Article

The Quintessence of public finances: Sustainability dynamics in tourism financial analysis

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Abstract: Tourism plays a crucial role in driving economic development, and there is a growing demand to integrate sustainability into the sector, particularly in the financial practices of governments. This study introduces the Quintessence Sustainable Tourism Public Finances (QSustainableTPF) model, which combines five established financial models commonly used in the tourism industry. The research aims to identify statistically significant relationships between these models and assess their impact on sustainability and financial performance in tourism. A quantitative methodology was employed, with data collected from financial reports and budget documents of both local and central governments, along with a survey of 2099 citizens and visitors conducted during the 2023–2024 period. Statistical analysis was performed using SPSS and AMOS, incorporating exploratory factor analysis (EFA), reliability testing using Cronbach's alpha, and confirmatory factor analysis (CFA). The findings underscore the essential role of public finance in supporting tourism sustainability, particularly through transparent budgetary practices, efficient allocation of resources, and targeted investment in local tourism initiatives. The analysis reveals key insights into the benefits of financial transparency, citizen-centred budgeting, and the promotion of innovation in tourism finance. The interconnectedness of the five models highlights the importance of responsible public financial management in fostering tourism growth, enhancing investment, and ensuring long-term financial sustainability in the sector. The study offers practical implications for policymakers, advocating for the adoption of transparent and innovative financial practices to boost tourism development. It also recommends further research to broaden the scope across different regions, integrating additional public finance dimensions to strengthen sustainable tourism growth.

Keywords: public finance; tourism financial model; financial sustainability; financial analysis

1. Introduction

Today, more than ever, there is no doubt that tourism has great potential to reduce poverty (Carrillo-Hidalgo and Pulido-Fernández, 2019). There is also a growing recognition of the importance of improving governance institutions through effective government strategies to facilitate economic growth anchored in sustainability (Saltza and Kittinger, 2022). The quintessence of public finance is increasingly relevant, with Ma and Ouyang (2023) highlighting a positive spatial correlation between inclusive digital finance (IDF) and national-level economic development in tourism. They underscore the global importance of foreign direct investment (FDI) and its channels, such as enhanced payment facilities, which significantly contribute to tourism development. Furthermore, in promoting sustainability in tourism financial analysis,

Adeleye et al. (2023) stress the net positive impact of finance on tourism. They emphasize the significance of financial technology (Fintech) and advocate for its integration with a robust financial system and ICT innovation to fully exploit the potential and benefits of tourism. Lulaj et al. (2024), there is a need for innovative strategies and accurate financial management by both government and businesses to attract tourists, as well as an emphasis on the importance of control and management to ensure financial sustainability.

In this context, several theoretical models have emerged to guide or evaluate the allocation and management of public finance in tourism. Ma and Su (2024) highlight the Public Finance for Enhanced Tourism (PFET) model, which posits that local governments use different public finance strategies to enhance tourism through liberalizing, performative, and contractual interventions. These approaches are essential for the development of rural tourism, thereby improving the socio-economic and financial landscape of the country. The Public Finance for Transparent Tourism (PFTT) model highlights the importance of good governance and effective public management processes in tourism development, emphasizing the need for transparent and accountable government action. The interaction between central and local governments is critical in stimulating rapid and sustainable tourism development. Topcu et al. (2023) emphasize that political stability and sound financial management have a significant impact on sustainable tourism development.

In regard to the Public Finance for Visitor Experience (PFVE) and Public Finance for Visitor Satisfaction (PFVS) models, Aguinis et al. (2023) advocate for a research agenda that emphasizes greater inclusion in tourism and hospitality, while addressing the evolutionary dynamics, crises, resilience, and institutional complexity inherent in the sector. Despite the scholarly contributions of these five models—which focus on different aspects of the tourism industry such as infrastructure, transparency, growth, visitor experience and satisfaction—no existing research has linked all five models together. Robinson et al. (2010) and Timothy (2001) highlight the need for a more comprehensive approach that cross-analyses these models. Therefore, this research aims to examine the quintessence of public finance and its impact on enhancing financial sustainability within tourism financial analysis across the five models mentioned.

These models serve as a foundation for exploring and identifying the relationships between public finance and its influence on the financial sustainability of the tourism sector. This research presents a distinctive contribution to the existing literature on the intersection of public finance and the tourism industry. The novelty of the study lies in its comprehensive analysis of five distinct public finance models: PFET, PFTT, PFTG, PFVE, and PFVS. By examining the statistical significance of these models, we can gain deeper insights into how public finance supports and drives tourism development.

To achieve this objective, the study first aims to clarify the mechanisms through which the five public finance models operate. Second, it identifies key factors within these models that enhance the visitor experience and stimulate tourism growth. Third, the research explores how policymakers can effectively utilize findings from these public finance models to improve financial transparency, stimulate growth, and enhance the overall visitor experience in the tourism industry. The significance of this

research lies in bridging existing gaps in the industry by examining multiple public finance models and their collective impact on the tourism sector. By addressing this gap, our research aspires to offer valuable insights and practical recommendations for policymakers, researchers, and government institutions to optimize the impact of public finance, ultimately contributing to the advancement of knowledge in both tourism and public finance domains.

2. Theoretical background

The exploration of public finance mechanisms in tourism development is an evolving field, driven by the increasing demand for sustainable economic practices and transparent governance. This study introduces the Quintessence Sustainable Tourism Public Finances (QSustainableTPF) model, which includes the Public Finance for Enhanced Tourism (PFET), Public Finance for Transparent Tourism (PFTT), Public Finance for Tourism Growth (PFTG), Public Finance for Visitor Experience (PFVE), and Public Finance for Visitor Satisfaction (PFVS). Foundational studies, such as Goodwin and Walton (2012), examine tourism taxes and donor-funded projects as potential financial sources, underscoring the importance of market-oriented and transparent initiatives for effective tourism development. Their work aligns with agency theory, which emphasizes the role of transparent financial mechanisms in mitigating the principal-agent problem in public finance management. These studies inform the work of Hoda and Bansal (2010), who emphasize that transparency in government procurement is crucial for improving tourism infrastructure, consistent with governance theories that advocate for clear communication and stakeholder engagement in public finance management. Building on these foundations, stakeholder theory also plays a critical role in tourism finance, as highlighted by Xu et al. (2024), who propose that financial technology can facilitate funding for green tourism, promoting sustainable economic growth through strategic budget allocation.

Similarly, Zhu and Wang (2022) evaluate the Public Finance for Tourism Growth (PFTG) model, suggesting that collaborative governance between local and central governments is essential for leveraging social media and other innovative tools in tourism development. Liu et al. (2020) argue that effective rural tourism management relies on partnerships with businesses and communities, a key tenet of collaborative theory, which stresses the importance of incorporating community perspectives into financial decision-making processes. Akmese et al. (2016) highlight the importance of meeting public finance expectations to ensure accurate budget allocation and corporate sustainability, particularly in G8 countries. Their application of Global Reporting Initiative (GRI) standards reinforces the connection between public finance and ethical business practices, which is well aligned with corporate social responsibility (CSR) theory. Vianna et al. (2018) demonstrate how improved visitor satisfaction drives economic development, pointing to a gap in the literature regarding the impact of customer satisfaction on sustainable tourism growth. This gap is relevant to the Public Finance for Visitor Satisfaction (PFVS) model, which emphasizes a need for further research into how financial mechanisms can improve visitor experience while promoting sustainability.

The discussion then shifts to the Public Finance for Enhanced Tourism (PFET) model, presented by Rashid et al. (2020), which highlights the positive impact of government financing on economic growth, aligning with public choice theory, which explores how government spending can enhance public welfare. This also aligns with Kálmán et al. (2024), who advocate for aligning tourism management with sustainable development theory. Habib (2023) examines the relationship between real earnings management (REM) and ESG performance, showing that effective REM strategies improve ESG outcomes and increase enterprise value. This reveals the need for more empirical studies that link financial management and sustainability theories to tourism finance practices. Lulaj et al. (2022) identify budgetary challenges that hinder e-government performance, emphasizing resource dependency theory in tourism finance governance. Their findings stress the need for enhanced resource management and risk mitigation to ensure effective governance. Lulaj (2022) further highlights the significant increases in government expenditures during the Covid-19 pandemic, underscoring the crucial role of public spending in ensuring community well-being. Findings from Lulaj and Dragusha (2022) support fiscal federalism theories, highlighting the importance of efficient tax policies and careful revenue collection from direct taxes to bolster public welfare and tourism development.

Addressing infrastructure needs, Lee and Palliyani (2017) advocate for integrated sustainable transport policies, which resonate with cost leadership strategies that focus on enhancing ESG performance, as discussed by Habib (2024). Habib and Mourad (2024) explore how strong ESG practices influence firm performance during crises, revealing performance disparities linked to ESG initiatives, further connecting to crisis management theories. Manzoor et al. (2024) examine the relationships between digitalization, population growth, trade openness, and sustainable development, raising concerns that advanced financial systems and open trade policies may sometimes impede sustainability efforts. These findings point to a critical gap in understanding the balance between growth and sustainability, which is central to sustainable tourism theory. Habib et al. (2024) find that cost leadership and digital strategies positively impact working capital management efficiency (WCME), with larger firms performing better. This highlights the importance of corporate financial management theories, as larger firms are better equipped to align cost leadership strategies with sustainability goals. Habib (2024) further emphasizes the role of corporate governance efficiency in the MENA region, noting that macroeconomic stability is crucial for enhancing financial services, consistent with macroeconomic stability theories.

