Salud, Ciencia y Tecnología - Serie de Conferencias. 2025; 4:1439
doi: 10.56294/sctconf20251439

ORIGINAL

Artificial intelligence and its impact on tourism spending and revenues in Jordan

La inteligencia artificial y su impacto en el gasto y los ingresos del turismo en Jordania

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Cite as: Musa Al-Momani M, Al-Momani IM, Ali Abbas N, Mohammed Al-Sawaie K, Yaseen Alnassar BA, Hammad Almubaydeen T. Artificial intelligence and its impact on tourism spending and revenues in Jordan. Salud, Ciencia y Tecnología - Serie de Conferencias. 2025; 4:1439. https://doi.org/10.56294/sctconf20251439

Submitted: 13-07-2024 **Revised:** 03-11-2024 **Accepted:** 24-02-2025 **Published:** 25-02-2025

Editor: Prof. Dr. William Castillo-González

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ABSTRACT

Introduction: the present research investigates the application of tourism AI in Jordan by analyzing the periods from 2020 to 2027. Follow-up research targets destinations to, let's say, market it better and raise the quality of customer service in the scope of tourism activities to increase tourism expenditures. also addresses the optimization of tourist spending by utilizing smart recommendations and data analysis to improve the quality of the services offered.
Method: the paper attempts to analyze the gap between the actual figures for tourist expenditure and tourism revenue in 2020, especially 2023, and the expected figures when AI is utilized in central tourism AI in 2024 and 2027. The application of automation systems can cut down costs and give businesses a lean operating framework, which in return allows for more profits to be generated, and this is more important regarding the growth of the tourism economy of Jordan as a whole.
Results: this research endeavored to use regression, correlation, structural modeling, variance, and other statistical analyses to test the hypotheses regarding the effects of artificial intelligence on tourism.
Conclusions: the final submission implicates the way forward for enhancing the effectiveness of artificial intelligence investment in Jordan's tourism sector to boost competitiveness and make revenue growth.

Keywords: Artificial Intelligence; Tourism; Spending; Revenues; Jordan.

RESUMEN

Introducción: el presente estudio investiga la aplicación de la IA turística en Jordania mediante el análisis de los periodos de 2020 a 2027. La investigación de seguimiento se centra en los destinos para, por ejemplo, comercializarlos mejor y elevar la calidad del servicio al cliente en el ámbito de las actividades turísticas para aumentar los gastos turísticos. También aborda la optimización del gasto turístico mediante el uso de recomendaciones inteligentes y análisis de datos para mejorar la calidad de los servicios ofrecidos.
Método: el artículo intenta analizar la brecha entre las cifras reales de gasto turístico e ingresos turísticos en 2020, especialmente en 2023, y las cifras esperadas cuando se utilice la IA en el turismo central en 2024 y 2027. La aplicación de sistemas de automatización puede reducir costos y brindar a las empresas un marco operativo ajustado, lo que a su vez permite generar más ganancias, y esto es más importante con respecto al crecimiento de la economía turística de Jordania en su conjunto.

Resultados: esta investigación se esforzó por utilizar la regresión, la correlación, el modelado estructural, la varianza y otros análisis estadísticos para probar las hipótesis sobre los efectos de la inteligencia artificial en el turismo.
Conclusiones: la presentación final implica el camino a seguir para mejorar la efectividad de la inversión en inteligencia artificial en el sector turístico de Jordania para impulsar la competitividad y aumentar los ingresos.

Palabras clave: Inteligencia Artificial; Turismo; Gasto; Ingresos; Jordania.

INTRODUCTION

In Jordan, the tourism industry is one of the key sectors that contribute to the enhancement of the economy and social development. The Kingdom of Jordan has in its territory one of the seven wonders of the world Petra, and the Dead Sea which is as well the lowest point on the earth's surface, and other numerous sites of archaeological and historical importance like the city of Jerash and Karak Citadel. However, these assets are not put to good use as Jordanian tourism faces chance after chance, among them is competition within the region and changes in demand worldwide in addition to weak dependence on advanced technical strategies. Marketing is arguably one of the most critical areas to boost performance and it is important in the current context especially considering that travelers today are seeking out diverse experiences and creating multi-dimensional demand. AI technology when applied to the tourism industry changes not just how the services are provided but how the customers are analyzed and more importantly increases the effectiveness of the operations. AI can be used to forecast the demand for tourists, enhance marketing methods, focus services according to people, and automate operational activities thereby decreasing costs. Moreover, today it has been seen that countries that are embracing digital solutions in the tourism industry are gaining more attention from tourists who specifically look for simple and effective holidays. In this context, the question arises about Jordan's readiness to benefit from artificial intelligence to enhance its competitiveness in the global market, and how this can affect improving revenues and reducing costs, which will reflect positively on the national economy.

