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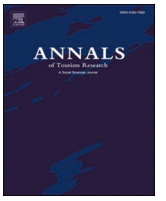

The salience of stakeholders in religious tourism: A case study of the Dajia Mazu pilgrimage

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ABSTRACT

Previous studies have focused on the relationship between religious tourism and some of its stakeholders. However, tourism's success relies on the commitment of all stakeholders. Based on stakeholder theory, this study assesses the stakeholder salience of a mass folk religious pilgrimage, the Dajia Mazu pilgrimage in Taiwan, by using fuzzy analytic hierarchy process (AHP). The results indicate that temples, pilgrims, and host communities are more important than tourists, environment, businesses, and governmental bodies. Among the 18 contributions of all stakeholders, pilgrims' engagement, organizing temple management, food and drink sharing, host communities' engagement, and supporting temples' assistance are the most important. Organizers and administrators therefore need to identify key stakeholders and prioritize their contributions in managing pilgrimages and religious tourism.

Introduction

Religion is a significant incentive for travel and religious sites attract numerous pilgrims and tourists (N. Collins-Kreiner, 2020). According to the World Tourism Organization of the United Nations, 60% of the world's population practiced a religion (UNWTO, 2012) and about 300 million people traveled for religious reasons (UNWTO, 2014). In other words, religious tourism accounts for a significant portion of domestic and international tourism. In addition to contributing to tourism development and economic growth, religious tourism establishes cultural, political, religious, and social connections between tourists and host communities. Religious tourism is therefore a multistakeholder and multidimensional phenomenon.

Previous studies of religious tourism have examined the issues associated with businesses and local economy (Dafuleya, Gyekye, Oseifuah, Nethengwe, & Sumbana, 2017; K.A. Shinde, 2010), pilgrims and tourists (B. Kim, Kim, & King, 2016; T.H. Lee, Fu, & Chang, 2015), host community (Suntikul & Dorji, 2016; Uriely, Israeli, & Reichel, 2003), governmental bodies (Henderson, 2011), religious sites (Nolan & Nolan, 1992; Poria, Reichel, & Cohen, 2011), and the environment (Alipour, Olya, & Forouzan, 2017; K.N. Shinde, 2007). These studies make clear visitors' various motives, experiences, and benefits, and the social and economic impact on host communities and their response (B. Kim, Kim, & King, 2020). They also help to formulate and implement strategies in sustainable development of environment, religious sites and heritages, religion, and religious tourism for regulatory and governmental bodies (B. Kim et al., 2020).

In short, these studies have clarified the relationship between religious tourism and one or more of its stakeholders. They highlight the engagement and significance of businesses, host community, regulatory and governmental bodies, religious sites, visitors, or environment. However, they focus on the relationship between a religious tourism activity and its stakeholder(s). Assessing how one or

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more stakeholders affect or are affected by religious tourism may result in the overvaluing of some stakeholders or the undervaluing of others.

In an organization, based on its own power, legitimacy, and urgency, each stakeholder plays a specific role and exerts unique influence on organizational actions (Mitchell, Agle, & Wood, 1997). An organization's long-term growth thus depends on not only one stakeholder but on all of them (Freeman, 2010). Similarly, effective management of tourism events and festivals (Todd, Leask, & Ensor, 2017), ecotourism (Wondirad, Tolkach, & King, 2020), heritage sites (Li, Lau, & Su, 2020), and travel destination (Beritelli & Laesser, 2011), depends on stakeholder engagement and support. Indeed, tourism development needs the involvement and collaboration of all stakeholders. As one of the oldest forms of tourism, religious tourism also rests on its all stakeholders, instead of just one or a few, to sustain its development.

Religious tourism consists of activities such as pilgrimages, events, and festivals (N. Collins-Kreiner, 2020). Since religious activities differ in business and economic condition, culture, political environment, religion, and social structure, their stakeholders are expected to vary across religions. Previous studies of religion tourism have concentrated on Buddhism, Christianity, Hinduism, and Islam (N. Collins-Kreiner, 2020; B. Kim et al., 2020). However, travel related to folk religion has received scant attention. In 2010, there were approximately 405 million adherents of folk religion in the world (Pew Research Center, 2015), close to the number of Buddhists.

Folk religions often have no formal creeds or sacred texts (Pew Research Center, 2012). They are also highly secularized. Therefore, folk religions tourism comprises rich secular elements, shows a variety of modern features, and can cater to the secular interests of its participants. In order to understanding religious tourism holistically, it is worthwhile to examine the stakeholder salience in the context of folk religious tourism.

Folk religion in Taiwan exhibits a high degree of secularization. Among 232 countries reported in Globe Religious Diversity analysis (Pew Research Center, 2014), Taiwan has the second highest score on the Religious Diversity Index, only behind Singapore. It indicates significant differences in religious belief and practice and that the Taiwanese are tolerant in terms of religion. In Taiwan, the Mazu (Heavenly Mother) pilgrimage held at DaJia is one of the world's largest pilgrimages (Cheng & Chen, 2014; Taichung City Government, 2019). Unlike Hinduism and Islam which are major religions, Mazu belief is a regional folk religion, and its annual nine-day, 300-km pilgrimage is highly secularized, commercialized, and enterprized (Song, 2007). The pilgrimage is open to everyone, regardless of age, ethnicity, gender, nationality, and religion.

The development of religious tourism relies on engaged and collaborative stakeholders. Without understanding the relative importance of stakeholders and their contributions, it is difficult to manage stakeholder relationship and encourage stakeholder engagement. Those are essential in the strategic management of religious tourism. To maximize religious tourism's social and economic impact and to balance the needs of its various stakeholders, tourism authorities and operators must understand stakeholder salience. However, research on the salience of stakeholders in religious tourism remains incomplete. Clearly, there is a need to scrutinize stakeholder salience holistically. For that reason, this study evaluates stakeholder salience based on the DaJia Mazu pilgrimage. The evaluation results can help to clarify the structure of stakeholder salience, which is essential for planning, organizing, leading, and controlling pilgrimages and religious tourism generally.

Literature review

This section reviews the literature on stakeholder theory, the stakeholders of religious tourism, Mazu belief and customs, and the stakeholders and their contributions to the DaJia Mazu pilgrimage.

Stakeholder theory

Stakeholder theory conceptualizes the relationship between an organization and its stakeholders by analyzing the moral and economic outcomes of their interactions (Friedman & Miles, 2002). The achievement of an organization's objectives thus affects and is affected by its stakeholders (Freeman, 2010). To maximize its stakeholders' engagement and support, an organization needs to consider the interests and power of those stakeholders. Therefore, understanding stakeholder influence is essential to stakeholder relationship management for organizational effectiveness and development (Freeman, 2010).

From the perspective of stakeholder relationship management, organizational performance is associated with high levels of trust, cooperation, and information sharing (Donaldson & Preston, 1995; Jones, Harrison, & Felps, 2018). In any organization, various groups and individuals influence and support their organization. Some stakeholders influence the organization more than others (Mitchell et al., 1997). The key stakeholders play a major role in an organization's survival and continued success (Clarkson, 1995). Therefore, assessing stakeholder salience is significant in stakeholder relationship management and stakeholder commitment to organizational objectives (Mitchell et al., 1997).

