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The Power of Human Touch in Elevating High-Tech Tourism for Authentic Experiences and Revisit Intentions

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Abstract:- The adoption of robotic technology in tourism is still very limited. However, this serves as a foundation for integrating robotics based on considerations of human touch and authentic tourism experiences. The presence of human elements in the tourism experience remains crucial. This research examines the impact of robotic in-service encounters on the intention to return, moderated by human touch in Bali. Through a mixed-method explanatory sequential design approach and customer surveys, this study highlights that aspects such as warmth, certainty, attention, and humanly customized content in technology-based high-tech tourism services can moderate positive effects on customer satisfaction and the intention to return. Managerial implications and directions for future research are also discussed to enhance the development of high-tech tourism focusing on authentic experiences and engagement with human touch in service encounters.

Keywords*: Authentic Experiences Human Touch, in Service encounter, Revisit intention, Robotic*.

1. Introduction

The implementation of high technology in tourism can be observed from various aspects, such as marketing through green tourism branding (Chiwaridzo & Masengu, 2023), service encounters as articulated, and the development of virtual tourism (Mou et al., 2023; Van Hanh & Tuyen, 2023; Yang et al., 2023; Zhu et al., 2023). Pencarelli, (2020) explains that the tourism sector is heavily involved in digital transformation, increasingly recognized as Tourism 4.0 or Smart Tourism.

Despite the limited use of high-tech technology such as robotics in the tourism context, examples of its application include the use of high-tech technology in service encounters (Fernandes & Oliveira, 2021; Pitardi et al., 2022; Söderlund et al., 2022; Verhagen et al., 2014; Wu et al., 2021). Chuah et al., (2022) exemplify the use of robotics in restaurants, considering factors such as customer satisfaction and the impact on human interaction. Bitner et al., (2000) describe service encounters in service-oriented sectors such as hospitality or retail as inherent, widely recognized, and critical aspects that shape impressions of the provider.

However, there is a contradiction in the use of robots. Pitardi et al., (2022) explain a gap between managers' enthusiasm for the positive potential of service robots and consumer responses that tend to be negative toward their use. Customer interaction with service robots has the potential to compromise data privacy due to the robot's ability to record, process, and store information from its surroundings, especially if embarrassing situations occur. One crucial decision is finding the right balance between human and technological input, ranging from fully technology-driven encounters (machine-to-machine) to exclusively human interactions (human-to-human) as stated by Larivière et al., (2017).

The use of technology in the form of robots in the tourism sector requires careful consideration, as seen in some hotels in Bali where robots are placed for service encounters. Zeng et al., (2020) explain that robotics and artificial intelligence can facilitate better tourism, although caution is needed. The experience of interacting with robots is based on considerations that still pay attention to the human touch in these interactions. Spencer, (2023) emphasizes that the conception of automation needs to include room for using technology to add meaning and ethics. One consideration is human touch in technology to ensure that tourists continue to have authentic experiences (Gao et al., 2022). Additionally, technology adoption is an effort to create value (Buonincontri & Micera, 2016; S. Gupta et al., 2023). Technology adoption cannot overlook the role of human touch in tourism, especially during service encounters.

Discussion regarding the role of technology and human touch in service encounters has not fully received attention. Little is known about the positive characteristics of service robots that may make them a preferred choice in providing services compared to traditional human interactions (Pitardi et al., 2022). Bretos et al., (2023) explain the increased scientific focus on exploring the application of virtual reality and technology in tourism with the aim of forming a cohesive framework and research in the field of tourism. Çolakoğlu et al., (2023) explain that a more in-depth analysis and comparison between destination types are needed in relation to the adoption of advanced technology to provide more comprehensive insights. Chuang, (2023) emphasizes that technology adoption in tourism is related to tourist behavior and the creation of sustainable value.

This research contributes to expanding the understanding of the impact of human touch in service encounters supported by robots. The adoption of technology in tourism is not only aimed at bringing tourists back but also at creating sustainable value together. Technology adoption is followed by efforts to raise awareness of the meaning of travel experiences for sustainability. Secondly, it connects literature on service robots in service encounter interactions to enhance understanding of how consumers assess the characteristics of service robots. Thirdly, this research opens the door to exploring the potential positive benefits of human interaction, tourists with service robots in the context of service encounters, which has not been widely explored in previous research. The research aims to investigate the impact of robotic in-service encounters on the intention to return moderated by human touch in Bali.

