Rivero (2019)	Current Issues in Tourism	E&F	Regression
Tourism-enhancing effect of World Heritage Sites: Panacea or placebo? A meta-analysis	Yang <i>et al.</i> (2019)	Annals of Tourism Research	E&F	Regression

*(D_TMS) Development of theories, models and scales, (E&C) Environmental and cultural issues, (E&F) Economic and financial aspects, (M&S) Methodologies and statistics techniques, (MS&P) Marketing strategies and practices, (TOUR_SEC) Specific sectors of tourism, (health tourism, event tourism, outdoor recreation, leisure, marine, cruises. (T&V_Beh) Tourist and visitor attitude, value, satisfaction, behavior and behavioural intention.

Coding

The studies to be included in the systematic analysis were examined according to the coding criteria determined by the researchers. In the coding form, the studies were primarily coded on the basis of their definitive properties (titles, years of publication, author(s), the countries in which they were conducted and journals in which they were published) and data collection channels and number of samples. The authors coded on the basis of the countries of the affiliated institutions in which the researchers carried out their research activities, as opposed to their countries of citizenship. When two different authors of one study were from the same country, the country was counted only once. Furthermore, since changes in the institutions may also result in country-related changes, calculations were finalized taking this matter into account. Because authors can conduct research simultaneously in different institutions, when they indicated two different countries in a single study, only the first country indicated was counted for the coding.

Subsequently, the studies were classified according to the research areas and designs and examined with regard to the applied meta-analysis model and publication bias tests. During the last stage, information regarding the citation numbers of the studies was coded.

The research area themes from Park, Phillips, Canter and Abbott (2011) and Kim *et al.* (2018) were used for categorizing the studies' research areas, though reorganized in a way to fit the studies included in our research's dataset. Within this scope, the studies were categorized in seven different topic titles: *Development of theories, models and scales (D_TMS)*, *Environmental and cultural issues (E&C)*, *Economic and financial aspects (E&F)*, *Methodologies and statistics techniques (M&S)*, *Marketing strategies and practices (M&P)*, *Specific sectors of tourism, (health tourism, event tourism, outdoor recreation, leisure, marine, cruises (TOUR_SEC) and Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention (T&V Beh)*. Studies that focused on more than one research area matter were classified on the basis of the main research area theme.

The studies were evaluated in three categories according to their research design: correlational, experimental and regression studies. According to the meta-analysis model applied, the studies were examined on the basis of two different models: *fixed-effect model* for when the sample was homogenous or *random-effects model* for studies with a heterogeneous structure.

Citation analysis data from Google Scholar and Web of Science were used for coding the citation analyses of the studies. For ranking the general citation numbers of the studies, Google Scholar, which includes more comprehensive citation data, was taken as a basis. The citation data from the Web of Science, in contrast, gives the number of citations of the studies within the scope of SSCI. The coding was carried out by three researchers separately and a consensus was reached on both the inclusion of the studies and all coding.

Findings

Publication Numbers According to Years and Periods

The first meta-analysis study within the discipline of tourism and hospitality was carried out by Geoffrey I. Crouch in 1994. The year with the highest number of published studies is 2019, even though only half of the year has passed (n=8). Considering the number of studies on a period-basis, it was determined that 13% (n=6) of the studies were published in the years 1994-1998, 4.4% (n=2) of the studies in the years 1999-2008, 21.7% (n=10) of the studies in the years 2009-2013 and 60.9% (n=28) of the studies in the years 2014-2019 (Table 2).

Table 2. *Distribution of Studies According to the Years*

Years	Number of Studies	%
1994-1998	6	13
1999-2003	1	2,2
2004-2008	1	2,2
2009-2013	10	21,7
2014-2019	28	60,9

Statistics Regarding the Authors of the Studies, Countries of the Authors and the Journals of Studies

The total number of authors of meta-analysis studies focusing on tourism and hospitality is 134, with 120 different authors, due to some authors with multiple studies. Examining the authors according to the number of studies revealed that 110 authors had 1 (91.67%) study, 8 authors had 2 (6.67%), 1 author had 3 (0.83%) and 1 author had 5 (0.83%). The authors with the highest numbers of publication are Geoffrey I. Crouch (n=5) and Peter Nijkamp (n=3).

