Geojournal of Tourism and Geosites
ISSN 2065-0817, E-ISSN 2065-1198

Year XVIII, vol. 62, no. 4, 2025, p.2053-2062
DOI 10.30892/gtg.62405-1571

EVALUATING HOW BIG DATA ANALYSIS MEDIATES THE IMPACT OF DIGITAL MARKETING STRATEGIES ON TOURISM DEVELOPMENT IN JORDAN

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Citation: Alawneh, O.M., Allahham, M., Habeeb, A.F.H., Almajali, W., AL-Nsour, I.A., & Jawabreh, O. (2025). Evaluating how big data analysis mediates the impact of digital marketing strategies on tourism development in Jordan. *Geojournal of Tourism and Geosites*, 62(4), 2053–2062. https://doi.org/10.30892/gtg.62405-1571

Abstract: This study examines how big data analysis mediates the relationship between digital marketing strategies and tourism development in Jordan. With the growing reliance on influencer marketing, mobile marketing and social media platforms, understanding their direct and indirect impacts on tourism has become increasingly important, especially as data-driven strategies shape decision-making in the industry.". Using a quantitative, cross-sectional research design, a structured questionnaire was administered to 167 professionals in tourism-related organizations across Jordan. The collected data were analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that influence and mobile marketing exert significant direct effects on tourism development, while social media marketing's impact appears more effectively mediated by big data analysis. Notably, big data analysis demonstrates a strong mediating role, amplifying the influence of digital marketing strategies on tourism outcomes such as visitor flow, satisfaction, and destination image. These results emphasize the strategic necessity of integrating analytical capabilities into digital marketing frameworks to drive sustainable tourism growth. The study contributes to the literature by empirically validating big data as a dynamic capability and by proposing a model applicable to tourism development policies in emerging economies. It also offers practical insights for tourism managers and policymakers, suggesting that investments in data infrastructure, analytics tools, and digital talent are essential to capitalize on the full potential of digital marketing. By integrating data-driven insights with strategic marketing, tourism organizations in emerging economies like Jordan can drive sustainable growth and competitive advantage in the digital age.

Keywords: Big Data Analysis, Influencer Marketing, Mobile Marketing, Social Media, Tourism Development

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INTRODUCTION

Digital marketing has significantly changed the worldwide landscape of destination branding and tourism promotion over the last 10 years, changing the ways in which tourism development is planned, coordinated, and maintained (Sudirjo et al., 2024). Nowadays, the most important strategies for grabbing and retaining travelers' attention are influencer collaborations, SEO, social media interaction, and content marketing. However, because of the power of big data analytics, which allows tourism firms to analyze visitor habits in real-time, adapt marketing campaigns, and extract actionable strategic insights, the promise of these techniques is just now starting to be realized (Dengra, 2024). Since growing competitiveness and sustainable tourist growth are national strategic priorities in socio-economic development plans, this change is particularly important for emerging tourism economies (Al-Barakat et al., 2025; Jawabreh et al., 2025; Saputra et al., 2023; Cordova-Buiza et al., 2025). Although digital marketing innovations are seen as promising ways to boost tourism, their effectiveness mostly depends on an organization's capacity to use data analysis to adapt to changing consumer travel habits and market demands (Nordhoff et al., 2020). An enterprise may use this analytical skill, which is referred to as big data analysis, to evaluate, extract, and produce value from large, intricate data sets from many digital sources and use these insights to inform strategy and decision-making (Alshurideh et al., 2023) To maximize the return on digital marketing expenditures, the tourist industry may use big data analytics to track campaign success, demand patterns, offer refreshes, and real-time pricing and promotion alignment (Aljabari et al., 2024; Jawabreh et al., 2024a).

The mediating function of big data analysis between digital marketing tactics and quantifiable tourism development has not been sufficiently explored, despite the fact that digital marketing techniques are often used by tourist businesses in Jordan and the MENA area (Bataineh et al., 2023). There is a strategic need for this. The need to transform marketing insights into development-led action has become a strategic need due to the increase in data quantities, digital competition,

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and traveler expectations. Tourism operators may not be able to fully use the digital marketing channel or effectively address the range of issues influencing tourism development if they lack excellent data analytic skills (Chopra & Raja, 2024). To make well-informed policy choices, strategic planning, and competitive positioning, it is vital to understand how big data affects the interaction between digital marketing and tourist development (Sacco & Magnani, 2023). The digitization of Jordan's tourist sector has led to the development of information and communication services, although this mediating process has not been well studied in study (Rossini et al., 2023). By investigating the connections between digital marketing tactics, big data analytics, and Jordanian tourist growth, this study aims to close this gap in the literature (Hussaine et al., 2023). As a result, the study will be guided by the following questions. Research on the potential and difficulties in the tourist industry is still scarce, despite the fact that the use of big data analysis methods has been regularly studied in many industries to prevent certain unwanted results and enhance performance 2. Given the importance of digital marketing in drawing prospective foreign visitors to Jordan, it is sense to investigate how this industry might benefit from the recently made big data resources by advancing scientific knowledge. Today's marketers have access to a low-cost, real-time, diverse, and trustworthy source of information on the market, competition, and customer behavior. Big data analysis tools provide tourism authorities with a new way to improve performance because of the growing amount of digital material about tourism goods, rivals, and visitors' opinions and interactions about trips and locations. Researchers in the field need to address how potential inbound tourists perceive Jordan's attractiveness as a travel destination in order to better understand potential analysis techniques that tourism organizations can use to benefit from big data sources by illustrating the digital marketing in the national tourism domain and filling in the related research gaps.

