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## CONTENTS

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# GUEST SEGMENTS AND DIGITAL TECHNOLOGY PERCEPTIONS IN HOTELS

**Cvetanka Ristova Maglovska**[1]

## Abstract

*This paper examines hotel guests' perceptions and attitudes related to the adoption of digital technology in the hotel industry, categorizing guests into distinct segments depending on their preferences and behaviour in relation to technology. Using quantitative, cross-sectional descriptive, and analytical approach, 400 participants completed a structured online questionnaire. Findings identified three guest segments – Tech-Enthusiasts, Balanced Digitalists, and Sceptics by cluster analysis, which were later verified by discriminant analysis, ANOVA, and crosstab statistics. Notable differences were observed across age and gender groups, introducing valuable insights for the implementation of digital service strategies in hotels.*

**Keywords:** digital technology, guest behaviour, guest segmentation, hospitality digitalization, hotel industry

## 1. Introduction

In today's modern and highly competitive hotel industry, digital technology is changing the guest experiences and making operations more efficient (Anwar et al., 2024; Bilgihan & Ricci, 2024). Recent research shows that 83% of tourists around the world expect digital solutions to play an important role in making their stay better, starting with booking a hotel room on their smartphone (Greenwood, 2025). These features change the way hotels interact with guests by offering contactless check-in and check-out, digital keys and payments, and instant service requests (Mandić et al., 2023; Ivanov, 2023; Stringam & Gerdes, 2021; Gupta & Sharma, 2021).

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However, the integration of these digital technologies is not universally accepted, and many guests show distinct reluctance towards adopting modern technologies (Limna, 2023; Mariani & Borghi, 2023). This situation sets an important question: do hotels know how different guests' segments will feel about digital technology and how it will affect their happiness, loyalty, and service quality?

Embracing technological innovations in hotels has the potential to enhance operation efficiency, improve human resources by equipping employees and the environment with digital technology to upgrade service delivery and provide more personalized experience (Albesher et al., 2025; García-López et al., 2025; Dianawati et al., 2024). The transition to digital solutions has substantially reduced paper use and optimized their energy consumption in real time, promoting sustainability (Pastor, 2025). However, there are several concerns related to guests' privacy, security, and trust perceptions regarding data (Fakfare et al., 2024) as well as, if they experience certain disconnection from hospitality's human aspect, since it is particularly important for their emotional satisfaction (Nanu, 2025; Roy & Pagaldiviti, 2025). According to the literature in hospitality management, today's guests expect and appreciate digital technology in a different way, some being enthusiasts, others moderate and a group showing general distrust for technology (Qiu et al., 2024; Kaushik et al., 2014), especially regarding the recent developments and implementation of AI (Șchiopu, 2024). Such outcome creates a complex picture for managing digital experience and implementing innovations.

Scientific literature supports that there has been significant progress in understanding digital technology as a catalyst for the hotel industry. Recent findings explore how automation, AI, and IoT technologies affect guests' trust and loyalty, and thus reshape the future of hotel service (Nanu, 2025; Jaiswal et al. 2025; Acharya & Mahapatra, 2024; Zahidi, 2024; Praharaj et al., 2023). For example, many studies investigated the impact of IoT on guest tracking to ensure satisfaction, but at the same time there are groups of guests who are resistant to such innovations due to scepticism towards IoT systems or concerns about data privacy (Khamesra & Priya, 2017). Other studies that analyse generational differences present findings that show younger generations such as Generation Z or Millennials, to have a much heavier reliance on digital technology (Wang et al., 2024; Marin-

Pantelescu & Ștefan-Hint, 2024; Ashok, 2024; Bolser & Gosciej, 2015; Bolton, 2013; Bennett, 2008), while older generations, who may be less skilled with technology, to seek a greater balance between human and digital interaction (Parvazi, 2023; Morris & Venkatesh, 2000). And although these literature findings provide beneficial insights, they remain disconnected when trying to provide full segment-specific representation of guest segments.

However, there is a significant gap in literature. Research on guest segments corresponding to the guest experience and technology-based services has primarily examined the basic relationship between one or two technological innovations and guest satisfaction. Often, these studies do not differentiate guest segments examined based on perceptions, attitudes, and emotional responses enough. Further, little research investigates the complex interactions between digitalization in the hotel industry, trust in technology, automation, IoT acceptability, perceptions of sustainability, and the balance between human and digital service. Even few research investigates how these constructs interact across various demographic groups. As a result, there is an absence of information regarding how distinct profile of guests influence the adoption, acceptance, or rejection of digital technologies in hotels. This is an important gap in knowledge, as hotels that do not understand their segments precisely will likely invest in digital technology that is not effective, thus diminishing satisfaction, and could harm the brand experience.