Examining the studies for co-authorship showed that study with the highest number of authors was “An indicator-based approach to analyse the effects of non-native tree species on multiple cultural ecosystem services”, published in 2018 with 11 co-authors. Among the 46 studies, 13% were single-author (n=6), 30.4% were two-author (n=14), 28.3% were three-author (n=13), 21.7% were four-author (n=10), 4.3% were five-author (n=2) and 2.2% were eleven-author studies (n=1).

The studies were carried out by authors from 23 different countries. The five countries with the highest number of studies were the USA, Australia, China, the United Kingdom and Spain. Authors linked to the USA contributed 18 different studies (39.1%), authors linked to Australia contributed 8 (17.4%), authors linked to China contributed 7 (15.2%), authors linked to the United Kingdom contributed 6 (13%) and authors linked to Spain contributed 5 (10.9%).

The analysis of the journals in which the studies were published showed that the 46 studies were published in 27 different journals. The top two journals with the highest numbers of publications were the *Journal of Travel Research* (n=7) and *Tourism Management* (n=5).

The Data Collection Channels and Sample Sizes of the Studies

The analysis revealed that 52.17% of the studies utilized search engines and databases as data collection channels (n=22). This is followed by browsing in specific journals, with 8.70% (n=4). However, 28.26% of the studies did not specify their data collection channels (n=13). The sample sizes of the studies most frequently were within the range of 26-50 (n=16). Meta-analysis study with the highest sample size examined 222 sample whereas one of the studies did not specify a sample size (Table 3). While the samples of 33 studies consist of publications, the samples of 3 studies consist of case studies. Two of the case studies focused on hotels as research populations and one focused on countries.

The Classification of the Studies According to Research Area Distribution

The analysis determined that the studies were mostly carried out under the research areas of *Economic and financial aspects* (n=19, 41.3%), *Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention* (n=11, 23.9%) and *Specific sectors of tourism (health tourism, event tourism, outdoor recreation, leisure, marine, cruises)* (n=7, 15.2%) (Table 4).

Table 3. *Sample Sizes and Data Collection Channels of Studies*

	Sample Sizes		Data Collection Channels		
	n	%	n	%	
200-	1	2,17	search engine & database	22	52,17
101-200	8	17,39	journal	4	8,70
51-100	10	21,74	journal & database	3	6,52
26-50	16	34,78	publications/report/ newspaper/website	1	2,17
1-25	10	21,74	photographic/ internet/catalogue	1	2,17
unspecified	1	2,17	unspecified	13	28,26
Total	46	100	Total	46	100

Table 4. *Distribution of Meta-analysis Studies by Research Area*

Research Area*	1994-1998	1999-2003	2004-2008	2009-2013	2014-2019	Number of Studies	
						Number of Studies	%
D_TMS	1	-	-	-	-	1	2,2
E&C	-	-	-	-	4	4	8,7
E&F	4	1	-	4	10	19	41,3
M&S	1	-	-	-	-	1	2,2
MS&P	-	-	-	-	3	3	6,5
TOUR_SEC	-	-	1	5	1	7	15,2
T&V_Beh	-	-	-	1	10	11	23,9

*(D_TMS) Development of theories, models and scales, (E&C) Environmental and cultural issues, (E&F) Economic and financial aspects, (M&S) Methodologies and statistics techniques, (MS&P) Marketing strategies and practices, (TOUR_SEC) Specific sectors of tourism, (health tourism, event tourism, outdoor recreation, leisure, marine, cruises (T&V_Beh) Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention.

In order to determine which meta-analysis research areas were predominant during which time periods and to reveal current interest towards research areas, the subject titles were examined for specific time periods starting from the year 1994 (Table 4). The analysis showed that no study was carried out on the research areas of *Development of theories, models and scales* and *Methodologies and statistics techniques* except in the years 1994-1998. While *Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention* and *Economic and financial aspects* are the most studied research areas, especially in the 2014-2019 period, the research areas of *Environmental and cultural issues* and *Marketing strategies and practices* have recently gained attention as well.