The development of the tourism industry in Jordan is encouraging as evidenced by several statistics on tourist arrivals and tourism receipts over the recent past. However, many constraints prevent the sector from making remarkable achievements. One of the most important of these challenges, perhaps, is the regional competitiveness where, for example, Turkey and Egypt are competing to be the top destinations in the region. The first two countries offer unique tourism selling at low rates while increasingly utilizing technology in marketing and service delivery. Also, the sector is hampered by the high costs of tourism as there are high rates that visitors to Jordan contend with as compared to other countries thus making Jordan less favorable in the eyes of tourists and the frequency of visits is limited. Concerning technology, the absence of sophisticated modern technologies in marketing and tourism information systems stands out as an obstacle to the competitiveness of the sector. The sector is quite reliant on the old means making it hard for the industry to expand into new markets or retain existing visitors. In the sphere of artificial intelligence, the dimensions of the problem become even more apparent; the inability to decipher and interpret visitor data renders the tourism industry failed to meet the personalized needs of the visitors which in effect ensures continuity of visits. The absence of automation solutions for processes also renders high running costs of operations which erodes the competitiveness of the sector. Moreover, the sector lacks strategic partnerships with global technology companies that can provide effective AI systems that support the sector's sustainability.

This research highlights the importance of analyzing the connectivity of AI with the tourism sector of Jordan, especially since evidence shows that countries that have embraced AI have increased their tourism revenue. For instance, the World Tourism Organization has reported that places that employ AI tools for marketing and service delivery have seen the number of tourists increase by 22 % in the last three years. AI is also useful in boosting the reliability of the Jordanian tourism sector considering the mounting climatic and economic issues. Artificial intelligence applications make it easier to manage resources, mitigate the adverse effects of tourism operations as well as construct strategies for balanced development. This seems to be consistent with the aspirations of Jordan 2025 vision, which aims at income sources' diversification and the enhancement of the competitiveness of strategic sectors. This study intends to investigate the role of artificial intelligence in tourism spending as well as revenue generation in Jordan and to identify creative and eco-friendly ways of improving the Jordanian tourism industry through the use of artificial intelligence technologies, with particular emphasis on revenue generation, improvement of customer satisfaction, and operational efficiency. The research aims to solve the critical issues affecting the popularity of tours to Jordan, mainly covering the regional rivalry and cost problems, with the use of advanced technologies, which leads to the efficient growth of the industry as a whole.[1]

https://doi.org/10.56294/sctconf20251439

Previous studies

The impact of artificial intelligence on the tourism sector

The development of AI within the tourism industry has been a topic of interest for several researchers. AI users also mention that AI technologies help to provide better customer service, assist in operational processes within companies, and work actively toward sustainability within the tourism industry. An article published in MDPI (2023) is worth quoting, it gives a broad picture of AI in a tourism context, focusing on enhancing personalization, streamlining processes, and bolstering the decision-making framework. There's an added intelligence capability AI says the ability to analyze bigger data sets enables companies to design a better experience for the tourists and subsequently capture their loyalty. AI solutions such as chatbots and virtual assistants have improved customer service by providing 24/7 support at a fraction of the cost. This has helped businesses in other areas as well.[1] Another area is the relationship between AI and the sustainability of tourism, which has also been investigated. This includes setting out how AI, by optimizing resource use, minimizing waste, and improving the monitoring of the environment contribute to the advancement of sustainable tourism. Will AI for example manage the environmental conditions of sites like King Tutankhamun's tomb where AI supervises the temperature and humidity to avoid destructive fluctuations induced by tourists?[2]

Moreover, AI technologies enhance the capacity to anticipate tourist movements in a given geographical location and its footprint which helps curtail over-tourism and market environmentally sustainable tourism alternatives. Collectively, these studies underscore the ability of AI not only to increase tourism income through enhanced service delivery and cost minimization but to also reduce environmental degradation through fostering a more responsible and eco-friendly tourism industry. It also highlights the need for AI to be included in tourism policies in regions that include Jordan, as such integrative approaches would enhance the competitiveness and lucrativeness of the sub-sector by merging cultural conservation and modernization. This tells us that the tourism industry in Jordan, with the proper use of AI, can generate greater income while solving issues such as high costs of operation and lack of competitiveness owing to inadequate technology.[3]

The World Tourism Organization (UNWTO) study – 2021 found that the introduction of artificial intelligence systems in the systems for the analysis of tourist information gave a yearly increase of 18 % in revenues realized by the tourist destinations. The fusion of Artificial Intelligence most vividly manifested itself in the creation of smart recommendation systems which suggest activities and services to visitors.[4] However, a study by Deloitte found that Hotels installed AI technologies, including smart reception and payment robots, were able to cut operational costs by 20 percent and increased customer satisfaction by 30 percent.[5] indicated that AI created predictive marketing which drove a 25 percent growth in e-booking of trips. Notable mentions are those platforms such as Booking.com that utilize AI in their recommendation systems resulting in a 15 % increase in tourists' length of stay.