The issue also has a practical aspect. Hotels invest extensively in digital solutions, ranging from smart reservation systems to automated room services, without any reliable information as to which segments of their guests will accept digital services and be comfortable with them. Insufficient segmentation, along with diverse attitudes towards digitalization, can lead to loss of revenue and decreased guest satisfaction and loyalty. For hotels to recommence a focus on the guest experience, they will need a systematic investigation into the perception and segmentation of their guests to develop effective and customer-centric strategies.

With this research, the aim is to identify and describe the various segments of hotel guests' experiences regarding digital technology assessments, attitudes, and behaviors. The research also aims to establish how the different demographic groups of generations and genders perceive

digital technology, their trust in hotel digital infrastructures, their perceptions of data security, and their expectations for digitalized experiences.

Considering this aim, the research question is: What are the main hotel guest segments' perceptions and attitudes of digital technology, and how do demographic characteristics affect their acceptance of digital solutions?

Additionally, the research hypotheses are as follows:

1. H1: There are statistically significant differences in digital perspectives and attitudes between identified guest segments.
2. H2: Guest segments differ in their level of digital acceptance, trust, and risk perception.
3. H3: Guest segments differ in their attitudes towards digital technology.
4. H4: Statistically significant differences exist across guest segments in all key constructs.
5. H5: The distribution of guest segments differs significantly by gender.
6. H6: The distribution of guest segments differs significantly by age group.

The research also has both academic and practical contributions because the findings will help hotels develop personalized digital-service strategies, improve guest satisfaction, and facilitate or reduce disruption in technology adoption and implementation into a hospitality business context.

In other words, this paper not only addresses the literature gap on segmenting guests according to their digital perceptions, but it also will provide explicit guidance for hotel management on which guest segments are most receptive to technology and who will need to be balanced between human centered interaction and adopting technology.

## 2. Materials and Methods

A quantitative, cross-sectional descriptive, and analytical study is designed in this research to identify and describe various segments of hotel guests based on their perceptions, attitudes, and behaviours regarding the implementation of digital technology in the hotel experience. The research further aims to define attitudes and statistically categorize segments according to guests' tendency for using digital technology in their hotel experience, their confidence in the hotel's digital infrastructure, their

perspective on data security, and their expectations regarding the digitalized service experience.

By employing this approach, accurate identification of hidden guest segments is enabled by using cluster analysis alongside the additional analytical methods (discriminant, ANOVA, and crosstab analysis) to differentiate the factors that distinguish the segments. The research collects data using a self-administered questionnaire, which allows for a larger, more diverse sample.

Regarding the target demographic, the research focused on adult hotel guests who have travelled for business or pleasure within the last year. For the purpose of the research, feedback was obtained from hotel guests who had used any of the hotel's services, regardless of the type of hotel, the location, or the length of time they had remained there. This population characterization provided a credible understanding of guest perceptions regarding hotels' adoption of digital formats.

The sample size included 400 participants representing diverse genders and ages. Age and gender were also relatively evenly distributed to facilitate a comparative analysis of male and female visitors.

For sampling purposes, the research utilized data acquired through a non-probability convenience questionnaire to collect sample data from hotel visitors, accessed through social media platforms, contacts with hotel professionals, and online touristic communities during the period of June to October 2025. This methodology provides an appropriate approach for investigating research centred on perceptions and attitudes; additionally, statistical efficacy is ensured through the utilization of larger sample sizes.

All participants were provided with a brief summary of the aim of the research, and then each was invited to voluntarily complete the questionnaire. The data were collected anonymously to protect potential participants' confidentiality, and participants were not obligated to provide any private and sensitive personal information. The participants were administered an anonymous online questionnaire using the Qualtrics platform. The online questionnaire was administered, considering the wide availability of guests with varying characteristics, convenience of dissemination, and reduced potential for data entry errors associated with paper/manual submission.

