HUMAN RESOURCE COMPETENCE IN PROMOTING TOURISM INNOVATION AND TOURIST LOYALTY IN ACEH'S HALAL DESTINATIONS

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Abstract: Innovation in tourism has an appeal to tourist satisfaction and loyalty. This study analyses the relationship between product innovation (halal facilities), process innovation (destination governance), organizational innovation (contribution of local organizations), and marketing innovation (digital promotion strategy) on tourist satisfaction and loyalty in Aceh's halal tourism destinations. This study also evaluates the moderating effect of HR competencies in strengthening the relationship between traveller satisfaction and loyalty. Data were collected from 400 domestic and international travellers using the Cochran sampling technique to ensure population representation. Structural Equation Modeling (SEM) was applied to analyse the cause-and-effect relationship between innovation variables as well as the moderating effect of HR competencies, with strict theoretical validation. The results show that all aspects of innovation have a positive effect on tourist satisfaction, with the highest contributions from process innovation (destination governance) at 46.6% and organisational innovation (local organization contribution) at 24.9%. Tourist satisfaction is the dominant mediator of destination loyalty at 95.0%, indicating that increasing satisfaction almost directly increases loyalty. HR competence contributed 9.4% to loyalty, while its interaction with traveller satisfaction was significant at 5.5%. This study confirms that tourist satisfaction plays a central role as a mediator of loyalty, with process and organisational innovation as key drivers. HR competencies play a critical role in optimizing the impact of innovation, although their contribution still needs to be improved. Practical recommendations include destination needs-based HR training, strengthening governance, and utilising more aggressive digital marketing strategies to expand Aceh's halal tourism appeal.

Keywords: Halal tourism, innovation, traveler satisfaction, loyalty, HR competencies, Aceh

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INTRODUCTION

Indonesia is the heart of the global halal economy, with 229 million Muslims representing the largest Muslim population outside of the Middle East (Asean Briefing, 2025). In 2023, the value of Indonesia's halal market reached approximately USD 279 billion, underscoring the country's substantial contribution to the global halal industry. This market is projected to grow at an extraordinary compound annual growth rate (CAGR) of 14.2 percent, reaching approximately USD 807 billion by 2030 (Asean Briefing, 2025). As the largest consumer market for halal products, Indonesia offers great opportunities in various halal sectors, including halal tourism.

The halal tourism sector in Indonesia has grown rapidly to serve the needs of domestic and international Muslim tourists (Fotina et al., 2024). More than 300 million people make religious pilgrimages every year (Othman et al., 2021). The global Muslim travel market is valued at over USD 200 billion. This value is expected to continue to increase in line with the growth of the Muslim population, which is projected to reach 2.2 billion by 2030 (Asean Briefing, 2025). Current researchers are not only focusing on traditional recreational tourism, world heritage sites, historical sites, or memorial sites, but also on travel services driven by pilgrimage tourism. Areas such as West Nusa Tenggara and Aceh are currently being developed as halal-friendly hotspots. These areas not only offer certified accommodations and prayer facilities but also natural beauty and a strong Islamic cultural heritage to enhance the tourist experience (Sutrisno et al., 2024).

The Halal tourism sector will certainly experience fluctuations influenced by micro and macro conditions (Priatmoko & David, 2021). Therefore, the role of human resources in identifying target markets is crucial to understanding the preferences and needs of tourists seeking experiences that are in line with Islamic principles. This understanding plays a crucial role in attracting Muslim tourists and encouraging them to return (Permadi et al., 2024). Previous studies have noted several important findings, one of which is the significance of destination image, as it can be a crucial construction that influences decision-makers, their post-trip evaluations, and their loyalty to the destination (Sutrisno et al., 2024).

In their research, Yusuf et al. (2019) highlight the close relationship between tourism and economic growth. Although Aceh has great potential in halal tourism, the contribution of the tourism sector to Aceh's GRDP is still low, reaching only

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4.5% in 2022, far below the national average of 6.2% (BPS Aceh, 2023). Another study conducted by Abdul-Sahib Al-Shakry also emphasises that halal tourism must meet several key criteria, namely promote culture and spread Islamic values, bringing economic benefits to Muslim communities, and strengthening the identity and confidence of Muslims amid negative stereotypes about other cultures (Muis, 2020). The increase in interest in halal tourism is also reflected in previous relevant studies, such as those by Battour & Ismail (2016) and Carboni et al. (2014), which show that the growing Muslim population worldwide is driving the rise in interest in halal tourism. This high demand implies the need to mobilise innovation in halal tourism services to meet the expectations of tourists. While the research by Battour & Ismail (2016) and El-Gohary & Eid (2012) emphasises technology-based innovation in halal tourism, the role of human resource competencies as a moderating factor has received less attention. Research by other scholars also focuses on halal tourism in Aceh (Umuri et al., 2022; Yusuf et al., 2021), which primarily discusses aspects of Sharia regulations but has not thoroughly examined the impact of human resource-based innovation on tourist loyalty.