2. Literature Review and Hypothesis Development

Robotic Acceptance in Service Encounter and Revisit intention

The service encounter conceptualizes the service experience as a series of interactions between customers and human employees (Solomon et al., 1985; Surprenant & Solomon, 1987). With technological advancements, this concept has evolved. In the theory of service encounter, the roles of humans and technology are interconnected and can involve various interactions that create the service experience (Wu et al., 2022). Technology has been accepted by consumers (Fernandes & Oliveira, 2021) as part of the service encounter, which is a critical aspect of service (Bitner et al., 2000; Larivière et al., 2017; Ostrom et al., 2019). There is potential for positive benefits from consumer interactions with service robots in specific contexts (Pitardi et al., 2022).

Technology integration shapes a more social and personal service experience, leading to service encounter satisfaction (Makarem et al., 2009; Soderlund et al., 2021; Söderlund et al., 2022; Verhagen et al., 2014) and value creation (van Doorn et al., 2017). Functional elements such as ease, readiness, subjective norms, and social functionality like perceived humanness, perceived social interactivity, social presence drive consumer acceptance of technology (Fernandes & Oliveira, 2021). Friendliness, expertise, and smiling are characteristics of technology implementation in service encounters (Verhagen et al., 2014). Informational and emotional components become crucial aspects of technology acceptance for service encounters (Stock & Merkle, 2017). The high-tech–high-touch conceptual framework aimed at incorporating robots into service encounters has brought about changes in customer value (Benckendorff et al., 2005). The use of robots influences revisit intention (Çakar & Aykol, 2021; Milman & Tasci, 2022).

The acceptance of high-tech technology such as robots in service encounters with features that meet customer expectations can drive the intention to return. Tourists are willing to pay based on the expectations of the service experience delivered by robots (Ivanov & Webster, 2021). Although not dominant, the introduction of robotics in services affects revisit intention based on functionality and service authenticity (K. P. Gupta & Pande, 2023;

Song et al., 2023). Wu et al., (2021) proposed dimensions of robotics in service encounters with experience design for high-tech, high-touch services that encourage revisit intention. Personalization of robot products in services enhances loyalty (Cui & Zhong, 2023). Robots personalized with a human touch increase emotional closeness, enhancing attachment. The proposed hypothesis is:

Ha1: Robotic in Service Encounter Influences Revisit Intention

Human Touch in Service Encounter for Revisit Intention

In service encounters, the human element contributes to consumer attitudes and purchase intentions towards service businesses (McLean et al., 2020). In service encounters where tourists have not fully embraced interactive robots for service provision, human touch significantly enhances attitudes and intention to return in tourism. The interaction between robots and human touch holds unique value for tourists. Designers in service encounters involving human-technology interactions play a key role in assisting companies in creating a holistic and positive customer experience throughout the entire service journey (Larivière et al., 2017). Human touch is essential for maintaining a balance between technology and human interactions (Lei et al., 2023), and Wu et al., (2022) assert that humans and technology are not separate entities but work together to create a holistic service experience. The success of service encounters depends on the effective integration of human and technological roles, with human employees bringing a human dimension that is challenging for technology to replicate. McLean et al., (2020) suggest that the assistance of artificial intelligence with human touch influences the intention to purchase. Human warmth, assurance, attention, and humanized content moderate the effects of high-tech service encounters (McLean et al., 2020). The proposed hypothesis is:

Ha2: Human touch strengthens the influence of robotic in service encounter for revisit intention

3. Research Method

This study was designed as a causal study with the aim of testing whether one variable, Robotic In Service Encounter, and interaction with human touch lead to changes in revisit intention. The research was conducted in several hotels that provide robotic services in service encounters in Bali. The tourists targeted were local tourists visiting various tourist destinations in Bali, with a total of 214 hotel visitors as respondents. Data collection was carried out over a one-month period with the assistance of hotel managers, and the selected tourists were those traveling with their families.

Measurement of robotic in-service encounter (Rob) in this research context was based on Wu et al., (2021), utilizing a systematic framework to understand and measure various dimensions of robot involvement in the service experience. These dimensions can influence the values generated by customers from that experience, namely: 1. Robotic Visibility, covering the presence of robots in the service process visible to customers. 2. Robotic Competency, including customers' perception of the robot's ability to provide quality service effectively, efficiently, and consistently. 3. Robotic Performance, encompassing the robot's ability to perform actions that entertain customers. 4. Robotic Co-creativity, reflecting the extent to which the robot allows customers to participate in the service process, such as customizing ingredients and flavors. 5. Robotic Prominence, reflecting the role of the robot in the service process relative to the role of employees.

