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Influence of Social Norms and Anthropomorphized Roles in Safety Compliance: Mediating Effects of Risk Perception and Behavioral Intention

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ABSTRACT

This study examines pivotal factors influencing safety compliance in the tourism and hospitality sectors, especially focusing on the roles of social norms and anthropomorphized roles with the mediating effects of risk perception and behavioral intention. This study deals with a significant theoretical gap in the literature on social norms and anthropomorphized roles on safety compliance within the tourism and hospitality industry, where a limited theoretical exploration has been made on interaction between these constructs. On the basis of the principle of the Theory of Planned Behavior and anthropomorphism theory, a conceptual model was developed and tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the proposed model. A pilot study was conducted to test the units of measurement instruments and refine the model before the main data collection. The analysis is carried out using ADANCO-PLS v2.4. The data was collected by questionnaire from a sample of domestic and international travelers engaged in tourism and hospitality services. The results suggest that both social norms and anthropomorphized roles significantly affect risk perception and behavioral intention. In addition, behavioral intention emerged as a strong predictor of safety compliance, while risk perception showed a moderate effect. Mediation analysis indicated that risk perception fully mediates the effect of the independent variables on safety compliance, while behavioral intention partially mediates these relationships. The findings offer theoretical contributions and practical implications for how these considerations affect safety behaviors among travelers and how such understanding can be supportive in successful safety communication.

1. Introduction

Tourism is increasingly open to different threats and risks (e.g., terrorist attacks, disasters, economic crises, epidemics, and new viruses). These threats may have affected tourism activities, image, and financial stability (Elshaer et al., 2023). According to Anichiti et al. (2021),

tourism security can be affected by unfavorable external events, which are classified by several human agents. The source can be defined as nature-run events (e.g., typhoons and earthquakes) and deliberately ordered incidents (e.g., industry accidents, airplane, and terrorist attacks). This change in the approach represents the increasing recognition of the importance of safety in tourism ecosystems. Travelers must be protected from dangers and risks. The famous theory of human needs proposed by (Priolo et al., 2025) classifies these needs into five levels: physiological, safety, belongingness and love, esteem, and self-actualization.

Despite the increasing safety precautions which are implemented by tourism destinations to protect travelers (Ruan & Deng, 2024). Many travelers Disregard safety warnings and engage in risky behavior, forming the dangers of potential accidents and injuries (Huang et al., 2023), drowned, and fall under photographs in the surrounding area of a stone (Crowley-Cyr et al., 2022; Huang et al., 2023). This active negligence is often caused by a lack of knowledge or understanding of potential danger. Many accidents are eligible to be stopped. It is necessary to understand which communication strategies are most effective in affecting safety compliance behaviors to influence that safety efforts are instructive. In addition, the severity of risk perception may increase travelers' decision-making and frequent safety communication requirements. Social norms (i.e., descriptive and injunctive) affect positively individual secure behavior (Ruan & Deng, 2024). They also act as behavioral signals, encouraging travelers to follow the traveler place norms and to look out for themselves (Kortenkamp et al., 2021). In relation to information material, social norms can provide good references to format tourism safety communication. These norm adaptions can also provide travelers to act more responsibly to promote a sense of mutual benefit with host destinations. Anthropomorphism is employed in tourism and hospitality as a marketing and communication strategy (Ding et al., 2022). However, it seems more humanlike and makes people treat those (Song et al., 2024). This anthropomorphization humanizes nonhuman agents and makes travelers happy, bringing them closer to nonhuman agents and supporting good, long-term relationships (Cai et al., 2025). Therefore, this could help to adapt procedures and make them more relatable and emotionally resonating to travelers. Safety compliance is crucial for the operational integrity of most organizations and refers to compliance with specified safety procedures. This commitment provides a risk- compatibility reference and recognizes the importance of individual and organizational behaviors in minimizing potential dangers.

To comprehend the fundamentals of safety compliance, theoretical frameworks that explain how people behave in a social environment can be applied (Pennington-Gray & Lee, 2024). These models can aid in understanding how external and internal pressures (e.g., social pressure and organizational culture) affect decisions about compliance. The facet of immediacy is demonstrated in an easily visible way in tourism and hospitality settings because guest-staff interactions are usually direct. This finding is consistent with Sinclair et al. (2010), they stated that proximal environment development is critical in determining safe behaviors. These immediate behaviors, viewed in micro-proximity, demonstrating the powerful influence on behaviors (Pennington-Gray & Lee, 2024). Once more employees adhere to a given safety norm, increasing the implicit expectation to follow suit. This phenomenon is reflected in Latané and Nida (1981), where group commitment highly affects individual performance. As such, this study seeks to determine the influence of social norms and anthropomorphized roles on safety compliance via risk perception and behavioral intention. Our findings may provide valuable implications for how these considerations affect safety behaviors among travelers and how such understanding can be supportive in successful safety communication.

2. Literature review and hypothesis development

2.1. Social norms

A norm is a statement about how someone or a particular type of people is required to act in some situations and is needed necessarily by social norms. Norms are strong determinants for behavior, within the framework that individuals work in different social contexts. There are two subtypes of norms: explicit and implicit. The former can be detected in written documents (e.g., laws, regulations, policies, and formal agreements), and the latter refers to unspoken or written rules, that are not been written but which are understood or appeared upon community members (Wasaya et al., 2024). Explicit norms are often easy to use because they are written down. However, implicit norms reflect the differences in opinions between the members of society. Norms are the basis of behavioral intentions, and they are rules of behavior (Reese et al., 2019). Such norms are crucial forces for social integration, as they control behavior and direct travelers to predicted behavior.

Honest behavior results from norms and is recognized as significant determinants of travelers' decision-making (Wang & Zhang, 2020). In the tourism and hospitality context, norms affect everything from environmentally routines to local cultures. Social norms fall into two types: descriptive and injunctive norms (Ruan & Deng, 2024). Descriptive norms refer to the prevalence of a given behavior in society or how most people behave. These norms guide individuals in assessing what is normal or acceptable in a particular situation. Injunctive norms concern what most other people approve or disapprove of and what people should conduct based on cultural or moral values. Descriptive norms reflect what travelers do, while injunctive norms reflect what travelers should accomplish for approval. These social norms induce herd behaviors (Kang et al., 2021), which converts interpersonal behaviors. Hence, this may lead to conformity when travelers stick to behavioral norms, which tends to interfere with group-level decision processes.

٢.2. Anthropomorphized roles

The concept of anthropomorphized begins with the dual categorization of anthropomorphized cognition and visual anthropomorphism (Barney et al., 2022). This is based on a common human schema which assists us in thinking and discussing non-human entities. Based on this visual principle, where the travelers enjoyment of animal-shaped products may paraodically be connected to their ability to recognize cognitive analogy to human schema rather than imagining services have been revived (Murtaza et al., 2024). As human-like attributes can make objects softer and less intimidating, they become easier to remember and more moving. The other type of anthropomorphized, cognitive anthropomorphism, problems attributing humanlike mental states to non-human subjects and might result in social behavior activation. This non-humanistic form of empathy involves possessing non-human minds which means they ought to be treated as humans with feelings (Barney et al., 2022). Travelers may feel psychologically bonded through emotional attachment to objects, evoking more favorable perceptions and interactions. Cognitive anthropomorphism seems to pertain more closely with the ability to regard an entity with human-like attributes who actually feel something, and whose perception would induce empathy.

2.3. Risk perception

Risk perception is a person's subjective risk judgment or appraisal. While the technical estimation of risk concerns the rational computation of experiencing the probability of negative consequences associated with a given hazard and their severity, a large body of research in psychology and behavioral science has demonstrated the importance of intuitive, affective, and emotional responses that people attach to stimulus in determining hazard perception and reactions to it (Priolo et al., 2025). The risk model holds that feelings and emotions proceed and may guide deliberative risk judgments and behavioral responses (Loewenstein et al., 2001).

These affective responses, which relate to fear, anxiety, or trust, can strongly determine how far individuals will judge damage and often contribute to overestimation or underestimation of actual risks.

In this context, risk perception has been revised as a multidimensional construct in recent years. For instance, Wilson et al. (2019) proposed that risk perception could be conceptualized as a three-dimensional concept that includes the subjective perception of exposed to a given hazard, the subjective perception of risk severity of its potential negative consequences, and reactions toward this risk. Hence, this suggests that travelers compute risk and perform emotional appraisals that affect their global evaluation and decisions. With online business and information asymmetry, it is easy for travelers to have risk cognition during booking and residence. This sense of not knowing is amplified when booking digitally, where travelers cannot meet and cannot see the place bookings are being made for.