Similarly, the success of tourism events depends on the engagement and commitment of key stakeholders (Todd et al., 2017). For ecotourism in developing countries, stakeholder engagement and cooperation are significant in its sustainable development (Wondirad et al., 2020). However, without proper stakeholder relationship management, the economic benefits resulting from heritage tourism may create interest conflicts among stakeholders (Li et al., 2020). To strengthen destination development and improve benefit-sharing to its stakeholders, destination planning and marketing also need the involvement of numerous stakeholders (Beritelli & Laesser, 2011). Religious tourism is no exception. Its continued success also rests on all stakeholders rather than just one or more. However, previous studies have not examined the relationship holistically.

The stakeholders of religious tourism

Tourism affects or is affected by various stakeholders. According to the UNWTO's classification (UNWTO, E, 2013), the main stakeholders in sustainable tourism are international development assistance agencies, national government, local government and destination bodies, businesses, employees and related bodies, non-governmental organizations, education and training bodies, local community, and consumers/tourists. In a concise structure, the main stakeholders consist of governmental bodies, host communities, tourists, tourism businesses, and other related sectors (Swarbrooke, 1999). There are also many stakeholders in religious tourism who have a range of roles and exert distinct influences. These stakeholders include the following.

Governmental bodies and political groups

In practice, governments have national and local responsibilities. National governments develop and implement religious tourism policy and strategy, involving legislation, regulation, and standards associated, resource management, infrastructure planning and development, information and marketing, and communication (UNWTO, E, 2013). Local governments implement policy and regulation, plan and direct local strategy, develop local infrastructure, encourage stakeholder engagement and cooperation, provide coordination and support (UNWTO, E, 2013). They are familiar with the unique characteristics of local sacred sites and thus can provide authentic experiences for pilgrims and tourists.

In Saudi Arabia, the government controls the Hajj (Henderson, 2011). For pilgrimage in the region of Vrindavan in India, state government and tour operators that promote pilgrimage as cultural tourism have been significant in transforming the pilgrimage economy (K.A. Shinde, 2010). In the Holy Land, Israeli political groups have used evangelical pilgrimage as a political and ideological instrument (B. Kim et al., 2020). Overall, the influence of governmental bodies over religious tourism depends on the link among the government, political culture, and religion (Henderson, 2011).

Businesses and local economy

As a niche market, religious tourism is one of the largest contributors to tourist flow (K.A. Shinde, 2010). It boosts tourism businesses and local economy. For instance, Holy Week in the Spanish city of Palencia benefits the regional economy and especially the hospitality sectors (Sánchez, Fernández, & Lara, 2017). Similarly, the annual United African Apostolic Church gathering in Vhembe District of South Africa contributes to sales growth of businesses in the host communities (Dafuleya et al., 2017). Another pilgrimage, the Garhwal Himalaya in India has shown that the income of residents along the route earn a higher income by providing services and goods to pilgrims than by practicing agriculture (Sati, 2015). In addition to economic benefits, indigenous religious entrepreneurs have a positive effect on social-cultural connection and religion maintenance (K.A. Shinde, 2010). However, over-commercialization of religious tourism has raised concerns about the preservation of the sanctity of religion (Hung et al., 2017).

Host communities and their residents

Host communities affect and are affected by local tourism development and tourists (Rasoolimanesh, Jaafar, Kock, & Ramayah, 2015). Tourists thus have cultural, economic, religious, and social links with host communities. These links shape the willingness of a community to support tourism development (Rasoolimanesh et al., 2015). Indeed, host communities are important to religious tourism. Their distinct cultures enrich religious tourism and add to the authentic experiences of pilgrims and tourists. In addition, residents' cultural and religious identity influences their perception of religious tourism and visitors (Suntikul & Dorji, 2016).

In Japan, residents around the Kumano Kodo pilgrimage perceived that although tourism development contributed to prosperity, visitors brought traffic congestion, the crowding of leisure facilities, and pollution (Knight, 1996). So far, Kumano Kodo pilgrimage has a minor positive economic impact on host communities, but residents perceive a stronger awareness of tradition and an interest in its conservation (Progano, 2018). Furthermore, the Santiago de Compostela pilgrimage affects host communities in different ways because of variations in the consumption behavior of tourists along the pilgrimage route (Lois-González & Santos, 2015).

Pilgrims and tourists

Pilgrims and tourists contribute to sales growth and local economic development. According to instrumental stakeholder theory, which emphasizes the link between stakeholder management and business objectives (Jones et al., 2018), tourist relation management is essential to continued religious tourism. Governmental bodies and tourism operators must understand the needs of pilgrims and tourists and provide secular and religious attractions that will appeal to the target market. Therefore, many studies (Abbate & Di Nuovo, 2013; Amaro, Antunes, & Henriques, 2018; B. Kim et al., 2020; Liro, Sołjan, & Bilska-Wodecka, 2018) have analyzed the motives, experiences, and benefits of pilgrims and tourists for formulating and implementing strategies in marketing and managing religious tourism. This highlights the significant influence of pilgrims and tourists on religious tourism.

Environment

The environment receives less attention than other stakeholders do. Large-scale religious tourism is likely to cause environmental pollution and congestion (Alipour et al., 2017). In addition, the presence of mass movement of pilgrims may damage the environment (K.N. Shinde, 2007). In the mountain regions of the Garhwal Himalaya in India, pilgrims have severely degraded the landscape along the pilgrimage routes (Sati, 2015). In Mashhad, Iran, religious tourism has improved the environment adjacent to the shrine, but residents generally perceive a negative environmental impact (Alipour et al., 2017).

Mazu belief and customs

In Taiwan, Mazu belief is a folk religion with features of Buddhism and Taoism (Shuo, Ryan, & Liu, 2009). It originated in mainland China in the 10th century and entered Taiwan in the 17th (Shuo et al., 2009). The belief in Mazu, a Chinese goddess, is especially pronounced in residents of Taiwan and coastal areas of mainland China. Her believers pray to her for health, peace, fertility, safety, the solution to a problem, or well-being (UNESCO, n.d.). The devotion to Mazu is a strong cultural bond that encourages individual peace, family harmony, and social concord (UNESCO, n.d.).

Mazu customs includes folk practices, oral traditions, and religious rituals. Mazu worship takes place in believers' home and in Mazu temples every day. Every year, more than 800 Mazu temples in Taiwan and other temples around the world celebrate the goddess' birthday in the third month of the Chinese lunar calendar. The Zhenlan temple at DaJia in Taiwan hosts the largest of these celebrations.

The stakeholders of and their contributions to the DaJia Mazu pilgrimage

The attraction, uniqueness, and status of the DaJia Mazu pilgrimage depend on engaged and cooperative stakeholders. These stakeholders have a variety of roles and exert distinctive influence on the pilgrimage in the following ways.

Governmental bodies

Due to its cultural and religious significance, Mazu belief and customs were added to the list of the intangible cultural heritage of humanity by the United Nations Educational, Scientific and Cultural Organization (UNESCO, n.d.) in 2009. In 2010, the Ministry of Culture in Taiwan designated the DaJia Mazu pilgrimage an important traditional religious and national folk cultural asset (Taiwan Ministry of Culture, n.d.). The Taichung city government designated the pilgrimage as a DaJia Mazu International Cultural Tourism

Fig. 1. The route of DaJia Mazu pilgrimage.
Source: DaJia Zhenlan Temple (2019b).