Measurement of human touch (HT) was developed based on Wu et al., (2022) as positive attributes of staff, such as friendliness, expertise, and smiling, contributing to a warm and personal experience. Measurement of revisit intention (RI) was developed based on Soliman, (2019), comprising three statements: 1. I tend to visit again. 2. I'd love to revisit this destination. 3. I plan to revisit this destination for the next vacation.

Confirmatory Factor Analysis (CFA) was selected as the analysis procedure to measure latent variables and ensure that the indicators used align with the conceptual model and structural relationships within the model. After the model was estimated, model assessment was conducted to evaluate the extent to which the model fits the data. This process might involve modifying the model if necessary to improve alignment with the available data. A goodness-of-fit test was then conducted to assess the quality of the model through various available fit measures. Findings and conclusions from the SEM analysis were compiled as research discussion material.

4. Result

The description of the research variables is as follows:

Table 1. Description statistic

Variable	Mean	Standard Deviation	Category
Robotic in Service encounter (ROB)	4.1	0.422	High
Human Touch (HT)	4.3	0.517	High
Revisit Intention (RI)	4.3	0.628	High

Source: Data processing (2023)

Proposed model:

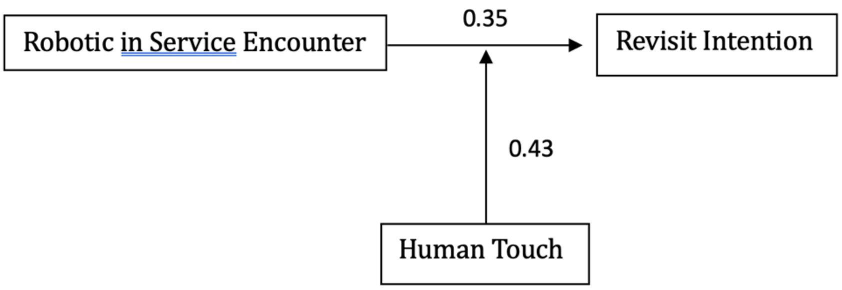

Figure 1. The results of the Standardized Regression Weight test in the research model.

The results of testing the factor weights on each statement indicate that all indicators have the ability to explain changes in the latent variable, with the following outcomes:

Table 2. Regression Weight

Path			Unstandarized Regression Weights	S.E.	C.R.	P	Standardized Regression Weights:
Rob1	<---	Robotic	1,000				0.731
Rob2	<---	Robotic	1,049	0.091	11,571	***	0.779
Rob3	<---	Robotic	1,138	0.097	11,690	***	0.788
Rob4	<---	Robotic	1,046	0.099	10,550	***	0.719
Rob5	<---	Robotic	1,125	0.096	11,760	***	0.796
Rob6	<---	Robotic	1,080	0.095	11,416	***	0.772
Rob7	<---	Robotic	1,040	0.092	11,308	***	0.765
Rob8	<---	Robotic	1,159	0.097	11,910	***	0.803
Rob9	<---	Robotic	1,122	0.098	11,445	***	0.775
Rob10	<---	Robotic	0.947	0.097	9,796	***	0.673
Rob11	<---	Robotic	1,006	0.094	10,726	***	0.733
Rob12	<---	Robotic	1,142	0.098	11,685	***	0.790

Path			Unstandarized Regression Weights	S.E.	C.R.	P	Standardized Regression Weights:
Rob13	<---	Robotic	1,059	0.095	11,105	***	0.752
Rob14	<---	Robotic	0.974	0.091	10,675	***	0.722
Rob15	<---	Robotic	1,045	0.093	11,187	***	0.755
HT1	<---	Human	1,000				0.875
HT2	<---	Human	1,026	0.056	18,319	***	0.871
HT3	<---	Human	1,094	0.056	19,434	***	0.895
HT4	<---	Human	1,021	0.056	18,378	***	0.873
HT5	<---	Human	0.99	0.055	18,104	***	0.867
HT6	<---	Human	1,030	0.055	18,873	***	0.884
HT7	<---	Human	1,020	0.056	18,176	***	0.868
HT8	<---	Human	1,006	0.054	18,667	***	0.879
HT9	<---	Human	0.999	0.055	18,014	***	0.865
HT10	<---	Human	1,007	0.055	18,284	***	0.871
HT11	<---	Human	1,041	0.055	18,811	***	0.883
HT12	<---	Human	1,000	0.054	18,412	***	0.874
HT13	<---	Human	1,011	0.055	18,356	***	0.872
HT14	<---	Human	1,020	0.056	18,351	***	0.872
HT15	<---	Human	0.952	0.052	18,358	***	0.873
HT16	<---	Human	0.971	0.054	17,853	***	0.861
RI1	<---	Revisit	1,000				0.732
RI2	<---	Revisit	1,109	0.106	10,502	***	0.81
RI3	<---	Revisit	0.91	0.09	10,077	***	0.721