The questionnaire itself was meticulously constructed to assess the key aspects of this research: privacy and security concerns, preparedness for disclosing particular data, personalization attitudes, and data sharing perspectives. The 25 questions covered theme areas and demographics (gender and age). The questionnaire's main section used a Likert scale (1-5) to accurately quantify attitude intensity, perform factor analysis, and compare groups. To standardize analytical methods and replicate outcomes, the questions were closed-ended and unidimensional.

Results were analysed using IBM SPSS Statistics, and the following statistical analysis methods were used:

1. *Exploratory factor analysis* using Principal Component analysis with Varimax rotation to access the dimensional structure of the questionnaire and determine a set of factors.
2. *Cluster analysis* to create guest segments. By employing k-means cluster analysis based on previously established factors; the elbow trend showed the strongest inflection at k = 3, and the Calinski-Harabasz index separated this configuration better than k = 2 and k = 4.
3. *Discriminant analysis* to confirm and further explore the adequacy of the segmentation. This analysis was employed to assess how well the discovered clusters could be distinguished based on the input variables and to estimate the percentage of guests categorized correctly.
4. *Means and Standard Deviations* were calculated for all the overall attitudes related to guests' perceptions of digital technology in hotels.
5. *ANOVA and post-hoc* tests were conducted for the attitudes and practices spectrum across segments. Given that ANOVA results were statistically significant, the Tukey HSD post-hoc test was employed to determine which segments were statistically significantly different from one another.
6. *Crosstab analysis with Pearson chi-square* to further investigate the group differences between demographic categories. These analyses allowed for verification whether attitudes and behaviour differed statistically by gender and generational groups.

## 3. Results

This section presents in detail the results of the statistical analyses conducted to test the research hypotheses and answer the research question.

Table 1. Demographic distribution of respondents

| **Gender** | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Male | 198 | 49.5 | 49.5 | 49.5 |
| Female | 202 | 50.5 | 50.5 | 100.0 |
| Total | 400 | 100.0 | 100.0 | |
| **Age Group** | | | | |
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Under 25 | 70 | 17.5 | 17.5 | 17.5 |
| 25–34 | 88 | 22.0 | 22.0 | 39.5 |
| 35–44 | 82 | 20.5 | 20.5 | 60.0 |
| 45–54 | 80 | 20.0 | 20.0 | 80.0 |
| 55+ | 80 | 20.0 | 20.0 | 100.0 |
| Total | 400 | 100.0 | 100.0 | |

The demographic profile of the 400 respondents who completed the questionnaire is shown in Table 1. The distribution of respondents was excellently balanced, which was essential to ensure the credibility of the results.

Gender representation was almost exactly even with 49.5 (198) male respondents and 50.5% (202) female respondents, which means that the results will not be gender biased. Age representation also showed fair distribution across all five categories, from under 25 years old (17.5%) to 55 and above (20%). This balanced representation is viewed as significant as it allows the ability to analyse different expectations and levels of acceptance of digital technologies from different age groups.

Overall, the demographic distribution of this research provided a solid foundation for deriving important and applicable conclusions to the hotel sector. Next, Exploratory Factor analysis was conducted on the 23 questions (other two questions were gender and age) using Principal Component analysis with Varimax rotation. Results confirmed sample adequacy with Kaiser-Meyer-Olkin value of 0.89, and Bartlett's Test of Sphericity ($\chi^2 = p < .001$). Cronbach's α demonstrated good internal consistency with coefficients ranging from 0.78 to 0.91. Factors were labelled as:

1. Trust in AI and Automation,
2. IoT Acceptability and Guest Experience,
3. Digital Solutions' Influence on Satisfaction,

4. Digital-Human Balance,
5. Perceptions of Sustainability through Digitalization,
6. Emotional Reactions to Technology,
7. Previous Experience with Smart Hotels,
8. Privacy and Security.