RQ1: What is the extent of the impact of digital marketing on tourism development in Jordan?

RQ2: What is the role of big data analysis in the relationship between digital marketing strategies and tourism development?

RQ3: Is big data analysis a crucial mediating factor in enhancing the effectiveness of digital marketing strategies for tourism development?

The rest of the paper is organized as follows: Section 2 reviews the literature on digital marketing, big data analytics, and tourism development, concluding with a presentation of potential hypotheses regarding the mediating effects of big data analysis. Methodology Section 3 discusses the method employed, including the survey design, data collection, and the application of PLS-SEM to investigate the hypotheses. Section 4 examines the empirical results and their comparisons to previous work. Part 6 concludes the report with theoretical and practical contributions, especially how a combination of data analytics with digital marketing techniques can create opportunities for sustainable tourism growth in the new digital era in Jordan.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

1. Big Data Analysis and Tourism Development

The tourism industry has been reinvented by the power of data-driven analytics, fundamental in supporting evidence-based decision-making, forecasting visitor behavior, and customized marketing (Ahmad et al.,2025; Alhaj et al., 2024; Budiarto et al., 2024). With the ability to collect and process large amounts of different types of data, web traffic, and online booking behavior, big data technology enables destination marketers to learn about travel patterns, preferences, and pains (Sharabati et al., 2023). For Jordan, with tourism expansion being a key strategy in national economic diversification, examination of real-time analytics is reportedly necessary to better understand the dynamics of domestic and international tourist flows, manage resource allocation, and make target campaigns (Haleem et al., 2022). Big data improves the capability of tourism agencies to match the art marketing mix with quantifiable results, arrivals, length of stay, or spending (Makrydakis, 2024). However, easy access to big data is not enough; strategic use of this data to give fruitful information to advance tourism is what is required (Tiwari et al., 2024). The capacity to analyze and operationalize big data is crucial to enhance the effectiveness of marketing strategies when it comes to tourism (Hartanto et al., 2022). It is certain, nevertheless, that the several organizations involved in Jordan's tourism marketing are not doing enough or effectively enough to draw in a sufficient number of visitors, either domestic or foreign. Furthermore, the media in general and the electronic/digital media in particular have undergone significant transformation with the introduction of the Internet. Regarding the many approaches and systems of tourist marketing, the characteristics of media organizations, and the significant rise of specialist media focused on tourism-related issues.

H1: Digital marketing strategies have a positive influence on tourism development in Jordan.

2. Influencer Marketing and Tourism Development

Influencer marketing is increasingly used as a fundamental part of digital tourism promotion, leveraging the reputation and reach of web personalities to influence tourists' perceptions and actions (Ibáñez-Sánchez et al., 2022). Influencer marketing does not have the same shortcomings as traditional advertising, as influencer campaigns can produce authentic content, which is more likely to connect with audiences, especially on platforms like Instagram, TikTok, and YouTube (Theresa et al., 2024). In the Jordanian tourism industry, influencers have played an instrumental role in promoting cultural, historical, and environmental assets to worldwide tourists, often igniting viral tourism trends and niche market appeal (Diab, 2021). However, the effectiveness of influencer marketing lies in monitoring the engagement metrics, sentiment analytics, and conversion rate. is dependent on how well the big data on these aspects is analyzed. Identifying influencers who trigger the most engagement with the highest-performing content also involves complex data collection and interpretation mechanisms(Atieh Ali et al., 2024).

H2: Big data analysis has a positive influence on tourism development in Jordan.

3. Mobile Marketing and Real-Time Engagement

Mobile marketing has become an integral part of digital efforts, allowing for immediate contact with tourists through

SMS, push notifications, and location-based services. In tourism, such techniques can be used to send tailored offers, suggest points of interest for visits, or provide real-time news, which can positively affect tourist satisfaction and experience (Morshed et al., 2024a). Mobile marketing in Jordan (Niu et al., 2024). While exploring and staying in Jordan, the majority of tourists rely on mobile apps to assist with commuting, accommodation, and their itinerary. Effective marketing helps engage visitors at the right time and in an uninterrupted way (Al Mawahreh et al., 2025). As big data becomes more widely available, the marketing process becomes more complicated. The relevance of sophisticated analytics has increased in tandem with its increased availability. Big data's diversity, velocity, and volume on the Internet may improve the efficacy and efficiency of marketing. Making better decisions about marketing strategies requires incorporating and analyzing the appropriate kinds of big data. Furthermore, better marketing efficacy and efficiency may be attained by making judgments based on the appropriate data and analytics. However, the performance effect of big data marketing has been the main focus of previous marketing studies. The operational and strategic significance of computer-mediated settings is becoming more widely recognized in the tourist industry. E-business developed during the information technology boom to capitalize on digital value and innovation, exposing businesses to a much wider market 2.