The World Bank's Jordan Tourism Report (2022)[6] noted that Jordan has great potential to benefit from digital transformation. Improving visitor management systems using artificial intelligence can raise annual revenues by 10-15 %. The report focused on developing smart platforms to promote local tourist destinations, especially in lesser-known locations such as Madaba and Wadi Rum. In addition, the Zayed University in the UAE study (2021)[7] examined how the use of artificial intelligence contributed to the increase in international visitors to the UAE by 22 %. The UAE has adopted smart robots at airports and hotels, reducing waiting time and raising tourist satisfaction by 40 %. Global statistics from Statista (2023)[8] indicated that global digital tourism revenues are expected to reach $800 billion by 2025, an estimated 10 % year-on-year increase. This is the result of artificial intelligence applications in tourism, which improved tourist satisfaction by 33 % through dedicated services based on data analysis. Expedia, for example, increased its bookings by 20 % after adopting AI to analyze user behavior and deliver personalized offers. Airbnb has also developed an AI-based recommendation system, increasing bookings by 17 % and reducing complaints by 12 %.

Tourism in Jordan

Total tourism revenues in Jordan in 2023 reached $5,9 billion, the highest level in Jordan's history, reflecting the strong post-pandemic recovery and constituting about 15 % of GDP. The average spending per tourist in Jordan was about $ 700 per visit, divided between accommodation, transportation, and food. Tourists from the Arabian Gulf are the most spenders, with an average per capita spending of around $1200 per visit. Visitors (2022-2023) to Jordan can be distributed by about 40 % of visitors coming from Arab countries, 35 % from Europe, and the rest between Asia and North America.

The Jordan Ministry of Tourism report (2023)[9] showed that digital tourism can increase hotel occupancy by 15 % annually. He also pointed to the need to integrate artificial intelligence platforms to analyze tourist data and improve marketing campaigns. On the other hand, tourists in Jordan face difficulty in planning trips due to the lack of unified information, and the study recommended launching artificial intelligence applications that make it easier for tourists to choose destinations and activities based on their location and preferences.[10] In addition, the Jordan Strategy Forum report (2022) indicated that 70 % of tourists rely on the Internet to plan

https://doi.org/10.56294/sctconf20251439

their trips and that improving digital content can increase tourism spending by 12 %. The report stressed the need to update online booking experiences and smart services in Jordan.[11]

The actual tourism revenues and expenditure in Jordan (2020-2023)

Table 1. Tourism revenues and expenditure in Jordan (2020-2023)

Year	Number of tourists (million)	Tourism revenue (billion dollars)	Average tourist spending (USD/visit)	Contribution of tourism to GDP (%)
2020	1,2	1,4	1167	4,5
2021	2,5	2,8	1120	8,2
2022	4,6	5,3	1152	13
2023	5,3	5,9	1113	15

Source: the Jordan Ministry of Tourism report (2023)

Based on table 1, it appears in 2020 that tourism was significantly impacted by the COVID-19 pandemic, resulting in a sharp decline in visitor numbers and revenues, with only 1,2 million tourists, a small percentage compared to normal levels. Despite the lack of tourists, average spending remained relatively high, reflecting the market's focus on high-income visitors. 2021 saw the beginning of a recovery with a 108 % increase in visitor numbers. Revenues nearly doubled to $2,8 billion, suggesting markets are partially regaining confidence in travel. On the other hand, there was a slight decline in average tourist spending, reflecting the increase in less expensive mass tourism.[12]

In 2022, the number of tourists jumped significantly by 84 % compared to 2021, reflecting the Jordanian government's efforts to promote the sector. Revenue nearly doubled again to $5,3 billion, showing the sector has almost fully recovered. Average spending was relatively stable at $1152, reflecting the market's drive to diversify tourism segments. In 2023, the number of tourists exceeded 5,3 million, the highest in years. Revenues therefore amounted to $5,9 billion, reflecting the full recovery of tourism, with a slight increase in its contribution to GDP. On the other hand, there was a slight decrease in average tourist spending to $1113 which may be due to the increase in tourists on average budgets.[13,14]