Table 2. Final cluster centers for guest segments

| **Final Cluster Centers** | | | | |
|---|---|---|---|---|
| | | Cluster | | |
| | | Balanced Digitalists | Tech Enthusiasts | Sceptics |
| Trust in AI and Automation | | 3.56 | 3.55 | 3.23 |
| IoT Acceptability and Guest Experience | | 3.65 | 4.04 | 3.16 |
| Digital Solutions' Influence on Satisfaction | | 3.69 | 4.48 | 3.37 |
| Digital-Human Balance | | 4.29 | 3.73 | 3.50 |
| Perceptions of Sustainability through Digitalization | | 3.70 | 4.41 | 3.22 |
| Emotional Reactions to Technology | | 4.22 | 3.24 | 2.92 |
| Previous Experience with Smart Hotels | | 3.16 | 3.95 | 2.93 |
| Privacy and Security | | 3.61 | 3.69 | 3.08 |
| **Number of Cases in each Cluster** | | | | |
| Cluster | Balanced Digitalists | | | 154.000 |
| | Tech Enthusiasts | | | 126.000 |
| | Sceptics | | | 120.000 |
| Valid | | | | 400.000 |
| Missing | | | | .000 |

To identify diverse groups of guest segments according to their attitudes and behaviour based on the previously created factors, a Cluster analysis was conducted. Each variable was standardized with z-scores before clustering, and similarity check was measured by Euclidean distance. The k-means algorithm converged after 16 iterations. Results from Table 2, revealed three clearly defined segments (clusters), supporting H1, who were labelled:

1. Balanced Digitalists: this segment represented 38.10% of the sample, making it the largest group. Guests here showed significantly higher acceptance of digital technology than Sceptics, but they did not reach the same levels of enthusiasm as Tech-Enthusiasts. Dominant variables who showed the highest average scores for this segment were: balance between digital and human service in hotels (4.29), and positive

emotional reactions to digital technology (4.22). As, Balanced Digitalists, this group of guest segments values the convenience and efficiency of digital technology but does not compromise the human touch in hotels. This group is seen as modern average guest who balances digital experience with a personal one.

2. Tech-Enthusiasts: this segment represented 31.5% of the sample. Guests here demonstrated the biggest enthusiasm and positive attitudes towards digitalization. This segment had the highest average scores for most of the technology-based variables: impact of digital solutions on satisfaction (4.48), acceptability of IoT and user experience (4.04), previous experience with smart hotels (3.95). What is interesting is that this segment also indicated that the strongest belief, which is that digitalization contributes to sustainability (4.41). As Tech-Enthusiasts, the results indicate that this group of guest segments are innovators and early adopters of technology, actively seeking digital solutions are part of their hotel stay.
3. Sceptics: this segment represented 30% of the sample, making it the smallest group. Guests here showed hesitation and the lowest level of digital technology acceptance. Highest average scores for this group of guest segments includes: trust in AI and automation (3.23), privacy and security (3.08), and emotional reaction to technology (2.92). As Sceptics, the results indicate that this group of guest segments experiences distrust or discomfort while using digital technologies in hotels, so that is why they prefer using traditional types of service.

Table 3. Discriminant functions summary for guest segments

| **Eigenvalues** | | | | |
|---|---|---|---|---|
| Function | Eigenvalue | % of Variance | Cumulative % | Canonical Correlation |
| 1 | 1.719[a] | 65.6 | 65.6 | .795 |
| 2 | .900[a] | 34.4 | 100.0 | .688 |
| a. First 2 authorised discriminant functions were used in the analysis. | | | | |
| **Wilks' Lambda** | | | | |
| Test of Function(s) | Wilks' Lambda | Chi-square | df | Sig. |
| 1 through 2 | .193 | 646.327 | 16 | .000 |
| 2 | .526 | 252.657 | 7 | .000 |
| **Structure Matrix** | | | | |
| | | Function | | |
| | | 1 | | 2 |

| | | |
|---|---|---|
| Digital Solutions' Influence on Satisfaction | .696* | -.131 |
| Perceptions of Sustainability through Digitalization | .608* | .000 |
| Previous Experience with Smart Hotels | .533* | -.160 |
| IoT Acceptability and Guest Experience | .523* | .145 |
| Privacy and Security | .328* | .276 |
| Emotional Reactions to Technology | .049 | .791* |
| Digital-Human Balance | .069 | .686* |
| Trust in AI and Automation | .181 | .220* |

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions.
Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function.

**Functions at Group Centroids**

| Guest Segments | Function | |
|---|---|---|
| | 1 | 2 |
| Balanced Digitalists | -.223 | 1.184 |
| Tech Enthusiasts | 1.750 | -.582 |
| Sceptics | -1.552 | -.908 |

Unstandardized canonical discriminant functions evaluated at group means.

To further confirm the statistical significance of the three guest segments, a Discriminant analysis was performed. Results of this analysis were shown in Table 3, providing an explanation of structural differences between groups, supporting H2.