However, the human resource variables present in several research recommendations related to halal tourism are crucial, given that human resources are an integral component of an organisation's success in implementing innovations and best practices. Furthermore, the development of Aceh's tourism has been shaped by information technology literacy, both in terms of destination selection and the utilisation of technology, which requires skilled and reliable human resources to manage it. Nevertheless, the taxonomy of development in business has shown positive results (Adam & Syahputra, 2016). The evolution of information and communication technology (ICT) has transformed various traditional industries, including the tourism sector. The integration of ICT in tourism enables the development of new business models and the enhancement of technology-based services (Bilotta et al., 2021). Therefore, human resource competencies in the tourism sector need to be improved to keep pace with the increasingly popular and available technological developments in the market (Bilotta et al., 2021). The existing reference information base identifies gaps and provides opportunities to comprehensively analyse how human resource-based tourism innovation can enhance tourist satisfaction and loyalty in the context of halal tourism in Aceh. Given the limited academic information examining the role of human resources in halal tourism, this study is expected to contribute theoretically and practically to the development of a more competitive halal tourism destination model in Aceh.

MATERIALS AND METHODS
Product Innovation
Schumpeter' (2021) The theory of "creative destruction" states that innovation is the driving force of economic change through the replacement of old products and processes with new ones. Kotler (1988) emphasises the importance of product diversification as a strategy to meet increasingly diverse market segments. However, in the context of halal tourism destinations in Aceh, the application of the concept of "creative destruction" needs to be re-examined (Desky et al., 2022). On the one hand, product innovation must be able to generate new tourist attractions and increase the attractiveness of the destination while ensuring its harmony with Islamic principles and Acehnese culture (Yusuf et al., 2021; Lestari et al., 2022). Thus, destination product innovation not only prioritises rejuvenation, but also maintains local wisdom and cultural identity that has stood the test of time (Lestari et al., 2023).

Process Innovation
Devanport's (1993) paradigm of process efficiency and Parasuraman et al. (1985) SERVQUAL have long been used as a reference in improving service quality (Othman et al., 2020). Process efficiency, such as fast and precise online reservation, is very important in optimising the operation of tourist destinations. But for halal destinations, process efficiency alone is not enough. There is an urgent need to integrate service personalisation so that aspects such as tourists' special requests can be properly handled by HR (Huda et al., 2021; Saputra, 2021). The concept of efficiency from Hansen (1959) also supports the importance of ease of access, but it needs to be balanced with the ability of human resources (Alfanda & Suhartanti, 2018; Ningsih et al., 2022) to provide responsive services and by Islamic values, including the management of digital marketing in business processes to run well and target as expected (Adam et al., 2020).

Organisational Innovation
Organisational innovation focuses on the establishment of flexible and adaptive internal structures. OECD (2005) and Vangen & Huxham (2003) emphasise that a dynamic organisational structure enables rapid response to market changes. However, in halal destinations, such flexibility must be combined with the consistency of Islamic values and local wisdom (Hariani & Hanafiah, 2023). Collaboration with local stakeholders is key to ensuring that any innovation does not erode the cultural identity that has characterised Aceh. This collaborative approach ensures that any organisational change or innovation remains rooted in the values and principles valued by the local community (Rachmiatie et al., 2024). In addition, good organisational innovation will create superior performance and encourage all those involved in the organisation to give their best contribution (Martunis et al., 2020).

Marketing Innovation
Kotler & Keller (2016) and Chaffey & Chadwick (2019) suggest that digital marketing strategies through social media are key in reaching consumers in the modern era. In halal tourism destinations, marketing campaigns must not only utilise existing digital trends but must also be able to convey authentic Islamic cultural narratives. The roles conveyed through Aceh's social media campaigns should highlight the Islamic values, cultural authenticity, and uniqueness of halal tourism destinations, rather than simply following generic trends that apply globally. Thus, marketing innovation in this sector can integrate cultural values and Sharia principles in promotional strategies.

Traveller Satisfaction

The satisfaction indicators proposed by Dewi et al. (2015) include facilities, cleanliness, services, accessibility, attractions or tourist attractions are factors that are generally measured to assess the quality of the tourist experience. However, in the context of halal tourism, tourist satisfaction must also include aspects of fulfilling spiritual needs. The availability of places of worship, halal dining will affect tourist perceptions. Therefore, although this indicator is generic, it can provide an overview of the quality of services, adjustments to spiritual and cultural needs that are needed so that halal tourism destinations in Aceh can provide a holistic experience.

Destination Loyalty

Ajzen's (1991) and Oliver's (1999) theories state that loyalty is formed through deep satisfaction and repeated intention to visit the destination. In addition, loyalty can also be seen from recommendations given to others. Thus, halal destination loyalty must be seen as a form of long-term commitment that is built on comprehensive satisfaction both functionally and spiritually (Permadi et al., 2024).

HR Competence

HR competence is a critical aspect in the tourism industry. According to Berlo (2007) and Grönroos (1984), professional communication and service skills are key in building satisfying interactions with tourists. In Aceh, human resources not only need to master foreign languages to serve global travellers, but also must understand and integrate values such as khidmah (serving wholeheartedly) which is part of Islamic culture. Thus, HR competency development in halal tourism destinations should include improving technical skills, communication, as well as a deep understanding of local values and wisdom so that the services provided are not only efficient, but also warm and relevant to the local cultural context.