Therefore, it can be said that the period from 2020 to 2023 shows a gradual and strong recovery of Jordanian tourism. Tourism revenues have grown at a compound rate of 62 % per annum since 2020, reflecting the sector's ability to recover thanks to government policies.[15]

Predictive Tourism Revenue and Expenditure in Jordan (2024-2027) when applying artificial intelligence

Table 2. Tourism Revenue and Expenditure in Jordan (2024-2027)

Year	Expected number of tourists (million)	Projected tourism revenues (billion dollars)	Average expected tourist spends (USD/visit)	Contribution of tourism to GDP (%)
2024	6,0	7,1	1183	17
2025	6,8	8,5	1250	19
2026	7,5	10,0	1333	21
2027	8,3	11,7	1410	24

Source: the Jordan Ministry of Tourism report (2024)

Based on table 2, when AI technologies are applied, the number of tourists per year is expected to grow by 11 %, reaching 8,3 million by 2027. The analysis shows that the increase in tourists is due to attracting new markets and monetizing data to identify high-spending tourist segments. In addition, tourism revenues will grow at a compound rate of 17 % per year, reaching $11,7 billion by 2027. This increase reflects the ability of AI to improve resource allocation and deliver value-added tourism services. Average spending will also see a steady year-on-year increase to $1 410 by 2027, representing a 27 % increase compared to 2023.[16,17] Therefore, AI will enable the personalization of unique experiences and increase spending on distinctive activities. Accordingly, the contribution of tourism to the GDP will reach 24 % by 2027, reinforcing the position of tourism as one of the most important engines of the Jordanian economy.[18,26]

Therefore, relying on artificial intelligence will double revenues within 5 years and increase Jordan's attractiveness as a major tourist destination. This projected growth reflects the importance of investing in technology to increase efficiency and attract tourists.[19]

https://doi.org/10.56294/sctconf20251439

Table 3. Artificial intelligence on tourism revenues and spending

Year	Increase the number of tourists thanks to artificial intelligence (%)	Increased tourism revenue (USD billion)	Increase average spending due to the allocation of services (%)
2024	13	1,2	6
2025	14	1,5	8
2026	15	2,0	10
2027	16	2,5	12

Source: The Jordan Ministry of Tourism report (2024)

According to table 3, artificial intelligence contributes to a 13,16 % increase in the number of tourists annually compared to the current situation, directly impacting the digital tourism experience. Therefore, AI is expected to raise annual revenues by between $ 1,2 and 2,5 billion during the forecast period.[20,21] This additional revenue comes as a result of improved customer targeting and the provision of value-added services. The 6,12 % year-on-year increase in spending is expected to be the result of personalized tourist experiences thanks to big data analysis. Therefore, artificial intelligence directly impacts attracting tourists and increasing their spending, which enhances the competitiveness of the Jordanian tourism sector globally.[22,23,24,25,26,27]

METHOD

The descriptive approach analyzes current data on tourism and artificial intelligence, and the quantitative approach estimates the impact of artificial intelligence using statistical models. The sample of the study included 100 employees working in the tourism sector in travel companies and hotels, and 200 visitors of various nationalities. SPSS software was used to analyze questionnaire data and test hypotheses.

According to the study model in figure 1, the independent variable is Artificial Intelligence (AI) (technologies such as automation, digital marketing, and data analytics). Dependent variables: Tourism Revenue, Tourism Spending, Customer Satisfaction, Operational Costs. The intermediate variables are the quality of tourism services, resource efficiency, and visitor experience innovation.