However, their expansion has been hampered by the underutilization of potential from tourist and hospitality businesses. As opportunities often demand, these opportunities have their roots in external contexts. The advent of digital spaces has changed the way that tourism and hospitality are now consumed and marketed, turning them into marketplaces for information and experiences. By providing better alternatives to businesses and consumers alike, these significant advancements have opened the door for a new grand strategy that has the potential to digitally revolutionize local sectors. To provide advantages, however, chances must be seized.Although social media and word-of-mouth have shown their worth in the last 10 years, their potential to revolutionize whole industries has not yet been completely acknowledged.

Managers of tourism and hospitality must investigate many underutilized prospects, and it is crucial to conceptualize computer-mediated settings. Computer-mediated environments are artificially constructed digital and ethereal spaces where computers frame and facilitate human activity (Jawabreh et al., 2021). This definition involves two concepts: computer-mediated and surroundings. It is possible to distinguish between different perspectives of technology, such as technology as a tool and technology as an environment, since the environment is a place where affordance occurs.

Environments as structures inherently couple concrete activities with alternatives that limit. This is also true for performers who accompany affordance and afford presence. Participants in these settings are aware of alternatives, which further limit their choices. However, they feel free to explore other options within the set of options.

However, players share consequences that are dictated by macro-structures at a meta-level. However, the effectiveness of mobile marketing ultimately depends on the organization's ability to monitor user data, track behavioral trends, app engagement, and response rates. All of this responsiveness and personalization made possible by Big Data is therefore a fundamental mediating variable among mobile marketing strategies and tourism expansion (Ahmad et al., 2024).

H3: Big data analysis mediates the relationship between digital marketing strategies and tourism development in Jordan.

4. Social Media Marketing and Destination Image

Social media sites have changed the way that tourists find and explore during their vacations (Alofan et al., 2025). Social media, Facebook, Twitter, and Instagram are no longer just communication channels; they are decision-making tools , affecting destination image and reputation (Greve, 2021). Journalists from around the world flew into Amman on the foreign minister’s plane to hear Jordan’s tourism authority and private operators present marketing campaigns that took to social media to advertise the likes of Petra, Wadi Rum, and the Dead Sea. Despite this, the effects of these measures are most transparent when filtered through big data analysis. Real-time sentiment analysis, engagement rates, content performance, and user feedback can be leveraged to help tweak campaigns, spot trends, and head off reputation threats (Chidera et al., 2024). In this sense, big data intermediates by transforming raw social media behaviors into strategic inputs for sustainable tourism development. As every other kind of business data is used for operational and strategic decisions, big data is becoming more and more important. Leading businesses worldwide have access to a wealth of internal and external data on their clients, including their online and offline behaviors, as well as a plethora of financial and non-financial data about rivals, industries, and macroeconomies. Executives have historically used functional or regional perspectives on standard reporting data to inform them of their choices. In addition to increasing consumer welfare and business offers, efficacy, convenience, and price-sensitive benchmarking, big data creates new kinds of reports with predictive or prescriptive insights into customer behavior (Jawabreh et al., 2020).

Using internal and external datasets covering a wide range of easily iterable events that are widely defined, big data may also provide reports more often and in more detail. Data-driven decision-making is still in its infancy, and many businesses still experience minimal improvement in decision-making because they lack the competitive power to extract better evidence and insights. Most of the data analysis now in use focuses on statistics or pictures.

Transactional and other digitally encoded data have been captured and made easier by innovative digital gadgets, wireless internet, and inexpensive, portable storage. Therefore, firm-fixed and consumer-fixed delays on past behavior and business events provide more accurate expert judgment on possibly dynamic changes in offering, result, and behavior than do nebulous perspectives. Now accessible are competitor scan maps that show what other businesses are doing and the activities they are doing around their goods and services (Balcılar et al., 2024).

H4: Social media marketing has a positive influence on tourism development in Jordan.

5. The Mediating Role of Big Data Analysis

Influencer, mobile, social media: Digital marketing strategies on influencer, mobile, and social media hold great

promise for tourism development, but can be most effective when applied in conjunction with sophisticated data analytics (Jawabreh et al.,2024b; Lopez, 2024). Big data allows predictive modelling, customer segmentation, performance monitoring, and content personalization. It is a strategic capability rather than a technical tool (Acheampong et al., 2023). In Jordan, a country characterized by fast-paced tourism movements driven by regional and international developments, real-time data analysis is a matter of competitive imperative. Ultimately, the decision-making perspective reveals that firms without analytical capabilities often rely on good intentions to produce digital practices that do not yield realized returns, in contrast to firms with strong big data capabilities, who can transform digital involvement into business value. Hence, BDA is not a supportive role, but a core actor realizing digital strategy in tourism value (Jawabreh et al., 2023), One of the newest developments in the field of digital marketing is influencer marketing, which is being progressively used by corporations into their marketing strategy. "A type of advertising that emphasizes the operator's or brand spokesperson's gratitude to whom the message reaches the audience" is what influencer marketing is. It usually entails a well-known someone from the business endorsing a brand. The influencers in this study are social media celebrities whose notoriety is determined by the number of followers they have amassed on blogging and social media sites. Influencer marketing is still a little-studied field in the internet world, despite the incredible excitement around it. Since social media is a virtual environment where people may interact with social media influencers, it is worthwhile to research the influencer marketing process and how it affects businesses' marketing plans. Tourism and Social Media Campaigns. Social media has made it possible to keep a closer eye on daily activities than ever before. Revenue managers in the tourist industry have benefited from these technological advancements as they can now utilize indicators like social media likes, comments, and shares to learn more about how to enhance booking. To find out how different major actors in the tourist industry evaluate social media's value and influence on online reservations, further research would be helpful. Additionally, more investigation is needed to determine the proportional importance of each social media platform. These channels should be ranked from least to most successful, and the tourist industry should be given recommendations on how to use each one effectively.