Research Design

This research uses an explanatory and confirmatory quantitative approach. This research model is designed to analyse the relationship between variables with a multi-tier mediation-moderation approach. The variables to be explored are the effect of innovation which includes (product innovation, process innovation, organisational innovation, and marketing innovation) on tourist satisfaction with destination loyalty as a mediating variable and HR competence as a moderating variable. The research model is designed to analyse the relationship between variables with a multi-tier mediation-moderation approach with a modelling structure that includes:

1. Direct Relationship: tests the direct effect between the independent (X) and dependent (Y) variables (Hair et al., 2022).
2. Mediation Relationship: analyses the role of the mediator variable (M) in clarifying the relationship between X and Y (Baron & Kenny, 1986).
3. Moderation Relationship: examines the interaction effect between the independent variable (X) and moderator (Z) on the dependent variable (Y) (Hayes, 2017).

Latent variable measurement model, reflective for variables X, M, Y:
Product innovation (X_1), Process (X_2), Organisation (X_3), Marketing (X_4):
$$X_{jl} = \lambda_{xj.l}X_j + \varepsilon_{jl}; j = 1,2,\ldots,4 \text{ and } l = 1,2,\ldots,L_j \ldots\ldots\ldots\ldots(1)$$
By L_j stating the number of indicators for each variable j
Traveller satisfaction (Y)
$$Y_{1k} = \lambda_{y1k}Y_1 + \varepsilon_{1k}; k = 1,2,\ldots,K \ldots\ldots\ldots\ldots(2)$$
With K stating the number of indicators for the variable Y_1; HRD Competence (M)
$$M_{1r} = \lambda_{m1r}M_1 + \varepsilon_{1r}; r = 1,2,\ldots,R \ldots\ldots\ldots\ldots(3)$$
With R stating the number of indicators for the variable M_1; Destination loyalty (Z)
$$Z_{1s} = \lambda_{z1r}Z_1 + \varepsilon_{1s}; s = 1,2,\ldots,S \ldots\ldots\ldots\ldots(4)$$
With S stating the number of indicators for the variable Z_1
$$Z_{1s} = \lambda_{z1r}Z_1 + \varepsilon_{1s}; s = 1,2,\ldots,S \ldots\ldots\ldots\ldots(5)$$
With S stating the number of indicators for the variable Z_1

Structural relationships: Direct relationship:
$$Y = \beta_{x1}X_1 + \beta_{x2}X_2 + \beta_{x3}X_3 + \beta_{x4}X_4 + \varepsilon_M \ldots\ldots\ldots\ldots(6)$$
Traveller satisfaction and loyalty:
$$Z = \beta_m Y + \varepsilon_Y \ldots\ldots\ldots\ldots(7)$$

Moderating relationships: The interaction effect of HR competencies:
$$Z = \beta_z(M.Y) + \varepsilon_Y \ldots\ldots\ldots\ldots(8)$$

The study population included domestic and international tourists who visited tourist destinations in Aceh in the past 12 months. The sampling technique used stratified random sampling to increase data representativeness (Uma & Roger, 2016). Stratification was based on traveller origin (domestic or international) and monthly income level (low or high). The sample was determined using the Cochran formula for large populations (Cochran, 1977):
$$n_0 = \frac{Z^2 \cdot p \cdot (1-p)}{e^2}$$

Where: Z =1.96 (95% confidence level); p = 0.5 (conservative proportion for unknown population); e = 0.05 (margin of error)

The minimum sample size obtained was 384 respondents. To anticipate non-response and invalid data, the sample size was rounded up to 400 respondents. The data collection process was carried out by filling out a structured research questionnaire designed with a Likert scale, then distributed online, both to local and foreign tourists.

Furthermore, the collected data were analysed using Structural Equation Modelling (SEM) techniques with the help of open source software R-Lavaan 0.6-19 (Rosseel, 2012). R-Lavaan, which is used to test research models and hypotheses directly. In addition, R-Lavaan is highly relevant for analyses with complex structural models. To visualise geographical tourism destinations in Aceh that attract location-based tourists, spatial analysis with the help of a Geographic Information System (GIS) is used. This visualisation was done through thematic maps and processed at the Remote Sensing and Cartography Lab, Syiah Kuala University. Spatial analysis can help identify the geographical distribution pattern of tourists towards tourism destinations in Aceh (Goodchild, 2007).

RESULTS AND DISCUSSION
Respondent Profile

The profile of the respondents showed a male dominance (77.75%). Most of the tourists were from Indonesia (75%), followed by countries such as Germany (5.25%), Netherlands (4.5%), and Malaysia (3%) indicating the global attractiveness of halal tourism destinations in Aceh. The main professions of the respondents were businessmen (42.5%) and private employees (29.25%), with minorities being academics (6.75%) and medical personnel (2.75%). Information related to respondent characteristics can be seen in Figure 1.
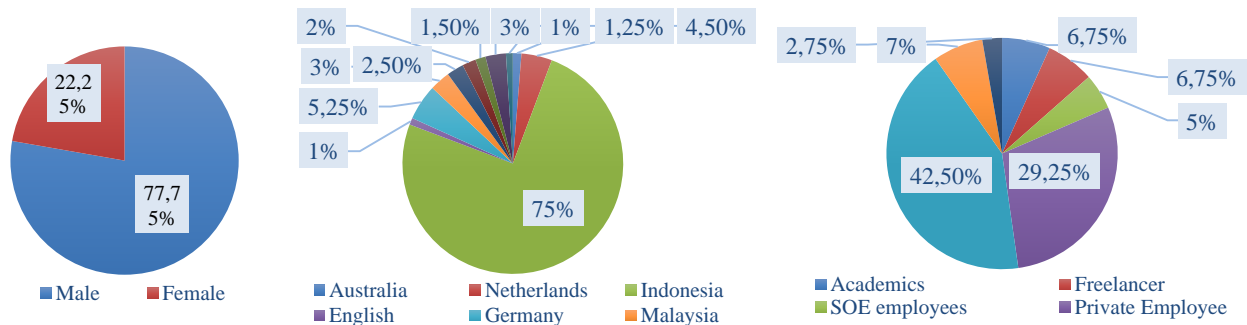