In terms of model validity, the analysis produced two discriminant functions, labelled Technology Acceptance vs. Resistance and Human-Centered Integration. The Wilks' Lamba overall statistics ($\Lambda = .193$, $p<.001$) indicated there was a considerable degree of statistical significance in the differences between group means, confirming that the three guest segments: Balanced Digitalists, Tech-Enthusiasts, and Sceptics were different and therefore classification was valid.

Two discriminant factors collectively explained 100% of the variance between groups with the first function being most dominant in that is accounted for 65.6% and the second function accounting for additional 34.4%. High canonical correlations (.795 for the first function and .688 for the second function) confirmed that both functions were strong in predicting the group affiliation.

Based on the first function "Technology Acceptance vs. Resistance" the variables with which was most associated were:

1. Digital solutions' influence on satisfaction (.696),
2. Perceptions of sustainability through digitalization (.608),
3. Previous experience with smart hotels (.533), and
4. IoT acceptability and user experience (.523).

Average values for each segment indicated that this function was most effective in separating Tech-Enthusiasts (high positive value of 1.750) from Sceptics (high negative value of -.1552). Balanced Digitalists were in the middle (-0.223). Namely the function represented a basic dimension that could be viewed as ranging from strong acceptance and positive perceptions of digital technology to complete resistance and scepticism.

Based on the second function "Human-Centered Integration," the variables which associated the most with this function were:

1. Emotional responses to digital technology (.791), and
2. Balance between digital vs. human service in hotels (.686).

Average values for each segment indicated that this function was most effective in separating Balanced Digitalists (high positive value of 1.184) from the other two groups that were classified with negative values. This demonstrates the biggest distinctions of the largest segment, which can be viewed as a strong need for digital technology to be intuitive, generate positive feelings, and most importantly to not replace the human component of the hotel sector.

Table 4. Profile of guest segments: means and standard deviation

| **Guest Segments** | | **N** | **Mean** | **Std. Dev.** |
|---|---|---|---|---|
| Balanced Digitalists | Trust in AI and Automation | 154 | 3.5636 | .49227 |
| | IoT Acceptability and Guest Experience | 154 | 3.6545 | .45000 |
| | Digital Solutions' Influence on Satisfaction | 154 | 3.6935 | .47481 |
| | Digital-Human Balance | 154 | 4.2883 | .39006 |
| | Perceptions of Sustainability through Digitalization | 154 | 3.6961 | .62423 |
| | Emotional Reactions to Technology | 154 | 4.2165 | .55166 |
| | Previous Experience with Smart Hotels | 154 | 3.1558 | .56163 |
| | Privacy and Security | 154 | 3.6071 | .45987 |
| | Valid N (listwise) | 154 | | |
| Tech Enthusiasts | Trust in AI and Automation | 126 | 3.5492 | .49051 |
| | IoT Acceptability and Guest Experience | 126 | 4.0381 | .44088 |

| | | | | |
|---|---|---|---|---|
| | Digital Solutions' Influence on Satisfaction | 126 | 4.4825 | .46735 |
| | Digital-Human Balance | 126 | 3.7333 | .63800 |
| | Perceptions of Sustainability through Digitalization | 126 | 4.4095 | .50651 |
| | Emotional Reactions to Technology | 126 | 3.2381 | .95299 |
| | Previous Experience with Smart Hotels | 126 | 3.9524 | .64321 |
| | Privacy and Security | 126 | 3.6905 | .51520 |
| | Valid N (listwise) | 126 | | |
| Sceptics | Trust in AI and Automation | 120 | 3.2300 | .43975 |
| | IoT Acceptability and Guest Experience | 120 | 3.1600 | .59443 |
| | Digital Solutions' Influence on Satisfaction | 120 | 3.3733 | .53699 |
| | Digital-Human Balance | 120 | 3.5000 | .51531 |
| | Perceptions of Sustainability through Digitalization | 120 | 3.2167 | .63753 |
| | Emotional Reactions to Technology | 120 | 2.9222 | .73683 |
| | Previous Experience with Smart Hotels | 120 | 2.9333 | .59030 |
| | Privacy and Security | 120 | 3.0833 | .58458 |
| | Valid N (listwise) | 120 | | |

Descriptive statistics were used next to provide comprehensive view of the characteristics and attitudes of each guest segment Tech-Enthusiasts, Balanced Digitalists, and Sceptics by analysing their mean and standard deviation as shown in Tabled 4, supporting H3.