Consequently Du et al. (2025) discovered that travelers consider security risks when they shop online. As their risk perception increases, they do risks in online environments, which dampen their willingness to be risk-takers. The impact of financial loss, data theft, or fraud is exacerbated when transactions are conducted remotely, resulting in further wariness when it comes to making bookings. Regarding risks in-stay, the extant literature has attempted to categorize them into several kinds, which include performance, financial, social, time, and safety. These factors reflect comprehensive traveler concerns, including service delivery quality and the potential to affect overall satisfaction and loyalty towards tourism and hospitality services.

2.4. Behavioral intention

Mamahit et al. (2013) showed that traveler behavior is influenced by environment, individual differences, and psychological factors. Travelers are influenced by the environment they reside in. Traveler purchasing decisions are influenced by complex factors, including cultural, social class, personal, family, and situational. Five external factors shape traveler behavior: traveler resources, motivation, knowledge, attitudes, personality, lifestyles, and demographics. These unique aspects can give marketers insights into what drives travelers and holds them back when they make purchasing decisions. Psychological issues are also essential, providing foundations for psychological traveler behavior patterns to evolve based on information processing, learning, and attitudinal and behavioral changes.

At the same time, Islam et al., (2024) defined factors of traveler purchasing in which he outlined three big ones as follows: the first dimension is individual differences, at which the sources of traveler selections are traveler individual needs and perceptions of brand features, traveler attitudes, demographic, traveler individuality. These components decide on the basis travelers' judge one product over another and like one product over another. Second, there are also environmental influences on traveler behavior. Traveler decisions are shaped by brand sights in their proximal surroundings and social interactions. Marketers are actively concerned with encouraging travelers to behave in specific ways, using advertising, promotions, and other marketing actions, and aimed at making travelers more inclined to select a particular brand.

2.5. Safety compliance

Safety compliance behavior of travelers serves as key behaviors of self-protection to travelers' adherence to safety norms and safety-related policies at destinations (Ruan & Deng, 2024). The importance of compliance with safety requirements has an direct impact on traveler safety, experience, and health. There are numerous factors affecting safety compliance behaviors in internal and external dimensions. Otherwise, external factors (e.g., nature environments, cultural activities, and infrastructure in destinations) also affect significantly the degree to which travelers comply with safety protocols (Chen, 2020). A reasonable understanding is required for

the interaction between these drivers to help destinations manage traveler safety and minimize the dangers.

2.6. Hypothesis development

Social norms and risk perception interplay the design of managing responses. Hence, this is a process that Lu (2013) was proposed moves onward with societal implications and feedback playing a shaping role in risk perception and related features. The social amplification of risk framework explicit the complications, noticing that social norms are dynamic rather than static and appear due to the response to collective and individual risks experiences. Social norms depend on cultural, economic, and social contexts and may exaggerate or diminish individuals' risk estimations. The common belief or attitude toward risks that people share can increase perceived threats or make threats seem less severe. When social norms are tilted among specific travelers, they are interested in risk perception targets (Scholderer & Veflen, 2019). However, People who underestimate risks, they are exposed to that are frequent and ordinary, and they believe they are lower at risk than others for contrary events.

Travelers differ in their willingness to take risks and risk preferences are affected by social norms (Kulow et al., 2021). These differences in risk preference are shaped by the surrounding environment, which infuses people with the expected conduct standards. For example, if risk avoidance is held in high regard in society, travelers may view small amounts of risk as more frightening, while in risk-accepting societies, the same risks may be diminished. Accordingly, this study assumes that:

H1. *Social norms have a statistically significant effect on risk perceptions.*

Behavioral intention antecedents have been documented in service value, brand image, service quality, and relationship quality literature (Abubakar & Mavondo, 2014). Social norms are known to be the most critical antecedents of such behavioral intention formation, as people are conditioned by other behaviors and expectations (Ajzen, 1991). Travelers are positively impacted by various norms are more likely to contribute to positive word of mouth about destinations and remain loyal (Wasaya et al., 2022). Social norms affect travelers' intentions (e.g., whether to visit destinations or recommend them to others). Normative influence proved to be an essential part of behavioral intention. In addition, social norms give us an anticipated conception of how to act and perform, and intended actions are based on individuals' behavioral intentions.

Consequently, these norms have been adopted to explain the relationships among service users, providers, brands, or destinations (Narwal & Nayak, 2019). Social norms are decisive determinants of behavioral intentions as they define the right things to do, influencing expectations about those behaviors and delivering reinforcement in social approval or disapproval. According to Wasaya et al. (2022), it is hard to imagine that human society would function adequately without norms in social and behavioral science in traveler loyalty behavior. This argument supports the theory of planned behavior. Thus, this study posits that:

H2. *Social norms have a statistically significant effect on behavioral intention.*

Anthropomorphizing may help to bond with the entity at the emotional level (Kim and McGill, 2011) and foster cooperation (Kulow et al., 2021) that might influence risk assessment. Anthropomorphism roles may elicit a common risk perception, similar to human perception of and responses to risks in decision-making contexts. When facing risks, an anthropomorphized role may be interpreted as a being that understands stakes by decision-makers, reducing the psychological distance between individuals and risks and making decisions look less overwhelming.

In the presence of others, the supportive nature of the group may diminish the effect of anthropomorphized roles on risk perception when making decisions. (Bixter & Luhmann's, 2014). Moreover, the effect of anthropomorphism roles on risk perception has drained attention in several fields (e.g., marketing, economy, and social psychology) (Cui, 2022). However, Kim and McGill (2011) noted that social beliefs and expectations are critical in how anthropomorphized roles are perceived in this context. Therefore, this study assumes that:

H3. *Anthropomorphized roles have a statistically significant effect on risk perception.*

Based on Lee & Oh (2021) findings reinforced by the anthropomorphized theory and mind perception theory, anthropomorphized roles may have a statistically significant influence on behavioral intention. In line with anthropomorphized theory, travelers are more likely to anthropomorphize an advertised brand when it possesses humanlike attributes Anthropomorphized roles improve traveler interaction and provide a more friendly and familiar face. The three-factor theory of anthropomorphism postulates that triggered agency perception serves as a cognitive determinant, while sociality and reflectance are motivational determinants (Song et al., 2024). Travelers are liable to have a stronger emotional connection to brands; this can affect their behavioral intentions. Consistent with mind perception theory, hotel brands will be attributed with abilities to feel experience (Ben Saad, 2024). Hence, travelers anthropomorphize even extinct objects. Perception represents warmth, and act captures competence dimension associated with human perception (Song et al., 2024). Accordingly, this study assumes that:

H4. *Anthropomorphized roles have a statistically significant effect on behavioral intention.*

The rapid development of new technologies, which is combined with systemic changes in demography, environment, and socio-economics, bring with them new and unexpected risks. In the tourism industry, safety incidents or accidents, as investigated by Amaya-Gómez et al. (2023), have zoomed up safety protocol development which leads to a safer way of life where stricter safety precautions are taken and remain on high alert about risks. With such rapidly changing hazards, perceptions of how safe travelers feel and the extent to which they are determined to follow safety procedures are more critical in effectively preventing risks.

Risk perception is the subjective evaluation of threats that are subjective to personal beliefs, attitudes, social values, and safety compliance. Although safety compliance is considered in terms of safety procedures at a given workplace, risk perception operates outside this limited space, and covers individual and collective consciousness of risks (Ben Saad, 2024). According to Sakalli and Arikan (2024), safety culture has its basis in organizational values; risk perception is a more liable. This variation implies that risk perception, as defined by personal experience and cultural context, significantly influences safety behaviors. Thus, this study posits that:

H5. *Risk perception has a statistically significant effect on safety compliance.*

Traveler safety is a top priority in the tourism and hospitality industry. Traveler intention toward attitude, perceptual subjective norms, and perceived behavior control are critical predecessor in devotion of safety measures (Nugraha et al., 2024). Psychological and environmental factors (e.g., safety awareness, trust in hotel management, and information clarity on safety protocols) affect behavioral intention. These elements also affect guest approaches toward compliance with safety measures; guests are more likely to comply with safety practices if they observe competent and transparent safety efforts.