METHODOLOGY

1. Research Design: This study adopts a quantitative, cross-sectional research design to examine the mediating role of big data analysis in the relationship between digital marketing strategies and tourism development in Jordan. The model integrates digital marketing dimensions (influencer marketing, mobile marketing, and social media marketing) as independent variables, big data analysis as a mediating variable, and tourism development as the dependent variable.

2. Population and Sample: The target population includes tourism-related organizations in Jordan, spanning public and private sectors such as tourism boards, travel agencies, digital marketing firms, and hospitality businesses. From an initial frame of 250 firms actively engaged in digital marketing between 2015 and 2024, a purposive sampling approach was used to select organizations with verifiable digital presence and data analytics usage. A total of 167 valid responses were collected from professionals occupying strategic, marketing, or data analytics roles.

3. Data Collection Tools and Procedure: Data was collected through a standardized questionnaire distributed electronically to selected respondents. The instrument included items measuring:

- Digital marketing strategies: influencer marketing, mobile marketing, and social media engagement.
- Big data analysis capability.
- Tourism development outcomes: visitor flow, customer satisfaction, and brand perception.

Responses were rated on a 5-point Likert scale, with items adapted from validated constructs in prior literature. Additional secondary data from platforms such as Google Analytics, Facebook Business Suite, and TripAdvisor Insights, along with statistics from the Jordanian Ministry of Tourism and Antiquities, were used to triangulate findings and enhance data robustness.

H5: Big data analysis mediates the relationship between digital marketing strategies and tourism development in Jordan.

Figure 1, the research model integrates Social Media, Mobile Marketing, and Influencer Marketing as predictors of Tourism Development, with Big Data Analysis serving as a mediating construct.

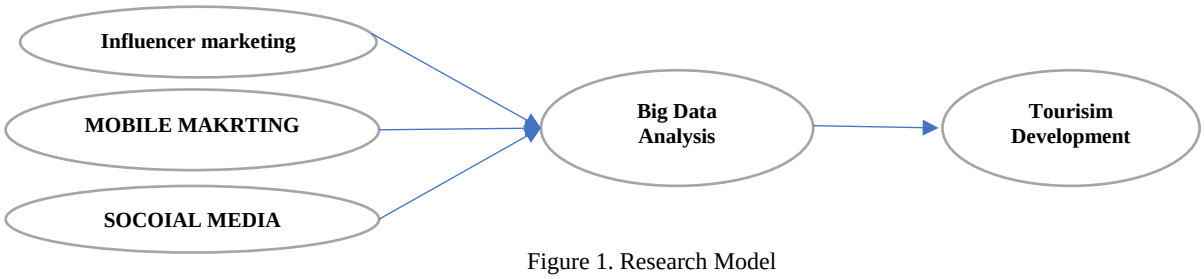

Figure 1. Research Model

DATA AND SAMPLE

This study population was tourism organizations in Jordan tourism sector including public sector tourism organizations, private sector tour operators, digital marketing organizations and hospitality organizations whose activity toward digital marketing was active from year 2015 and 2024. The standardized questionnaires were addressed to marketing managers, analytics specialists and strategic decision makers of these companies. In addition, the tourist statistics issued by Jordan's Ministry of Tourism and Antiquities and social media metrics collected from some of the main channels Google Analytics, Facebook Business Suite, and TripAdvisor Insights were used to substantiate and complement survey data. The first frame was drawn from 250 travel-related firms known to have implemented digital marketing endeavors.

For the accuracy and authenticity of our evaluation, organizations that lacked evidence of digital engagement on dynamic media or that did not have any use of big data analytics were removed. We ended up with a final sample of 167 valid and representative of the different sides in the tourism sector in Jordan. The indicators that have been gathered and analyzed can be situated somewhere in between those that are qualitative and quantitative, and are related to e-tourism strategies social media, mobile marketing, influencer campaigns, the stage of development in big data analysis, and the key performance indicators as regards the development of tourism ,visitor flow, customer satisfaction, brand image. This multilevel data set enables a comprehensive investigation of the moderating effect of big data analytics on the relationship between digital marketing strategies and tourism development outcomes in Jordan.