Festival in 2010 to promote tourism. The governmental bodies have several functions in the pilgrimage. Taiwan Ministry of Culture and Taichung City government subsidize the DaJia Mazu pilgrimage. In addition, the Taichung City government and other governmental bodies, such as Taiwan Tourism Bureau, Changhua county government, and police stations, support the implementation and safety of the pilgrimage (T.H. Lee et al., 2015).

Businesses

Many businesses in Taiwan and around the world donate to the pilgrimage (DaJia Zhenlan Temple, 2019a). They also offer the use of their buildings, equipment, products, or services for pilgrims, tourists, and other stakeholders (Wong, 2013). Some of their employees volunteer to assist with the pilgrimage by offering support for pilgrimage affairs, medical care, and information technology support and service. Furthermore, firms that profit from the pilgrimage are more willing to support it to express their sincere thanks or to enhance their financial performance.

Host communities

The DaJia Mazu pilgrimage was initiated by dozens of pilgrims supported by local believers and communities (Taiwan Ministry of Culture, n.d.). The pilgrimage is an important traditional religious and national folk cultural asset that draws millions of participants. The host communities and their residents remain heavily involved in the pilgrimage. Along the pilgrimage route (Fig. 1), Mazu believers worship the goddess with flowers and incense. They also donate to the organizing and supporting temples, participate in pilgrimage affairs, and share meals with pilgrims and tourists (Liu, Wang, Huang, & Tang, 2019; Wong, 2013). This sharing of food and drink is one of the most interesting elements of the DaJia Mazu pilgrimage (Liu et al., 2019; Wong, 2013). The host community's contributions reflect believers' devotion to Mazu. It is believed that the devotion will be a godsend to the faithful. The enthusiastic involvement of host communities is helpful in increasing the pilgrimage's appeal (T.H. Lee et al., 2015).

Temples

The temples in the pilgrimage are the organizing temple, supporting temples along the pilgrimage route, and at other places. Although the organizing temple, the Zhenlan temple, is neither an original Mazu temple, nor the biggest, it hosts the largest celebrations among 5000 Mazu temples around the world (UNESCO, n.d.). The host temple makes all decisions pertaining to planning, organizing, leading, and supervising the pilgrimage as well as encouraging stakeholder engagement and cooperation. The supporting temples coordinate pilgrimage affairs with their community residents and firms. This includes organizing groups of pilgrims and tourists, raising funds for celebrations, or participating in religious ceremonies along the pilgrimage route.

The pilgrimage route passes more than 100 supporting temples (Liu et al., 2019). These temples are gathering places for businesses, temples, pilgrims, tourists, and host communities. They also compete with each other by offering worship and rituals, fashion shows, fireworks, martial arts performances, parades, religious art and architecture, or entertainment. The competition enriches the pilgrimage.

Pilgrims and tourists

The DaJia Mazu Pilgrimage welcomes pilgrims and tourist, some staying for a few hours and others making the full pilgrimage. Anyone can participate by bicycle, bus, car, foot, motorcycle, or other transportation (Cheng & Chen, 2014). Along the route,

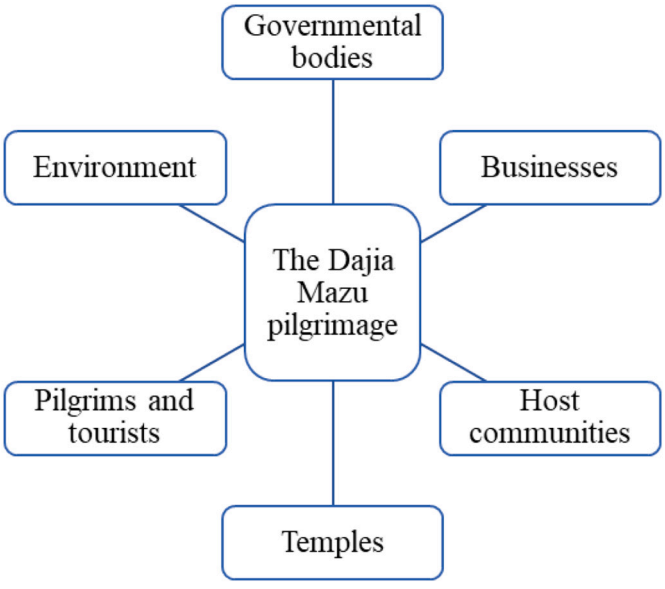

Fig. 2. The six possible stakeholders of DaJia Mazu pilgrimage.

businesses, host communities, temples, and residents provide food and drink, medical service, showers, transportation, and laundry at no charge (Wong, 2013), showing the piety of Mazu believers. The time, cost, and convenience barriers to participate in the pilgrimage are thus reduced substantially and attract more participants. The contributions of pilgrims and tourists to the DaJia Mazu pilgrimage include pilgrims' engagement, tourists' engagement, and their donations. In general, after taking part in the pilgrimage, pilgrims and tourists have a unique cultural, emotional, intellectual, leisure, religious, physical, or spiritual experience (T.H. Lee et al., 2015).

Environment

With millions of participants in nine days, the DaJia Mazu pilgrimage is the cause of environmental damage (Cheng & Chen, 2014): air and noise pollution, garbage and other wastes, overcrowding, and traffic congestion. Air and noise pollution are caused by incense and fireworks. According to the folk religion, incense is a part of worship and ritual and firecrackers drive away threats.

After reviewing the literature, a group of experts was recruited to select the possible stakeholders and their contributions of the DaJia Mazu pilgrimage. The group comprised seven experts: one government official in tourism; one top manager from corporate donors; one representative of host communities; one host temple council member and one council chairpersons of supporting temple; and two academics in religion and religious tourism. They are also pilgrims or tourists.

The experts selected six possible stakeholders (Fig. 2): governmental bodies (*SG*), businesses (*SB*), host communities (*SH*), temples (*ST*), pilgrims and tourists (*SP*), and environment (*SE*). They also identified 18 possible contributions: (1) identity and designation (SG_1), subsidy (SG_2), and pilgrimage affair supporting (SG_3) form governmental bodies; (2) monetary donation (SB_1), in-kind donations (SB_2), and corporate volunteering (SB_3) contributed by businesses; (3) donation (SH_1), large-scale food and drink sharing (SH_2), and general pilgrimage affair engagement (SH_3) of host communities; (4) organizing temple's management (ST_1), the assistance of supporting temples along the pilgrimage route (ST_2), and the support of other temples around Taiwan (ST_3); (5) pilgrims' engagement (SP_1), tourists' engagement (SP_2), and donations from both (SP_3); and (6) air pollution (SE_1), garbage and other wastes (SE_2), and noise (SE_3) caused by the pilgrimage.

Research methodology

Religious tourism affects or is affected by many stakeholders, each with its own meaning and significance. Since this study evaluates the stakeholder salience of religious tourism, the evaluation is a comprehensive and complex problem. As a result, it needs a flexible and inclusive answer to the evaluation. Previous studies have examined the relationship between religious tourism and its one or more stakeholders by using quantitative methods such as analysis of variance, factor analysis, and structural equation modeling. They can ascertain whether one stakeholder is significant or not. However, they cannot explain the complicated phenomenon of religious tourism.