Inspiring a strong level of behavioral intention among guests will create higher compliance with safety processes, which leads to lower risks and higher safety levels. The degree to which

guests follow safety procedures is determined by several factors (e.g., perceived risk, trust in hotel management, and past experiences) (Kokkhangplu et al., 2023). Guests who feel more safe and have trust of control the risk are more likely to demonstrate a positive behavioral intention in complying with safety regulations. Hence, applying health and safety procedures affects perceived value and intentions to visit. Brand awareness also has the potential to attenuate this effect and promote the favorable influence of safety measures on traveler behaviors (Paulose & Shakeel, 2022). Thus, this study proposes that:

H6*. Behavioral intention has a statistically significant effect on safety compliance.*

When travelers are willing to adopt new behaviors, willingness to change behaviors stops and attitudes that follow new behaviors are updated. This attitude change is central because it impacts intentions to comply with new norms or expectations. Based on TPB, behavioral intentions are served as a vital mediator in the link between social norms and safety compliance (Nugraha et al., 2024). The strengths of these theories are that they indicate social norms can impact individual attitudes and intentions directly towards safety compliance. The high risk perception remains more than simple rule-following; evolves merged with behavior (Kokkhangplu et al., 2023).

Risk perception seems to play a central role, as it mediates risk perception and its incidence probability. The greater the perceived risk, the greater the possibility of one will engage in safety convergent behavior when social norms support this behavior (Paulose& Shakeel ,2022). Consequently, this study assumes that:

H7. *Risk perception mediates the relationship between social norms and safety compliance.*

Blut et al. (2023) and Lee et al. (2021) focused on the cognitive effect of anthropomorphism design on traveler behaviors under safety risk situations. Anthropomorphized roles that give human-like characteristics to technology can also enhance travelers' emotional link and perceived duty and engagement. This increased engagement should contribute to an increased intention to comply with safety regulations since travelers feel more responsible for anthropomorphized roles. Perceived risk should be pivotal in this process; the higher users perceive risks while interacting with anthropomorphized roles, the more they are motivated to engage in safety behavior to reduce risks. Anthropomorphized roles could create an emotional association of responsibility and care among travelers, where risk perception and safety compliance will improve. Hence, this is consistent with risk aversion principles; with travelers to adhere to safety rules should they see steeper potential consequences. Therefore, risk perception serve as a central mediator of anthropomorphic roles in safety compliance behavior. Hence, the possible psychological framing of risks may affect the nexus between anthropomorphized roles and safety compliance. Therefore, this study assumes that:

H8. *Risk perception mediates the relationship between anthropomorphized roles and safety compliance.*

Risk perception is determined by traveler characteristics and past experiences they are provided. These diverse factors combined affect risk perception (Lopes-Rafegas et al., 2023). Behavioral intention acts as a mediating variable in this process to affect how social norms are perceived to guide the application of compliance behavior. For instance, travelers' willingness to follow safety recommendations is influenced by social norms that can be observed among their peers, which leads one to behave likewise to what is considered acceptable within this social context. This mediation process is critical in crises characterized by increased risk perception and strong identification with others' expectations. Social norms are determinants of individual and

group behaviors and are relevant when coming to traveler health and safety (Blut et al,2023). Social norms affect safety compliance when travelers experience high behavioral intentions to support these norms. Priolo et al. (2025) suggested that perceived risk is present at societal and cultural levels. These norms shape behaviors and attitudes' acceptability or expectancy and risk perception for noncompliance. Behavioral intentions are a key mechanism through which these norms are converted into actual safety behaviors. Where risk perception is increased, and social pressures are stronger, people are more likely to conform their intentions with prevailing social norms with consequent adherence to safety compliance. Hence, this study assumes that:

***H9**. Behavioral intention mediates the relationship between social norms and safety compliance.*

The mediating effect also established the mediation relationship that behavioral intention underlies the association between anthropomorphized roles and hotel safety compliance. With the control condition, groups that had contact with anthropomorphized safety agents (e.g., virtual assistants or mascots with human-like features) had significantly higher non-adhering risk to safety protocols (Ruan, 2024). Thus, this increased risk perception was associated positively with higher intentions to adhere to safety protocols (Huang et al., 2021). Results revealed that behavioral intentions, which are motivated by risk perception, mediate the association between anthropomorphized roles and safety compliance. Hotel guests or employees who interacted with safety messages transmitted via human-like agents' perceived risk to be more serious. This heightened sense of danger increased their tendency to adhere to safety measures (Alsaad, 2023). The impact of anthropomorphized roles on safety compliance was more robust when risk perception mediated behavioral intention. Therefore, this study assumes that:

***H10.** Behavioral intention mediates the relationship between anthropomorphized roles and safety compliance.*

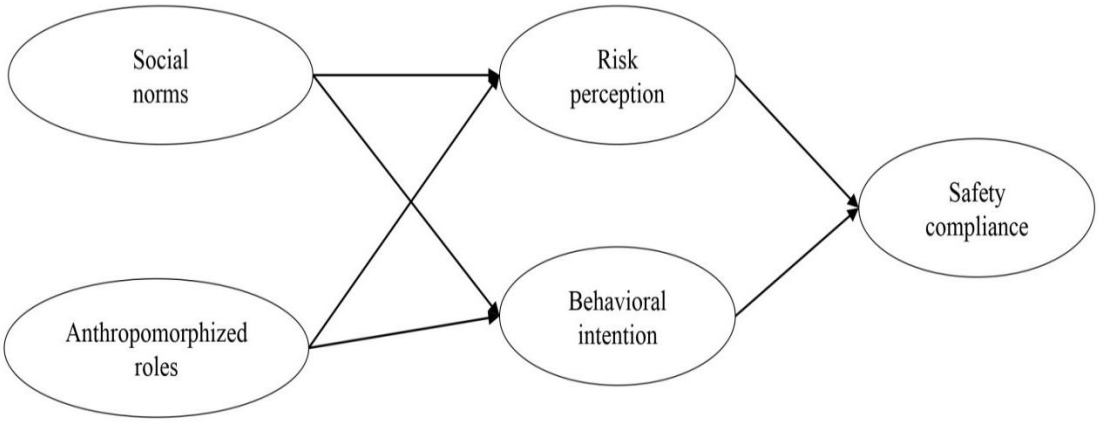

Fig. (1) Research model
Source: Prepared by authors

3. Methodology

3.1. Research design and sampling

This study employs a quantitative research design using a structured questionnaire to investigate the relationships between social norms, anthropomorphized roles, and safety compliance via risk perception and behavioral intention within the Egyptian tourism and hospitality context. Given Egypt's strategic position, Egypt was chosen as the study context. The nation provides an unparalleled feast for history, culture, and leisure, heightened with warm

welcomes to millions of travelers annually worldwide. Recently, Egypt has also been highly concentrating on improvements in safety and quality service based on international tourism trends and traveler expectations, making it a suitable context to investigate determinants that influence traveler intentions and safety compliance actions. In addition, Egypt's tourism services are diverse in that it varies from luxury hotels and ancient historical sites to informal restaurants and local transportation. Hence, this enables investigation of the effects of social norms, anthropomorphism roles, and risk perception in different service encounters.

Egypt's challenge of managing the rise of tourism and safety and service innovations provides additional reasons for its appeal as a case representing existing opportunities in tourism and hospitality sectors. It is driven by a positivist research philosophy that values objectivity, measurement, and statistical analysis to explore the relationships among the variables studied. The target population consisted of domestic and international travelers who engage with tourism and hospitality services. This study aims to gather data from travelers who have recently experienced services (e.g., hotels, traveler attractions, restaurants, and transportation facilities), ensuring that respondents' experiences are existing and relevant to this study's objectives. This study employs a convenience sampling technique due to its practicality and feasibility in reaching the target population. Respondents were selected based on their availability and willingness to participate during their engagement with tourism and hospitality services. Data was collected from travelers at airports, hotels, traveler destinations, and online travel communities.

Travelers are selected as subjects of this study design because tourism and hospitality service customers, travelers are people who directly receive and assess opportunities to interact with social norms, anthropomorphized encounters, and safety compliance behaviors in service scenarios. Their perceptions, intentions, and behaviors offer valuable evidence of how service design and social cues affect safety compliance behaviors in hospitality and tourism settings. Unlike employees and managers, travelers provide an outsider, based-on-experience view that mirrors potential guest reactions to safety messaging, service customization, and decision-making relative to risk. Tourism and hospitality activities are guest-focused, and travelers' intentions and compliance behavior are crucial to developing more effective communication plans, service improvements, and safety measures. In addition, travelers are a diverse group of individuals with different culture-based preferences, expectations, and experiences, and this has enabled researchers to examine the discrepancy in behavioral responses among travel segments and psychographic profiles. This variety widens the collection of results and facilitates more comprehensive implications for theory and practice in tourism management.