Dalei et al. (2021) emphasize the significance of sustainable ocean tourism, which seeks to balance environmental, economic, social, and cultural dimensions. Their findings indicate that while regulations can enhance sustainability, revisions to government policies are necessary to maximize impact, echoing regulatory theory in public finance. This highlights a gap in the literature regarding policy efficacy in promoting sustainable tourism, pointing to the need for further exploration of policy reforms within the context of sustainable development goals (SDGs). Lulaj (2019) evaluates fiscal transparency in the budget processes of local governments in Kosovo, demonstrating that transparent systems are essential for fair resource allocation and efficient public fund management, drawing on fiscal transparency theories. This work

underscores the need to align fiscal processes with public accountability theories, especially when assessing tourism finance mechanisms. Additionally, Lulaj (2019) analyzes the significance of financial reporting in public accounting, emphasizing the need for harmonizing accounting standards due to the impact of globalization on transition countries. This aligns with globalization theories, which stress the importance of standardized financial reporting in an interconnected world. Finally, Lulaj (2021) highlights the importance of public financial accounting for enhancing economic development and stability, asserting that effective reforms require accountability in public accounting and accurate financial reporting across all levels of governance.

This is consistent with theories of public sector reform and new public management, which advocate for enhanced accountability and transparency in financial reporting. By identifying these key theories and gaps, this study aims to develop the Quintessence Sustainable Tourism Public Finances (QSustainableTPF) model, offering a new theoretical framework that synthesizes public finance mechanisms in tourism with sustainability goals and accountability in financial governance.

3. Literature review and hypothesis development

Public finance holds the key to unlocking the full potential of sustainability in tourism financial analysis. According to Lulaj (2024), significant gaps exist between average and desired budget values, indicating changes in consumer behavior, particularly in food spending. Therefore, governments should consider how public budget distribution affects citizens' sustainability. The research centres around five influential public finance models such as Public Finance for Enhanced Tourism (PFET), Public Finance for Transparent Tourism (PFTT), Public Finance for Tourism Growth (PFTG), Public Finance for Visitor Experience (PFVE), and Public Finance for Visitor Satisfaction (PFVS). exposed in the following points.

3.1. Public finance for enhanced tourism model

The PFET model, as elucidated by various authors, serves as a cornerstone in shaping the tourism sector by emphasizing meticulous financial analysis of institutional governance. Alatawi et al. (2023) underscore the profound impact of the PFET model, outlining challenges and identifying potential avenues for research to enhance the tourism industry. Shan and Ren (2023) contribute to the understanding of PFET, the intricate interplay between tourism development, consumption, and the financial analysis of institutional governance. These insights are the basis of the PFET1 variable, highlighting the role of accuracy in the establishment of tourism rules for tourists. Additionally, their emphasis on improving the infrastructure of existing tourist facilities resonates with the PFET2 variable, that benefits both residents and tourists aligns with the PFET3 variable. Furthermore, Manahov and Li (2024) draw attention to the limitations in the impact of financial analysis on the stock prices of travel and examine tourism companies, governance. Rocca and Zielinski (2022) caution against the challenges faced by community-based tourism in the absence of sufficient capital and governance, the vital role of robust government involvement.

This aligns with the overarching PFET model, by improving infrastructure, and fostering additional attractions. Lastly et al. (2011) contribute to the discourse by stressing the necessity of increased awareness within local government for accurate financial analysis of budget allocations. The awareness prevents unfair competition and ensure the long-term positive development of the tourism sector, reinforcing the PFET model.

3.2. Public finance for transparent tourism model

In the context of the PFTT model, accurate financial analysis in institutional governance plays a central role in several dimensions. The alignment with PFTT1 variable, which emphasizes that accurate financial analysis ensures citizens benefit from tourism, Atmodjo et al. (2017) highlights the growth of tourism globally provides financing opportunities, the underscore the importance of transparent budget allocations but note a lack of clarity in connecting these allocations, leading to demands for additional taxes from certain communities. Gispert and Clavé (2020) research highlights five distinct governance models based on the perceptions of actors within the tourism system. Furthermore, PFTT3 variable, which accentuates the role of accurate financial analysis in improving financial decision-making for the development of tourism attractions. Peng et al. (2021) delved into identifying a positive relationship between corporate governance, technical efficiency, and financial performance. This insight contributes to a sound financial analysis of institutional governance which is essential for effective decision-making in the development of tourist attractions. Presenza et al. (2013) shed light on the intricate interactions in tourism destinations, underscoring a knowledge gap related to the involvement of local communities in tourism development. Lastly, Nunkoo et al. (2012) bring attention to the vital link between public trust, political support for sustainable tourism, and the proper allocation of budget funds. This underscores the importance of accurate financial analysis of public finances, aligning with the PFTT model.

3.3. Public finance for tourism growth model

The PFTG model encompasses the accurate financial analysis of institutional governance, plays a crucial role in shaping various aspects of local and international tourism. The insights from the different authors align with the specific variables in promoting tourism, managing facilities, monitoring development and impact, and ensuring financial resources for innovation. As for PFTG1 variable, Lee et al. (2023) underscore the transformative role of the digital economy, including information technology services in propelling the international tourism industry's development. Socher (2000) advocates for a new model of destination management to navigate the rapid changes in tourism markets, align with PFTG2 variable that emphasizes the need for accurate financial analysis to increase the number of visitors throughout the year. The model proposed by Socher involves limiting government influence, empowering private entrepreneurs, and utilizing taxes for financing, which shows within the PFTG4 and PFTG5 variables. Vieira do Nascimento (2016) points out the lack of knowledge in climate change finance related to tourism, which aligns with the PFTG3

variable. Seetanah et al. (2023) highlight the varied impact of tourism on wealth through economic growth, reinforcing the importance of accurate financial analysis in PFTG3. including budget allocations based on accurate financial analysis. Socher (2001) emphasizes the pivotal role of governments and international institutions in tourism policies, aligning with PFTG4 and PFTG5, emphasizing "direct" and "indirect" budget allocations through accurate financial analysis of public finances. Yousaf et al. (2022) contribute to PFTG1 and PFTG2 analyse the positive impact of board capital on firm performance, in human capital, identify institutional investors, and state ownership as crucial determinants, aligning with PFTG4. Wu and Chang (2023) research support PFTG2 and PFTG5, that call for e dynamic interactive function's contribution to family tourism consumption through the digitalization of finances, budget allocations, and public finances.

3.4. Public finance for visitor experience model

In the context of the PFVE model, accurate strategic budgeting in institutional governance plays a crucial role in ensuring the safety and satisfaction of visitors (PFVE1 variable), increases the number of tourist operators (PFVE2 variable), increases the number of tourist guides (PFVE3), providing information to visitors before they choose a destination (PFVE4 variable), provide information to visitors after they arrive and settle in the destination (PFVE5 variable), and facilitate visitor access to events and activities (PFVE6 variable), as elucidated by the findings of various scholars. PFVE1, focuses on visitor safety and satisfaction, is supported by Iranah et al. (2018), who found a crucial link between tourists' financial satisfaction and overall satisfaction. PFVE2 and PFVE3, related to the growth of tourism operators and guides, are addressed by Kaffashi et al. (2015), who highlight the role of government-imposed fees as a mechanism to enhance the financial sustainability of protected areas, in the tourism industry. PFVE4 provides information to visitors before they choose a destination, is supported by Vecco et al. (2017), who explain the central role of accurate information in tourists' decision-making processes. PFVE5 focuses on providing information to visitors after their arrival. PFVE6, which aims to help visitors, observes events and happenings. (Xiang and Worthington, 2017), highlight how financial support from the government can significantly improve the performance of tourism-related businesses. Furthermore, Buteau-Duitschaever et al. (2010) reinforce the relevance of the PFVE model by demonstrating the impact of government financial analysis on visitor perceptions, in relation to the allocation of funds for sustainable tourism. Heald and Hodges (2020) introduce a temporal dimension on the ongoing impact of public finances on the tourism sector, reflecting the importance of the PFVE model that addresses challenges such as the recent pandemic. Finally, Hopkins (1988) broadens the perspective on the need for advanced financial and managerial techniques, consistent with the PFVE model's comprehensive approach to addressing organizational and policy issues within the tourism industry.

3.5. Public finance for visitor satisfaction model

In the context of the PFVS model, accurate financial analysis of institutional governance plays a crucial role to provide visitors information on historical and cultural heritage monuments (PFVS1 variable), comfort for visitors in tourist destinations (PFVS2 variable), ensure convenient opening hours of various facilities (PFVS3 variable), provide satisfaction for visitors on the quality of products relative to prices (PFVS4 variable), and satisfaction for visitors on the quality of services relative to prices (PFVS5 variable). According to Albaity and Melhem (2017), tourist satisfaction serves as a positive mediator between demand and destination image. (PFVS1). Balli et al. (2019) emphasize the understanding of decision-makers in the tourism sector regarding the impact of the volatility of visitor arrivals and the provision of visitor comfort, in line with the role of providing comfort to visitors in tourist destinations (PFVS2). The reputation of a city, as mentioned by Sanders and Canel (2015), is influenced by the provision of convenient opening hours for different establishments, supporting the variable of convenient opening hours in the PFVS model (PFVS3). Trupiano (2005) emphasizes the need for accurate financial analysis in strategic financial and managerial approaches to attract visitors and increase customer satisfaction during their stay, which is consistent with the variables of quality of products relative to prices (PFVS4) and quality of services relative to prices (PFVS5) in the PFVS model.

The comprehensive analysis of the existing literature not only provides valuable insights and identifies research gaps, but also establishes a solid theoretical foundation. This foundation illuminates the complex relationship between public finance and sustainable tourism development. Drawing from a variety of authoritative sources, it forms the basis for constructing hypotheses and sub-hypotheses within our conceptual model, providing a central foundation for the research framework.