Multi-criteria decision making (MCDM) is widely used to solve complex scenarios with various criteria and objectives in business ethics, corporate social responsibility, management, and operations research. It quantifies the subjective judgements of group experts and arrives at a group consensus (P.T.W. Lee & Yang, 2018). Among MCDM methods, analytical hierarchy process (AHP) is designed to systematize complex problems and capable of evaluating the relative importance of critical factors and their sub-factors of the research questions (Saaty, 1991). Its evaluation results are superior to other approaches such as eigenvector, weighted least square, and entropy methods (Tsaur & Wang, 2007). Therefore, this study uses AHP method to analyze the stakeholder salience of religious tourism.

In reality, human language, judgment, and decision are generally subjective and contain vague characteristics (Zimmermann, 2010). To solve this problem, fuzzy set theory (L.A. Zadeh, 1965) is a suitable technique. It can express subjective linguistic information qualitatively by linguistic terms and quantitatively by a fuzzy set in the universe of discourse and respective membership function (L.A. Zadeh, 1975). Given that the DaJia Mazu pilgrimage is a MCDM problem in a fuzzy environment, this study thus uses fuzzy AHP method to evaluate the relative importance of stakeholders and their contributions in a stakeholder analysis setting. The mathematical description of fuzzy set theory and fuzzy AHP method is shown in Appendix.

Empirical study and results

This section identifies the stakeholders, develops the fuzzy AHP hierarchy, collects data, and assesses the relative importance of stakeholders and their contributions in the DaJia Mazu pilgrimage.

Identify stakeholders and contributions to develop the fuzzy AHP hierarchy

In fuzzy AHP analysis, there are two ways of selecting valid criteria (P.T.W. Lee & Yang, 2018; Lin, Wu, & Tsai, 2020): (1) a pre-survey; and (2) literature review and expert judgment. However, false selections and considerable detail may change evaluation results. After identifying the six possible stakeholders and their 18 possible contributions, this study uses a five-point Likert scale that ranges from 1 for 'not important' to 5 for 'extremely important' to test the validity of the selected stakeholders and their contributions. On the one hand, the Likert-scale questionnaire assumes that stakeholders are independent and does not perform pairwise comparisons among them. On the other hand, fuzzy AHP analysis carries out pairwise comparisons to derive their relative importance. Therefore, the Likert-scale questionnaire both facilitates the identification of critical stakeholders (contributions) and helps to compare their importance with the relative importance measured by fuzzy AHP analysis.

In the Likert-scale questionnaire, 12 experts were asked to identify stakeholders' (contributions') importance and to add any other stakeholders and contributions. The group comprised two senior officers of the Ministry of Culture and Taichung city government, one

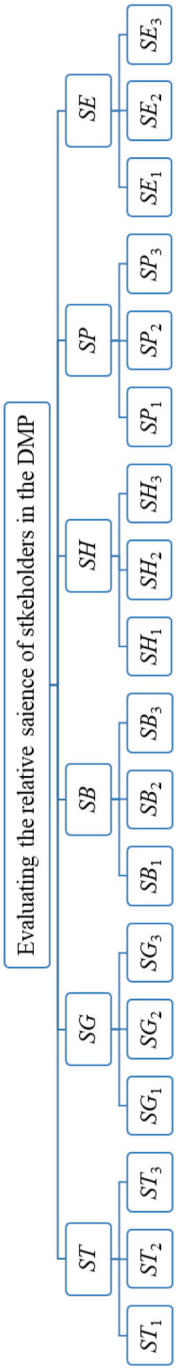

Fig. 3. The hierarchical structure of fuzzy AHP analysis.

top and one senior managers from corporate donors, one council member of the host temple, two council chairpersons of supporting temples, two representatives of host communities, and three academics. They are either pilgrims or tourists. Their responses show that the importance of all stakeholders (Table 7) is higher than 3.000 'moderately important', ranging from 3.250 to 4.833. The results suggest the stakeholders and their contributions selected are acceptable.

According to the selected stakeholders and their contributions, a three-layer hierarchical structure (Fig. 3) is constructed. The first layer shows the goal of evaluating the stakeholder salience of the Mazu pilgrimage. The second layer comprises six key stakeholders. The 18 contributions are placed in the final layer. This hierarchical structure links the successful organization of a pilgrimage, stakeholders, and their contributions into a systematic analysis.

Data collection

In MCDM studies, there is no empirical and theoretical evidence on whether evaluation results would improve with the size of the expert panel (P.T.W. Lee & Yang, 2018). The selection of panel size is thus subjective. Consequently, the size of expert panel is indefinite in MCDM analysis. A group of five to seven experts is sufficient to make decisions (Robbins & Coulter, 2012). For MCDM analysis, a group of 10 to 15 experts is appropriate (Hwang & Lin, 2012). In fact, the requisite panel size is usually not less than 10 (P.T.W. Lee & Yang, 2018).

Similarly, expert selection is quite subjective and no theoretical and empirical standard on the selection exists in MCDM analysis (P.T.W. Lee & Yang, 2018). The explanatory power of MCDM analysis depends on expert judgements, empirical evidence, and theory behind the research objective (P.T.W. Lee & Yang, 2018). For fuzzy AHP applications, expert experience and knowledge capable of understanding and evaluating the features of objective are prominent. Therefore, the selection of group experts is crucial in fuzzy AHP evaluation. Since this study examines the salience of stakeholders in DaJia Mazu pilgrimage, the main data sources are the six identified stakeholders. After several exchanges via phone and email, 27 experts involve in the pilgrimage agree to join the survey.

The 27 experts assume multiple roles: government officials in culture (1), tourism (1), and local government (2); top (5) and senior (8) managers of corporate donors; representatives (9) of host communities; council member (1) and managers (2) of host temple, council chairpersons (1), members (2), and managers (2) of supporting temple, and senior pilgrimage volunteers (2); and academics in Mazu faith and custom (2), tourism management (2), religious tourism (1). They are also pilgrims (14) searching for getting closer to the goddess, godsend, healing, vow fulfillment, and salvation, or tourists (13) motivated by secular reasons such as cultural enrichment, curiosity, duty, education and learning, research, nature environment and sport, relaxing, and social interaction. With their influence, social acceptance, claim, or close interaction with other stakeholders, these experts engage in the pilgrimage heavily and

Table 1
Profiles of the group experts.

Basic information	Distribution	Number of experts	Percentage
Age	21–30	7	25.93%
	31–40	5	18.52%
	41–50	5	18.52%
	51–60	6	22.22%
	Over 60	4	14.81%
	Total	27	100.00%
Education	High school	8	29.63%
	Bachelor	13	48.15%
	Master	2	7.41%
	PhD	4	14.81%
	Total	27	100.00%
Attending record (times)	1–3	6	22.22%
	4–6	7	25.93%
	7–9	7	25.93%
	10–12	4	14.81%
	13–15	1	3.70%
	19–21	1	3.70%
	Over 25	1	3.70%
	Total	27	100.00%
Gender	Female	9	33.33%
	Male	18	66.67%
	Total	27	100.00%
The role of experts[a]	Temples	10	14.71%
	Governments	4	5.88%
	Scholars	5	7.35%
	Businesses	13	19.12%
	Host communities	9	13.24%
	Pilgrims	14	20.59%
	travelers	13	19.12%
	Total	68	100.00%

[a] The experts assume multiple roles in the DaJia Mazu pilgrimage.

actively and have the expertise and experience to understand and assess the relative importance of the pilgrimage stakeholders and their contributions. Table 1 shows their detailed profiles.