Although convenience sampling limits the generalizability to the entire population, it remains suitable for exploratory studies and allows researchers to gain initial insights into behavioral patterns in real-world settings. Given the large size of travelers in Egypt—including domestic and international travelers—the sample size was calculated using Cochran's formula to ensure statistical representativeness. According to recent reports by the Egyptian Ministry of Tourism and the Central Agency for Public Mobilization and Statistics (CAPMAS), the annual number of travelers engaging in tourism and hospitality services in Egypt exceeds 30 million. Since the total population is considered enormous and undefined, Cochran's formula was applied with a confidence level of 95% (Z = 1.96), a margin of error of 5% (e = 0.05), and an estimated response distribution (p = 0.5). The calculated sample size is:

N = Study Population= 45553

Z= 0.95 = 1.96

d = 0.05

p = 0.50

$$n = \frac{N \times p(1-p)}{\left[\left[N-1\times\left(d^2 \div z^2\right)\right]+p(1-p)\right]}$$

n = 381

Thus, a minimum sample size of 384 respondents is deemed sufficient to represent the target population and ensure generalizability of the results.

3.2. Pilot study and back-translation approach

A pilot study was assumed to test the reliability, clarity, and validity of the research instrument before the complete survey was taken. The pilot test 100 travelers who were invited and 68 out of them were accepted to be of the target population as international and domestic travelers who visited and had experience accessing these services. Respondents were recruited at airports, hotels, and internet travel forums. Respondents were also invited to comment on obvious items or not, each item's importance, and response options. Pilot feedback recognized minor language vagueness and cultural crank wording in several items; those based on risk perception and anthropomorphized roles. Hence, this required minor modifications to better word items and rephrasing challenging terms. Since the original instrument was created in English to be used on bilingual respondents, a thorough reverse-translation process was followed to sustain item semantic and conceptual equivalence. First, three bilingual translators, who are fluent in English and Arabic with experience in tourism and hospitality terms, translated the English version of this survey into Arabic.

The Arabic-translated version was back-translated by two-second bilingual translators who were unaware of the original English version to test for translated accuracy and cultural relevance. Measuring items translated were compared to the original version to identify any deviances or loss of meaning in translation or cultural misinterpretation that could affect how respondents could comprehend qualitative content. Accordingly, indirect differences were detected in the items of risk perception and anthropomorphic roles. This conflict in these translations was fixed in group sessions between translators and the authors and matched the reason behind translation. For example, terms (e.g., safety compliance and risk behavior) were transformed into locally understandable terms used by domestic travelers other than the original ones. Further, anthropomorphism roles were carefully adjusted based on travelers' experienced relationship to humans in service robots, virtual assistants, and hospitality services.

After responding to pilot feedback and making any final adjustments to reverse translations, the questionnaire was then reviewed for face and content validity by three academic experts in tourism and hotel management. Their comments supported the cross-cultural applicability of the instrument and the accuracy of construct validity. As a result, the final questionnaire was linguistically and culturally matched for Arabic and English speakers in terms of understanding and responding to questionnaire items. This phase strengthened the methodological quality and appointed a reasonable basis for reliable and culturally sensitive data creation among travelers interacting with tourism and hospitality contexts.

3.3. Instruments and data collection process

A structured, self-administered questionnaire was developed to measure the primary constructs which are utilized to collect data for this study. Adapting measures from validated scales in previous tourism, hospitality, and traveler behavior studies to establish theoretical accuracy and content validity were used to develop items. Each construct was measured by three items based on Wang & Zhang, C. (2020) and D'Arco et al., (2023) for social norms, Letheren et al., (2017); Chan & Gohary (2023) and Kwak et al., (2020) for anthropomorphized roles, Priolo et al., 2025 and Khan et al., 2021 for risk perception, Nguyen-Phuoc et al., (2024) and Islam et al., (2024) for behavioral intention, and Omidi et el., (2023) and Chi et al., (2000) for safety compliance. All items were scored on a 5-point Likert scale from 1 "strongly disagree" to 5

"strongly agree". This format was chosen to accommodate fine-grained variances in attitudes and behavioral intentions among the traveler segmentations.

This survey also contained further demographic questions (e.g., age, gender, traveler type, educational level, and travel purpose). This survey was and via Google Form survey platform, which is secure, customizable, and accessible through several devices (e.g., PC, laptops, and mobile phones). To maximize completeness, critical questions were requested and made necessary so that submission was not possible if any of these outcome-related data were missing. In addition, IP filtering was used to minimize the possible effect of multiple entries on dataset reliability.

Data was collected between February and April 2025. The survey link was shared on 1,000 distributed invitations; these were distributed through posting in travel-related online communities with constant postings, partnerships with hotels and traveler attractions, and QR code signs at key airports or traveler centers. A total of 529 questionnaires were returned (a response rate of 52.9%). Hence, this is an acceptable response rate for online surveys in tourism and hospitality research, which are self-administered and voluntary. A total of 16 responses were excluded from those collected due to the presence of outliers in the data and are excluded from the datasets. This large sample size (n = 513) results in increased statistical power of this study and is likely to give more strong implications and findings' generalizability within the population of travelers dealing with Egyptian tourism services.

3.4. Data analysis

Partial least squares structural equation modeling (PLS-SEM) was utilized in testing the research model and analyzing data (Sarstedt et al., 2021). PLS-SEM was used because it is appropriate for exploratory research and predictive modeling and works with highly complex relationships among multiple constructs within limited to moderate samples (Hair et al., 2019). PLS-SEM is suitable when the goal is to radicalize the explained variance to the maximum extent possible (Guenther et al., 2023) and when the theoretical model is explorative (Hair et al., 2020). PLS-SEM also does not assess substantial restrictions on multivariate normality (Vaithilingam et al., 2024). In this paper, ADANCO-PLS v2.4 is an easy-to-use and fully featured environment tool to perform these analyses, including mature visualizations and reporting (Luo et al., 2024). Employing ADANCO-PLS, this study could comprehensively confirm the theoretical model and draw reasonable conclusions from the effects of social norms and anthropomorphized roles on safety compliance in the tourism and hospitality context.

4. Results

4.1. Respondent profile

Table 1 shows respondent information, of which 57.9% were females. Besides, 39.8% of respondents are 30 to below 40 years old. Further, 59.3% of respondents have a bachelor's degree. Regarding traveler type, 53.4% of respondents were domestic travelers, while 46.6% were international travelers. Lastly, 69.4% of respondents traveled to Egypt for leisure, while 30.6% traveled to business.

Table 1. Respondent profile (n = 513)

Category	Frequency	%
Gender		
Male	216	42.1
Female	297	57.9
Age group (years)		
Below 30	99	19.3
30-below 40	204	39.8

40-below 50	177	34.5
50 and above	33	6.4
Education		
High school	86	16.8
Bachelor	304	59.3
MSc/PhD	123	24
Traveler type		
Domestic	274	53.4
International	239	46.6
Travel purpose		
Leisure	356	69.4
Business	157	30.6

Source: Prepared by authors

4.2. Measurement model estimation

Construct reliability and validity were first checked in the measurement model (Hair et al., 2019). Factor loadings of items were examined to verify the unidimensionality of the measurement indicators (Sarstedt et al., 2021). As shown in Table 2 and Figure 2, all item loadings were more significant than the suggested minimally acceptable level of 0.70, inferring that each item was a good indicator of its latent construct (Hair et al., 2020). This result backed up the reliability of an item-to-item level recommended for a strong measurement model. Further, we evaluated convergent validity with AVE, CR, and Cronbach's alpha values. All constructs recorded AVE scores above 0.50, CR values greater than 0.70, and Cronbach's alpha values larger than 0.70 (see Table 2), indicating internal consistency and constructs' capacity to explain acceptably the variance of their indicators.

Table 2 findings demonstrate great convergent validity (Hair et al., 2020). Next, this study used the heterotrait-monotrait (HTMT) ratio of correlations as a stricter test for discriminant validity (Hair et al., 2019). As indicated in Table 3, HTMT scores were far lower than the threshold value of 0.85 (Guenther et al., 2023). Hence, the discriminant validity was supported, and the constructs were measured conceptually independent matters from each other (Hair et al., 2020). As a result, this study moved with confidence to an examination of the structural model and hypotheses testing (Hair et al., 2019).