H_0: There is a statistically significant and positive relationship between PFET, PFTT, PFTG, PFVE, and PFVS models

Figure 1 depicts the QSustainableTPF conceptual model of public finance in the context of sustainability in tourism financial analysis between in the base models PFET, PFTT, PFTG, PFVE, PFVS. This conceptual model forms the basis for establishing the alternative hypothesis (H_0), asserting a statistically significant and positive relationship between these models (PFET, PFTT, PFTG, PFVE, and PFVS) and sub-hypothesises:

- Sub. H_1: PFTG $\longleftrightarrow$ PFVS
- Sub. H_2: PFTG $\longleftrightarrow$ PFTT
- Sub. H_3: PFTG $\longleftrightarrow$ PFVE
- Sub. H_4: PFTT $\longleftrightarrow$ PFVE
- Sub. H_5: PFVS $\longleftrightarrow$ PFVE
- Sub. H_6: PFET $\longleftrightarrow$ PFTG
- Sub. H_7: PFET $\longleftrightarrow$ PFVE
- Sub. H_8: PFET $\longleftrightarrow$ PFVS
- Sub. H_9: PFVS $\longleftrightarrow$ PFTT
- Sub. H_{10}: PFET $\longleftrightarrow$ PFTT

Further, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) are pivotal for supporting H_0 and sub-hypotheses.
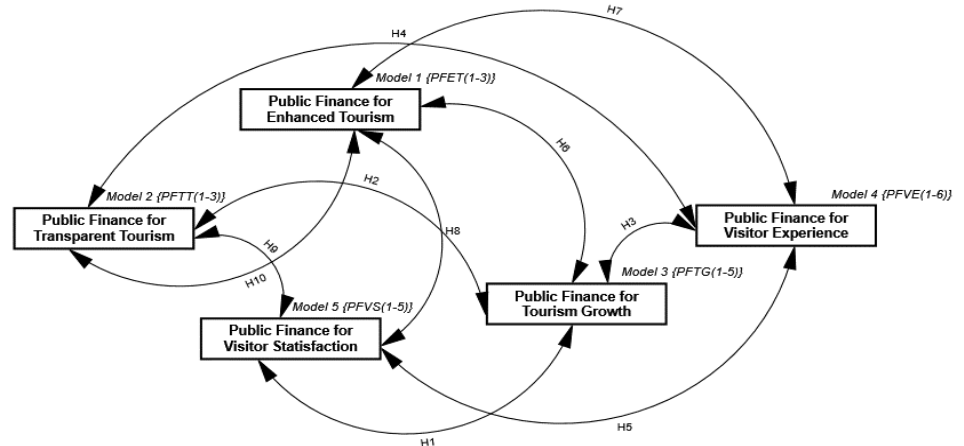
Figure 1. QSustainableTPF conceptual model.

Source: Prepared by the authors.

Each sub-hypothesis is designed to unveil specific relationships, contributing significantly to understanding the intricate dynamics of public finances and their impact on sustainability in tourism financial analysis.

Table 1. Literature review table.

Model	Variable	Year	Authors	Key Findings and Contributions
Public Finance for Enhanced Tourism (PFET)	PFET1	2023	Alatawi et al.	Highlights the need for accurate regulations for tourists and outlines challenges in enhancing the tourism industry.
	PFET2	2023	Shan and Ren	Emphasizes the relationship between tourism development, consumption, and the financial analysis of governance.
	PFET3	2024	Manahov and Li	Discusses limitations in financial analysis on the stock prices of travel companies and the need for robust government involvement.
		2022	Rocca and Zielinski	Cautions against challenges faced by community-based tourism without sufficient capital and governance.
		2011	Wang and Xu	Stresses the need for local governments to be aware of financial analysis in budget allocations to prevent unfair competition.
Public Finance for Transparent Tourism (PFTT)	PFTT1	2017	Atmodjo et al.	Notes the global growth of tourism, emphasizing the need for transparent budget allocations to prevent tax demands from communities.
	PFTT2	2020	Gispert and Clavé	Identifies five distinct governance models based on stakeholder perceptions in the tourism system.
	PFTT3	2021	Peng et al.	Establishes a positive relationship between corporate governance, technical efficiency, and financial performance, highlighting the need for sound financial analysis.
		2013	Presenza et al.	Sheds light on knowledge gaps regarding local community involvement in tourism development.
		2012	Nunkoo et al.	Highlights the link between public trust, political support for sustainable tourism, and budget fund allocation, reinforcing the importance of accurate financial analysis.

Table 1. (*Continued*).

Model	Variable	Year	Authors	Key Findings and Contributions
Public Finance for Tourism Growth (PFTG)	PFTG1	2023	Lee et al.	Emphasizes the transformative role of the digital economy in international tourism development.
	PFTG2	2000	Socher	Advocates for a new model of destination management to adapt to rapid changes in tourism markets.
	PFTG3	2016	Vieira do Nascimento	Points out the lack of knowledge regarding climate change finance related to tourism.
	PFTG4	2001	Socher	Stresses the role of governments and international institutions in tourism policies, emphasizing direct and indirect budget allocations.
	PFTG5	2023	Wu and Chang	Calls for dynamic interactive functions to enhance family tourism consumption through financial digitalization and effective budget allocations.
Public Finance for Visitor Experience (PFVE)	PFVE1	2018	Iranah et al.	Finds a significant link between tourists' financial satisfaction and overall satisfaction, emphasizing safety and satisfaction.
	PFVE2	2015	Kaffashi et al.	Discusses the role of government fees in enhancing the sustainability of tourism operators and guides.
	PFVE3	2017	Vecco et al.	Highlights the importance of providing accurate information to visitors for better decision-making.
	PFVE4	2017	Xiang and Worthington	Emphasizes government financial support's impact on tourism-related businesses' performance.
	PFVE5	2010	Buteau-Duitschaever et al.	Demonstrates how government financial analysis impacts visitor perceptions regarding sustainable tourism funding.
	PFVE6	2020	Heald and Hodges	Discusses the ongoing impact of public finances on tourism, particularly in light of recent challenges like the pandemic.
Public Finance for Visitor Satisfaction (PFVS)	PFVS1	2017	Albaity and Melhem	Argues that tourist satisfaction mediates the relationship between demand and destination image, focusing on cultural heritage.
	PFVS2	2019	Balli et al.	Emphasizes the need for decision-makers to consider visitor comfort amidst fluctuating arrival volatility.
	PFVS3	2015	Sanders and Canel	Highlights how convenient opening hours influence a city's reputation, affecting visitor satisfaction.
	PFVS4	2005	Trupiano	Stresses the importance of accurate financial analysis in enhancing visitor satisfaction with product quality relative to prices.
	PFVS5	2005	Trupiano	Further emphasizes the need for accurate analysis in ensuring service quality relative to prices.

Source: Prepared by the authors.

Table 1 provides a comprehensive overview of the significant contributions of various authors to the models of public finance and their implications for tourism development. The table describes specific variables within the models—such as the Public Finance for Enhanced Tourism (PFET), Public Finance for Transparent Tourism (PFTT), Public Finance for Tourism Growth (PFTG), Public Finance for Visitor Experience (PFVE), and Public Finance for Visitor Satisfaction (PFVS). This structured elaboration serves as an essential reference for understanding the intricate relationship between public finance, tourism management, governance, and visitor experiences, thereby illustrating the critical role of accurate financial analysis in advancing the tourism sector.

4. Methodology

This study explores the quintessence of public finance by integrating sustainability into tourism financial analysis using five basic models: PFET (Public Finance for Enhanced Tourism), PFTT (Public Finance for Transparent Tourism), PFTG (Public Finance for Tourism Growth), PFVE (Public Finance for Visitor Experience), and PFVS (Public Finance for Visitor Satisfaction). The primary objective is to explore statistically significant relationships between these models and thereby assess their impact on sustainability and financial performance. The findings are intended to provide insights that will inform government policy, stimulate economic growth, and enhance visitor experience within the tourism sector.

4.1. Research context and design

The research is conducted in Kosovo, with the tourism sector serving as a critical area of focus, given its growing contribution to the country's economy. The selection of Kosovo as the research context is driven by its evolving tourism industry and the central role that public finance plays in promoting sustainable tourism development. The study adopts a quantitative research design, employing both primary and secondary data to analyze the relationship between public finance mechanisms and tourism sustainability.

4.2. Data collection

Data for this study were collected from two primary sources during the period 2023–2024 such as government reports and a survey of citizens and visitors. Secondary data were collected from the Tourism Department of the Ministry of Industry, Trade, and Commerce, as well as the Budget Department of the Ministry of Finance, Labor, and Transfers. These data included financial reports and budget allocations for the tourism sector at both the municipal and central government levels. In addition to secondary data, primary data was collected through a structured questionnaire distributed to 2099 participants, including both citizens and tourists. The survey used a Likert scale (1 = strongly disagree, 5 = strongly agree) to capture respondents' perspectives on the role of public finance in tourism development and its contribution to the country's financial sustainability. This mixed-methods approach provided a comprehensive understanding of the factors influencing tourism finance and sustainability. **Table 2** provides an overview of the key variables and their alignment with the five basic models.

Table 2. Definition and description of the study variables.

Variable	Construct
Model 1-Public Finance for Enhanced Tourism (PFET)	
PFET1	Accurate financial analysis on institutional governance facilitates the establishment of tourism rules for tourists
PFET2	Accurate financial analysis on institutional governance helps to improve the infrastructure of existing tourist facilities
PFET3	Accurate financial analysis on institutional governance helps to create additional attractions that benefit residents and tourists

Table 2. (*Continued*).