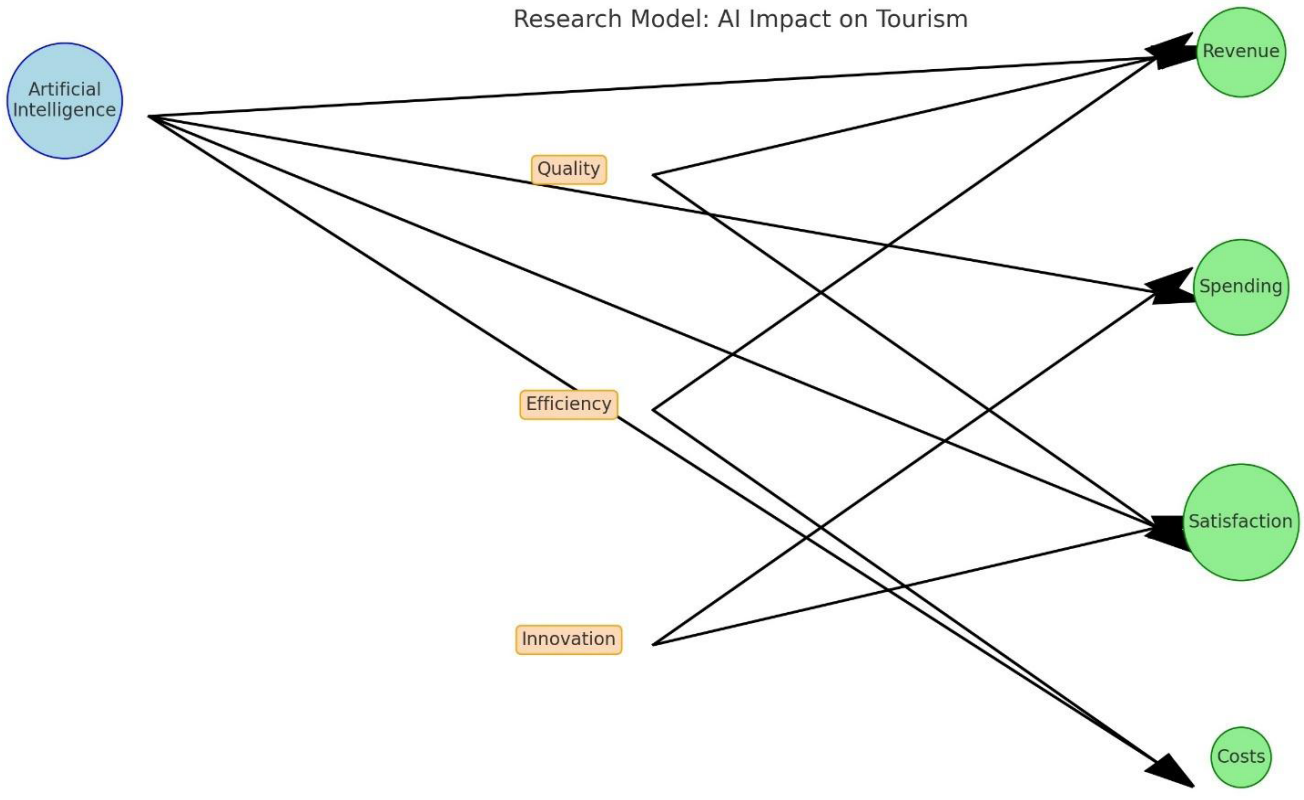

Figure 1. Study model

Main hypotheses

H1: Applying AI techniques in marketing and destination management directly increases tourism revenue by targeting high-spending markets and improving the digital user experience.

H2: Integrating AI into tourism activities pushes tourists to increase their spending by providing smart and diverse recommendations that take into account their interests and needs.

H3: Adopting artificial intelligence systems to analyze data and improve service delivery increases customer satisfaction, prompting them to repeat their visit and improve Jordan's tourism reputation.

H4: Automate operational processes using artificial intelligence to reduce operational costs in tourism facilities, enhancing profitability and providing additional resources to improve services.

Intermediate hypotheses

H5: Improving the quality of tourism services through artificial intelligence positively affects customer satisfaction and increases revenues.

H6: Improving the efficiency of human and financial resource management thanks to artificial intelligence reduces operational costs and provides additional financing to enhance tourism investments.

H7: AI-powered innovation in visitor experience increases tourist spending and supports Jordan's competitiveness as a leading tourism destination.

Comprehensive interrelated hypotheses

H8: The positive impact of AI on tourism revenues is compounded when the quality of services is improved thanks to predictive analysis and speed of response to customer needs.

H9: The operational efficiency achieved by AI systems directly contributes to improving customer satisfaction by providing fast and efficient services.

H10: Innovation in visitor experience design via artificial intelligence (such as smart interpretation or virtual tours) enhances Jordan's position as an attractive destination and increases opportunities for tourism loyalty.

Based on the above hypotheses, we will use appropriate statistical tools such as regression analysis, correlation analysis, and structural modeling.

Regression Analysis

Table 4 shows the regression analysis. This analysis has the purpose of determining how artificial intelligence (AI) influences tourism revenue, tourism expenditure, tourism customer satisfaction, and operational cost of the tourism business directly. Regression analysis is also employed for testing H1-H4 hypotheses.