Table 2. ***Reliability and validity analysis***

Construct	Items		Factor loading	CR	Alpha	AVE
Social norms	SNR1	Most people around me follow safety guidelines in risky situation.	0.876	0.900	0.833	0.750
	SNR2	I feel social pressure to comply with safety rules.	0.840			
	SNR3	People I respect believe that following safety regulations is important.	0.881			
Anthropomphized roles	ANR1	I perceive safety systems (e.g., AI assistants, warning signs) as having human-like characteristics.	0.904	0.923	0.875	0.800
	ANR2	I feel a personal connection with automated safety assistants.	0.871			
	ANR3	I trust safety messages more when they appear to be communicated by a human-like entity.	0.908			
Risk perception	RSP1	I believe that not following safety guidelines increases the chances of accidents.	0.936	0.928	0.884	0.812
	RSP2	I feel anxious when I see others ignoring safety	0.915			

		regulations.				
	RSP3	I think the risks associated with non-compliance are serious.	0.850			
Behavioral intention	BVI1	I intend to follow safety measures when I am in risky situations.	0.887	0.904	0.841	0.758
	BVI2	I am likely to choose services that prioritize safety.	0.849			
	BVI3	I plan to encourage others to comply with safety guidelines.	0.876			
Safety compliance	SFC1	I ensure safety by carefully following each step of procedures with full attention.	0.917	0.920	0.869	0.793
	SFC2	I consider how my actions may affect safety before taking any step.	0.852			
	SFC3	I proactively seek information about safety measures before making decisions.	0.901			

Source: Prepared by authors

Table 3. Discriminant validity

Constructs	HTMT approach				
	1	2	3	4	5
1. Social norms					
2. Anthropomphized roles	0.189				
3. Risk perception	0.339	0.300			
4. Behavioral intention	0.512	0.478	0.543		
5. Safety compliance	0.417	0.488	0.417	0.546	

Source: Prepared by authors

4.3. Structural model estimation

According to Hair et al. (2019), the degree of the fit of the structural model was tested using the determination coefficient (R^2). The predictive power of the model to safety compliance, risk perception, and behavioral intention has been shown in Figure 2. These R^2 values indicate that the model has acceptable explanatory power (Sarstedt et al., 2021). Additionally, Cohen's f^2 indices were calculated to measure the effect size of the relationship between constructs (Hair et al., 2020). The f^2 values were in the range of lying between 0.057 and 0.537 (see Table 4), indicating small to strong effect sizes (Vaithilingam et al., 2024). These effect sizes imply that the relationships postulated in the model have substantive effects on the endogenous constructs (Hair et al., 2019).

Next, the direct effect findings (see Table 4 and Figure 2) lend further support to H1-H6. Social norms significantly and positively affected risk perception ($\beta = 0.258$, $t = 5.793$, $p < 0.001$) and behavioral intention ($\beta = 0.546$, $t = 14.979$, $p < 0.001$), supporting H1-H2. Likewise, anthropomphized roles significantly and positively affected risk perception ($\beta = 0.226$, $t = 5.056$, $p < 0.001$) and behavioral intention ($\beta = 0.322$, $t = 8.886$, $p < 0.001$), supporting H3-H4. Further, safety compliance was significantly and positively affected by risk perception ($\beta = 0.141$, $t = 2.955$, $p < 0.01$) and behavioral intention ($\beta = 0.489$, $t = 10.547$, $p < 0.001$), supporting H5-H6. Lastly, this study investigated the mediation roles of risk perception and behavioral intention in the nexuses between safety compliance and both and social norms anthropomphized roles.

Findings (see Table 4) confirmed that social norms had no significant effect on safety compliance via risk perception ($\beta = 0.036$, $t = 1.299$, $p > 0.05$, CIs = -0.019-0.091). Likewise, anthropomorphized roles had a not significant effect on safety compliance via risk perception ($\beta = 0.032$, $t = 1.138$, $p > 0.05$, CIs = -0.023-0.087). Hence, hypotheses H7-H8 were not supported. These findings proved that risk perception fully mediates the relationship between safety

compliance and both anthropomorphized roles and social norms. On the other hand, social norms significantly affected safety compliance via behavioral intention (β = 0.267, t = 9.536, p < 0.001, CIs = 0.212-0.322). Similarly, anthropomorphized roles significantly affected safety compliance via behavioral intention (β = 0.077, t = 2.750, p < 0.05, CIs = 0.022-0.132). Hence, hypotheses H9-H10 were supported. These findings proved that behavioral intention partially mediates the relationship between safety compliance and both anthropomorphized roles and social norms.

Table 4. Results of direct and indirect effects

Direct effects						
Relationship	β	*t*-value	*p*-value	Effect size (f^2)		Remark
H1: Social norms → Risk perception	0.258***	5.793	0.000	0.075		Supported
H2: Social norms → Behavioral intention	0.546***	14.979	0.000	0.537		Supported
H3: Anthropomphized roles → Risk perception	0.226***	5.056	0.000	0.057		Supported
H4: Anthropomphized roles → Behavioral intention	0.322***	8.886	0.000	0.187		Supported
H5: Risk perception → Safety compliance	0.141**	2.955	0.003	0.023		Supported
H6: Behavioral intention → Safety compliance	0.489***	10.547	0.000	0.276		Supported
Mediation effects						
Model	β	*t*-value	*p*-value	95% CI		Mediation type
				UB	LB	
H7: Social norms → Risk perception → Safety compliance	0.036	1.299	0.085	-0.019	0.091	Full mediation
H8: Anthropomphized roles → Risk perception → Safety compliance	0.032	1.138	0.067	-0.023	0.087	Full mediation
H9: Social norms → Behavioral intention → Safety compliance	0.267***	9.536	0.000	0.212	0.322	Partial mediation
H10: Anthropomphized roles → Risk perception → Safety compliance	0.077*	2.750	0.027	0.022	0.132	Partial mediation

Note: ***p < 0.001, **p < 0.01; CI = confidence interval
Source: Prepared by authors

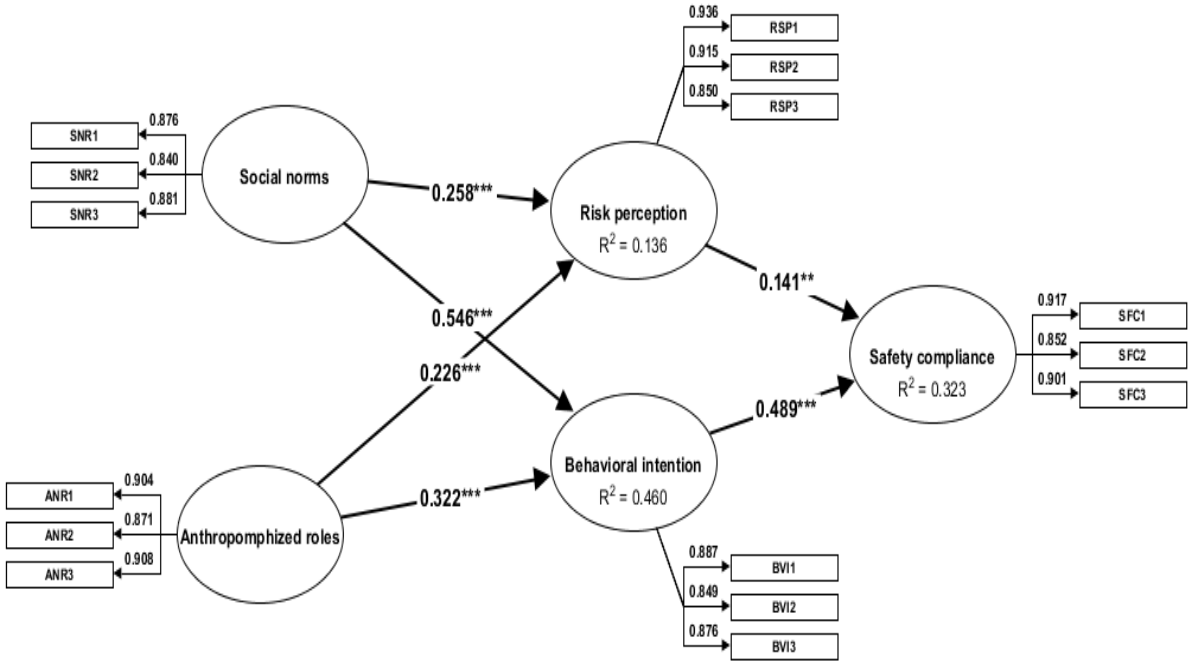

Fig. (2) Structural model findings
Source: Prepared by authors

5. Discussion

This study aimed to investigate the effect of social norms and anthropomorphized roles on safety compliance, with the mediating roles of risk perception and behavioral intention. Many insights were discovered in the conclusion. First, both social norms and anthropomorphized roles significantly affected risk perception and behavioral intention, and support the proposed direct relations. In addition, behavioral intention appeared as a strong predictor of safety compliance, while the risk perception showed relatively weak, but still significant. Interestingly, the risk perception fully mediated the relationship between both social norms and anthropomorphized roles with safety compliance, indicating that these factors affect compliance only indirectly through risk perception. On the other hand, behavioral intention partially mediated these relations, and suggests that the intention plays a more central role in the design of compliance behavior. These findings are consistent with the Theory of Planned Behavior (Ajzen, 1991), which suggests that behavioral intention is the most direct predictor of actual behavior.