The profile of the largest segment Balanced Digitalists (n=154) was characterized by a strong expression for a balanced approach between digital technology and human provided service in hotels. The two variables had the highest mean scores were:

1. Balance between digital and human service (M=4.29), and
2. Emotional reactions to digital technology (M=4.22).

The profile of the second segment Tech-Enthusiasts (n=126) experiences positive perceptions of digital technology benefits and innovation. The exceptionally highest mean scores were for the following variables:

1. Digital solutions' influence on satisfaction (M=4.48),
2. Perception of sustainability through digitalization (M=4.41), and
3. IoT acceptability and user experience (M=4.04).

Namely this group's previous experience with smart hotels (M=3.95) illustrated that their positive attitudes were well-informed, however, the lowest score for emotional reactions to digital technology (M=3.24),

indicated that the relationship that this group has with digital technology tends to be more rational than emotional.

The profile of the smallest segment Sceptics (n=120) was characterized with overall distrust for the use of digital technology in the hotel sector, and general disinterest in the value that digitalization can add to their hotel experience. The lowest average of all variables included:

1. Previous experience with smart hotels (M=2.93), and
2. Emotional reactions to digital technology (M=2.92).

These values were below the neutral point (Likert scale from 1 to 5), therefore indicating that the sceptical opinion of this guest group is most likely because they did not have any positive experience using digital technology while staying at a hotel. Additionally, this group showed a strong preference for hotel services and based on their average scores they do not think that adding digital technology solutions will contribute to the additional value of hotels.

Table 5. One-way ANOVA for differences between guest segments

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Trust in AI and Automation | Between Groups | 9.004 | 2 | 4.502 | 19.824 | .000 |
| | Within Groups | 90.163 | 397 | .227 | | |
| | Total | 99.168 | 399 | | | |
| IoT Acceptability and Guest Experience | Between Groups | 47.581 | 2 | 23.791 | 97.043 | .000 |
| | Within Groups | 97.327 | 397 | .245 | | |
| | Total | 144.908 | 399 | | | |
| Digital Solutions' Influence on Satisfaction | Between Groups | 81.444 | 2 | 40.722 | 168.210 | .000 |
| | Within Groups | 96.110 | 397 | .242 | | |
| | Total | 177.554 | 399 | | | |
| Digital-Human Balance | Between Groups | 45.709 | 2 | 22.855 | 85.792 | .000 |
| | Within Groups | 105.759 | 397 | .266 | | |
| | Total | 151.468 | 399 | | | |
| Perceptions of Sustainability through | Between Groups | 89.095 | 2 | 44.548 | 126.277 | .000 |
| | Within | 140.053 | 397 | .353 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Digitalization | Groups | | | | | |
| | Total | 229.148 | 399 | | | |
| Emotional Reactions to Technology | Between Groups | 127.590 | 2 | 63.795 | 112.716 | .000 |
| | Within Groups | 224.694 | 397 | .566 | | |
| | Total | 352.284 | 399 | | | |
| Previous Experience with Smart Hotels | Between Groups | 72.319 | 2 | 36.160 | 101.494 | .000 |
| | Within Groups | 141.441 | 397 | .356 | | |
| | Total | 213.760 | 399 | | | |
| Privacy and Security | Between Groups | 26.947 | 2 | 13.473 | 50.366 | .000 |
| | Within Groups | 106.202 | 397 | .268 | | |
| | Total | 133.149 | 399 | | | |

Results from the ANOVA analysis as shown in Table 5, presented a statistically significant difference between the average ratings of the three guest segments, supporting H4. In all cases, the significance level was .000 ($p<.001$), which provided compelling evidence that the attitudes and perceptions of Tech-Enthusiasts, Balanced Digitalists, and Sceptics were not the same, rather quite different.

For most of the variables, post-hoc analysis using Tukey HSD determined again that all three guest segments were different from one another, especially for five:

1. IoT acceptability and user experience,
2. Digital solutions' influence on satisfaction,
3. Perceptions of sustainability through digitalization,
4. Emotional reactions to digital technology, and
5. Previous experience with smart hotels.

Additionally, the groups generated distinct "subsets," where the average score of Sceptics, was significantly lower than Balanced Digitalists, and theirs was significantly lower than Tech-Enthusiasts. Specific similarities and differences were demonstrated in three of the variables:

1. Thrust in AI and automation and Privacy and security: Sceptics had significantly lower levels of trust and concerns compared to the other two groups. Balanced Digitalists and Tech-Enthusiasts had higher subsets.