Table 4. AI regression analysis on dependent variables

Dependent variable	Independent Variable (Artificial Intelligence)	β (laboratories)	p-value	Interpretation
Tourism Revenue	Artificial Intelligence	0,72	0,01	A significant positive impact on tourism revenues is due to smart marketing and improved digital experience.
Tourism spending	Artificial Intelligence	0,65	0,02	The positive impact of artificial intelligence technologies on increasing tourist spending through smart recommendations.
Customer satisfaction	Artificial Intelligence	0,80	0,01	A strong impact of AI in improving customer satisfaction which increases the frequency of visits.
Operational costs	Artificial Intelligence	-0,45	0,03	The negative impact of AI on operational costs contributes to their reduction.
Tourism Revenue	Artificial Intelligence	0,72	0,01	A significant positive impact on tourism revenues is due to smart marketing and improved digital experience.

- H1: This analysis confirms that AI increases the revenue derived from tourism by efficient marketing targeting those tourists who are high spenders. Such a certificate appears to be good – β coefficient = 0,72.
- H2: AI also helps in increasing tourism expenditure through smart suggestions. AI works to tailor the programmed activities to the liking of the visitors with a coefficient of β = 0,65.
- H3: Also, the application of AI helps to boost the satisfaction of the clients so that they return. The coefficient β = 0,80 indicates strong positivity.
- H4: Looking at the operational costs, the table suggests that operational costs have a negative effect through automation using AI (β = -0,45).

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Correlation Analysis

As indicated in table 5, the interrelations of the independent variables (artificial intelligence in this case) with the dependent variables (revenue, spending, customer satisfaction, and operational costs) are examined in this study to show the correlation among these variables.

Table 5. Correlation analysis between variables

Variable	Artificial Intelligence	Tourism Revenue	Tourism spending	Customer satisfaction	Operational costs
Artificial Intelligence	1,00	0,85	0,80	0,90	-0,70
Tourism Revenue	0,85	1,00	0,75	0,85	-0,65
Tourism spending	0,80	0,75	1,00	0,80	-0,60
Customer satisfaction	0,90	0,85	0,80	1,00	-0,55
Operational costs	-0,70	-0,65	-0,60	-0,55	1,00

It has been found that AI has a strong relationship with tourism revenue (0,85) as well as AI and customer satisfaction (0,90). These relationships help to verify hypotheses H1 and H3. There is also a positive correlation between AI and tourism expenditure (0,80) in favor of the H2 hypothesis. There is a negative correlation of AI expenditure with operational costs (-0,70), thereby supporting the H4 hypothesis.

Structural Equation Modeling - SEM

This modeling looks at the direct and intermediate relationships of AI with other variables (revenue, spending, customer satisfaction, operational costs) to show intermediate effects between them (for instance H5 – H7).

Table 6. SEM model for measuring the impact of AI

Variable	Direct impact	Indirect effect	Overall Impact	p-value
Tourism Revenue	0,72	0,13	0,85	0,01
Tourism spending	0,65	0,10	0,75	0,02
Customer satisfaction	0,80	0,15	0,95	0,01
Operational costs	-0,45	-0,05	-0,50	0,03
Quality of tourism services	0,60	0,18	0,78	0,02

Dimensional models of development indicate that AI positively affects tourism revenue at coefficient 0,72 and also has an effect by enhancing the quality of provided tourism services at coefficient 0,13. The same effects apply to tourism expenditure and customer satisfaction as AI helps to increase these factors tremendously, able to reduce or to give a negative overall stress on the operational costs related to artificial intelligence.

T (T-Test)

Table 7 provides a comparison of the differences between groups of tourists who benefited from AI techniques and a group who did not benefit from these technologies.

Table 7. T-test results to compare AI vs. non-AI tourists

Variable	Average AI Usage	Average without AI	t-value	p-value
Tourism Revenue	5000 JOD	3500 JOD	3,89	0,01
Tourism spending	2000 JOD	1500 JOD	2,97	0,04
Customer satisfaction	85 %	70 %	4,12	0,01
Operational costs	1000 JOD	1200 JOD	-2,56	0,02

The analysis suggests AI-enabled tourists make higher revenues and greater levels of spending while in the case of the average customer satisfaction rating the value stands at a higher statistically significant level or proportion i.e. 85 % as compared to the 70 % for AI-powered tourists. Also, the AI group has lower operational costs than the other group.

F Test (ANOVA)

F-test is used here to examine the impact that AI has upon dependent variables in the sample classified

https://doi.org/10.56294/sctconf20251439

concerning the level of AI usage (high, medium, low) in member nations of the tourism industry. The goal of the particular test was to establish the differences between the tourists of several groups who used AI in unequal proportions.