This study strongly supports this hypothesis that social norms significantly affect risk perception, which is well consistent with the findings from our study. For example, Geber et al. (2021) showed that both perceived and collective social norms form the risk behavior between young drivers, which emphasizes the role of the social environment at risk taking. Similarly, Knoll et al. (2015) found that young people are subjected to peer on the perception of special risk, which consistent with our observation of developmental differences in social norms effects. In addition, Zhuang, & Carey (2025) highlighted the fact that social norms interact with uncertainty to influence the intentions of being engaged in protective behavior, and strengthens the idea that normative effects become stronger when individuals are uncertain about the risk. In addition, interaction between social norms and cultural worldrviews has been reported by Savadori & Lauriola (2021) under Covid-19 supports the complex, versatile nature of normative effects on the risk perception. Overall, these findings confirm ours that social norms are an important factor for risk perception and related behavior, and describing the importance of involving normative factors in risk communication strategies.

In addition, as the study confirms the positive effects of social norms on the intention of customer behavior, this result is in line with several studies which emphasize the role of social norms in shaping the behavioral intention. For example, Hu et al., (2023) found that the subjective norms affected the intention to travel among Shanghai residents. Consistently, Zhang et al., (2025) and Wang et al., (2023) explored that subjective norms largely affected individual norms, attitudes and perceived behavioral control positively, which in turn increases behavioral intentions. In the context of sustainable tourism, Luong, (2025) stated that the subjective norms positively influenced the intentions of the Vietnamese tourists related to green consumption. Kun-Shan et al. (2011) also found that subjective norms and approaches largely impressed the intentions of visiting green hotels in Taiwan. In addition, the norms were shown to influence the customer's loyal behavior, such as intentions and positive words-mouthed (Wasaya et al., 2022). Overall, these studies emphasize the important role of social norms in influencing practical intentions in different tourism and consumer behavioral relationships.

Moreover, anthropomorphism has a significant and positive effect on risk perception; it is constant with previous studies, which suggest that human-like issues can increase perceived risk principally between low social power persons, who often feel less control in such interactions (Aubel et al., 2022). This also line up with the perspective that anthropomorphized beings enlarge emotional responses and perceived helplessness (Cui, 2022). Nevertheless, other research highpoints that this effect is not constant as individual traits play a moderating role. For example, high social power people may perceive lower levels of risk, because they believe they can influence or manage anthropomorphized agents (Kim & McGill, 2011). Consequently, while the general effect is positive, it is likely depending on moderating issues such as perceived control and social power.

As anthropomorphism has an significant and positive effect on the intention of behavior, it is consistent with previous research, which emphasizes its role in increasing the intentions of tourists through meaningful experiences and stories (Liu et al., 2024) and increases service usage and recommendation through emotional affinity (Belanche et al., 2021; Ben Saad, 2024). It also supports studies showing that anthropomorphic properties in service robots affect the intention of continuous use in technology acceptance model frame (Lee & Oh, 2021). However, this effect may vary on individual traits such as supposed control and social power, which noted by Chan & Gohri (2023), who found that high experienced power has reduced dependence on anthropomorphic signals due to perceived risk.

By way of risk perception has a significant and positive effect on safety compliance; it is supported by several prior studies. Xia et al. (2016) align with this as distinguishing between different forms of risk perceptions particularly affects compliance with with the safety protocol. In addition, Amaya-Gómez et al., (2023) reported a similar positive correlation, indicating that risk awareness increasing, leading to greater compliance with safety measures. Moreover, Sakalli and Ariqan (2024) emphasized the role of human values in the formulation of the perception of risk and behavior related to safety, which suggests that personal differences may affect the strength of this relationship. Al- Bsheish (2024) study asserted this relationship is completely mediated by safety training, which emphasizes the importance of organizational support to translate translating awareness into action.

Consequently, reviewed studies clearly support the study finding that the behavioral intention has a significant and positive impact on safty compliance in tourism and hospitality. For example, Harinurdin et al., (2024) found that individuals with strong intentions of complying are more likely to follow the safety protocols. In tourism environments, Ge & Chen (2024); Nugraha et al., (2024) emphasized that the intention of behavior is influenced by factors such as risk perception, satisfaction and past experiences. This intention directly affects customers to

follow safety measures, encourages frequent participation and continuously matches health and safety guidelines. In addition, Setiawan et al., (2024) emphasized that the intention of the behavior mediates the relationship between risk perception and real compliance; as the perceived risk increases, it is intended to comply with it, leading to high safety farming in turn.

Meanwhile, the mediating effects of risk perception highpoints its serious role in impelling safety compliance, mostly in environments where social influence and human-like signals are existing. This aligns with the findings of Nugraha et al. (2024) and Kokkhangplu et al. (2023) that highlighted when individuals perceive high risk, social norms become affected, leading to bigger compliance. In the same way, Paulose & Shakeel (2022) found that perceived risk reinforces the effect of normative pressures on safety behavior. On the other hand, the study confirms the role of risk perception as a mediator between anthropomorphized roles and safety compliance, as advised by Blut et al. (2022) and Lee et al. (2021). When customers cooperate with human-like systems, emotional engagement increases, enhancing their responsibility sense and perceived risk, which in turn increases safety compliance.

Furthermore, the mediating effect of behavioral intention highpoints its important role in influencing safety compliance, mainly in environments where social norms and human-like cues are existing. This bring into line with previous studies that emphasize the role of intention in shaping safety-related behaviors (Ruan, 2024; Lopes-Rafegas et al., 2023).

5.1. Theoretical Implications

The current study contributes to the standing literature by explaining the different and complementary roles of the social norms and anthropomorphized roles in inducing safety compliance over risk perception and behavioral intention. The findings reveal that risk perception assists as a full mediator in positive ways, emphasizing its critical role as a cognitive determinant in safety-related behaviors. Instantly, behavioral intention partially mediates these relations, underlining the motivational procedures that bridge perception and action. These insights enhance existing theoretical models by fitting social psychological factors to understand safety compliance, thus providing a framework for future behavioral research.

5.2. Practical implications

Our practical implications focus on promoting travelers to support their safety when they visit the sites and take into account the normative impact and anthropomorphized roles in the safety communications message. There are many ways that can help reduce the destination socially irresponsibility; One method might be to encourage leaders and injunctive norms. By displaying safety guides in safety messages, destinations can use necessary language (e.g. elimination or prohibition), and emphasize safety policy. This form of communication develops a sense of commitment and responsibility with the travellers; they can see the implications and consequences of the following rules (e.g. threat to their health, treatment costs and their social and working life disorder).

From a management point of view, the results suggest that intervention aimed at increasing safety compliance should double focus on cognitive and motivational mechanisms. Humanizing positive social norms in organizations can establish an environment adapted to safe behaviors, while utilizing anthropological roles can lead to an increase in salinity and emotional involvement of safety messages. In addition, safety leaflet may emphasize the importance of compliance by actively following security procedures, where guests follow safety procedures. The hotels should contain technology in its safety communication plans. Digital reminders, in-room video and mobile app warning guarantee that security is continuously introduced. Using such technology to communicate message is a powerful way to strengthen the key messages and keep them in the heads of travellers during their journey.

Furthermore, many considerations should be specified to possible inhibitions that may delay the translation of behavioral intentions into real compliance, such as uncertainty in safety procedures. Addressing these obstacles is important to maximize involvement efficacy.