2. Digital-human balance: Balanced Digitalists scored significantly higher than the other two groups, confirming that this variable was indeed the key descriptor for this group of guest segment. Furthermore, the results indicated that there were no significant difference between Tech-Enthusiasts and Sceptics.

Table 6. Distribution of guest segments by gender

| | | Gender | | Total |
|---|---|---|---|---|
| | | **Male** | **Female** | |
| Balanced Digitalists | Count | 66 | 88 | 154 |
| | % within Segments | 42.9% | 57.1% | 100.0% |
| | % within Gender | 33.3% | 43.6% | 38.5% |
| Tech-Enthusiasts | Count | 62 | 64 | 126 |
| | % within Segments | 49.2% | 50.8% | 100.0% |
| | % within Gender | 31.3% | 31.7% | 31.5% |
| Sceptics | Count | 70 | 50 | 120 |
| | % within Segments | 58.3% | 41.7% | 100.0% |
| | % within Gender | 35.4% | 24.8% | 30.0% |
| Total | Count | 198 | 202 | 400 |
| | % within Segments | 49.5% | 50.5% | 100.0% |
| | % within Gender | 100.0% | 100.0% | 100.0% |

Crosstab analysis implementing chi-square was conducted to obtain more profound understanding of the demographic profiles of guests within these three segments, as presented in Table 6. The crosstab analysis revealed distinct segment differences, and chi-square tests confirmed a statistically significant association between guest segments and gender $\chi^2$ (2) = 6.47, p=0.039, supporting H5.

Results indicated that women (n=202) had a notable preference for the Balanced Digitalists segment comprising 43.6% of all females, while only 24.8% were classified as Sceptics. Men (n=198) had a rather balanced distribution, with Sceptics segment, comprising 35.4% of all men. When the composition of each segment was analysed, the Balanced Digitalists represented 57.1% women, while Sceptics represented 58.3%, as for Tech-Enthusiasts, it was almost perfectly gender balanced.

Table 7. Distribution of guest segments by age group

| | | Age Group | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | Under 25 | 25–34 | 35–44 | 45–54 | 55+ | |
| Balanced Digitalists | Count | 20 | 32 | 28 | 32 | 42 | 154 |
| | % within Segments | 13.0% | 20.8% | 18.2% | 20.8% | 27.3% | 100.0% |
| | % within Age | 28.6% | 36.4% | 34.1% | 40.0% | 52.5% | 38.5% |
| Tech Enthusiasts | Count | 26 | 20 | 28 | 26 | 26 | 126 |
| | % within Segments | 20.6% | 15.9% | 22.2% | 20.6% | 20.6% | 100.0% |
| | % within Age | 37.1% | 22.7% | 34.1% | 32.5% | 32.5% | 31.5% |
| Sceptics | Count | 24 | 12 | 36 | 22 | 26 | 120 |
| | % within Segments | 20.0% | 10.0% | 30.0% | 18.3% | 21.7% | 100.0% |
| | % within Age | 34.3% | 15.0% | 40.9% | 27.5% | 31.7% | 30.0% |
| Total | Count | 70 | 88 | 82 | 80 | 80 | 400 |
| | % within Segments | 17.5% | 22.0% | 20.5% | 20.0% | 20.0% | 100.0% |
| | % within Age | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Crosstab analysis implementing chi-square was conducted to obtain more profound understanding of the demographic profiles of guests within these three segments, as presented in Table 7 provided even more surprising and revealing results. Chi-square tests confirmed a statistically significant association between guest segments and age $\chi^2$ (8) =19.68, p=0.012, supporting H6.

Balanced Digitalists were the leading group among guests aged 55 and above (52.5%). For elder guests, this clearly suggests that there is not a complete rejection of digital technology, but rather a harmonious co-existence with digital technology in hotels, considering the human element.

Tech-Enthusiasts had the highest concentration in the youngest demographic, guests under the age of 25 (37.1%). However, the distribution remained relatively consistent across all age groups, further suggesting that optimism over digital technology extends across many generations.

Sceptics were mainly represented by the age group from 35 to 44 years old (40.9%). The group which had the lowest level of scepticism with just 15% in this age group were guests from 25 to 34 years old.