Figure 2 the proposed Structural Equation Model provides a depiction of the structural relationship among the key constructs of Digital Marketing Strategies (namely Social Media Marketing, Influencer Marketing, Mobile Marketing) as antecedents to Tourism Development in Jordan, while Big Data Analysis is a mediating variable in this relationship

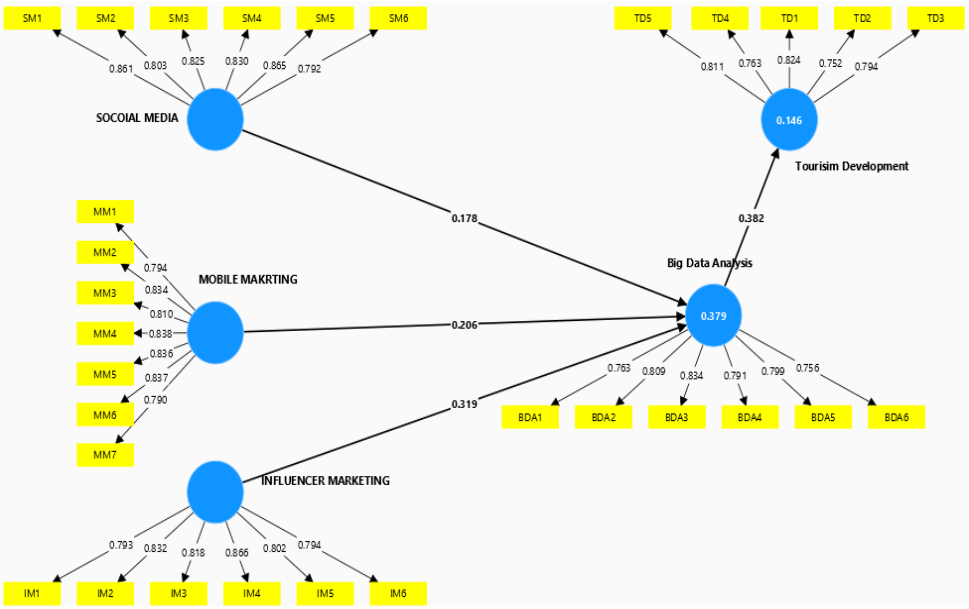

Figure 2. Structural Equation Model

Table 1. Measurement items and reliability

Constructs	Items	Factor loadings	Cronbach's Alpha	C.R.	(AVE)
Big Data Analysis	**BDA1**	0.763	0.881	0.91	0.628
	BDA2	0.809			
	BDA3	0.834			
	BDA4	0.791			
	BDA5	0.799			
	BDA6	0.763			
Influencer Marketing	**IM1**	0.793	0.901	0.924	0.669
	IM2	0.832			
	IM3	0.818			
	IM4	0.866			
	IM5	0.802			
	IM6	0.794			
Mobile Marketing	**MM1**	0.794	0.919	0.935	0.673
	MM2	0.834			
	MM3	0.81			
	MM4	0.838			
	MM5	0.836			
	MM6	0.837			
	MM7	0.79			
Social Media	**SM1**	0.861	0.909	0.93	0.689
	SM2	0.803			
	SM3	0.825			
	SM4	0.83			
	SM5	0.865			
	SM6	0.792			
Tourism Development	**TD1**	0.824	0.852	0.892	0.623
	TD2	0.752			
	TD3	0.794			
	TD4	0.763			
	TD5	0.811			

Table 1 provides the model portrays that Big Data Analysis is the main mediator due to the path analysis where strong influence had been proved in the setting, Big Data Analysis mediated between Tourism Development 33.7% and resulted with strong path coefficients especially from big data analysis to tourism development (β = 0.394). The influence of Influencer Marketing (β = 0.267) and Social Media Marketing (β = 0.318) on big data usage is statically significant whereas Mobile Marketing (β = 0.129) has negative impact on the Utilization of big data and is found to be statistically insignificant. The structure of the model is in accordance with the PLS-SEM, and the analysis brings empirical evidence about the strategical relevance of analytical capabilities in turning grinds of digital marketing into capabilities to measure positive tourism impacts.

This study's measure model features strong psychometric properties as evidenced by indicator and internal consistency reliability and convergent validity. All factor loadings of the construct in Big Data Analysis, Influencer Marketing, Mobile Marketing, Social Media, and Tourism Development are within the recommended limit 0.752 - 0.866. These criteria are beyond the recommended minimum cutoff of 0.70 recommended by Hair et al. (2019) demonstrating that each of the individual items are meaningfully related to their respective constructs. This provides further evidence of strong indicator reliability. Concerning the internal consistency reliability, Cronbach's Alpha as well as the composite reliability (CR) exceed the suggested threshold of 0.70. The values of Cronbach Alpha and CR vary from 0.852 to 0.919 and 0.892 to 0.935 respectively among the constructs. These findings suggest each construct displays consistent measurement characteristics across its items, with a high level of internal consistency. This would provide validity evidence based on test features and reliability for the survey used as a test instrument. The model is also in compliance with the convergent validity condition. This is also evident from the AVE values for all constructions that are also well above the threshold of 0.50. The AVE varies from 0.623 for Tourism Development to 0.689 for social media. These results indicate that the latent constructions account for a considerable amount of variance in the observed items. Thus, the constructs are valid operationalization of the theory that they are supposed to measure. Finally, the measurement model has acceptable indicator reliability, internal consistency reliability and convergent validity. These findings support the fact that the models through which the relationship between digital marketing strategies and big data analysis on tourism development in Jordan have been tested are statistically reliable and theoretically consistent. Thus, the model is appropriate for the structural analysis with the PLS-SEM.