Variable	Construct
Model 2-Public Finance for Transparent Tourism (PFTT)	
PFTT1	Accurate financial analysis on institutional governance ensures that citizens benefit from tourism
PFTT2	Accurate financial analysis on institutional governance increases transparency in financial reporting for tourism revenues
PFTT3	Accurate financial analysis on institutional governance improves financial decision-making for the development of tourism attractions
Model 3-Public Finance for Tourism Growth (PFTG)	
PFTG1	Accurate financial analysis on institutional governance promotes local tourism for visitors to different countries
PFTG2	Accurate financial analysis on institutional governance increases the number of visitors throughout the year
PFTG3	Accurate financial analysis on institutional governance monitors the development and impact of tourism
PFTG4	Accurate financial analysis on institutional governance manages the number of tourist facilities
PFTG5	Accurate financial analysis on institutional governance ensures the allocation of financial resources for tourism innovation
Model 4-Public Finance for Visitor Experience (PFVE)	
PFVE1	Accurate financial analysis on institutional governance contributes to the safety and satisfaction of visitors
PFVE2	Accurate financial analysis on institutional governance helps to increase the number of tourist operators
PFVE3	Accurate financial analysis on institutional governance helps to increase the number of tourists' guide
PFVE4	Accurate financial analysis on institutional governance helps in providing information to visitors before they choose the tourist destination
PFVE5	Accurate financial analysis on institutional governance helps in providing information to visitors after they reach and settle in the tourist destination
PFVE6	Accurate financial analysis on institutional governance helps visitors to see occurrence, events, etc.
Model 5-Public Finance for Visitor Satisfaction (PFVS)	
PFVS1	Accurate financial analysis on institutional governance offers the opportunity for visitors to visit historical-cultural heritage monuments
PFVS2	Accurate financial analysis on institutional governance provides comfort for visitors to the tourist destinations they visit
PFVS3	Accurate financial analysis on institutional governance provides convenient opening hours of various markets, municipalities, banks, public institutions, etc.
PFVS4	Accurate financial analysis on institutional governance provides satisfaction for the visitors regarding the quality of the products against the prices
PFVS5	Accurate financial analysis on institutional governance provides satisfaction for visitors regarding the quality of services versus prices

Source: Prepared by the authors.

Models 1 (PFET) and 2 (PFTT) included the analysis of three variables each, models 3 (PFTG) and 5 (PFVS) included the analysis of five variables, and model 4 (PFVE) included six variables.

4.3. Data analysis

To ensure the robustness of the results and to validate the proposed hypotheses, a series of statistical analyses were carried out using SPSS and AMOS software. The analysis consisted of four main steps:

Step 1: Exploratory Factorial Analysis (EFA)—EFA was used to identify the underlying factors influencing the data, using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Sphericity test to assess the adequacy of the sampling. This

technique, widely used in economic research, was essential in the initial exploration of the data.

Step 2: Reliability Testing—Reliability was assessed using Cronbach's Alpha to ensure the internal consistency of the constructs. The analysis, based on the work of Floyd and Widaman (1995), confirmed the reliability of the measurement instruments used to evaluate the five models.

Step 3: Confirmatory Factorial Analysis (CFA)—CFA was conducted to verify the factor structure identified by EFA and to confirm the validity of the constructs. CFA also provided insight into the relationships among the variables and their fit to the proposed models.

Step 4: Covariance and Correlation Analysis—Finally, covariance and correlation analyses were conducted to test the main hypothesis (H0) and the ten sub-hypotheses (H1–H10). Model fit was assessed using standard goodness of fit indices to ensure that the proposed relationships between public finance models and tourism sustainability were statistically valid.
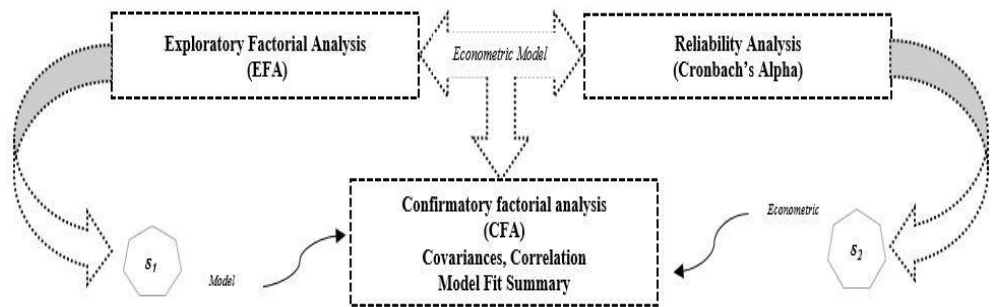
Figure 2. Econometric model.

The graphical representation of the econometric model illustrating the relationships between the variables is shown in **Figure 2**, which provides a visual summary of the research findings and enhances the clarity of the analysis.

4.4. Justification for methods and period

The period of 2023–2024 was selected for this research to capture the most current data and trends in Kosovo's tourism and public finance sectors. This timeframe is significant because it reflects the post-pandemic recovery phase, during which public finance strategies were critical to rebuilding the tourism industry. The selected methodologies, including EFA, CFA, and reliability testing, are widely accepted for the analysis of complex data sets, ensuring that the research is both rigorous and comprehensive.

5. Results

5.1. The QSustainableTPF conceptual model scrutinising variables' validity

The study meticulously examined the key factors (PFET, PFTT, PFTG, PFVE, and PFVS) outlined in the literature and methodology. In particular, the PFET and PFTT models were scrutinized using three variables each, while the PFTG and PFVS

models were analysed with five variables. The PFVE model underwent analysis with six variables. In total, 22 variables were analysed across these five models, while non-impact variables were excluded from the analyses.

Table 3. Demographic overview of respondents.

Variable	Category	Frequency	Percent	Valid Percent	Cumulative Percent
Education	High School	34	1.6%	1.6%	1.6%
	Basic Studies-Faculty	761	36.3%	36.3%	37.9%
	Post-graduate Studies-Master	1224	58.3%	58.3%	96.2%
	Other (PhD)	80	3.8%	3.8%	100.0%
	Total	2099	100.0%	100.0%	
Gender	Male	1089	51.9%	51.9%	51.9%
	Female	968	46.1%	46.1%	98.0%
	I prefer not to answer	42	2.0%	2.0%	100.0%
	Total	2099	100.0%	100.0%	
Age Group	15–30 years old	843	40.2%	40.2%	40.2%
	31–50 years old	910	43.4%	43.4%	83.5%
	51–70 years old	346	16.5%	16.5%	100.0%
	Total	2099	100.0%	100.0%	

Source: Table prepared by the authors.

Table 3 presents the descriptive statistics for the demographic variables of the study: education, gender, and age group. Starting with education, the data show that a significant majority of the respondents (58.3%) hold a postgraduate (master's level) degree, reflecting a well-educated sample. This level of education suggests that respondents are likely to have a strong understanding of public finance and tourism, strengthening the reliability of their findings. In addition, 36.3% of the participants have completed undergraduate studies at the faculty level, while a smaller proportion have a Ph.D. (3.8%) or a high school diploma (1.6%). Moving from education to gender, we see an almost equal representation of male and female participants. Men make up 51.9% of the sample, while women make up 46.1%. This relatively balanced gender distribution ensures that the research captures diverse perspectives across genders, which is essential for a comprehensive understanding of public finance and its impact on tourism. In addition, 2% of respondents chose not to disclose their gender, reflecting the inclusivity of the survey design by providing an option for those who prefer privacy. Finally, in terms of age group, the largest proportion of respondents (43.4%) fall within the age range of 31–50 years, followed closely by those aged 15–30 years (40.2%). This indicates that the sample is composed of a mix of young professionals and mid-career individuals, who are more likely to have direct experience with tourism-related financial policies. On the other hand, 16.5% of the respondents are in the age group of 51–70 years, which brings a broader generational perspective to the study. The range of age groups represented provides a well-rounded understanding of how public finance impacts tourism across different life stages.

Table 4 shows the Component Matrix-PCA according to EFA, which highlights the importance of the models PFET, PFTT, PFTG, PFVE, PFVS related to the

quintessence of public finance in the context of turbocharging sustainability in tourism financial analysis.

Table 4. EFA and Cronbach's alpha.

Variable	Factor Loading λ	KMO and Bartlett's Test	Variance Explained (VE) Cronbach's Alpha	Interpretation
Model 1-Public Finance for Enhanced Tourism (PFET)				
PFET1	0.775	KMO = 0.676		
PFET2	0.820	χ^2 = 175.502 df = 3	VE = 64.1% α = 0.720	Valid results
PFET3	0.807	Sig. = 0.000		
Model 2-Public Finance for Transparent Tourism (PFTT)				
PFTT1	0.776	KMO = 0.675		
PFTT2	0.811	Bartlett's sphericity = 166.165 df = 3	VE = 63.4% α = 0.711	Valid results
PFTT3	0.801	Sig. = 0.000		
Model 3-Public Finance for Tourism Growth (PFTG)				
PFTG1	0.816			
PFTG2	0.808	KMO = 0.767		
PFTG3	0.704	Bartlett's sphericity = 453.147 df = 10	VE = 55.3% α = 0.796	Valid results
PFTG4	0.669	Sig. = 0.000		
PFTG5	0.708			
Model 4-Public Finance for Visitor Experience (PFVE)				
PFVE1	0.688			
PFVE2	0.815			
PFVE3	0.825	KMO = 0.872		
PFVE4	0.748	Bartlett's sphericity = 723.900 df = 15	VE = 58.6% α = 0.857	Valid results
PFVE5	0.823	Sig. = 0.000		
PFVE6	0.681			
Model 5-Public Finance for Visitor Satisfaction (PFVS)				
PFVS1	0.681			
PFVS2	0.769	KMO = 0.686		
PFVS3	0.701	Bartlett's sphericity = 331.733 df = 10	VE = 48.7% α = 0.735	Valid results
PFVS4	0.628	Sig. = 0.000		
PFVS5	0.701			

Note: df = degrees of freedom, ***$p < 0.001$, α = Cronbach's Alpha.
Source: Table prepared by the authors.