Figure 1. Respondent Profile

Descriptive Analysis

The survey data presented in Table 1 above shows positive perceptions among tourists regarding various aspects of innovation and services in the halal tourism sector in Aceh. The overall average score for all variables ranges from 4.02 to 4.04 (on a scale of 5) with a consistent standard deviation (0.77–0.78), indicating homogeneity in responses.

Table 1. Descriptive Analysis Results

	Dimensions	Average	SD		Dimensions	Average	SD
Variable X1	**Product Innovation**			**Variable Y**	**Traveller Satisfaction**		
	Development of new tourism products	4.11	0.76		Facilities	4.06	0.78
	Uniqueness of tourism products	3.98	0.77		Hygiene	4.00	0.77
	The level of tourist attraction to the new product	4.01	0.78		Services	4.05	0.79
	Average	**4.03**	**0.77**		Accessibility	4.07	0.78
Variable X2	**Process Innovation**				Attraction or tourist attraction	3.99	0.76
	Efficiency of tourism service process	4.11	0.76		Facilities	4.06	0.78
	Technology adoption in travel services	3.99	0.76		**Average**	**4.03**	**0.78**
	Environmentally friendly operational management	4.01	0.78	**Mediating Variable**	**Destination Loyalty**		
	Average	**4.04**	**0.77**		Intention to return to the destination	4.02	0.78
Variable X3	**Organisational Innovation**				Recommend destination to friends/family	4.10	0.77
	Adaptive and innovative organisational structure	4.03	0.78		Loyalty to the destination despite alternatives	4.00	0.77
	Technology-based resource management	4.00	0.77		Positive perception of the destination compared to similar destinations	4.00	0.78
	Creativity in promotional strategy	4.07	0.78		**Average**	**4.03**	**0.77**
	Average	**4.04**	**0.78**	**Moderating Variable**	**HR Competence**		
Variable X4	**Marketing Innovation**				Ability of human resources to communicate with tourists (including foreign languages)	4.07	0.79
	Utilisation of social media and digital marketing	4.00	0.77		HR understanding of local culture and values	4.04	0.79
	Competitive and flexible pricing	4.08	0.78		Ability of HR to handle traveller complaints	4.01	0.78
	Traveller engagement in promotional campaigns (user-generated content)	4.00	0.77		HR capabilities in using technology for tourism services	4.00	0.77
	Average	**4.03**	**0.77**		HR professionalism in providing excellent service	4.00	0.78
					Average	**4.02**	**0.78**

Process and organizational innovation recorded the highest scores (4.04 each), followed by product innovation (4.03). These findings indicate the success of innovation policies in creating standardized halal tourism experiences. Tourist satisfaction (4.03), supported by accessibility (4.07) and destination loyalty (4.03), which is supported by recommendation intent (4.10), demonstrates Aceh's success in building a halal tourism ecosystem that responds to tourists' practical needs and leverages their satisfaction as social capital. Human resource competence scored 4.02 with an SD of 0.78. Although lower than other variables, it still showed a positive response from tourists. The relatively high SD indicates variation in service quality, especially in terms of technological mastery and professionalism (each scoring 4.00). Conversely, recommendation-based loyalty (4.10) and human resource communication (4.07) are critical assets in bridging tourist loyalty.

Measurement Model Analysis

The analysis of the measurement model in Table 2 clearly shows that all main variables have adequate validity and reliability in the innovation construct, although there are significant variations between dimensions.