Evaluate the salience of stakeholders and their contributions

To derive the stakeholder salience via pairwise comparisons, the experts were asked to compare each stakeholder (contribution) with all other stakeholders (contributions) in terms of relative importance based on a 9-point fuzzy linguistic scale (Table 2). Key part of the pairwise comparison survey is shown in Table 3. Following the evaluation procedure of fuzzy AHP shown in the Appendix, the relative importance of stakeholders and their contributions is calculated.

The anonymous responses are transformed and constructed into individual fuzzy pairwise comparison matrix. Each fuzzy pairwise comparison matrix's maximum eigenvalue λ_{max}, random consistency index *RI* (Table 4), consistency index *CI*, and consistency ratio *CR* are then calculated. After several rounds of questionnaire survey, the consistency ratio value for each fuzzy pairwise comparison matrix is smaller than 0.1, indicating that the consistency of each matrix is satisfied. The valid anonymous responses are then integrated into a fuzzy group pairwise comparison matrix (Table 5) by using arithmetic means. Given the fuzzy group matrix, the study calculates the geometric mean of TFNs ($\tilde{Z}_i^T$), fuzzy weights ($\tilde{W}_i^T$), defuzzified weights ($G\left(\tilde{W}_i^T\right)$), and normalized weights (NCW_i^T) of stakeholders (Table 6) and their contributions. Lastly, the normalized and integrated weights of stakeholders (NCW_i^T) and their contributions (ICW_{ip}^T), as shown in Table 7, are computed to compare the relative salience of stakeholders and their contributions in the pilgrimage.

The stakeholders and their contributions are ranked in order of relative importance. Table 7 shows that among the six key stakeholders, temples have the highest relative importance (0.270), followed by pilgrims and tourists (0.235), host communities (0.212), environment (0.130), businesses (0.085), and governmental bodies (0.069). For stakeholders' contributions, the ranking r + cis pilgrims' engagement (0.129), organizing temple's management (0.122), large-scale food and drink sharing (0.089), general pilgrimage affair engagement of host communities (0.078), the assistance of other supporting temples around Taiwan (0.077), the support of temples along the pilgrimage route (0.071), tourists' engagement (0.055), donations from pilgrims and tourists (0.051), garbage and other wastes (0.050), donations from host communities (0.045), air pollution (0.041), noise (0.039), corporate monetary donations (0.036), government's identity and designation (0.027), corporate volunteering (0.026), corporate in-kind donations (0.023), pilgrimage affair supporting by governmental bodies (0.021), and government subsidy (0.021).

Discussion and implications

This section discusses the results of fuzzy AHP analysis and their implications.

Discussion

By setting a threshold value (0.1667), measured as the average of all the measurements of stakeholders' relative importance, to filter out the minor stakeholders, group experts perceive that among the six stakeholders, temples, pilgrims and tourists, and host communities are more important than other stakeholders. The three key stakeholders represent together about 0.717 of prominence, implying that they have more power, legitimacy, and urgency than other stakeholders. Although tourists vastly outnumber pilgrims and supporting participants form host communities and temples, the three primary stakeholders are essential to the development of the DaJia Mazu pilgrimage.

From the perspective of instrument stakeholder theory that focuses on the connections between stakeholder relationship management and the achievement of corporate profitability and effectiveness objectives (Donaldson & Preston, 1995), tourists are crucial for sales growth of tourism businesses and local economic development. Many researchers in religious tourism thus focus on tourists and their social and economic impact. However, in addition to secular interests, all stakeholders in religious tourism share mutual religious meaning and value.

In contrast, normative stakeholder theory analyzes the function of organization or guidelines for organizational management (Donaldson & Preston, 1995). According to the perspective of normative stakeholder theory, religious factors seem to be a fundamental principle because pilgrims and pious residents of host communities are the primary stakeholders and likely to participate in the pilgrimage as an expression of piety. This is different from the traditional stakeholder analysis that centers on economic benefits, moral

Table 2
The linguistic variables and their respective triangular fuzzy numbers.

Linguistic scale for relative importance	TFN	Scale of TFN	Reciprocal scale of TFN
Equal importance (EQI)	$\tilde{1}$	(1,1,1)	(1,1,1)
Moderate importance of one motive over another (MI)	$\tilde{3}$	(2,3,4)	(1/4,1/3,1/2)
Essential or strong importance (SI)	$\tilde{5}$	(4,5,6)	(1/6,1/5,1/4)
Very strong importance (VSI)	$\tilde{7}$	(6,7,8)	(1/8,1/7,1/6)
Extreme importance (EI)	$\tilde{9}$	(8,9,9)	(1/9,1/9,1/8)
Intermediate value between two adjacent judgements	$\tilde{2},\tilde{4},\tilde{6},\tilde{8}$		

Table 3
Key parts of the pairwise comparison survey.

To evaluate the stakeholder salience of DaJia Mazu pilgrimage event, please base on your expertise and experience indicate (✓) the relative importance of stakeholder X (left column) to stakeholder Y (right column) on the pilgrimage event along with the following scales.

Stakeholder X	EI[a]		VSI		SI		MI		EQI		MI[b]		SI		VSI		EI	Stakeholder
	9:1	8:1	7:1	6:1	5:1	4:1	3:1	2:1	1:1	1:2	1:3	1:4	1:5	1:6	1:7	1:8	1:9	Y
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SB
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SH
SG	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	ST
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SP
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SE
SB	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	SH ST SP SE
SH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ST SP SE
ST	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SP
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SE
SP	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SE

Note:

[a] EI (9:1) = extreme importance, VSI (7:1) = very strong importance, SI (5:1) = essential or strong importance, MI (3:1) = moderate importance, and EQI (1:1) = equal importance of stakeholder X over stakeholder Y.

[b] MI (1:3) = moderate importance, SI (1:5) = essential or strong importance, VSI (1:7) = very strong importance, and EI (1:9) = extreme importance of stakeholder Y over stakeholder X.

Table 4
Random consistency index.

Order of matrix n	1	2	3	4	5	6	7	8	9	10
Random index RI	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49

Source: Saaty (1991).

Table 5
The fuzzy group pairwise comparison matrix.

0g	*ST*	*SG*	*SB*	*SH*	*SP*	*SE*
ST	(1,1,1)	(3.49, 4.23, 4.81)	(2.12, 2.58, 3.03)	(1.21, 1.42, 1.64)	(1.17, 1.31, 1.43)	(1.56, 1.90, 2.27)
SG	(0.21, 0.24, 0.29)	(1,1,1)	(0.73, 0.83, 0.94)	(0.35, 0.40, 0.47)	(0.25, 0.28, 0.32)	(0.44, 0.49, 0.56)
SB	(0.33, 0.39, 0.47)	(1.07, 1.21, 1.37)	(1,1,1)	(0.31, 0.36, 0.45)	(0.31, 0.36, 0.44)	(0.49, 0.57, 0.68)
SH	(0.61, 0.70, 0.82)	(2.15, 2.51, 2.82)	(2.23, 2.76, 3.20)	(1,1,1)	(0.87, 0.98, 1.11)	(1.66, 1.90, 2.09)
SP	(0.70, 0.77, 0.86)	(3.09, 3.60, 3.99)	(2.25, 2.77, 3.22)	(0.90, 1.03, 1.15)	(1,1,1)	(1.91, 2.15, 2.35)
SE	(0.44, 0.53, 0.64)	(1.79, 2.04, 2.29)	(1.47, 1.76, 2.03)	(0.48, 0.53, 0.60)	(0.43, 0.47, 0.52)	(1,1,1)

Table 6
The geometric mean of TFNs ($\tilde{Z}_i^T$) and their respective fuzzy weight ($\tilde{W}_{ip}^T$), defuzzified weight ($G\left(\tilde{W}_i^T\right)$), and normalized weight (NCW_i^T) for stakeholders.