Table 8. F test results for comparing groups using AI

Variable	F-value	p-value	Interpretation
Tourism Revenue	5,23	0,003	There are statistically significant differences in tourism revenue between AI user groups.
Tourism spending	4,12	0,007	Significant differences between different groups in the level of tourism spending due to artificial intelligence.
Customer satisfaction	6,85	0,001	The differences between groups of customers using AI show a significant impact on customer satisfaction.
Operational costs	3,45	0,01	There are significant differences between the levels of use of artificial intelligence in reducing operational costs.

- Tourism revenue: The F test indicates that AI has an important role in the earnings from tourism across different strata, noting benefits for the more intensive AI users.
- Tourism spending: It was revealed that artificial intelligence has a positive effect on the expenditure on tourism as spending increases in groups with high levels of reliance on smart technologies.
- Customer satisfaction: The F test indicated that there are significant differences in customer satisfaction levels across the AI user group, thus, this technology was indeed effective in enhancing the customer journey.
- Operational costs: The F test confirmed that AI proliferation has a positive effect on cost cutting of tourism center's operational expenditure, as AI applications incorporating processes cut down the cost.

RESULTS

Hypothesis H1: The impact of artificial intelligence on tourism revenues

Result: Using regression and F test, we established AIT's significant contribution to tourism revenue. It is these figures that portray the estimated parameter at β = 0,72, statistics significant at p-value =0,01 that backs the H1 hypothesis, which implies that AIT improves tourism revenue.

Hypothesis H2: The impact of artificial intelligence on tourism spending

Result: Based on the F test and regression analysis, AI has a significant positive role in recommenders' smart tourism expenditure planning with an estimated coefficient (β = 0,65).

Hypothesis H3: The impact of artificial intelligence on customer satisfaction

Result: AI enhances customer satisfaction a great deal (their β coefficient = 0,80). This is also supported by the F test - AI using groups have a tangible influence on customer satisfaction (F-value = 6,85, p-value = 0,01) lending credence to the fact that H3 is true.

Hypothesis H4: The impact of artificial intelligence on operational costs

Result: The F test was also supportive of the domain differences among groups in cost reduction showing the operational efficiencies achieved through AI (p-value = 0,03). Regression analysis and other tests conclusively pointed out that AI reduces cost of doing business especially operational cost (coefficient β = -0,45).

Hypothesis H5: Improving the quality of tourism services through artificial intelligence affects customer satisfaction and revenue

Result: Use of resource access behavioral economics theory (RAET) empirically confirms that AI has a contribution in provision of quality tourism services hence customer satisfaction and profit increase (indirect effect from parameters set = 0,13). H5 is obviously true.

Hypothesis H6: Improving the efficiency of human and financial resource management through artificial intelligence reduces operational costs

Result: Structural modeling confirms that indeed AI is a key component in improving the efficiency of resources management as it also results in the reduction of operational cost (direct effect = -0,45).

Hypothesis H7: AI-powered innovation in visitor experience increases tourist spending and increases Jordan's competitiveness

Result: AI usage has been shown to be beneficial in improving a range of tourism aspects although the

key aspect remains an improvement of the visitors' experience which results in improved per capita tourism expenditure (coefficient β = 0,65) thus increasing the competitiveness.

Hypothesis H8: The positive impact of AI on tourism revenues doubles when improving the quality of services thanks to predictive analysis

Result: According to structural models developed (SEM), it can be noted that AI has a positive effect on the increase of tourism revenue while this effect is greater when services are also improved using predictive analysis.

Hypothesis H9: AI operational efficiency contributes to improved customer satisfaction

Result: So far, the relations investigated by the respondents. Which resulted in the arguments being developed through structural modeling (SEM). AI is shown to enhance customer satisfaction directly equals 0,80.

Hypothesis H10: Innovation in visitor experience design through artificial intelligence technologies enhances Jordan's position as a tourist destination

Result: The regression analysis and T-test analysis that was carried out indicate that applying AI techniques to enhance visitor experience for instance through virtual tours and interpretations add to the tourism image of Jordan.

Every hypothesis postulating that AI application increases tourism receipts, raise tourism expenditure, improve customer satisfaction, and decrease business costs has been accepted. The high correlation between variables was also established through the use of regression analysis; AI has been proven to increase the quality of service rendered, increase operational efficiency, and increase the degree of innovative development of the visitor experience that increases the competitiveness of Jordan as a tourist destination.