According to **Table 4**, all models have factor loadings above 0.50, which underlines their importance. The KMO test confirms the reliable fit of the data for all models and Bartlett's Sphericity test shows a significant and meaningful correlation between the factors (Sig. = 0.000). Also, the reliability analysis (Cronbach's Alpha) shows a high degree of reliability in the data of all factors, while the Eigenvalues (VE) emphasize the importance of the variance, which has a value above 50% in each model (1–5). Concluding this analysis supports the fact that the identified public finance models are crucial for understanding and enhancing financial sustainability in tourism. The reliable fit of the data, the significant correlations between the factors, and the

emphasis on the variance explained by each model collectively suggest that these public finance models play a vital role in shaping policies and strategies for sustainable tourism development.

5.2. The QSustainableTPF conceptual model relating variables with factors

Table 5 presents the results of the confirmatory factor analysis (CFA) of the QSustainableTPF conceptual model between variables and models.

Table 5. Confirmatory factorial analysis (CFA).

Observed variable	Latent Variable Models	Standardized Regression Weights	Estimate	S.E	C.R	*p*-value	Asterisk	Confidence level of 99.9%.
PFET3		0.675***	1.000			-		Statistically Significant
PFET2	PFET	0.755***	1.094	0.119	9.189	*p* < 0.001	***	
PFET1		0.607***	1.167	0.141	8.249	*p* < 0.001	***	
PFTT1		0.689***	1.000			-		Statistically Significant
PFTT2	PFTT	0.681***	1.018	0.109	9.350	*p* < 0.001	***	
PFTT3		0.641***	1.124	0.126	8.946	*p* < 0.001	***	
PFTG1		0.834***	1.000			-		
PFTG2		0.787***	0.957	0.068	14.014	*p < 0.001*	***	Statistically Significant
PFTG3	PFTG	0.585***	0.772	0.077	10.032	*p* < 0.001	***	
PFTG4		0.482***	0.663	0.082	8.094	*p* < 0.001	***	
PFTG5		0.580***	0.705	0.071	9.946	*p* < 0.001	***	
PFVE1		0.601***	1.000			-		
PFVE2		0.776***	1.356	0.133	10.167	*p* < 0.001	***	
PFVE3		0.786***	1.090	0.106	10.248	*p* < 0.001	***	Statistically Significant
PFVE4	PFVE	0.666***	1.083	0.118	9.169	*p* < 0.001	***	
PFVE5		0.800***	1.092	0.105	10.351	*p* < 0.001	***	
PFVE6		0.622***	0.796	0.091	8.720	*p* < 0.001	***	
PFVS1		0.525***	1.000			-		Statistically Significant
PFVS2	PFVS	1.022***	1.663	0.278	5.976	*p* < 0.001	***	
PFVS3		0.496***	1.006	0.136	7.396	*p* < 0.001	***	

Note: Standard Error (S.E.), Critical Ratios (C.R.), ***p* < 0.001 indicates statistical significance. The confidence interval is set at 99.9% (CI).
Source: Table prepared by the authors.

In this analysis (**Table 5**), the results show a significant and statistically reliable influence of each visible variable PFET (1–3), PFTT (1–3), PFTG (1–5), PFVE (1–6), and PFVS (1–5) in the latent variables (PFET, PFTT, PFTG, PFVE, and PFVS) as all observed variables have a standardized regression weight greater than 0.5 with a *p* < 0.001. Therefore, observing **Table 3**, in the PFET model, the variable PFET2 has the greatest importance; In the PFTT model, the variables with the highest importance are PFTT1 and PFTT2; In the PFTG model, the variables with the highest importance are PFTG1 and PFTG2; In the PFVE model, the variables with the highest importance are PFVE5, PFVE3 and PFVE2; And in the PFVS model, the variable with the highest importance is PFVS2. A reliability level of 99.9% confirms that these results are very reliable.

Interpreting all these results, if institutional governing bodies conduct an accurate financial analysis of budget allocation for tourism from public finances, some measures should be taken: improving the infrastructure of existing tourism facilities in the country; ensuring that citizens benefit from tourism through employment and

other activities, increasing their income and well-being; enhancing the transparency of public funds through accurate financial reporting of revenues earned by businesses and the country through tourism; promoting local tourism for visitors from different countries through innovations in technology, infrastructure, marketing of tourist destinations; increasing the number of visitors throughout the year; providing information to visitors after they arrive and settle in the tourist destination by the country, agencies, businesses, and citizens through brochures, maps, innovative technological programs for tourism; increasing the number of tour guides and cicerones for visitors, as well as increasing the number of tourist operators; providing comfort for visitors through good infrastructure, technology, security, quality in services and products offered, cleanliness of the environment, timely information and ease of stay and travel.

In essence, these findings provide a clear path forward, urging stakeholders to prioritize accurate financial analysis as a linchpin for transformative and sustainable tourism, thereby contributing to the prosperity and advancement of the nation.

5.3. The relationship among factors

Table 6 presents the results that show the relationships between the factors, revealing the values of covariance, correlation and the significance related to the quintessence of public finance in the context of turbocharging sustainability in tourism financial analysis among the 5 models and their variables. Almost all the relationships are significant, positive and weak, except the relation between PFTG and PFTT is strong and the relations of PFET with PFTG, PFVE and PFTT are moderate. However, the relationship between PFVS and PFVE/PFET is non-significant.

Table 6. Covariance's and correlations.

Path Variables	Covariance's				Correlation	Interpretation
	Estimate	**S.E.**	**C.R.**	*P* value	**Estimate**	
PFTG ←→ PFVS	0.045**	0.020	2.276	$p < 0.05$	0.155	
PFTG ←→ PFTT	0.167***	0.022	7.442	$p < 0.001$	0.750	
PFTG ←→ PFVE	0.103***	0.022	4.726	$p < 0.001$	0.368	Cov (PFET, PFTT, PFTG, PFVE, PFVS)
PFTT ←→ PFVE	0.076***	0.019	4.021	$p < 0.001$	0.333	Cor (PFET, PFTT, PFTG, PFVE, PFVS)
PFVS ←→ PFVE	0.028	0.019	1.505	nonsig.	0.095	Positive and significant relationship
PFET ←→ PFTG	0.155***	0.025	6.210	$p < 0.001$	0.572	The covariance's of the models:
PFET ←→ PFVE	0.118***	0.025	4.816	$p < 0.001$	0.428	PFVS ←→ PFVE and PFET ←→ PFVS
PFET ←→ PFVS	0.023	0.019	1.182	nonsig.	0.080	are not statistically significant at the 5%
PFVS ←→ PFTT	0.067***	0.020	3.292	$p < 0.001$	0.284	level.
PFET ←→ PFTT	0.131***	0.023	5.785	$p < 0.001$	0.594	

Notable symbols: ***$p < 0.001$, **$p < 0.05$, Standard Error (S.E.), Critical Ratios (C.R.), Covariances (Cov), Correlations (Cor), C.I = 95%., nonsig.—not significantly different from zero at the 0.05 level (two-tailed).
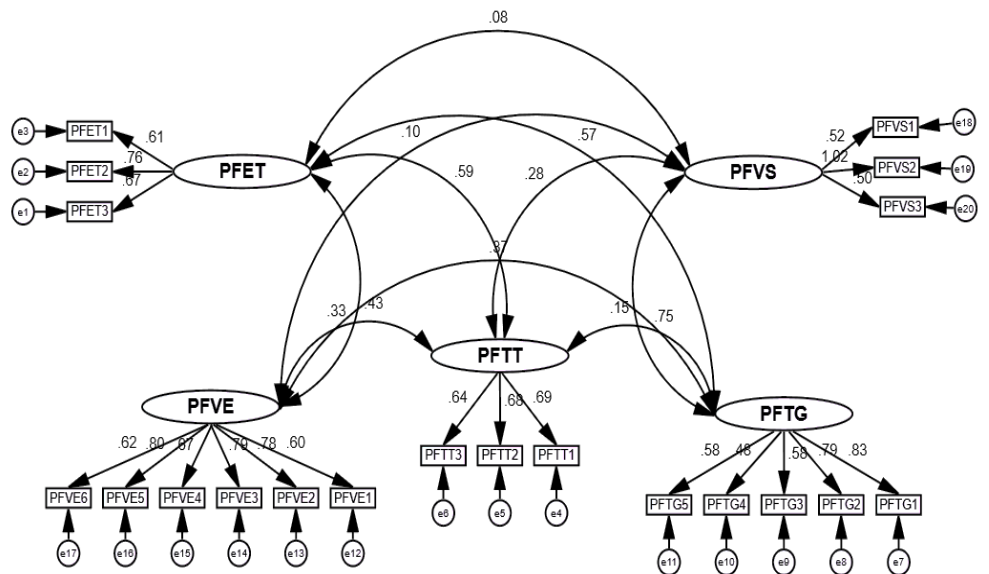Source: Table prepared by the authors.

Making it explicit, any variation that occurs in any factor will imply a variation in the same direction in the other factors. Nevertheless, it should be outstanding the relationship between PFTT and PFTG, where the highest correlation coefficient was found, what identifies a strong dependence between these two variables, i.e., well-coordinated and transparent financial governance in the tourism sector can increase

the chances of sustainable and transparent tourism development and vice-versa. Also, to achieve a richer experience for visitors, it will be necessary future policies and strategies.