Table 2. Measurement Model Analysis Results

Dimensions	Items	λ	C.R	AVE	Dimensions	Items	λ	C.R	AVE
Product Innovation (X1)					**Traveller Satisfaction (Y)**				
X1.A	X1.1	0.756	0.804	0.583	Y2	Y1.4	0.815	0.91	0.773
	X1.2	0.895				Y1.5	0.809		
	X1.3	0.614				Y1.6	1.000		
X1.B	X1.4	0.704	0.886	0.725	Y3	Y1.7	0.739	0.877	0.706
	X1.5	0.825				Y1.8	0.848		
	X1.6	1.000				Y1.9	0.924		
X1.C	X1.7	0.757	0.891	0.735	Y4	Y1.10	0.687	0.822	0.607
	X1.8	0.795				Y1.11	0.837		
	X1.9	1.000				Y1.12	0.806		
Process Innovation (X2)					Y5	Y1.13	0.683	0.847	0.652
X2.A	X2.1	0.774	0.826	0.619		Y1.14	0.780		
	X2.2	0.928				Y1.15	0.939		
	X2.3	0.629			**Destination Loyalty (M)**				
X2.B	X2.4	0.649	0.855	0.669	M1	M1.1	0.670	0.862	0.681
	X2.5	0.766				M1.2	0.813		
	X2.6	1.000				M1.3	0.966		
X2.C	X2.7	0.733	0.858	0.673	M2	M1.4	0.717	0.803	0.578
	X2.8	0.740				M1.5	0.847		
	X2.9	0.966				M1.6	0.709		
Organisational Innovation (X3)					M3	M1.7	0.642	0.844	0.651
X3.A	X3.1	0.686	0.850	0.656		M1.8	0.735		
	X3.2	0.864				M1.9	1.000		
	X3.3	0.867			M4	M1.10	0.674	0.871	0.698
X3.B	X3.4	0.751	0.871	0.697		M1.11	0.799		
	X3.5	0.739				M1.12	1.000		
	X3.6	0.991			M5	M1.13	0.756	0.806	0.58
Marketing Innovation (X4)						M1.14	0.748		
X4.A	X4.1	0.624	0.83	0.624		M1.15	0.781		
	X4.2	0.872			**HR Competence (Z)**				
	X4.3	0.850			Z1	Z1.1	0.793	0.873	0.696
X4.B	X4.4	0.758	0.891	0.733		Z1.2	0.828		
	X4.5	0.821				Z1.3	0.880		
	X4.6	0.975			Z2	Z1.4	0.749	0.885	0.722
X4.C	X4.7	0.684	0.846	0.649		Z1.5	0.813		
	X4.8	0.886				Z1.6	0.972		
	X4.9	0.833			Z3	Z1.7	0.675	0.863	0.684
X4.D	X4.10	0.669	0.831	0.626		Z1.8	0.772		
	X4.11	0.739				Z1.9	1.000		
	X4.12	0.940			Z4	Z1.10	0.687	0.846	0.649
Traveller Satisfaction (Y)						Z1.11	0.800		
Y1	Y1.1	0.714	0.853	0.661		Z1.12	0.914		
	Y1.2	0.879			Z4	Z1.10	0.687	0.846	0.649
	Y1.3	0.837				Z1.11	0.800		
						Z1.12	0.914		

Process innovation performs well with C.R. values ranging from 0.826 to 0.858 and AVE values from 0.619 to 0.673, supported by the strength of the service efficiency indicator ($\lambda = 0.928$) and environmental management indicator ($\lambda = 0.966$). On the other hand, product innovation showed specific weaknesses in the dimension of tourism product uniqueness with marginal loading ($\lambda=0.614$) and threshold AVE (0.583), indicating suboptimal measurement of product

differentiation aspects. A similar pattern is observed in marketing innovation, where the utilization of digital media (λ=0.624) has not yet reached the ideal standard, although the overall C.R. remains satisfactory (0.830–0.891). In the outcome construct, tourist satisfaction showed strong reliability (C.R 0.853-0.910) but experienced conceptual weaknesses in the dimensions of hygiene (λ=0.687) and tourist attractions (λ=0.683). Destination loyalty exhibits an interesting polarization in the dimensions of intention to return (λ=0.966) and recommendation (λ=0.847), which are very solid, while loyalty to alternatives fails to meet the minimum psychometric requirements (AVE=0.578; λ=0.709), indicating instability in the measurement of long-term commitment. Human resource competence is the most consistent construct (C.R 0.846–0.885; AVE 0.649–0.722), although two indicators require further optimization. Overall, the model meets the criteria for convergent validity (92% of dimensions have AVE > 0.5).