The results of the AVE (Average Variance Extracted) test, composite reliability, and discriminant validity are as follows:

Table 3. The results of the AVE (Average Variance Extracted) test, composite reliability, and discriminant validity

Variables	AVE	Composite Reliability	1	2	3
Robotic in Service encounter	**0.574**	**0.909**	**0.574**		
Human Touch	**0.764**	**0.944**	**0.218**	**0.764**	
Revisit Intention	**0.571**	**0.859**	**0.205**	**0.170**	**0.571**

In accordance with the results of the testing, the AVE values are deemed satisfactory, namely for Robotic in Service encounter 0.574, Human Touch 0.764, and Revisit Intention 0.571. The composite reliability test results for each variable > 0.7 indicate high reliability. The discriminant validity testing indicates that each observed variable can distinguish latent variables well, and the discriminant validity is acceptable.

The normality test, using the Kolmogorov-Smirnov method, shows that the data follows a normal distribution, with a P-Value of 0.425, which is greater than 0.05. No issues were found in identifying the model according to the tool used. Assumptions regarding multicollinearity (strong relationships between predictors) and singularity (linear dependence problems) are met. In the test for multivariate extreme data, with a significance level of p less than 0.001, the Mahalanobis D-squared value in AMOS calculations is lower than the chi-square value at a significance level of 0.001. This indicates the absence of multivariate outliers in the data.

Next is the testing of the goodness of fit model, with the following results:

Table 4. Model test results

Absolute Fit Measure				
Goodness-of-Fit	Cut-off Value	Results (initial)	Repair results	Compatibility
p-value (Sig.)	>0.05	0.00	**0.003**	l fit
CMIN /DF	>2>3	1.634		
GFI(Goodness of Fit)	0.90	0.825	0.920	fit
RMSEA(Root Mean square Error of Approximation)	0.08	0.055	0.038	Fit
RMR(Root Mean Square Residual)	0.05	0.155	0.040	Fit
Incremental Fit Measure				
AGFI(Adjusted Goodness of Fit Index)	0.90	0.802	0.903	l fit
CFI (Comparative Fit Index)	0.90	0.951	0.966	Fit
Incremental Fit Index (IFI)	0.90	0.951	0.956	Fit
Relative Fit Index (RFI)	0.95	0.875	0.962	Fit
Parsimonious Fit Measure				
PNFI (Parsimonious Normed Fit Index)	> 0.6	0.826	0.80	Fit
PGFI (Parsimonious Goodness Of Fit Index)	Close to 1	0.728	0.742	Marginal fit
AIC (Akaike Information Criterion)	<462	997	708	marginal Fit
CAIC (Consistent Akaike Information Criterion)	<1536	1.303	1.274	Fit

Source: Data processing (2022)

According to the test results, it is evident that the criteria for goodness of fit, such as absolute fit indices, incremental fit indices, and parsimony indices, have been satisfied after the model is refined. The field data aligns with the construction of the research model.

Subsequently, hypothesis testing is based on the data analysis results, with the following outcomes:

Table 5. Causality test results regression weight

Path			**Estimate**	**S.E.**	**C.R.**	**P**	**Standarized regression weight**
Revisit	<---	Robotic	0.346	0.125	2,775	0.006	0.326
Revisit	<---	Human	0.431	0.144	3,000	0.003	0.339

Source: Regression weight Data processing (2023)

The test results indicate that robotic in-service encounter has a significant relationship with revisit intention, specifically 0.346. Human touch strengthens the influence of robotic in-service encounter with an estimate of 0.431. The study results show that hypotheses ha1 and ha2 are supported.