Table 2. Structural analysis with the PLS-SEM the relationship between digital marketing strategies and big data analysis on tourism development in Jordan

	Big Data Analysis	Influencer Marketing	Mobile Marketing	Social Media	Tourism development
Big Data Analysis					
Influencer Marketing	0.63				
Mobile Marketing	0.544	0.605			
Social Media	0.602	0.818	0.679		
Tourism Development	0.422	0.716	0.467	0.656	

Table 3. Fornell-Larcker

	Big Data Analysis	Influencer Marketing	Mobile Marketing	Social Media	Tourism development
Big Data Analysis	0.793				
Influencer Marketing	0.566	0.818			
Mobile Marketing	0.494	0.555	0.82		
Social Media	0.543	0.744	0.623	0.83	
Tourism Development	0.382	0.609	0.402	0.556	0.79

Tourism Validity Analysis (HTMT Criterion)

Table 2 provides divergent validity determines if a construct is not the same as the other constructs in the model. A unique approach to assess discriminant validity in a PLS-SEM is the Heterotrait-Monotrait Ratio of Correlations (HTMT), which is generally preferred to the standard criterion, the Fornell-Larcker criterion. According to Henseler et al. (2015), HTMT should be less than 0.90, and less than 0.85 is more conservative for conceptually similar constructs. The HTMT results provide evidence of discriminant validity of the constructs: Big Data Analysis, Influencer Marketing, and Mobile Market Development. All HTMT values are far less than the cut-off level of 0.85, suggesting that each construct represents a separate conceptual domain. HTMT for Big Data Analysis and Influencer Marketing is 0.630; the correlation with Mobile Marketing and Social Media is 0.544 and 0.602, respectively. These coefficients demonstrate a strong but not redundant relation between the constructs. Likewise, the HTMT between influencer marketing and social media is 0.818, which is lower than the threshold of 0.90, but this value is high. This value indicates a high similarity, however, with adequate discriminant separation. The HTMT between tourism development and the predictor constructs varies from 0.422 (with big data analysis) to 0.716 (with influencer marketing). As these values fall below the typical threshold of 0.90, this evidence indicates that tourism development is empirically distinct from the digital marketing and analytics constructs. In sum, the HTMT examination provides support for the discriminant validity of all the latent constructs in the model. This evidence provides support that both artifacts are measuring different aspects of the conceptual framework and that there is no moderate overlapping of the measurement among them, which will facilitate a fine-grained structural interpretation in the future SEM analysis.

Table 3 provides discriminant validity of the constructs in the research was assessed using the Fornell-Larcker criterion. Following this approach, the square root of AVE (Average Variance Extracted) of each construct should be larger than the correlation between it and any other construct in the model. This condition guarantees that each construct is more highly correlated with its indicators than with those of other constructs, thereby establishing its distinctiveness. According to Table

3, all the constructions satisfy this requirement. The current study's square root of the AVE for Big Data Analysis is 0.793, greater than its correlations with Influencer Marketing (0.566), Mobile Marketing (0.494), Social Media (0.543), and Tourist Development (0.382). Meanwhile, influencer marketing's square root AVE is equal to 0.818, which is greater than its correlation value with mobile marketing (0.555), social media (0.744), and tourism development (0.609). Mobile marketing, with a square root AVE value of 0.820, also demonstrates a higher level of internal consistency in comparison to the other constructs with which it is correlated. The square root AVE value of social media is 0.830, which is higher than its corresponding correlations with big data analysis (0.543), influencer marketing (0.744), mobile marketing (0.623), and tourism development (0.556). Finally, the lowest factor correlation for Tourism Development is 0.790 (square root AVE), higher than its factor correlations with all other constructs, including the higher correlation with Influencer Marketing at 0.609. These findings indicate that each construct in the model has established its discriminant validity. Therefore, the measurement models for Big Data Analysis, digital marketing dimensions, and Tourism Development constructs are significantly distinct and valid within the structural model used for analysis. The Goodness of Fit (GoF) is an important indicator in PLS-SEM that evaluates the model's explanatory value concerning the prediction of endogenous constructs.

Table 4 shows that the R^2 of Big Data Analysis is 0.379, and the adjusted R^2 is 0.372. This implies 37.9% of the variance in Big Data Analysis is accounted for by the predictor variables (digital marketing strategies, social media, mobile marketing, influencer marketing). This level of explanatory power is moderate and indicates that 151 the chosen marketing constructs explain a substantial part in the variation in tourism organizations' use of big data analytics. For Tourism Development, the R^2 value is 0.146 and adjusted R^2 0.143, which means that 14.6 per cent of the variance in tourism development is explained by the joint effect of Big Data Analysis and digital marketing strategies. Although we know we are dealing with a low R2 value, this is still significant in behavioral and social sciences, in which values over 0.10 can be meaningful (Hair et al., 2019). This finding indicates that despite the role of digital marketing and big data in shaping tourism development in Jordan, there are external factors that are not integrated into the model and significantly affect it. In general, a Comparison of the R^2 values.

Table 5 suggests that Big Data Analysis is better explained as a construct in the model and a mediator in the GBT model. On the other hand, the lower R^2 in Tourism Development means that the model has room for improvement in being able to include new elements, such as service quality, infrastructure, or policy support, in future studies.