The Classification of the Studies According to Research Design

The analysis revealed that 32.61% (n=15) of the studies reflected a correlational construct, 41.30% (n=19) were designed based on regression and 26.09% were carried out experimentally (Table 5). Furthermore, two of the studies that applied meta-regression applied internal meta-analysis, which refers to researchers carrying out meta-analyses of the studies themselves.

Table 5. Research Design of Studies

Research Design	Number of Studies	%
Correlation	15	32,6
Regression	19	41,3
Experimental	12	26,1

The analysis of the preferred type of meta-analysis according to the subject titles revealed that most of the studies on the research area of *Economic and financial aspects* applied meta-regression (n=19), while a great majority of the studies on the research area of *Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention* (n=9) had a correlational structure. In addition, the 4 studies published on the research area of *Environmental and cultural issues* were carried out experimentally (Table 6).

Table 6. Research Design According to the Research Areas

Research Area*	Correlation	Regression	Experimental
D_TMS	1	-	-
E&C	-	-	4
E&F	-	15	4
M&S	1	-	-
MS&P	1	2	-
T&V_Beh	9	1	1
TOUR_SEC	3	1	3

*(D_TMS) Development of theories, models and scales, (E&C) Environmental and cultural issues, (E&F) Economic and financial aspects, (M&S) Methodologies and statistics techniques, (MS&P) Marketing strategies and practices, (TOUR_SEC) Specific sectors of tourism (health tourism, event tourism, outdoor recreation, leisure, marine, cruises). (T&V_Beh) Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention.

The Analysis of the Meta-Analysis Models Applied in the Studies and the Publication Bias Tests

The analysis of the studies' models determined that 34.78% applied a *random-effect model* (n=16), 4.35% applied a *fixed-effect model* (n=2), 10.87% applied both models together (n=3) and the model was not specified in half of the studies (n=23). It was observed that tests for publication bias were applied in 26.09% (n=12) of the studies, whereas 73.91% (n=30) included no analysis of publication bias (Table 7).

Table 7. Meta-analysis Models and Publication Bias Tests Used in the Studies

Model	n	%
Random	16	34,78
Fixed	2	4,35
Random & Fixed	5	10,87
Unspecified	23	50,00
Total	46	100
Publication Bias	n	%
Applied	12	26,09
Unapplied	34	73,91
Total	46	100

Statistics on the Citation Numbers of the Studies

As of June 2019 (the observation date), the most cited study according to the citation data obtained from Google Scholar (GS) and the Web of Science (WoS) database was “Measuring Leisure Motivation: A Meta-Analysis of the Recreation Experience Preference Scales” (n=716), which was published in the *Journal of Leisure Research* in 1996. This study was carried out in the research area of *Development of theories, models and scales* with a correlational meta-analysis design. When the citation ratios according to the publication dates of the studies were considered, it was seen that the study with the highest density of citations was “Destination image and tourist loyalty: A meta-analysis”, which was published by Zhang *et al.* in 2012 (Table 8).

Table 8. Top 5 Studies with Highest Citation Counts

Study	Journal	Research Area*	Design	GS	WoS	Cites/ Year (GS)	Cites/ Year (WoS)
Measuring Leisure Motivation: A Meta-Analysis of the Recreation Experience Preference Scales (1996)	Journal of Leisure Research	D_TMS	correlation	716	239	31	10
Destination image and tourist loyalty: A meta-analysis (2014)	Tourism Management	MS&P	correlation	444	208	89	42
A Meta-Analysis of Tourism Demand (1995)	Annals of Tourism Research	E&F	regression	424	170	18	7
A Meta-Analytic Review of International Tourism Demand (2012)	Journal of Travel Research	E&F	experimental	311	-	44	-
Demand Elasticities for Short-Haul versus Long-Haul Tourism (1994)	Journal of Travel Research	E&F	experimental	129	-	5	-

*(D_TMS) Development of theories, models and scales, (E&F) Economic and financial aspects, (MS&P) Marketing strategies and practices.