5.4. QSustainableTPF model–Path diagram

The results of the FIT model (Appendix—**Table A1**) aim to identify and evaluate the QSustainableTPF model's possible relationship with PFET, PFTT, PFTG, PFVE, and PFVS models. The model has a chi-squared value (CMIN/χ^2) of 244.990 and (X2/df, 0.143) and a *p*-value of 0.000 at the 5% (0.05) level, indicating an excellent fit and a statistically significant model effect. Various model performance indices, such as RMR (0.035), GFI (0.927), AGFI (0.892), PGFI (0.631), NFI (0.899), RFI (0.865), IFI (0.955), TLI (0.939), PRATIO (0.753), PNFI (0.676), and PCFI (0.718), collectively indicate a high level of model fit. The RMSEA index of 0.049 also supports a good fit for the data. These results indicate that the model has a good fit and corresponds well to the structure of the available data, highlighting the possibility of the presence of significant relationships and interactions between factors when testing alternative hypotheses.

Figure 3 illustrates the QSustainableTPF model´s relationship with PFET, PFTT, PFTG, PFVE, and PFVS models and their variables (PFET1-3, PFTT1-3, PFTG1-5, PFVE1-6, and PFVS1-3), through a path diagram. Of all the relationships that can be seen in **Figure 3**, the strongest can be highlighted, presenting the most impactful relationships. The relationship between the models PFTG and PFTT is highlighted with a value of 0.750, indicating that an improvement in budget allocations for tourism growth has a significant impact on the transparency of tourism financial projects. Also, budget allocations for tourism growth influence positively improvement in tourism development, and vice versa. Moreover, tourism improvement through budget allocations according to tourism priorities (PFET) influences the transparency and financial reporting of tourism finances.

Figure 3. QSustainableTPF model–Path diagram.

Source: Prepared by the authors.

Therefore, these correlations indicate various and complex relationships between public finance components and sustainability in tourism. In the context of public finance for turbocharging sustainability in tourism financial analysis, intricate connections among financial policies, transparency, and overall tourism development may be revealed.

5.5. Verification of hypotheses

Table 7 presents a comprehensive verification of hypotheses related to public finance models in tourism, specifically focusing on the relationships among Public Finance for Enhanced Tourism (PFET), Public Finance for Transparent Tourism (PFTT), Public Finance for Tourism Growth (PFTG), Public Finance for Visitor Experience (PFVE), and Public Finance for Visitor Satisfaction (PFVS). The primary hypothesis (H0) posits that there is a statistically significant and positive relationship among these models. The results indicate a strong model fit across various tests, including Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA), with *p*-values below 0.001, a Comparative Fit Index (CFI) of 96%, and Root Mean Square Error of Approximation (RMSEA) results that confirm the robustness of the model. Consequently, H0 is not rejected, affirming that effective public finance practices are crucial for fostering sustainable tourism, which, in turn, can stimulate economic growth and enhance visitor experiences.

The QSustainableTPF model serves as a comprehensive framework that integrates the various dimensions of public finance within the tourism sector. This model encompasses PFET, PFTT, PFTG, PFVE, and PFVS, underscoring the interconnectedness of these elements and demonstrating that a holistic approach to public finance is essential for achieving sustainability in tourism. By incorporating PFET, the model highlights the significance of effective financial management in enhancing tourism outcomes, ultimately fostering economic development. The inclusion of PFTT emphasizes the necessity for transparency in financial practices, fostering trust among stakeholders and ensuring that public resources are allocated efficiently. Furthermore, PFTG reflects the model's focus on stimulating tourism growth as a catalyst for overall economic prosperity. Additionally, the QSustainableTPF model recognizes the critical roles of visitor experience (PFVE) and satisfaction (PFVS) in shaping the success of tourism initiatives. By prioritizing these aspects, the model illustrates how improved financial practices not only drive growth but also enhance the quality of experiences for visitors, ultimately leading to higher satisfaction levels. This comprehensive integration of public finance components allows for a more nuanced understanding of how each element influences and supports the others, creating a synergistic effect that can significantly contribute to the sustainability of tourism.

Delving into the sub-hypotheses, Sub. H1 examines the relationship between PFTG and PFVS and was not rejected, indicating that as tourism grows, visitor satisfaction tends to improve. This relationship underscores the importance of investing in tourism growth to enhance overall visitor experiences. Similarly, Sub. H2 reveals a positive correlation between PFTG and PFTT, suggesting that initiatives aimed at growing tourism are likely to improve transparency in public finance, thereby enhancing governance and fostering greater trust among stakeholders. Sub. H3 further

supports the notion that growth in tourism positively affects visitor experience, as indicated by the non-rejection of the hypothesis linking PFTG and PFVE. The findings also indicate a significant relationship between PFTT and PFVE (Sub. H4), suggesting that transparency in public financial practices can lead to improved visitor experiences. However, Sub. H5, which investigates the connection between PFVS and PFVE, is only partially supported. This indicates that while there is some correlation, it is not robust enough to establish a strong link. Possible explanations for this weak correlation could include the influence of external factors, such as destination management and service quality, which may play a more critical role in determining visitor satisfaction than financial considerations alone. This suggests that focusing solely on financial aspects may not be sufficient to enhance visitor satisfaction and that a more comprehensive approach is needed.

Moreover, Sub. H6 confirms a positive relationship between PFET and PFTG, indicating that enhanced financial practices contribute to tourism growth. Sub. H7 supports this notion further, showing that improved financial management positively impacts visitor experiences. Conversely, Sub. H8, which examines the relationship between PFET and PFVS, is also partially supported, suggesting that although sound financial practices can influence visitor satisfaction, other variables are likely at play. This weaker correlation may arise from factors such as varying visitor expectations and experiences, which are not solely dependent on financial management practices. Therefore, a more nuanced approach that addresses both financial and experiential dimensions is necessary to enhance visitor satisfaction fully. The findings further reveal a positive relationship between PFVS and PFTT (Sub. H9), suggesting that transparency in public finance enhances overall visitor satisfaction. Finally, Sub. H10 indicates a positive correlation between PFET and PFTT, confirming that effective financial practices promote transparency, ultimately benefiting the tourism sector.

Table 7. Verification of hypotheses.

Hyp.	Elaboration	Tests	Rejected/Accepted	Future Research/Implications
H_0	There is a statistically significant and positive relationship between PFET, PFTT, PFTG, PFVE, and PFVS models.		Not Rejected	
Sub. H_1	PFTG $\longleftrightarrow$ PFVS		Not Rejected	
Sub. H_2	PFTG $\longleftrightarrow$ PFTT	Excellent Model Fit CFA ***; EFA ***; C.I $\approx$99.9% $0.60 \geq \alpha$; $0.05 \geq \lambda$; $p < 0.001$ (***) $p < 0.05$ (**); RMSEA; (90% CI), $p = 0.049$; χ^2_M, $p = 0.000$; CFI = 96%	Not Rejected	Transparent government budgeting is crucial for fostering sustainable tourism, as highlighted by this study.
Sub. H_3	PFTG $\longleftrightarrow$ PFVE		Not Rejected	
Sub. H_4	PFTT $\longleftrightarrow$ PFVE		Not Rejected	Future research should focus on dynamic changes over time, cross-country comparisons, and the influence of emerging technologies.
Sub. H5	PFVS $\longleftrightarrow$ PFVE		Partially rejected	
Sub. H_6	PFET $\longleftrightarrow$ PFTG		Not Rejected	
Sub. H_7	PFET $\longleftrightarrow$ PFVE		Not Rejected	
Sub. H_8	PFET $\longleftrightarrow$ PFVS		Partially rejected	
Sub. H_9	PFVS $\longleftrightarrow$ PFTT		Not Rejected	
Sub. H_{10}	PFET $\longleftrightarrow$ PFTT		Not Rejected	

Notable symbols: PClose > 0.05, CFI > 0.95.
Source: Table prepared by the authors.

Based on the findings from **Table 7** and the comprehensive analysis of the QSustainableTPF model, several key conclusions and suggestions emerge regarding public finance in tourism. The study confirms that effective public finance practices significantly influence various aspects of tourism, including growth, transparency, visitor experience, and satisfaction. The non-rejection of the primary hypothesis (H0) underscores the importance of integrating financial management with tourism policy to foster sustainable outcomes. The QSustainableTPF model illustrates the interconnectedness of different public finance elements, indicating that a holistic approach is essential for sustainable tourism development. Each model contributes to a broader understanding of how financial practices can enhance tourism outcomes. Furthermore, the positive correlation between transparency in public finance (PFTT) and both tourism growth (PFTG) and visitor experience (PFVE) highlight the necessity for transparent practices in fostering trust and enhancing governance, which is crucial for attracting investment and improving overall tourism performance. Additionally, the focus on visitor experience (PFVE) and satisfaction (PFVS) reveals that these factors are critical indicators of the success of tourism initiatives, emphasizing the need for investments that prioritize enhancing these aspects to ensure long-term viability and growth in the sector. It is essential for policymakers to prioritize transparency and efficient financial practices in tourism planning and management, developing frameworks that promote accountability and community involvement to enhance stakeholder trust and satisfaction. Moreover, integrating sustainability goals within public finance frameworks is vital, ensuring that financial decisions consider environmental, social, and economic impacts while aligning with broader sustainability objectives. Overall, the findings from this study underscore the vital role of public finance in shaping sustainable tourism outcomes; by adopting a comprehensive and integrated approach, stakeholders can enhance visitor experiences, ensure satisfaction, and foster economic growth within the tourism sector. As the industry continues to evolve, ongoing adaptive policy development will be essential to navigating future challenges and opportunities in tourism finance.