Structural Model Analysis

The structural model analysis in this study aims to examine the effect of product innovation (X1), process innovation (X2), organisational innovation (X3), and marketing innovation (X4) on tourist satisfaction (Y), as well as its impact on destination loyalty (M) with moderation of HR competence (Z). The results of the analysis can be seen in Figure 2.
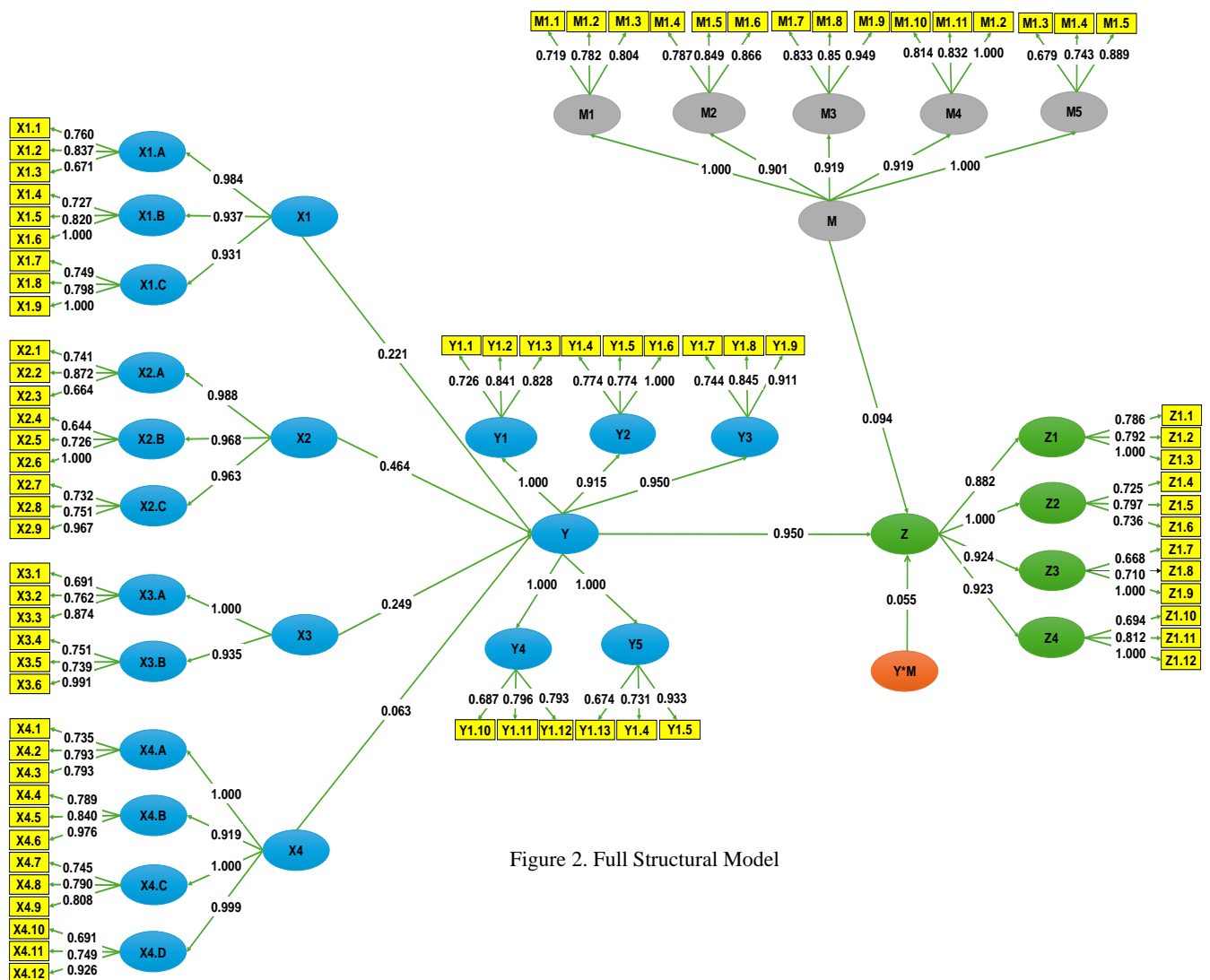

Figure 2. Full Structural Model

Model Fit

Based on the results of the model fit test in Table 3, the model used is considered to have a fairly good fit even though not all indicators meet the ideal criteria. The Chi-Square Ratio value of 3,960 slightly exceeds the ideal threshold (<2), but is still acceptable, especially in research with complex models involving many indicators and moderating variables.

Table 3. Model Fit Test Results

Statistical Measures of Model Fit	Value	Criteria	Conclusion
Chi-Square Ratio	3.960	< 2	The model fits the data reasonably well
CFI	0.844	> 0.90	The model fits the data reasonably well
TLI	0.834	> 0.90	The model fits the data reasonably well
RMSEA	0.086	< 0.08	The model fits the data reasonably well

This is in line with the views of Schumacker & Lomax (2016) who state that the Chi-Square Ratio is sensitive to large sample sizes and model complexity, so higher values are often found in this kind of research. The Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) have values of 0.844 and 0.834 respectively, which are below the ideal threshold (>0.90), but still acceptable in complex models, as described by Hair et al. (2013). This value indicates that the model has sufficient fit to explain the relationship between variables.

Furthermore, the Root Mean Square Error Approximation (RMSEA) value of 0.086 is slightly higher than the ideal threshold (<0.08), but remains within the acceptable range for complex models. Browne & Cudeck (1992) mentioned that RMSEA values close to 0.08 can still be considered feasible, especially if supported by other measures of fit that are close to the criteria. Overall, although not all fit measures reach the ideal value, this model is considered adequate to explain the relationship between the variables of Product Innovation, Process Innovation, Organisational Innovation, Marketing Innovation, Tourist Satisfaction, Destination Loyalty, and Moderation of HR Competence. In research with moderation and high complexity models, a holistic approach in assessing model fit is essential (MacCallum et al., 1996). As such, the model is acceptable for further analysis, with interpretations supported by theory and significant results in structural regression.

Research Hypothesis Test

Based on the results of the analysis in Table 4, it is found that all aspects of innovation, namely product innovation, process innovation, organisational innovation, and marketing innovation, have a positive and significant influence on tourist satisfaction. The coefficient of 0.221 for product innovation indicates that any increase in product innovation will increase tourist satisfaction by 22.1%. This effect is in line with findings in the literature that product innovation can create new value for tourists through the provision of more unique and memorable experiences (Hjalager, 2010; Azis et al., 2020). Similarly, process innovation has the greatest influence among the four innovation variables, with a coefficient of 0.464. This suggests that increased innovation in the way a destination's services or operations are managed can increase tourist satisfaction by 46.4%, supporting the view that process efficiency plays an important role in maximising the tourist experience (Elrehail et al., 2020). In addition, organisational and marketing innovation also contribute positively to tourist satisfaction, with coefficients of 0.249 and 0.063 respectively.