According to the citation analysis data from Google Scholar, of the 46 total studies, six studies (13.04%) received no citations, nine studies (19.57%) received 1-10 citations, sixteen studies (34.78%) received 11-50 citations, seven studies (15.22%) received 51-100 citations, five studies (10.87%) received 101-400 citations and three studies (6.52%) received over 400 citations.

Analysing the citation numbers based on research area distributions showed that 19 studies carried out on the research area of *Economic and financial aspects* have the highest citation number (GS=1631). One study (GS=716) carried out on the research area of *Development of theories, models and scales* and three studies (GS=484) on the research area of *Marketing strategies and practices* were listed as the most cited research area titles following *Economic and financial aspects*. Moreover, *Development of theories, models and scales* (Mean GS=716) and *Marketing strategies and practices* (Mean GS=161) were the research area titles with the highest citation means according to the publication number (Table 9).

Conclusion

Meta-analysis studies arrived late to the tourism and hospitality literature compared to many disciplines. Long after Glass (1976) put forth the notion of meta-analysis, Crouch (1994) conducted the first meta-analysis study in the tourism and hospitality literature. In the last decade, there has been increasing interest in meta-analysis studies in the field. 82.6% of the studies were published within the

decade of 2009-2019. This increase in the number of meta-analysis studies indicates that knowledge of the field is also increasing.

Table 9. Citation Counts According to Research Area Distribution

Research Area*	Citation (GS)	Number of Study	Mean (GS)
E&F	1631	19	86
D_TMS	716	1	716
MS&P	484	3	161
TOUR_SEC	329	7	47
T&V_Beh	189	11	17
E&C	76	4	19
M&S	6	1	6

*(D_TMS) Development of theories, models and scales, (E&C) Environmental and cultural issues, (E&F) Economic and financial aspects, (M&S) Methodologies and statistics techniques, (MS&P) Marketing strategies and practices, (TOUR_SEC) Specific sectors of tourism (health tourism, event tourism, outdoor recreation, leisure, marine, cruises), (T&V_Beh) Tourist and visitor attitude, value, satisfaction, behaviour and behavioural intention.

In meta-analysis studies, with various methods and data channels (e.g., databases, journals, etc.), the number of samples analysed and the meta-analysis method used should be specified in a hierarchical order. The present paper determined that a great majority of the meta-analysis studies carried out in the field do not specify the data collection channels. For transparency and the reliability of samples, the entire research process, from collecting data to reporting, should be explicated in detail. Within this scope, researchers can apply the data inclusion flowchart and the control lists developed by Moher *et al.* (2009) called Prisma (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). In addition, most of the studies applied the random-effect model as their meta-analysis model. This shows that the individual studies included in the meta-analysis studies did not have a homogenous structure. A heterogeneous dataset necessitates publication bias tests; however, it was ascertained that the great majority of the studies did not apply publication bias tests. This situation raises questions about whether the individual studies included in the analysis unit have publication bias or not. In order to get an answer to this question, it is necessary to apply to publication bias tests (Funnel plot, Classic fail-safe N, Begg and Mazumdar Rank Correlation etc.). However, it is observed that although the random model was used in many meta-analysis studies conducted in the field (that is, despite the heterogeneous structure of the individual studies included in the analysis unit), publication bias tests were not applied. In addition, an important point that stands out is that half of the studies did not report the model they applied. This situation creates suspicion that the study is based on its reliability, transparency and ethical principles. Meta-analysis studies in the tourism and hospitality literature can direct theory development, shed light on conflicting findings and lead to improved methodologies (Gretzel & Kennedy- Eden, 2012, p.466). For this reason, meta-analysis studies should be conducted in line with the principles of transparency and reliability, starting from the data collection stage and continuing to the reporting stage. Ensuring consistency is important for obtaining reliable findings in the tourism and hospitality field, as this field encompasses many different disciplines (Pahlevan-Sharif, Mura & Wijesinghe, 2019, p.164-165).