Moreover, encouraging safety leadership participating and employee involvement can reinforce social responsibility and adherence to safety regulations.

5.3. Limitations and future research

While this study provides insights, some limitations must be acknowledged. The dependence on self-reported data can introduce the general method of bias and social desirable effects, with increasing of possibly relationships. Future research may include data collection of multiple sources or objective that measures behavioral to diminish these concerns.

In addition, this study is focused mainly on social norms and anthropomorphized roles, leaving other possible effective factors like personality traits. Including more moderators in future studies can lead to a greater widespread understanding of safety compliance.

Future research should also take into account qualitative methods, such as interviews or focus groups, to get deeper insights into how individuals identify and interact with social norms and anthropomorphized roles in safety contexts.

Hence, addressing these limitations and expanding future research directions will increase the strength and purpose of theoretical models and inform the more effective content of safety compliance.

References

Abubakar, B., & Mavondo, F. (2014). Tourism destinations: Antecedents to customer satisfaction and positive word-of-mouth. *Journal of Hospitality Marketing & Management*, *23*(8), 833-864.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

Al-Bsheish, M. (2024). The mediation role of safety training between risk perception and safety behaviors among non-medical hospital staff. *International Journal of Innovative Research and Scientific Studies*, *7*(1), 27-35. 102

Alsaad, A. (2023). The dual effect of anthropomorphism on customers' decisions to use artificial intelligence devices in hotel services. *Journal of Hospitality Marketing & Management*, *32*(8), 1048-1076.

Amaya-Gómez, R., Dumar, V., Sánchez-Silva, M., Torres-Cuello, M. A., Avila, A., & Muñoz, F. (2023). An analysis of engineering students' risk perception to support process safety learning process. *Education for Chemical Engineers*, *42*, 7-19.

Anichiti, A., Dragolea, L. L., Tacu Hârșan, G. D., Haller, A. P., & Butnaru, G. I. (2021). Aspects regarding safety and security in hotels: Romanian experience. *Information*, *12*(1), 44.

Aubel, M., Pikturniene, I., & Joye, Y. (2022). Risk perception and risk behavior in response to service robot anthropomorphism in banking. *Central European Management Journal*, *30*(2), 26-42.

Barney, C., Hancock, T., Jones, C. L. E., Kazandjian, B., & Collier, J. E. (2022). Ideally human-ish: How anthropomorphized do you have to be in shopper-facing retail technology?. *Journal of Retailing*, *98*(4), 685-705.

Belanche, D., Casaló, L. V., & Flavián, C. (2021). Frontline robots in tourism and hospitality: service enhancement or cost reduction?. *Electronic markets*, *31*(3), 477-492.

Ben Saad, S. (2024). The digital revolution in the tourism industry: role of anthropomorphic virtual agent in digitalized hotel service. *International Journal of Contemporary Hospitality Management*, *36*(11), 3751-3773.

Bixter, M. T., & Luhmann, C. C. (2021). The social contagion of temporal discounting in small social networks. *Cognitive Research: Principles and Implications*, *6*(1),

Blut, M., Kulikovskaja, V., Hubert, M., Brock, C., & Grewal, D. (2023). Effectiveness of engagement initiatives across engagement platforms: A meta-analysis. *Journal of the Academy of Marketing Science*, 51(5), 941-965.

Bremser, K., Crowley-Cyr, L., Abraham, V., Moreno-Martin, M. J., & Carreño, M. (2022). Application of the health belief model to explain public perceptions, travel intentions and actions during COVID-19: a sequential transformative design. *Journal of Hospitality and Tourism Insights*, *5*(5), 865-885.

Cai, S., Lin, D., & Xiao, H. (2025). The collision of tradition and fashion: How anthropomorphizing museum exhibits influences cultural inheritance. *Tourism Management*, *109*, 105133.

Chan, E., & Gohary, A. (2023). To whom does destination anthropomorphism appeal? Power and perceived control. *Journal of Travel Research*, *62*(4), 859-877.

Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., & Zhang, L. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The lancet*, *395*(10223), 507-513.

Chi, H., Vu, T. V., Vo-Thanh, T., Nguyen, N. P., & Van Nguyen, D. (2020). Workplace health and safety training, employees' risk perceptions, behavioral safety compliance, and perceived job insecurity during COVID-19: Data of Vietnam. *Data in Brief*, 33, 106346.

Cui, Y. (2022). Sophia Sophia tell me more, which is the most risk-free plan of all? AI anthropomorphism and risk aversion in financial decision-making. *International Journal of Bank Marketing*, *40*(6), 1133-1158.

D'Arco, M., Marino, V., & Resciniti, R. (2023). Exploring the pro-environmental behavioral intention of Generation Z in the tourism context: The role of injunctive social norms and personal norms. *Journal of Sustainable Tourism*, 1-22.

Ding, A., Lee, R., Legendre, T., & Madera, J. (2022). Anthropomorphism in hospitality and tourism: A systematic review and agenda for future research. *Journal of Hospitality and Tourism Management*, 52, 404–415.

Du, Z., Sun, S., & Wang, S. (2025). How do the risk perceptions of consumers affect the stock return volatility? The evidence from five hospitality firms. *International Journal of Hospitality Management*, *124*, 103949.

Elshaer, A. M., Marzouk, A. M., & Khalifa, G. S. (2023). Antecedents of employees' perception and attitude to risks: the experience of Egyptian tourism and hospitality industry. *Journal of Quality Assurance in Hospitality & Tourism*, *24*(3), 330-358.

Ge, H., & Chen, X. (2024). Research on tourist satisfaction and behavioral intention in ecological health tourism activities in bama, guangxi based on structural equation model. *GeoJournal of Tourism and Geosites*, *52*(1), 221-230.

Geber, S., Baumann, E., Czerwinski, F., & Klimmt, C. (2021). The Effects of Social Norms Among Peer Groups on Risk Behavior: A Multilevel Approach to Differentiate Perceived and Collective Norms. *Communication Research*, 48(3), 319–345.

Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. *Industrial Marketing Management, 111*, 127-142.

Hair, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, *109*, 101-110.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2-24.

Harinurdin, E., Safitri, K. A., & Kountur, R. (2024). Applying the Theory of Planned Behavior in Examining the Intention to Improve Corporate Tax Compliance Through Compensation and Counterproductive Work Behavior. *SAGE Open*, *14*(4), 21582440241305624.

Hu, A., Li, H., Pang, J., & Zhang, H. (2023). A study on the intention of Shanghai residents to travel abroad in the post-pandemic era based on the theory of planned behavior. *Sustainability*, *15*(15), 12050.

Huang, H. L., Cheng, L. K., Sun, P. C., & Chou, S. J. (2021). The effects of perceived identity threat and realistic threat on the negative attitudes and usage intentions toward hotel service robots: the moderating effect of the robot's anthropomorphism. *International Journal of Social Robotics*, *13*, 1599-1611.

Huang, R., Xie, C., Lai, F., Li, X., Wu, G., & Phau, I. (2023). Analysis of the characteristics and causes of night tourism accidents in China based on SNA and QAP methods. *International journal of environmental research and public health*, *20*(3), 2584.

Islam, M. S., Tan, C. C., Sinha, R., & Selem, K. M. (2024). Gaps between customer compatibility and usage intentions: The moderation function of subjective norms towards chatbot-powered hotel apps. *International Journal of Hospitality Management*, 123, 103910.

Kang, G. W., Piao, Z. Z., & Ko, J. Y. (2021). Descriptive or injunctive: How do restaurant customers react to the guidelines of COVID-19 prevention measures? The role of psychological reactance. *International Journal of Hospitality Management*, *95*, 102934.

Khan, A. N., Bilek, E., Tomlinson, R. C., & Becker-Haimes, E. M. (2021). Treating social anxiety in an era of social distancing: adapting exposure therapy for youth during COVID-19. *Cognitive and behavioral practice*, *28*(4), 669-678.

Kim, S., & McGill, A. L. (2011). Gaming with Mr. Slot or gaming the slot machine? Power, anthropomorphism, and risk perception. *Journal of Consumer Research*, *38*(1), 94-107.

Knoll, L. J., Magis-Weinberg, L., Speekenbrink, M., & Blakemore, S. J. (2015). Social influence on risk perception during adolescence. *Psychological science*, *26*(5), 583-592.