The effect of organisational innovation, although smaller than process innovation, remains significant in creating tourist satisfaction through improved internal management that is responsive to tourist needs.

Marketing innovation, despite having the smallest coefficient, shows that an effective communication strategy in promoting the destination remains relevant in enhancing the traveller experience.

Table 4. Research Hypothesis Test Results

Influence	β	SE	Z-Value	P-Value	Decision
Product Innovation (X1)→ Tourist Satisfaction (Y)	0.221	0.026	8.358	0.000	H0: Rejected
Process Innovation (X2)→ Tourist Satisfaction (Y)	0.464	0.041	11.269	0.000	H0: Rejected
Organisational Innovation (X3)→ Tourist Satisfaction (Y)	0.249	0.035	7.445	0.000	H0: Rejected
Marketing Innovation (X4)→ Tourist Satisfaction (Y)	0.063	0.017	3.650	0.000	H0: Rejected
$R^2_1 = 0.952$					
Tourist Satisfaction (Y)	0.95	0.042	20.919	0.000	H0: Rejected
HR Competence (Z)→ Destination Loyalty (M)	0.094	0.030	2.940	0.003	H0: Rejected
Tourist Satisfaction (Y) HR Competence (Z)→ Destination Loyalty (M)	0.055	0.005	7.244	0.000	H0: Rejected
$R^2_2 = 0.959$					

Traveller satisfaction itself has a very large impact on destination loyalty, with a coefficient of 0.950. This means that an increase in traveller satisfaction almost directly translates into greater loyalty towards the destination. This finding supports previous research showing that positive traveller experiences not only increase repeat visit intentions, but also encourage positive word-of-mouth recommendations (Chen & Tsai, 2007).

In addition, human resource (HR) competence also has a positive influence on destination loyalty, with a coefficient of 0.094. This suggests that competent human resources play an important role in maintaining traveller loyalty, especially through the ability to provide high-quality services. Not only that, the interaction between traveller satisfaction and HR competence also proved significant, with a coefficient of 0.055. This confirms that HR competencies strengthen the impact of traveller satisfaction on destination loyalty. In other words, the level of tourist loyalty can increase more when tourist satisfaction is accompanied by quality services provided by competent human resources. The coefficient of determination shows that the model is very good at explaining data variability.

The R^2 value of 0.952 for tourist satisfaction indicates that 95.2% of the variance in tourist satisfaction can be explained by product innovation, process, organisation, and marketing. Meanwhile, the R^2 value of 0.959 for destination loyalty indicates that 95.9% of the variance in loyalty can be explained by tourist satisfaction, HR competencies, and their interactions. This indicates that the model has excellent predictive ability.

Overall, these results indicate that innovations in various aspects of tourist destinations contribute significantly to traveller satisfaction, which in turn influences destination loyalty. HR competencies also play an important role, both directly and through moderation, in strengthening the relationship between traveller satisfaction and destination loyalty. This finding is consistent with the literature that shows the importance of innovation and human resources in building the competitiveness of tourist destinations (Sigala, 2018). A summary of the analysis can be depicted in Figure 3.
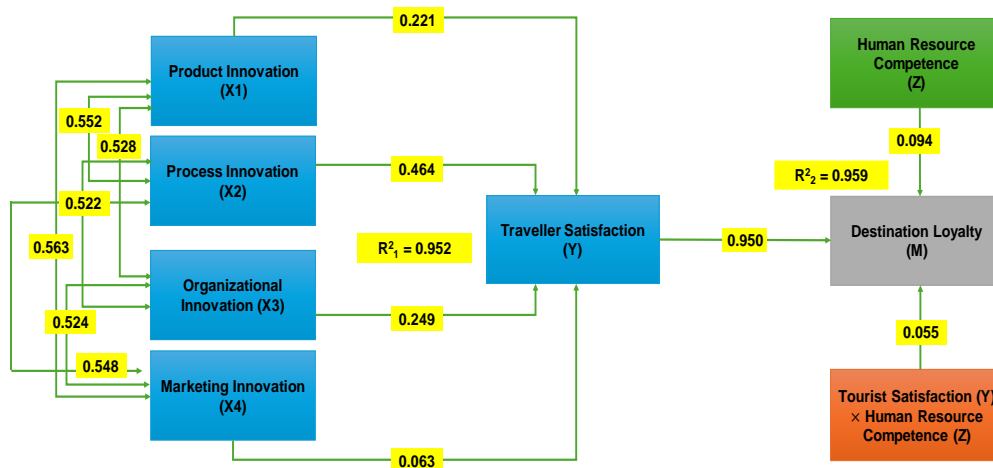
Figure 3. Relationship between variables

Spatial Analysis

Figure 4 above shows the distribution and frequency of visits by both local and foreign tourists over the past 12 months. The figure shows significant disparities among various halal tourism destinations in Aceh that were the subject of this study. Weh Island recorded the highest percentage of visits (20.25%), followed by Alus-Alus Beach (19%). The high number of tourist visits to this area indicates the quality of the local human resources, which makes tourists feel comfortable in obtaining services that enhance their level of satisfaction. Meanwhile, destinations such as Ulee Lheue Beach (8.5%) and Pulau Banyak (11.25%) have relatively low visitation rates, due to the lack of local guides and standard service interactions, making them less appealing to tourists for visits or recommendations.