	$\tilde{Z}_i^T$	$\tilde{W}_{ip}^T$	$G\left(\tilde{W}_i^T\right)$	NCW_i^T
ST	(1.593, 1.837, 2.065)	(0.209, 0.270, 0.344)	0.272	0.270
SG	(0.425, 0.469, 0.532)	(0.056, 0.069, 0.089)	0.070	0.069
SB	(0.506, 0.572, 0.667)	(0.066, 0.084, 0.111)	0.086	0.085
SH	(1.271, 1.443, 1.607)	(0.167, 0.212, 0.268)	0.214	0.212
SP	(1.424, 1.601, 1.760)	(0.187, 0.235, 0.293)	0.237	0.235
SE	(0.786, 0.880, 0.990)	(0.103, 0.129, 0.165)	0.131	0.130

Table 7
The normalized and integrated weights of stakeholders (NCW_i^T) and their contributions (ICW_{ip}^T).

Stakeholders	NCW_i^T (a)	Contributions	NCW_{ip}^T (b)	ICW_{ip}^T (c) = (a)*(b)
		SG_1	0.392 (1st)	0.027 (14th)
SG	0.069 (6th, 0.141)	SG_2	0.299 (3rd)	0.021 (18th)
		SG_3	0.309 (2nd)	0.021 (17th)
		SB_1	0.425 (1st)	0.036 (13th)
SB	0.085 (5th, 0.148)	SB_2	0.265 (3rd)	0.023 (16th)
		SB_3	0.310 (2nd)	0.026 (15th)
		SH_1	0.212 (3rd)	0.045 (10th)
SH	0.212 (3rd, 0.174)	SH_2	0.420 (1st)	0.089 (3rd)
		SH_3	0.369 (2nd)	0.078 (4th)
		ST_1	0.451 (1st)	0.122 (2nd)
ST	0.270 (1st, 0.195)	ST_2	0.263 (3rd)	0.071 (6th)
		ST_3	0.286 (2nd)	0.077 (5th)
		SP_1	0.551 (1st)	0.129 (1st)
SP	0.235 (2nd, 0.178)	SP_2	0.233 (2nd)	0.055 (7th)
		SP_3	0.216 (3rd)	0.051 (8th)
		SE_1	0.313 (2nd)	0.041 (11th)
SE	0.130 (4th, 0.164)	SE_2	0.384 (1st)	0.050 (9th)
		SE_3	0.303 (3rd)	0.039 (12th)

Note: Numbers in parentheses are the ranks of relative importance and Likert-scale importance, respectively.

values, and ethics of organizational actions (Friedman & Miles, 2002). In addition, many studies (Abbate & Di Nuovo, 2013; Amaro et al., 2018; Shuo et al., 2009) have cited secular desires as the primary reasons for undertaking religious tourism. However, for this highly secularized and commercialized pilgrimage, it is very likely that faith and piety are the core value.

The conclusion that temples, pilgrims, and host communities are primary stakeholders is reasonable. With its millions of pilgrims and tourists, unique activities, important traditional and national folk religious cultural assets, and traditional link between organizing and supporting temples, and host communities, the DaJia Mazu pilgrimage faces no significant competition from other temples. Therefore, its organizers and managers have sufficient leverage over businesses, governmental bodies, and tourists. However, the

organizing temple relies on the engagement and cooperation of supporting temples, host communities, and pilgrims to make the pilgrimage a success. This study indicates that temples, pilgrims, and host communities play a key role in the DaJia Mazu pilgrimage, which is different from pilgrimages in India that depend on leaders of religious sects, ritual priests, and devotees (K.A. Shinde, 2010). Nor is it in line with the pilgrimage to Mecca that Saudi authorities dominate the pilgrimage (Henderson, 2011). In this study, the governmental bodies play only a minor role in supporting the Mazu pilgrimage.

Temples have the highest relative importance (0.270) and their three contributions are essential to the pilgrimage. Among the 18 contributions, organizing temple's management (0.122), the support of temples along the pilgrimage route (0.071), and at other places (0.077) are ranked second, sixth, and fifth respectively. To date, more than 800 Mazu temples in Taiwan are competing for identity, support, and resource from believers, businesses, communities, governmental bodies, and tourists. The organizing temple and its supporting temples formulate and implement a variety of strategies for fundraising, marketing, organizing stakeholders, public communication and relationship, and service to maintain the competitiveness of DaJia Mazu pilgrimage.

For example, the organizing temple shares its identity and resources with more than 100 supporting temples and host communities along the designed pilgrimage route. The supporting temples also provide meeting grounds for temples, pilgrims, tourists, and host communities, contributing to both social and religious connections, as well as trading platforms for businesses and other pilgrimage stakeholders to enhance local economy. In this way, the link among stakeholders is reinforced.

Pilgrims and tourists are ranked second (0.235). Furthermore, among the 18 contributions, pilgrims' engagement has the highest relative importance (0.129); tourists' engagement is seventh (0.055). The results indicate the significance of pilgrims' attitude, motive, behavior, and benefit, but a minor effect of tourists on the DaJia Mazu pilgrimage. It is not in line with the view that tourists are a central factor in religious tourism and tourism. Although previous studies suggest that the boundary between pilgrims and tourists is not clear in today's secular world (N. Collins-Kreiner, 2010; B. Kim et al., 2016), the expert group in this study believes that pilgrims contribute more than tourists to the DaJia Mazu pilgrimage.

After taking part in the long walk, pilgrims and tourists report unique authentic experiences. For this reason, both pilgrims and tourists are more willing to support and repeat the pilgrimage (T.H. Lee et al., 2015). Tourists are likely to share their experience with their families and friends who might become future tourists (Jang & Wu, 2006). The enthusiasm and faith of pilgrims are likely to encourage potential participants. Both have a significant impact on the pilgrimage's sustainable development.

Host communities (0.212) are the third important stakeholder in the pilgrimage. The sharing of food and drink (0.089) and engagement in general pilgrimage affairs (0.078) are ranked third and fourth in stakeholder contributions, respectively. Although host communities are slightly less important than temples, pilgrims and tourists, they are actively involved in the pilgrimage. The results are different from the attitudes, behaviors, and responses of local communities in Christian pilgrimages, the Hajj, and pilgrimages in India. Host communities' passionate engagement and belief in Mazu assist the participants in the pilgrimage and strengthen their link with temples and host communities. In other words, host communities' devotion to Mazu distinguishes the DaJia Mazu pilgrimage from all others.

Implications

In tourism management, tourism authorities and operators need to understand their stakeholders' engagement to differentiate primary from other stakeholders (Aas, Ladkin, & Fletcher, 2005). Without ranking stakeholders, it is difficult to understand their salience for managers to manage stakeholder relationships, formulate strategies, and implement religious tourism. Focusing on highly rank stakeholders' expectations, behaviors, and benefits can help to increase their willingness to engage in and support religious tourism. For the DaJia Mazu pilgrimage, the needs of temples, pilgrims, and host communities should take precedence over those of businesses, governmental bodies, and tourists to encourage their engagement and support.