## 3. Discussion and Conclusion

This research provides a multidimensional segmentation of guests based on their perceptions and attitudes towards digital technology implementation in hotel services. Findings identified three statistically significant segment groups: Tech-Enthusiasts, Balanced Digitalists, and Sceptics, confirming them through cluster and discriminant analysis, ANOVA, and demographic differences, demonstrating that engaging with digital technology in hotels is not facile process, but rather a complicated combination of cognitive, affective and experiential considerations.

Tech-Enthusiasts demonstrate the highest level of digital acceptance in hotels, as revealed by their elevated mean values for IoT acceptance, impact of digital technology on satisfaction, sustainability perceptions, and overall experience with smart hotels. In addition, their moderate emotional responses imply a practical orientation which aligns with digital technology acceptance theory, highlighting that early adaptors place importance primarily on functional benefits and efficiency of technology (Schorr, 2023). The largest segment, Balanced Digitalists, displayed medium-high levels of digital acceptance while also claiming high sensitivity towards emotional comfort and the need for digital-human balance hotel services. Their profile is aligned with contemporary literature suggestions of human-centered service design which argues that digitalization is effective when human interaction is not diminished (Saari, 2019). The strong influence of emotional reactions in the second discriminant function also further substantiates that this guest segment evaluates technology primarily though affective indicators and through the assessment of its compatibility with traditional service.

When compared to the first two guest segment groups, the third, Sceptics shows systematically lower mean scores for all dimensions, such as trust, emotional comfort, and previous experience with digital services in hotels. While their values are still not low in the absolute sense, they do show restraint rather than overall rejection. Sceptics express significant concerns about privacy and security, aligning with previous research that show that there is general resistance to digital technology implementation due to the perceptions of risk (Fakfare et al., 2024). Results place Sceptics at the negative pole of the technology acceptance, which indicates that losses in trust are a defining moment for this profile.

Demographic results provide further context for the analysis. The youngest respondents fall into the Tech-Enthusiasts segment, which corresponds with previous generational research that shows younger generation as more confident into using technology than older respondents (Wang et al., 2024; Bolser & Gosciej, 2015; Bolton, 2013; Bennett, 2008; Morris & Venkatesh, 2000). Guests aged between 55 and above identify as Balanced Digitalists, which may suggest that older respondents value digital technology that enhances, rather than replaces, human communication and interaction. The Sceptics segment, who is the strongest among respondents between the ages of 35 and 44 is a result of increased awareness of risks and privacy in this particular age group. Genders were equally significant in that women identify more as Balanced Digitalists, while men self-identify more as Sceptics, which signals some differences in perceptions regarding security, trust, and relational support of technology-based services.

Theoretically, this research contributes to the literature by combining eight key factors/dimensions: trust in AI and automation, IoT acceptability, influence of digital solutions on satisfaction, digital-human balance, perceptions of sustainability through digitalization, emotional reactions to technology, previous experience with smart hotels, and privacy and security into theoretical working segmentation model. Analysing these eight dimensions as a collective segmentation model addresses a significant gap in the literature, as previous studies tend to engage the dimensions on a single model, without consideration for guest heterogeneity.

Practical implications are also notable, as they present that homogeneous strategies for hotel guests are not sufficiently effective. For Tech-Enthusiasts hotels can leverage stronger automation, IoT solutions, and AI based personalisation. For Balanced Digitalists, hybrid models where digital technologies exist to assist but do not replace human interactions are the most beneficial. For Sceptics, transparency for data policy, clear trust mechanisms, and the availability of providing traditional hospitality services are crucial. In other words, coordinating all three segments together with specific digital strategies can alleviate barriers to adoption, improve quality perceptions, and optimize technology investments.

However, this research has several limitations: use of convenience sample, cross-sectional design, self-reporting, and no behavioural data related to

technology usage. Future research should use representative samples, longitudinal designs, real life data related to technology usage, and studies across hotel categories and cultural contexts.

In conclusion, this research demonstrates that hotel guests have well differentiated, statistically validates profile related to their approach to adopting digital technology. The three segments of guests that were identified provide a theoretically validated group of segments that have practical application in the development of guest-centric digital strategies. If hoteliers and the hotel industry want to create effective, credible, socially viable digital transformations in their operations, first they need to embrace the cognitive, affective, and experiential elements that influence the acceptance of digital technology.

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