District	Tourism object	Frequency	%
Aceh Tengah	1. Lut Tawar Lake	70	17.5
Simeulue	2. Alus-alus Beach	76	19
Aceh Besar	3. Lampuuk Beach	47	11.75
Banda Aceh	4. Ulee Lheue Beach	34	8.5
Aceh Singkil	5. Banyak Island	45	11.25
Sabang	6. Weh Island	81	20.25
	7. Rubiah Island	47	11.75

Figure 4. Distribution of Research Objects (Source: Aceh Culture and Tourism Office, 2025;
Spatial Map: Muhammad Rusdi (Syiah Kuala University, Remote Sensing and Cartography Lab)

In the context of the dynamic competition in the tourism business, business actors are increasingly relying on new types of data and analysis to maintain their competitiveness (Sugianto et al., 2019). This condition opens up opportunities for halal tourism managers to take advantage of the digitalization niche, particularly the use of spatial data.

The implementation of geospatial data not only expands market reach and optimizes existing data sources but also aligns with the Indonesian government's One Map Policy initiative since 2016. This study uses spatial data to determine the distribution of local and international tourist visits over the past 12 months in Aceh. Destinations with high visitor numbers often introduce innovations in products, processes, organization, and marketing, as well as offering services based on competent human resources to meet tourist needs. The database and findings further reinforce the role of human resource competence and innovation in enhancing tourist satisfaction and destination loyalty.

CONCLUSION

The research concludes that product, process, organisational and marketing innovations crucially shape tourist satisfaction, which in turn increases destination loyalty. Product innovation, through the development of unique attractions and differentiation-based tourism offerings, not only creates new experiences but also strengthens destination competitiveness. Meanwhile, process innovations, such as the efficiency of reservation systems and the integration of operational technologies, significantly improve comfort and ease of access, which has a direct impact on satisfaction.

On the organisational side, an adaptive and responsive internal structure enables fast and tailored services, while digital-based marketing innovations expand audience reach through modern promotional strategies. These four dimensions of innovation complement each other in building a positive traveller experience.

Furthermore, this study confirmed that tourist satisfaction plays a central role as a mediator of loyalty, where satisfied tourists tend to return and recommend the destination. However, the effectiveness of the innovation was significantly moderated by HR competencies. HR capabilities in communication, service, and understanding of local culture are catalysts that optimise the implementation of innovations, thereby improving the quality of the tourist experience holistically. This finding confirms that the success of a destination depends not only on operational technical innovation but also on its integration with human resource capacity development.

Therefore, destination management strategies need to prioritise the synergy between enhancing multidimensional innovation and continuous investment in HR training to achieve sustainable competitiveness in the modern tourism era.

Critical suggestions for formulating future research agendas

Halal tourism is increasingly becoming a major focus in the development of the global tourism industry, especially in areas with great potential such as Aceh. With its strong cultural and religious background, Aceh has a unique opportunity to develop halal tourist destinations that appeal to domestic and international tourists.

However, to achieve this goal, sustainable innovation and a deep understanding of the factors that influence tourist loyalty are needed. Recommendations for the future in the field of halal tourism innovation in Aceh should focus on several key aspects: Halal Tourism Product Development: Creating tourism packages that include local experiences, halal cuisine, and activities aligned with Islamic values. For example, integrating religious tourism with local cultural activities to attract tourists seeking authentic experiences. Enhancing Human Resource Competencies: Training and skill development for local workers in the tourism industry. Competencies in customer service, cultural understanding, and halal tourism management should be a top priority. This will ensure that tourists feel valued and understood, which in turn enhances their loyalty. Digital Technology and Marketing: Leveraging digital technology to promote halal destinations through social media, mobile apps, and other online platforms.

Effective marketing strategies can attract a wider audience, particularly the digitally connected younger generation.

Future research should go beyond identifying gaps and move toward developing a more structured and actionable agenda. Some areas that require further investigation include Tourist Experience Analysis: Conducting in-depth studies on tourists' experiences at halal destinations in Aceh. This research can explore factors that influence tourist satisfaction and loyalty, as well as how innovation can enhance these experiences.

The Role of Culture and Religion in Tourist Loyalty: Investigating how cultural and religious values influence tourists' decisions to return to halal destinations. This research can provide insights into the importance of integrating local values into tourism product development. Sustainable Business Models for Halal Tourism: Developing sustainable business models for the halal tourism industry in Aceh.

This includes analyzing how collaboration between the government, private sector, and local communities can create a mutually beneficial tourism ecosystem. Social and Economic Impacts of Halal Tourism: Studying the social and economic impacts of halal tourism development in Aceh. This research can help understand tourism's contribution to poverty alleviation and improving the quality of life for local communities. Innovation in halal tourism in Aceh is highly dependent on human resource competencies and a deep understanding of tourist needs. Through critical and targeted research, we can formulate strategies that not only enhance the appeal of halal destinations but also strengthen tourist loyalty, ultimately contributing to economic growth and the well-being of the people of Aceh.

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