Stakeholder involvement is critical in realizing sustainable tourism (Li et al., 2020). As religious tourism is a multistakeholder activity, a multistakeholder approach to management is necessary to ensure its sustainable development. This approach comprises attraction, integration, and management (Waligo, Clarke, & Hawkins, 2013). For the DaJia Mazu pilgrimage, temples, host communities, and pilgrims are primary stakeholders. To encourage their involvement, and to meet their physical and spiritual needs by providing a variety of sacred and secular attractions, it is important to involve them in planning, organizing, leading, and controlling the pilgrimage.

Poor interaction and cooperation among stakeholders undermine tourism development (Wondirad et al., 2020). To integrate stakeholders, establishing a long-term strategic relationship among stakeholders would be wise (Saxena, 2005). In such a close relationship, governmental bodies, businesses, host communities, temples, and academia have their own role and responsibility to work toward mutual pilgrimage objectives. This might also benefit those stakeholders by satisfying and balancing their various interests. Lastly, after identifying stakeholder salience, stakeholder relationship management, monitoring stakeholder involvement, and pursuing realizable sacred and secular goals are significant components of stakeholder involvement management.

Conclusion

Pilgrimage is a multistakeholder phenomenon. Its development and success depend on key stakeholders' engagement and cooperation. However, previous studies of pilgrimage and religious tourism have focused on the relationship between a religious tourism activity and its stakeholder(s). Although they can identify whether the relationship is significant or not, they are unable to determine the salience of stakeholders. Therefore, following stakeholder theory, this study evaluates the relative importance of stakeholders and their contributions to the DaJia Mazu pilgrimage.

By using fuzzy AHP method, the evaluation results show that temples, pilgrims, and host communities are more important than tourists, environment, businesses, and governmental bodies. In other words, to formulate strategies, manage stakeholder relationship, allocate resources, and manage the pilgrimage, organizers and administrators should first consider the expectations, attitudes, behaviors, and benefits of the three primary stakeholders. Of the 18 contributions, pilgrims' engagement, organizing temple's management, food and drink sharing, pilgrimage affair engagement of host communities, and the assistance of supporting temples both along the pilgrimage route and at other places outweigh other contributions. Therefore, managers should place these six key contributions at a higher priority without losing sight of the others.

Clarifying the salience of key stakeholders in the pilgrimage is essential not only to its management but also to the understanding of religious tourism. Although this study provides new insights into pilgrimage in a stakeholder analysis setting, it has some limitations. For instance, this study focuses on the annual celebration of Mazu belief in Taiwan, a regional folk religious pilgrimage. Around the world, religions and its related tourism activities differ in beliefs and customs, business and economic environments, culture, political structure, and social conditions. The stakeholder salience is likely to vary across religions and religious tourism activities. Therefore, similar results may not be applicable to other religions, such as Buddhism, Christianity, Hinduism, and Islam, and their related tourism activities. To provide a comparative evaluation and explore various dimensions of religious tourism, future researchers can use similar systematic assessment on religious tourism activities in other religions.

The success of pilgrimage relies on key stakeholder engagement and cooperation. It is essential to examine the perceptions, motives, behaviors, and benefits of pilgrims, temples, or host communities. The examination is significant in understanding pilgrimages and religious tourism. Last, although fuzzy AHP method outweighs other quantitative methods in evaluating the relative importance of criteria in complex decision problems, it relies on the decision-making of a group of experts. The experts are crucial in clarifying and evaluating relevant attributes of the research question. Since fuzzy AHP method uses expert questionnaire, its sample size is not sufficient to draw comprehensive results. When applying fuzzy AHP method or other MCDM approaches, future studies should review panel size and experts' expertise and experience to ensure that the evaluation is valid.

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CRediT authorship contribution statement

1. This study structures the stakeholder salience of a mass folk resinous pilgrimage systematically, which is essential to understanding pilgrimages as well as religious tourism.
2. Clarify the relative importance of stakeholders and their contributions in the pilgrimage.
3. The results indicate that temples, pilgrims, and host communities are more important than travelers, environment, businesses, and governmental bodies in formulating and implementing the pilgrimage.
4. Identify key stakeholders and contributions for organizers and administrators in managing pilgrimages.
5. Provides new insights into management and development for intangible cultural heritage of humanity, pilgrimages, and religious tourism in a stakeholder analysis setting.

Appendix A

Fuzzy sets and fuzzy numbers

Fuzzy set theory offers a rigorous mathematical approach helping to reason vague problems, judgements, decisions, and solutions logically (Zimmermann, 2010). A fuzzy set is described by a membership function assigned to each object a grade of membership valued in the real unit interval between zero and one (L.A. Zadeh, 1965). Greater value of the membership function indicates higher grade of membership.

A triangular fuzzy number (TFN) can be denoted as $\tilde{a} = (m^-, m, m^+)$. The real numbers, m^-, m, and m^+ ($-\infty < m^- < m < m^+ < \infty$), denote the lower bound, the most possible value, and the upper bound of the fuzzy number, respectively. The TFN's membership function $f_{\tilde{a}}(x) : \Re \to [0, 1]$ is defined as follows (Chang, 1996).

$$f_{\tilde{a}}(x) = \begin{cases} (x - m^-)/(m - m^-), m^- \le x \le m, \\ (x - m^+)/(m - m^+), m \le x \le m^+, \\ 0, \text{otherwise.} \end{cases} \tag{A1}$$

The interval $[m^-, m^+]$ represents the extent of fuzziness. The greater the interval, the greater the fuzziness of the fuzzy number.

Let $\tilde{a}_1 = (m_1{}^-, m_1, \text{and} m_1{}^+)$ and $\tilde{a}_2 = (m_2{}^-, m_2, \text{and} m_2{}^+)$ be two TFNs, their fuzzy algebraic operations used in this study are expressed as follows (Chang, 1996; L.A. Zadeh, 1965).

$$\tilde{a}_1 \oplus \tilde{a}_2 = \left(m_1^- + m_2^-, m_1 + m_2, m_1^+ + m_2^+\right), \tag{A2.1}$$

$$\tilde{a}_1 \otimes \tilde{a}_2 = \left(m_1^- m_2^-, m_1 m_2, m_1^+ m_2^+\right), m_1 \ge 0, m_2 \ge 0, \tag{A2.2}$$

$$\lambda \otimes \tilde{a}_1 \cong \left(\lambda m_1^-, \lambda m_1, \lambda m_1^+\right), \lambda \geq 0, \lambda \in \Re, \tag{A2.3}$$

$$\tilde{a}_1^{-1} \cong \left(1/1/m_1^+, 1/m_1, 1/m_1{}^-\right), m_1^- > 0. \tag{A2.4}$$

To provide an appropriate basis for ranking the TFNs, the fuzzy number can be transformed into crisp value through defuzzification. The graded mean integration representation (GMIR) method (Chen & Hsieh, 2000) is an effective technique to solve the defuzzification problem. Given the fuzzy numbers $\tilde{a} = (m^-, m, \text{and} m^+)$, its GMIR value is computed as follows.

$$G\tilde{a} = (m^- + 4m + m^+)/6 \tag{A3}$$

The fuzzy AHP method

The AHP is a systematic method for organizing and analyzing complex decision problems. It uses a pairwise comparison technique to calculate the relative importance of criteria and their sub-criteria based on group experts' subjective judgements. The method is described as follows (Saaty, 1991).