Table 4. R2 Adjusted

Variable	R-square	R-square adjusted
Big Data Analysis	0.379	0.372
Tourism Development	0.146	0.143

Table 5. Hypothesis testing estimates

	Original sample	Standard deviation	T statistics	P values	Result
Big Data Analysis -> Tourism Development	0.382	0.088	4.334	0	Supported
Influencer Marketing -> Big Data Analysis	0.319	0.086	3.708	0	Supported
Influencer Marketing -> Tourism Development	0.122	0.047	2.573	0.01	Supported
Mobile Marketing -> Big Data Analysis	0.206	0.073	2.829	0.005	Supported
Mobile Marketing -> Tourism Development	0.079	0.033	2.363	0.018	Supported
Social Media -> Big Data Analysis	0.178	0.085	2.094	0.036	Supported
Social Media -> Tourism Development	0.068	0.038	1.768	0.077	Unsupported

PATH RESULT

The results of the structural model indicate that several significant paths between the constructs are likely, which support most of the hypotheses. The influence of Big Data Analysis on Tourism Development is great, with a t-value of 4.334 and significant at 0.000, and the path is standardized 0.382, significant at 0.000. With this, we can say that Big Data Analysis has a positive and significant effect on Tourism Development. This proposed that big data enabling digital marketing activities to facilitate quantifiable tourism growth is consistent with its underlying framework. Regarding the links between digital marketing strategies and Big Data Analysis, the three dimensions all exhibit significant and positive influences. Influencer Marketing has the highest standardized path coefficient of 0.319 ($t = 3.708$, $p = 0.000$), followed by Mobile Marketing as supporting this path at 0.206 ($t = 2.829$, $p = 0.005$) and Social Media Marketing with 0.178 ($t = 2.094$, $p = 0.036$). Our findings suggest that digital marketing activities are important motivators for adopting and using big data analytics in tourism organizations. This helps confirm the notion of Big Data Analysis being a mediating construct in the model. In assessing the direct effect of digital marketing trends on Tourism Development, Influencer Marketing ($\beta = 0.122$, $t = 2.573$, $p = 0.010$) and Mobile Marketing ($\beta = 0.079$, $t = 2.363$, $p = 0.018$) have a significant and positive effect, meaning these tools have contributed independently toward tourism growth. However, the path from Social Media Marketing to Tourism Development ($\beta = 0.068$, $t = 1.768$, $p > 0.05$) is not significant at the 5% level of confidence, which suggests that its effects on Tourism Development might be mediated by other third factors like big data instead of having a direct effect. In conclusion, the findings of this study confirm the structure and hypotheses of the model as well as the fact that Big Data Analysis has an important mediating role in connecting digital marketing strategies to tourism development. Additionally, the model informs about the greater effect of both influencer marketing and mobile marketing tactics in improving tourism performance in Jordan, directly and indirectly.

FINDINGS AND DISCUSSION

This research explores the impact of digital marketing systems on tourism innovation in Jordan, particularly exploring the mediating impact of big data analysis. The outcomes obtained from the PLS-SEM model indicate strong empirical

support for most of the posited relationships. It is revealed that Big Data Analysis exerts a positive and statistically significant direct influence on Tourism Development (β = 0.382, p = 0.000), its position as a major facilitator in converting marketing in the realm of marketing into development has been justified. In other words, based on the results, Influencer Marketing (β = 0.319, p = 0.000), Mobile Marketing (β = 0.206, p = 0.005), and Social Media Marketing (β = 0.178, p = 0.036) influence the Big Data Analysis, which means that data infrastructure has a direct relationship with digital marketing investments. In addition, both Influencer Marketing (β = 0.122, p = 0.010) and Mobile Marketing (β = 0.079, p = 0.018) had significant direct effects on Tourism Development, but not for Social Media Marketing (β = 0.068, p = 0.077), indicating that its effect is likely more efficiently directed via big data capability. These findings indicate that the mediating effect of Big Data Analysis, which lies between digital marketing and tourism development, can only be partial. Data analytics is not just a supportive tool but also a fundamental element in the transformation from digital campaigns to measurable growth of the tourism industry. The finding highlights that those organizations that successfully embrace data and analytics tools are in a better position to position their market strategy and performance, and those that fail to embrace data capabilities may end up foregoing significant development possibilities.

Theoretical Implications

Our study adds to the body of research in the digital marketing and tourism development juncture by empirically exploring the mediating mechanism of big data analytics. In theory, the paper extends the knowledge on the interplay between various dimensions of digital marketing influences and mobile marketing. Moreover, data analysis is crucial for stimulating development outcomes. This study also contributes to the literature by providing critical empirical evidence that supports dynamic capability theory, which posits that big data analytics (BDA) is a strategic resource for enhancing value from digital innovation. By focusing on indirect effects, the model transcends crude linear representations and necessitates a more refined analysis of how internal capabilities moderate the impact of external marketing efforts. The results suggest that future research should investigate the minute details in which tourism organizations in emerging markets adopt and utilize big data insights.

Managerial Implications: The findings provide valuable direction for decision-makers in the tourism sector and digital marketing practitioners in Jordan. Digital marketing techniques are only one part, of course— their impact is orders of magnitude greater when combined with the power of big data analytics. Managers must invest in not just social media or influencer outreach but also the architecture, talent, and training necessary to process, analyze, and act on vast amounts of data. Creating a data-informed ethos throughout the tourism sector can, in turn, help with more effective targeting campaigns, personalizing visitors' experiences, and monitoring performance. Specifically, the significant mediation of big data implies that analytics should not be treated mainly as a secondary, service support, or part of the setup or ad hoc margin, but rather as a strategic base. Additionally, tourist boards can benefit from public-private partnerships to help boost a national analytics manpower, in line with the digital transformation objectives of the MENA region.