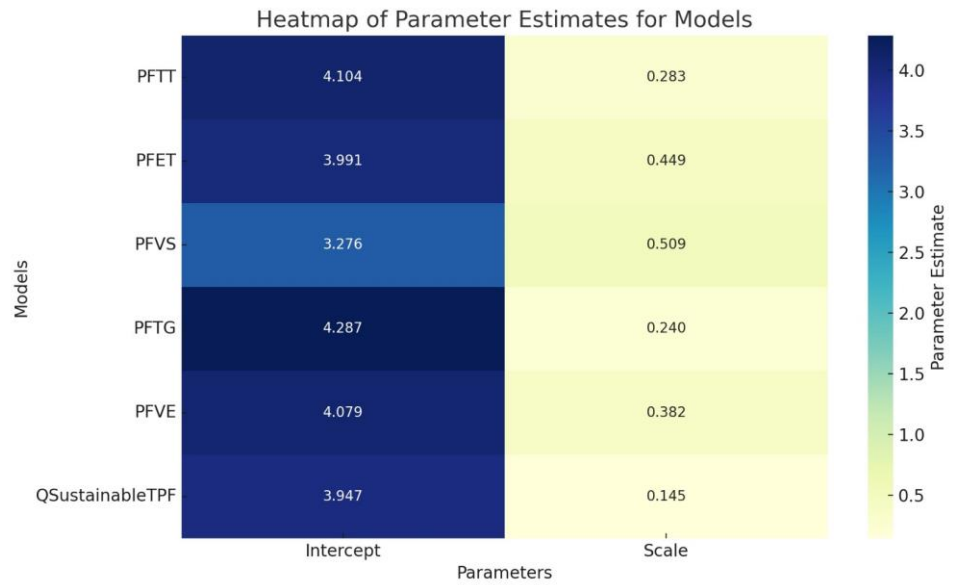## 5.6. Robustness for model QSustainableTPF estimates

Table 8 presents the robust results for model estimates in the context of public finances and sustainability dynamics within tourism financial analysis. Each model, including PFTT (Public Finance for Transparent Tourism), PFET (Public Finance for Enhanced Tourism), PFVS (Public Finance for Visitor Satisfaction), PFTG (Public Finance for Tourism Growth), PFVE (Public Finance for Visitor Experience), and QSustainableTPF (Quintessence Sustainable Tourism Public Finances), demonstrates significant parameter estimates that underpin the theoretical framework of the study. For the PFTT Model, the intercept value of 4.104 and a scale parameter of 0.283 reflect a strong baseline influence of public finance transparency on overall tourism dynamics, confirmed by a Wald Chi-Square of 17,780.122 ($p < 0.001$). The PFET Model exhibits an intercept of 3.991 and a scale of 0.449, indicating that public finance can significantly drive economic transformation, with a Wald Chi-Square of 10,611.483 ($p < 0.001$). Similarly, the PFVS Model shows an intercept of 3.276 and a robust scale parameter of 0.509, suggesting that public finance initiatives positively impact visitor satisfaction (Wald Chi-Square: 6296.942, $p < 0.001$). The PFTG Model, with an

intercept of 4.287 and a scale of 0.240, highlights the importance of public finance for fostering tourism growth (Wald Chi-Square: 22,928.149, $p < 0.001$). The PFVE Model also reflects a significant impact on visitor experiences, with an intercept of 4.079 and a scale of 0.382 (Wald Chi-Square: 13,021.840, $p < 0.001$). Finally, the QSustainableTPF Model indicates a substantial baseline effect on sustainable tourism practices, with an intercept of 3.947 and a scale of 0.145, validated by a remarkable Wald Chi-Square of 32,220.681 ($p < 0.001$). In conclusion, the robustness results presented in **Table 1** strongly indicate that each public finance model—PFTT, PFET, PFVS, PFTG, PFVE, and QSustainableTPF—demonstrates statistically significant relationships that underscore the vital role of public finance in enhancing sustainability within the tourism sector. These findings not only support the proposed hypotheses but also suggest that effective public finance strategies are essential for driving positive outcomes in tourism growth and visitor satisfaction. As such, this study advocates for policymakers to prioritize transparent and accountable public finance practices, while also encouraging further research to explore the intricate interactions among these models and their collective impact on sustainable tourism development.

Table 8. Robustness for model QSustainableTPF estimates.

Model	Parameter	*B*	Std. Error	95% Wald Confidence Interval	Wald Chi-Square	df	Sig.
PFTT Model	Intercept	4.104	0.0308	4.043–4.164	17,780.122	1	0.000
	Scale	0.283	0.0232	0.241–0.332			
PFET Model	Intercept	3.991	0.0387	3.915–4.067	10,611.483	1	0.000
	Scale	0.449	0.0367	0.382–0.527			
PFVS Model	Intercept	3.276	0.0413	3.195–3.356	6296.942	1	0.000
	Scale	0.509	0.0417	0.434–0.598			
PFTG Model	Intercept	4.287	0.0283	4.231–4.342	22,928.149	1	0.000
	Scale	0.240	0.0196	0.204–0.281			
PFVE Model	Intercept	4.079	0.0357	4.009–4.149	13,021.840	1	0.000
	Scale	0.382	0.0312	0.325–0.448			
QSustainableTPF	Intercept	3.947	0.0220	3.904–3.990	32,220.681	1	0.000
	Scale	0.145	0.0118	0.123–0.170			

Notes: *B* represents the parameter estimate. Std. Error is the standard error of the estimate. The 95% Wald Confidence Interval provides a range within which the true parameter value. Wald Chi-Square indicates the statistic used to test the significance of each parameter. Sig. shows the significance level, with values less than 0.05 indicating statistical significance.

Figure 4. Heatmap Robustness for Model QSustainableTPF.

Source: Prepared by the authors.

Figure 4 presents the heatmap of robustness results across all models. The heatmap visually summarizes the significant relationships among the various public finance models, emphasizing the critical roles these dynamics play in the tourism sector. Each cell in the heatmap reflects the strength and significance of the relationships between the models, reinforcing the interconnected nature of public finance factors. The robustness analyses reveal that public finance significantly impacts multiple aspects of tourism, including transparency (PFTT), enhanced (PFET), visitor satisfaction (PFVS), growth (PFTG), and experience (PFVE). The significant relationships highlighted in the heatmap strongly support the proposed hypotheses, particularly the alternative hypothesis (H0), which asserts that positive relationships exist between these models. This complex interplay among the different facets of public finance underscores the foundational premise of the study, which aims to enhance sustainability in tourism financial analysis. The QSustainableTPF model effectively integrates these various components, demonstrating how public finance strategies can drive sustainable tourism outcomes. This heatmap serves as a valuable tool for visualizing the robustness of these relationships and highlights the necessity for policymakers to prioritize transparent and accountable public finance practices in fostering sustainable tourism.

6. Discussion

This study contributes to the body of knowledge on public finance by examining its role in enhancing sustainability within tourism financial analysis through the QSustainableTPF conceptual model. The five base models such as PFET, PFTT, PFTG, PFVE, and PFVS serve as crucial frameworks for understanding how financial models influence sustainable tourism practices. The findings build on the existing literature and provide new insights into the dynamics between public finance and tourism sustainability, particularly emphasizing the novel contributions of the QSustainableTPF model in relation to prior studies.

6.1. Theoretical implications

This research aligns with and extends upon the theoretical framework proposed by Dhiraj et al. (2023), who emphasized the importance of financial well-being in the tourism industry. The findings indicate that public finance plays a pivotal role not only in financial well-being but also in broader sustainability objectives. Regarding tourism businesses, Lulaj et al. (2024) emphasize that to enhance sustainability, enterprises must provide quality services. Additionally, clear optimization strategies, continuous monitoring, effective working capital management, accurate financial decision-making, and technological improvements are essential for achieving positive cash flow (Lulaj and Minguez-Vera, 2024). Similar to Angrish's (2023) advocacy for alternative local government financing systems, this study highlights the significant impact of transparent and accountable financial management, which fosters local decentralization and supports sustainable tourism. Furthermore, the results support Haq et al.'s (2024) conclusions regarding the positive relationship between financial innovation and tourism development, demonstrating that public finance can significantly enhance both financial sustainability and tourism growth.

The application of advanced financial technologies and knowledge management strategies, as explored by Ratna et al. (2023), is also supported by the findings, especially in the context of increasing transparency and efficiency in financial transactions. Additionally, this study contributes to the work of Orazalin et al. (2024), who emphasize the integration of corporate social responsibility (CSR) initiatives into tourism financial analysis. The results confirm the importance of public finance in promoting sustainability, as well as its ability to generate positive outcomes in both visitor satisfaction and overall tourism growth. Statistical analyses, including PCA and CFA, further validate the relationships among the key models (PFET, PFTT, PFTG, PFVE, PFVS) and highlight the importance of public finance strategies in improving tourism experiences, financial transparency, and infrastructure development. In addition, the novel QSustainableTPF model provides a new perspective that distinguishes this study from previous research and highlights the need for a more integrated approach to understanding the role of public finance in promoting sustainable tourism practices.

6.2. Managerial and policy implications

The findings provide important insights for policymakers and tourism industry managers. Effective public finance strategies can directly enhance visitor satisfaction, drive economic growth, and support the long-term sustainability of tourism destinations. For instance, the PFET model highlights the importance of budget allocations to improve tourism facilities, which significantly improves both visitor experience and satisfaction.