Step 1. Develop a hierarchical structure. This step can offer a concise systematic representation of the complex and unorganized problem. To evaluate the stakeholder salience of DaJia Mazu pilgrimage, this study identifies the stakeholders and their contributions after a detailed literature review, expert judgements, and pre-survey. The subjective linguistic information and judgements is then converted into a structure.

Step 2. Construct a fuzzy pairwise comparison matrix with fuzzy linguistic variables. The fuzzy linguistic scales translate qualitative linguistic terms into a numerical fuzzy set. It is a critical aspect of fuzzy MCDM analysis. According to a 9-point fuzzy scale, this step compares critical factors in term of their relative importance in organizing and implementing a pilgrimage. A fuzzy pairwise comparison matrix A is then constructed and shown as

$$A = \left[\tilde{a}_{ij}\right]_{n\times n} = \begin{bmatrix} 1 & \tilde{a}_{12} & \cdots & \tilde{a}_{1n} \\ 1\Big/\tilde{a}_{21} & 1 & \cdots & \tilde{a}_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ 1\Big/\tilde{a}_{n1} & 1\Big/\tilde{a}_{n2} & \cdots & 1 \end{bmatrix}, i,j = 1,2,3,\ldots\ldots,n \tag{A4}$$

where $\tilde{a}_{ij}$ are positive TFNs and n is the number of factors. This matrix satisfies the reciprocal property $\tilde{a}_{ij} \otimes \tilde{a}_{ji} \cong 1$.

Step 3. Check for consistency. To ensure that experts' judgements avoids biased analysis, it is essential to check the consistency of each fuzzy pairwise comparison matrix. The consistency ratio (CR) is calculated and tested as

$$CR = CI/RI \tag{A5.1}$$

$$CI = (\lambda_{\max} - n)/(n-1) \tag{A5.2}$$

where CI is the consistency index, RI represents a random consistency index, and $\lambda_{\max}$ denotes the maximum eigenvalue of comparative matrix. The acceptable maximum value of CR is 0.1 (Saaty, 1991). If CR>0.1, the fuzzy pairwise comparison matrix is inconsistent and pairwise comparison procedure must be repeated until the consistency requirement is satisfied.

Step 4. Integration of individual fuzzy pairwise comparison matrices. In this step, individual comparison matrices are integrated into a group comparison matrix. The fuzzy group comparison matrix A^T is defined and computed as

$$A^T = \left[\tilde{a}_{ij}^T\right]_{n\times n} = \begin{bmatrix} 1 & \tilde{a}_{12}^T & \cdots & \tilde{a}_{1n}^T \\ 1\Big/\tilde{a}_{21}^T & 1 & \cdots & \tilde{a}_{2n}^T \\ \vdots & \vdots & \ddots & \vdots \\ 1\Big/\tilde{a}_{n1}^T & 1\Big/\tilde{a}_{n2}^T & \cdots & 1 \end{bmatrix}, i,j = 1,2,3,\ldots\ldots,n \tag{A6.1}$$

$$\tilde{a}_{ij}^T = \left(\tilde{a}_{ij}^1 \oplus \tilde{a}_{ij}^2 \oplus \tilde{a}_{ij}^3 \oplus \ldots \oplus \tilde{a}_{ij}^k\right)\Big/k, \forall i \neq j \tag{A6.2}$$

where $\tilde{a}_{ij}^T$ are the integrated TFNs and k represents the number of group experts. Similarly, the integrated group comparison matrices for sub-factors can be obtained by using an analogues calculation.

Step 5. Calculate the fuzzy weights of all factors and sub-factors. The fuzzy weights represent the expert group's mutual judgements. To calculate the fuzzy weights of the integrated group matrix A^T, this study uses the normalization of the geometric mean of the row (Saaty, 1991). The fuzzy weights of the factors $\tilde{W}_i^T$ are calculated as

$$\tilde{W}_i^T \cong \tilde{Z}_i^T \otimes \left(\tilde{Z}_1^T \oplus \tilde{Z}_2^T \oplus \tilde{Z}_3^T \oplus \ldots \oplus \tilde{Z}_n^T\right)^{-1}, \forall i = 1, 2, 3, \ldots, n, \tag{A7.1}$$

$$\tilde{Z}_i^T \cong \left(\tilde{a}_{i1}^T \otimes \tilde{a}_{i2}^T \otimes \tilde{a}_{i3}^T \otimes \ldots \otimes \tilde{a}_{in}^T\right)^{1/n}, \tag{A7.2}$$

where $\tilde{Z}_i^T$ are the geometric mean of the row TFNs. In the same way, the triangular fuzzy weight of sub-factors $\tilde{W}_{ip}^T$, $\forall p = 1, \ldots q; \cdots; \forall p = 1, \ldots r; \cdots; \forall p = 1, \ldots s$, can be calculated by using an analogous method.

$$NCW_i^T = G\left(\tilde{W}_i^T\right) \Big/ \left(\textstyle\sum_{i=1}^n G\left(\tilde{W}_i^T\right)\right), 0 \le NCW_i^T \le 1 \text{ and } \textstyle\sum_{i=1}^n NCW_i^T = 1,$$

Step 6. Defuzzify the fuzzy weights and normalize the crisp weights. This step converts the fuzzy weights of factors $\tilde{W}_i^T$ into crisp weights $G\left(\tilde{W}_i^T\right)$ by using the GMIR method stated in Eq. A3. Similarly, crisp weights of sub-factors $G\left(\tilde{W}_{ip}^T\right)$ can be derived from the fuzzy weights of sub-factors $\tilde{W}_{ip}^T$. Given the crisp weights, the normalized crisp weights of factors and sub-factors, NCW_i^T and NCW_{ip}^T respectively, can be computed as follows.

$$NCW_i^T = G\left(\tilde{W}_i^T\right) \Big/ \left(\sum_{i=1}^{n} G\left(\tilde{W}_i^T\right)\right), 0 \le NCW_i^T \le 1 \text{ and } \sum_{i=1}^{n} NCW_i^T = 1, \tag{A8.1}$$

$$NCW_{ip}^T = G\left(\tilde{W}_{ip}^T\right) \Big/ \left(\sum_{p=1}^{q;\cdots;r;\cdots;s} G\left(\tilde{W}_{ip}^T\right)\right), 0 \le NCW_{ip}^T \le 1 \text{ and } \sum_{p=1}^{q;\cdots;r;\cdots;s} NCW_{ip}^T = 1. \tag{A8.2}$$

Based on the normalized crisp weight, the relative importance of factors can be ranked.

$$ICW_{ip}^T = NCW_i^T \times NCW_{ip}^T, 0 \le ICW_{ip}^T \le 1 \text{ and } \sum_{i=1}^{n} \sum_{p=1}^{q;\cdots;r;\cdots;s} ICW_{ip}^T = 1. \tag{A9}$$

Step 7. Calculate the integrated crisp weights for sub-factors. After calculating the normalized crisp weights of factors and sub-factors, the integrated crisp weights of sub-factors ICW_{ip}^T are computed to facilitate the comparison of the relative importance among sub-factors. They are calculated as follows.

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