This paper showed that meta-analysis studies in the field are mostly conducted on the economy, tourist perceptions and behaviour and alternative tourism types. Although the first meta-analysis study in the field were conducted on tourism demand and demand elasticities, the majority of meta-analysis studies were carried out on the economy and tourist perceptions, attitudes and behaviour (satisfaction, loyalty), especially in the last five years. Kim *et al.* (2018) also ascertained that systematic review studies

conducted within the tourism and hospitality discipline intensively focus on the research areas of economy and finance. This finding can be a solution to the various challenges faced by the industry, such as economic instability, stagnancy and the distribution of tourism gains. When meta-analysis is considered as a combination of multiple studies, the fact that there are so many meta-analyses conducted on these research areas shows the high number of individual studies on these research areas as well. For instance, the industry's inclination towards alternative tourism types, after the saturation of mass tourism, is reflected in research and the numbers of researches carried out on this area has increased.

When the studies were evaluated according to research design, it was observed that regression-based designs are more frequent. Especially in recent periods, there is increasing interest in meta-regression studies. Regression-based studies have mostly focused on economic research area matters. Correlational meta-analysis is frequently observed in studies examining tourist perceptions and behaviour. In contrast, studies focusing on environmental and cultural values have an experimental design. Additionally, structural equation modelling (SEM) is becoming an increasingly popular statistical technique among tourism studies where it is used to test various types of theoretical models (Reisinger & Turner, 1999; Nunkoo & Ramkissoon, 2012; Nunkoo *et al.*, 2013). However, meta-analysis studies using SEM results are very limited in the literature. Future meta-analysis studies, taking into account Hedges' (2016) views, can conduct meta-analysis studies based on SEM results and make significant contributions to this gap in the literature.

The results of the citation analysis reveal that the most cited meta-analysis studies were conducted on the research areas of theory, model and scale development, marketing strategies and applications and the economy. For example, although there were only a few studies conducted on the research areas of theory, model and scale development and marketing strategies and applications, they received much attention in terms of citation numbers and citation densities. This combination of a few studies with high impacts can be a beacon for future studies.

With an exploratory perspective, the paper serves researchers as a reference for the scope, limitations, tendencies and future effects of the meta-analysis studies conducted within the field. This paper identifies the current status (historical development, scope, limitations, trends) of the meta-analysis studies carried out in the field of tourism and hospitality and provides inferences and suggestions for its future effects. The findings obtained through the systematic review of the meta-analysis studies contribute to a better understanding of the meta-analysis studies carried out in the field but also provide information about how future research should be structured. In this context, in the current paper, provided information about the historical development of meta-analysis studies in the field, and by identifying the authors, countries and journals leading the meta-analysis studies, a resource for future research was provided. In addition, by giving information about data collection channels of meta-analysis studies, sample numbers, applied meta-analysis models and publication bias tests, important and necessary criteria in a meta-analysis study and basic information about what these criteria mean are presented. This information provides critical clues to future research on how a meta-analysis study should be structured. In addition, classifying meta-analysis studies according to research area distributions and research designs will allow future researchers to identify trends, concentrations and gaps in the field. Finally, determining the meta-analysis studies that are effective in the literature based on the research area and research design through citation analysis, will undoubtedly be a guide for future researchers in the selection of research area and research design. In this respect, the paper will serve as a starting point and checklist for future meta-analysis researches to be carried out in the field of tourism and hospitality, provide researchers with insight into potential future research opportunities,

and help them explore research topics. Therefore, it is thought that the paper will contribute to the advancement of scientific development in the field by putting forward an idea about the current state of meta-analysis studies in the field and making determinations and inferences that guide the future meta-analysis studies.

This paper has certain limitations. Although a comprehensive literature review was carried out during the data collection stage, a limitation is that some studies were in different languages, had different scientific genres (proceedings, book chapter, thesis, etc.) and had inaccessible full-text. Searches could not be carried out in the tourism and hospitality journals in the Web of Science included within the scope of ESCI; however, it is believed that the other databases and the detailed examination of Google Scholar resolved this limitation.

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