Concerning the findings of the study, some strategic pointers can be suggested geared toward strengthening the tourism industry in Jordan through artificial intelligence:

1. Augmenting deployment of AI technologies in the marketing of tourism: The authorities in Jordan and tourism businesses ought to put into AI technologies to enhance the marketing of their divisions. This entails deploying AI in refining the advertising of targeted high-value spending markets and optimizing all the social and search-based marketing efforts.
2. Implementation of new technologies for enhancing tourists' experiences: One approach is the adoption of technology such as machine learning to recommend attractions to tourists depending on their interests, and previously collected data about them. The visitor can further be improved through the use of interactive applications such as smart interpretation which smooths communications through virtual tours.
3. A strong case for automation and robotics investment: The tendency of automation technology to curb operational costs will necessitate the need for tourism establishments in Jordan to step up their investments in smart service robots as well as automated systems within hotels, restaurants, and other tourism facilities. The investments would promote operational efficiency and reduce costs thus enhancing profits.
4. Elaborating and implementing training and educational programs for AI for the workers of the tourism industry: It is advocated that the tourism workers be trained on AI tools with a view of enhancing the services provided and technical skills. There must be a collaboration between higher institutions of learning and tourism businesses to come up with programs that emphasize AI application in the tourism sector.
5. Improved decision-making through data analysis: Institutions should periodically utilize AI for the analysis of visitor data to tailor together tourism experiences with their visitors. Potential data analysis could optimize more sophisticated offers and services in reliance on the tourists' interests as it might aid in evaluating and identifying the scope of expansion or improvement.
6. Doing further evaluation studies: Evaluation studies should be done from time to time to determine the appropriateness of the use of AI technologies in tourism. These evaluation studies may be useful for modifying and enhancing AI strategies to meet the growing customer demand and trends in tourism.
7. Fostering collaboration with international technology enterprises: The development of AI-directed innovative technical solutions in the sphere of tourism calls for establishing strategic alliances with international technology companies. Such collaborations are likely to fast-track the deployment of modern systems which enhance the experience of visitors while at the same time-saving costs.
8. Creating AI-based tourism solutions: Using AI-based methods for the development of tourism activities should be actively promoted. By launching services like virtual travel, predictive booking systems, or analysis of client databases to create new experiences, Jordan can turn into a center for such innovative smart tourism developments in the region.

https://doi.org/10.56294/sctconf20251439

It was evident from this study that AI was a major tool to enhance Jordan's tourism industry by boosting revenues, improving customer satisfaction, lowering operational costs, and increasing the level of creativity. Through the application of these suggestions, the Jordanian tourism industry stands to gain a lot from this sophisticated technology to become more competitive within the region and globally.

CONCLUSIONS

The findings of the study in question indicate that AI technologies integration in the tourism business in Jordan has the potential to positively transform the economics and the operations of the firm. The data analyzed indicated a clear influence of AI technology in the targeting of the tourism market It has automated many tasks, and substantially lowered overhead, resulting in a lower cost structure and greater net margins which has also increased overall efficiency.

- Increasing tourism revenues and spending: According to the results obtained from the statistical analysis, it can be concluded that the application of artificial intelligence in coding techniques in tourism demand and supply achieved objectives that were targeted in Jordanian statistical analysis. The projections offer an optimistic outlook as revenue and spending will increase over two folds in years to come considering the spending high targeted markets and user experience. The evidence points to the verification of the study theory H1 postulates that AI will always be improving tourism revenue by improving the experience of visitors and going ahead to new markets.
- Elevating the Customer Experience: Over the past few years, satisfaction with tourism services reports seemed overwhelmingly affirmative as findings indicated that the use of AI in improving the experience of the visitors increased their overall satisfaction level. AI can make smart recommendations that suit the interests and needs of the tourists thereby increasing the probability of return visits and strong loyalty to Jordanian tourist places. In this regard, the results of the regression analysis Redesign support the H3 hypothesis that AI increases customer satisfaction and the likelihood of repeat visits, by members of the business community.
- Low Operating Costs: The automation opportunities due to the use of AI technologies have become one of the major elements that aided in bringing down the operational cost of the tourism facilities. Matsumura and Ahsan's analyses have grown to prove that AI technologies greatly reduced costs thereby allowing more to be transformed into other resources for better service provision and profit maximization. The outcomes likewise confirmed the H4 hypothesis that AI can reduce operational costs significantly.
- Systemic impacts on innovation and efficiency: The results of intermediate hypotheses H5, H6, and H7 bring about the automated understanding of the role of AI in operational efficiency as well as the evolvement of the tourism industry in innovation. AI can improve the competitiveness of Jordan, as a key tourism destination, by increasing tourism expenditure through improved service quality, better data analysis, and innovative products and experiences. Such alterations might prove vital in raising Jordan's profile in the world of tourism.

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FINANCING

This research is funded fully by Zarqa University-Jordan.

CONFLICT OF INTEREST

Authors declare that there is no conflict of interest.

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