Limitations of the Study: This number of limitations exist, despite the valuable findings of the present study. This data was collected cross-sectionally from Jordanian tourism organizations, which may restrict generalization of the results to other areas. The second limitation is related to the examination of only digital marketing and big data as the main drivers of tourism performance, but fails to include other drivers, such as quality of service, cultural perception, political stability, infrastructure development, etc. Furthermore, the response bias could be generated because of self-report data. What is necessary for future research is to utilize longitudinal data to investigate causality over time and expand the model with broader variables concerning governance mechanisms, customer satisfaction measures, and ecosystem life cycle. Comparative analysis between countries in the region would also yield greater insights into more cross-market drivers.

CONCLUSIONS

The influence of digital marketing systems on Jordanian tourist innovation is examined in this study, with a focus on the mediating role of big data analysis. The PLS-SEM model's results indicate that most of the proposed associations have substantial empirical backing. it has a positive and statistically significant direct impact on tourism development (β = 0.382, p = 0.000). To put it another way, the results that social media marketing (β = 0.178, p = 0.036), mobile marketing (β = 0.206, p = 0.005), and influencer marketing (β = 0.319, p = 0.000) all have an impact on the Big Data Analysis. indicates that data infrastructure and digital marketing investments are directly related. Furthermore, there were significant direct effects on tourism development from both mobile marketing (β = 0.079, p = 0.018) and influencer marketing (β = 0.122, p = 0.010), but not from social media marketing (β = 0.068, p = 0.077), suggesting that big data capabilities are probably a better way to direct its effect. These results suggest that big data analysis, which sits between digital marketing and tourist development, may only have a limited mediation influence. In addition to being a helpful tool, data analytics is essential to the shift from digital advertising to quantifiable expansion of the travel and tourism sector. According to the findings, companies that effectively integrate data and analytics technologies are better positioned to position their performance and market strategy, while those that do not may wind up missing out on important growth opportunities.

The results of this research empirically underscore the proposition that big data analytics is a crucial means to achieve the developmental potential of tourism digital marketing strategies. Influencer and mobile marketing are both significant on destinations, but when organizations have data-analyzed power, that impact is magnified. This study situates big data as more than an ancillary crutch; rather, as a catalytic mediator that transforms digital marketing input to tangible developmental output. The findings underscore the need to integrate digital outreach and analytical infrastructure in an optimal manner that is far more likely to generate economic and social gains from tourism interventions. For interests serving the purpose of promoting tourism development in Jordan and in similar environments, the incorporation of

evidence-based decision-making data in marketing strategies ought to have priority. The present study proposes the base model to investigate how the analytical ability and digital tactics intertwine for sustainable tourism growth in the digital age. Big Data is the term used to describe the enormous amount of data that has been produced and shared globally because of the growing usage of the Internet. Both Big Data and data-driven business intelligence (BI) can be interpreted in this practices that encourage, among other things, gathering, combining, managing, and analyzing vast amounts of data (at the individual level) to generate information and make more precise predictions about future events and actions. This seeks to comprehend how BI procedures in the travel and tourism sector are influenced by Big Data. To develop a middle-range theory on the management uses and competitive advantages of Big Data in the tourist sector, it also seeks to provide the fundamentals of a theoretical framework that will include ideas and subjects found in the Big Data and BI domains. The potential of the ideas and subjects put forward comes from a careful analysis of scientific literature and real-world applications that have been published over the last three decades. In terms of GDP production and employment, the tourist and hospitality sectors are among the biggest and fastest growing. Tourism organizations may enhance their performance in several areas, including marketing, consumer targeting and screening, reputation, e-commerce transaction success, and the creation of new products and services, by managing vast amounts of data effectively. Big Data's rise has presented both possibilities and difficulties for travel agencies looking to enhance customer service and boost productivity. Businesses should create a data capacity development approach and comprehend the many kinds of big data. To handle Big Data methodically, they must make investments in personnel and equipment. By improving their data management techniques, practitioners may gain from a deeper comprehension of big data. The results may also help policymakers and tourism managers learn how to leverage Big Data to provide firms with a competitive edge.

Author Contributions: Conceptualization, O.A. and M.A.; methodology, A.H. and O.J.; software, W.A and O.J.; validation, I.A. and O.A. and M.A; formal analysis, A.H. and O.J.; investigation, W.A and O.J.; data curation, O.A. and M.A.; and O.J. and Y.I.; writing - original draft preparation, O.A. and M.A.; writing - review and editing, I.A. and O.A. visualization, I.A. and O.A and O.J.; supervision, O.J. and O.A. and M.A.; project administration, O.J. and M.A. All authors have read and agreed to the published version of the manuscript.

Funding: Not applicable.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgements: The author would like to express their gratitude to the Deanship of Scientific Research and Graduate Studies at Jadara University, Jordan, for supporting the publication of this research.

Conflicts of Interest: The authors declare no conflict of interest.

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Article history: Received: 15.05.2025 Revised: 20.08.2025 Accepted: 16.09.2025 Available online: 06.10.2025