Kokkhangplu, A., Onlamai, W., Chokpreedapanich, T., & Phikul, K. (2023). What predicts behavioral intention in eco-friendly hotels? The roles of tourist's perceived value and satisfaction: A case study of Thailand. *Sustainability*, *15*(4), 3219.

Kortenkamp, K. V., Moore, C. F., Miller, E. M., & Truell, K. V. (2021). DANGER! NO HIKING! Risky hiking decisions, framing of normative warning messages, and self-exempting beliefs. *Journal of Outdoor Recreation and Tourism*, *35*, 100415.

Kulow, K., Kramer, T., & Bentley, K. (2021). Lady luck: Anthropomorphized luck creates perceptions of risk-sharing and drives pursuit of risky alternatives. *Journal of the Association for Consumer Research*, *6*(3), 383-393.

Kun-Shan, W., & Yi-Man, T. (2011). Applying the extended theory of planned behavior to predict the intention of visiting a green hotel. *African Journal of Business Management*, *5*(17), 7579-7587.

Kwak, H., Puzakova, M., Rocereto, J. F., & Moriguchi, T. (2020). When the unknown destination comes alive: The detrimental effects of destination anthropomorphism in tourism. *Journal of Advertising*, *49*(5), 508-524.

Latané, B., & Nida, S. (1981). Ten years of research on group size and helping. *Psychological bulletin*, *89*(2), 308.

Lee, S. A., & Oh, H. (2021). Anthropomorphism and its implications for advertising hotel brands. *Journal of Business Research*, *129*, 455-464.

Letheren, K., Martin, B. A., & Jin, H. S. (2017). Effects of personification and anthropomorphic tendency on destination attitude and travel intentions. *Tourism Management*, *62*, 65-75.

Liu, Y., Ning, S., Zhang, M., Font, X., & Zeng, H. (2024). Can anthropomorphic interpretation cues motivate tourists to have civilized behavioral intentions? The roles of meaningful experience and narrative. *Tourism Management*, *103*, 104905.

Loewenstein, G., Weber, E., Hsee, C., Welch, N., 2001. Risk as feelings. *Psychol. Bull.* 127 (2), 267–286 .

Lopes-Rafegas, I., Cox, H., Mora, T., & Sicuri, E. (2023). The contribution of risk perception and social norms to reported preventive behaviour against selected vector-borne diseases in Guyana. *Scientific Reports*, *13*(1), 16866.

Lu, A. Y. (2013). The role of social norms in climate adaptation: Mediating risk perception and flood insurance purchase. *Global environmental change*, *23*(5), 1249-1257.

Luo, Z., Guo, J., Benitez, J., Scaringella, L., & Lin, J. (2024). How do organizations leverage social media to enhance marketing performance? Unveiling the power of social CRM capability and guanxi. *Decision Support Systems*, *178*, 114123.

Luong, T. B. (2025). Green consumption intention of tourist in tourist destinations: A moderation of destination social responsibility in the theory of planned behavior model. *Tourism Recreation Research*, *50*(2), 339-355.

Mamahit, D. A., Daryanto, H. K., Sumarwan, U., & Yusuf, E. Z. (2013). Compliance Behavior Analysis of the Ship Crew to the International Safety Management (Ism) Code in Indonesia. *International Journal of Management and Sustainability*, *2*(2), 14-27.

Murtaza, Z., Sharma, I., & Carbonell, P. (2024). Examining chatbot usage intention in a service encounter: Role of task complexity, communication style, and brand personality. *Technological Forecasting and Social Change*, *209*, 123806.

Narwal, P., & Nayak, J. K. (2019). How consumers form product quality perceptions in absence of fixed posted prices: Interaction of product cues with seller reputation and third-party reviews. *Journal of Retailing and Consumer Services*, *52*, 101924.

Nguyen-Phuoc, D. Q., Mai, N. X., Kim, I., & Oviedo-Trespalacios, O. (2024). Questioning penalties and road safety Policies: Are they enough to deter risky motorcyclist Behavior?. Accident Analysis & Prevention, 207, 107756.

Nugraha, O. N. R. A. C., Sari, R. A., Riyanto, V. R. A., Isnaini, M., & Ifriana, F. (2024). Ensuring Sustainable Hospitality: A Case Study on Occupational Health and Safety Governance at Ros-In Hotel. *ASEAN J. Hosp. Tour*, (1), 41-52.

Omidi, L., Karimi, H., Pilbeam, C., Mousavi, S., & Moradi, G. (2023). Exploring the relationships among safety leadership, safety climate, psychological contract of safety, risk perception, safety compliance, and safety outcomes. *Frontiers in public health*, *11*, 1235214.

Paulose, D., & Shakeel, A. (2022). Perceived experience, perceived value and customer satisfaction as antecedents to loyalty among hotel guests. *Journal of quality assurance in hospitality & tourism*, *23*(2), 447-481.

Pennington-Gray, L., & Lee, S. (2024). The demand for safety measures in the hospitality industry: Changes over three phases of a pandemic. *International Journal of Hospitality Management*, *122*, 103873.

Priolo, G., Vignoli, M., & Nielsen, K. (2025). Risk perception and safety behaviors in high-risk workers: A systematic literature review. *Safety Science*, *186*, 106811.

Reese, G., Rosenmann, A., & Cameron, J. E. (2019). The interplay between social identities and globalization. *The Psychology of Globalization: Identity, Ideology, and Action*, *4*, 71-99.

Ruan, W. Q., & Deng, F. (2024). Stop unsafe behaviors: Matching strategies of social norms and anthropomorphized roles in tourism safety communication. *Journal of Hospitality and Tourism Management*, *60*, 177-191.

Sakalli, A. E., & Arikan, S. (2024). The relationship of Value dimensions in Turk Society with fatalistic tendencies, safety motivation, risk perception and safety performance. *Heliyon*, *10*(9).

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 587-632). Cham: Springer International Publishing.

Savadori, L., & Lauriola, M. (2021). Risk perception and protective behaviors during the rise of the COVID-19 outbreak in Italy. *Frontiers in psychology*, *11*, 577331.

Scholderer, J., & Veflen, N. (2019). Social norms and risk communication. *Trends in food science & technology*, *84*, 62-63.

Setiawan, G., Dewantara, M. H., Nimri, R., & Arli, D. (2024). The effect of perceived risks and overall risk perception on international tourists' behavioural intention: Insights from Bali. *Journal of Vacation Marketing*, 13567667241282688.

Sinclair, S. J., Blais, M. A., Gansler, D. A., Sandberg, E., Bistis, K., & LoCicero, A. (2010). Psychometric properties of the Rosenberg Self-Esteem Scale: Overall and across demographic groups living within the United States. *Evaluation & the health professions*, *33*(1), 56-80.

Song, X., Li, Y., Leung, X. Y., & Mei, D. (2024). Service robots and hotel guests' perceptions: anthropomorphism and stereotypes. *Tourism Review*, *79*(2), 505-522.

Vaithilingam, S., Ong, C. S., Moisescu, O. I., & Nair, M. S. (2024). Robustness checks in PLS-SEM: A review of recent practices and recommendations for future applications in business research. *Journal of Business Research*, *173*, 114465.

Wang, L., Zhang, Q., Ding, Y. Y., & Wong, P. P. W. (2023). The effect of social and personal norm on intention to patronize green hotels: Extension of theory of planned behavior. *Journal of China Tourism Research*, *19*(2), 311-334.

Wang, X., & Zhang, C. (2020). Contingent effects of social norms on tourists' pro-environmental behaviours: The role of Chinese traditionality. *Journal of Sustainable Tourism*, *28*(10), 1646-1664.

Wasaya, A., Prentice, C., & Hsiao, A. (2022). The influence of norms on tourist behavioural intentions. *Journal of Hospitality and Tourism Management*, *50*, 277-287.

Wasaya, A., Prentice, C., & Hsiao, A. (2024). Norms and consumer behaviors in tourism: A systematic literature review. *Tourism Review*, *79*(4), 923-938.

Wilson, R. S., Zwickle, A., & Walpole, H. (2019). Developing a broadly applicable measure of risk perception. *Risk Analysis*, *39*(4), 777-791.

Xia, N. N., Wang, X. Q., Ni, W., & Liu, X. (2016). Risk perception and safety compliance of construction workers. In *2016 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)* (pp. 466-470). IEEE. 99

Zhuang, J., & Carey, P. (2025). Compliance with social norms in the face of risks: Delineating the roles of uncertainty about risk perceptions versus risk perceptions. *Risk Analysis*, *45*(1), 240-252.