5. Discussion

In line with previous studies, the integration of technology in service encounters through the use of robots has the potential to enhance customer value, satisfaction with the service experience, and the intention to return, with both functional and social aspects playing a crucial role. Human touch plays a key role in improving attitudes and the intention to return. In the tourism industry, human touch remains irreplaceable, considering that technology is not always the optimal solution. Despite the increased adoption of technology, tourists' experiences are still highly influenced by personal interactions with tour guides, hotel staff, and customer service officers. The intimacy and personal relationships created through human touch are challenging to replace. The human ability to respond with empathy and flexibility provides added value that technology finds difficult to achieve. Social and cultural aspects are also enriched by human touch, which can understand and respond to the specific needs of various cultural backgrounds to interact with the unique diversity of other cultures.

Efforts to integrate robotics into tourism services cannot be separated from the endeavor to humanize services through robots. Both functional and social functional elements, as stated by Fernandes & Oliveira, (2021), are crucial and encapsulated as robotic performance, as conveyed by Wu et al., (2021). Robot characteristics like friendliness, expertise, and smiling in service encounters, as proposed by Verhagen et al, 2018, become essential components in human-robot interactions. Informative and emotional components, as suggested by Stock & Merkle, 2017, are added as robot characteristics developed based on the high-tech–high-touch conceptual framework. Overall, characteristics that can enhance service encounter performance are robots with human-like performance, as indicated by Wu et al., (2021). The values generated by such experiences impact customers' intention to return positively. Positive evaluations of robot engagement dimensions can enhance customer satisfaction and their willingness to return, particularly in the tourism context.

In the tourism context, tourists' demand for authentic experiences has guided the design of interaction in service encounters filled with human touch. The positive and personal elements of services provided by human service employees emphasize emotional connection and social interaction, contributing to satisfying and memorable customer experiences (Wu et al., 2022), ultimately strengthening the intention to return. Human touch is inherent in the characteristics of robots in service encounters, as stated by Fernandes & Oliveira, (2021), such as ease of interaction, perceived humanness, perceived social interactivity, and social presence. Additionally, demonstrating friendliness, expertise, and smiling are characteristics of implementing technology in service encounters (Verhagen et al., 2014), involving emotional components (Stock & Merkle, 2017).

The integration of robotics in service encounters in tourism is essentially an extension of human touch to provide authentic experiences for tourists and reduce service failures while maintaining the privacy concerns expressed by visitors, as mentioned by Pitardi et al., (2022). The role of human touch becomes a balancing act and an effort to alleviate concerns related to data privacy, a concern among visitors. The interaction between humans and robots in service encounters is intended to provide both comfort and security, with the goal of enticing tourists to return for future excursions.

6. Conclusion

The interaction between humans and robots in tourism service encounters shapes an authentic experience by integrating human touch as a balancing element. The success of interaction design in service encounters, involving both human and robot touch, can alleviate privacy concerns while providing comfort and security for tourists. Human touch becomes a key factor in creating a satisfying customer experience, reinforcing the intention to return, and making interactions among tourists, staff, and robots more positive.

Limitation and Future Research Direction

This research has several limitations that need consideration. Firstly, the generalization of findings is confined to the context of hotels in Bali and local respondents, cautioning against applying the results to international environments or tourists. The one-month data collection duration lacks coverage of seasonal variations or changes in customer behavior throughout the year. Although human touch measurements exist, they may not fully encompass the complexity and variations of human touch. It is recommended to broaden the respondent sample and research context for a more holistic understanding. Further development of human touch measurements to include aspects of the complexity of human touch is also deemed crucial. Using a mixed-methods approach, combining quantitative and qualitative methods, could provide a more in-depth understanding of factors influencing revisit intention. Additionally, further research might consider the impact of technological changes and human-robot interactions over time, taking into account the developments and adoption of new technology for the sustainability of the tourism sector.

Theoretical Implication: The evolution of service concepts in the technological era, particularly the use of robots in the tourism sector, is progressing. The interaction between customers and human employees, as outlined by Solomon et al., (1985), is undergoing further development. Human touch is recognized as a key element in fostering positive attitudes and customer return intentions, while robot characteristics serve as an extension of human touch to provide an authentic experience.

Practical Implication: The extension of human touch by robots in creating an authentic experience can be an effective strategy to enhance customer value and increase customers' intention to return. Robot characteristics, such as friendliness, expertise, and smiling, should be considered and optimized to create positive interactions. Developing robots with strong humanistic capabilities, such as the ability to respond with empathy and flexibility, adds value that is challenging for other technologies to achieve, thereby enhancing the customer experience. Adopting a holistic approach that combines human excellence and technology in service encounters can be key to improving service performance and building long-term relationships with customers in the tourism industry.

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