The PFTT model emphasizes the role of transparency in ensuring that citizens benefit from tourism-related financial activities, in line with global calls for increased accountability in the use of public funds, as also discussed by Angrish (2023). Furthermore, the PFTG model demonstrates the need for investment in technological innovation and infrastructure to promote local tourism, particularly in a post-pandemic recovery context, a key focus of contemporary tourism studies. The PFVE and PFVS

models underscore the importance of providing essential services and information to visitors, ultimately enhancing their overall experience and satisfaction. These findings suggest that governments and tourism organizations should prioritize financial policies that improve the comfort, accessibility, and quality of services at tourist destinations. By drawing on the QSustainableTPF model, policymakers can better understand the interconnectedness of these various factors and make informed decisions to promote sustainable tourism development.

6.3. Limitations and future research agenda

While this study provides valuable insights, certain limitations must be acknowledged. First, the geographic focus on Kosovo may limit the generalizability of the results to other regions with different economic structures. Second, the research covers a specific timeframe (2023–2024), representing the post-pandemic recovery phase. While valuable data on recent trends is provided, future research should consider longitudinal studies to capture the long-term effects of public finance on tourism sustainability.

Future research could explore additional variables not covered in this study, such as the role of digital transformation in public finance management for tourism. Further studies might also examine the intersection between public-private partnerships and sustainable tourism development, providing deeper insights into how financial strategies can be optimized to support tourism growth. Lastly, exploring these models in different geographic and economic contexts would provide a broader understanding of their applicability across diverse tourism markets. By enhancing the exploration of the QSustainableTPF model, future research could further contribute to the theoretical and practical understanding of sustainable tourism finance.

7. Conclusions

This study set out to develop and empirically validate the QSustainableTPF model, which integrated five crucial public finance models: PFET (Public Finance for Enhanced Tourism), PFTT (Public Finance for Transparent Tourism), PFTG (Public Finance for Tourism Growth), PFVE (Public Finance for Visitor Experience), and PFVS (Public Finance for Visitor Satisfaction). The primary aim was to explore the relationships between these models and their impact on the sustainability and financial performance of the tourism sector. Through this, the study provided new insights into how public finance could drive sustainable tourism development. The research was conducted in Kosovo, a country that experienced significant growth in its tourism industry, where public finance played a pivotal role in fostering sustainable development. A mixed-methods approach was employed, combining quantitative data from government reports and financial records with primary data collected through a survey of 2099 participants, including vendors and tourists. Statistical analyses were conducted using SPSS and AMOS software, applying methods such as Exploratory Factor Analysis (EFA), Reliability Testing, Confirmatory Factor Analysis (CFA), and Covariance and Correlation Analysis. These analyses were rigorously applied to ensure the reliability and validity of the model.

7.1. Key findings and contributions

The results confirmed statistically significant relationships between the five public finance models and tourism sustainability. Specifically, the PFET model revealed the importance of financial investments in enhancing tourism infrastructure, while the PFTT model highlighted the role of transparency in increasing public trust and income from tourism activities. The PFTG model was shown to be crucial in stimulating local tourism and fostering innovation, and the PFVE model was linked to improving the overall visitor experience through better information and service offerings. The PFVS model focused on infrastructure, service quality, and security to enhance visitor satisfaction. However, the study identified a limited relationship between PFVS (visitor satisfaction) and PFVE (visitor experience), indicating that other external factors might significantly influence visitor experiences. These findings are invaluable for policymakers, offering a strategic framework for enhancing financial transparency, fostering growth, and improving the visitor experience within the tourism sector. The QSustainableTPF model serves as a transformative tool that can guide government strategies aimed at balancing economic growth with sustainability in tourism, potentially impacting tourism policy and practice on a global scale.

7.2. Specific contributions to knowledge

This research contributes to the field of sustainability by offering a nuanced understanding of how public finance can drive sustainable tourism development. By integrating multiple public finance models, the QSustainableTPF model provides a comprehensive framework that emphasizes the interdependencies among various financial practices and their collective impact on tourism sustainability. Each model within the framework addresses distinct but interconnected aspects of tourism finance, creating a holistic approach that policymakers can utilize. Furthermore, this study enhances the existing literature by offering empirical evidence from a unique context—Kosovo—which can serve as a case study for other countries with emerging tourism markets. The findings underscore the importance of transparency, investment in infrastructure, and a focus on visitor experiences, contributing to the broader discourse on sustainable tourism management.

7.3. Global relevance and future research directions

While the study primarily focused on Kosovo, the QSustainableTPF model holds significant global potential. Countries aiming to integrate sustainable finance into tourism development can adapt this model to their unique contexts, promoting best practices in financial governance. Future research should explicitly focus on extending this model through cross-country comparisons to assess how different public finance systems impact tourism sustainability across diverse economic and cultural settings. Additionally, researchers should investigate the role of emerging technologies such as digital finance platforms, blockchain for transparency, and AI for predictive analytics in enhancing tourism financial management and sustainability.

7.4. Limitations and path forward

This study is limited to Kosovo, with data primarily reflecting the perspectives of vendors and tourists within this context. While the sample of 2099 participants is substantial, it primarily captures views from specific stakeholders and may not fully represent the diversity of the tourism sector. To enhance the applicability of the QSustainableTPF model, future research should expand the sample size to include cross-national data and examine additional variables, such as private sector investments, international tourism trends, and macroeconomic conditions. By addressing these limitations and exploring new research avenues, future studies can deepen the understanding of public finance's role in tourism and improve the practical application of the QSustainableTPF model across various global contexts.

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Appendix

Table A1. FIT model.

Model Fit Summary

Tests/Parameters	Default Model	Tests Clarification & Equations	Threshold values	Interpretation
CMIN				
CMIN (χ2) $\alpha = 0.05$	244.990	(*N*–1) FML where FML is the value of the statistical criterion (fit function) minimized in ML estimation and (*N*–1) Minimum Discrepancy Function by Degrees of Freedom divided (Steiger and Lind, 1980) $\chi^2 - \chi'^2 = \sum_{i=1}^{k} \frac{\chi_i^2}{m_i} - \sum_{i=1}^{k} \frac{\chi^2}{m_i'}$		-
df_M (X2/df)	143	Degrees of freedom are important for understanding model fit, (Eisenhauer, 2008) ≤ 2 = acceptable fit → Tabachnick and Fidell (2007)	n/a	n/a
χ_M^2	0.000	*p*-value Joreskog and Surbom (1996)	< 0.05	Significant
CMIN/DF	1.713	Chi-square divided by Degree of Freedom Kline (1998); Marsh and Hocevar (1985)	Between 1 and 3	Excellent fit
RMR, GFI				
RMR	0.035	Root Mean Square Residual ≤ 0.05 = acceptable fit Diamantopoulos and Siguaw (2000)	The smaller the RMR value the better	Perfect fit
GFI	0.927	Goodness of Fit Index A value ≥ 0.9 indicates a reasonable fit (Hu and Bentler, 1998). A value of ≥ 0.95 is considered an excellent fit (Kline, 2005) $GFI = 1 - \frac{C_{res}}{C_{tot}}$ where C_{res} and C_{tot}, the residual and total variability in the sample covariance matrix. (Jöreskog, 2004)	≤ 1 > 0.80	Good fit
AGFI	0.892	Adjusted Goodness of Fit Index	> 0.80	Good fit
PGFI	0.631	Parsimony Goodness of Fit Index Mulaik et al.,1989	n/a	n/a
Baseline Comparisons				
NFI	0.899	Normed Fit Index also referred to as Delta 1 (Bollen, 1898) A value of 1 shows a perfect fit while models valued < 0.9 can be usually improved substantially (Bentler and Bonett, 1980)	> 0.80	Good fit
RFI	0.865	Relative Fit Index	> 0.70	Good fit
IFI	0.955	Incremental Fit Index	> 0.90	Perfect fit
TLI	0.939	Tucker-Lewis coefficient	0 to 1 > 0.90	Perfect fit
CFI	0.954	Comparative Fit Index (Hu and Bentler, 1999) A CFI value of ≥ 0.95 is considered an excellent fit for the model (West et al., 2012). (McDonald and Marsh, 1990) $CFI = 1 - \frac{\chi_M^2 - df_M}{\chi_B^2 - df_B}$	> 0.95	Excellent fit

Table A1. (*Continued*).

Model Fit Summary

Tests/Parameters	Default Model	Tests Clarification & Equations	Threshold values	Interpretation
Parsimony-Adjusted Measures				
PRATIO	0.753	Parsimony Ratio		
PNFI	0.676	Parsimony Normed Fixed Index expressing the result of parsimony adjustment (Mulaik and Brett, 1982) to the Normed Fixed Index (NFI).	0 to 1 > 0.50	Good fit
PCFI	0.718	Parsimony Comparative Fix Index		
NCP				
NCP	101.990	Non-Centrality Parameter		
LO 90	62.548	Lower boundary	17.3–106.1 CI 90%	Good fit
HI 90	149.306	Upper boundary		
FMIN				
FMIN	0.822	Index of Model Fit		
F0	0.342	Confidence Interval	0.08–0.53 CI 90%	Good Fit
LO 90	0.210	Lower boundary		
HI 90	0.501	Upper boundary		
RMSEA				
RMSEA (90% CI)	0.049	Root Mean Square Error of Approximation values ≤ 0.05 are considered excellent (MacCallum et al, 1996) (Steiger, 1990) $RMSEA = \sqrt{\frac{\chi^2_M - df_M}{df_M(N-1)}}$ (Mulaik, 2009)	< 0.06	Excellent fit
LO 90	0.038	Lower boundary	CI 90%	
HI 90	0.059	Upper boundary	CI 90%	
PClose	0.555	Close Fit Hypothesis Browne and Cudeck (1993)	>0.05	

Notable symbols: PClose > 0.05, CFI > 0.95.
Source: Table prepared by the authors.