

# WHY IS BRAND EQUITY SO IMPORTANT FOR PUBLIC HEALTHCARE MANAGERS? A CASE STUDY OF CITIZENS' PERCEPTIONS IN IRELAND

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## ABSTRACT

**Introduction:** This study aims to analyse the importance of brand equity within Ireland's Health Service Executive (HSE). To this end, the relevant literature was examined to identify the variables that determine brand equity within the healthcare industry. **Methodology:** An empirical study was conducted in Cork, Ireland, based on a valid sample of 418 responses from citizens. Five-point Likert scales were employed to assess the critical elements of brand equity, building upon the findings of prior studies. The analysis was performed using IBM SPSS 29 and SmartPLS 4. **Results and discussion:** The study quantitatively reinforces the positive effect of brand awareness, brand image, perceived quality, and brand loyalty on brand equity, with brand loyalty being the most significant factor. Citizens' educational level and occupational status have a partial effect on average perceptions of brand equity and its constituent variables. **Conclusions:** This empirical study successfully bridges the gap between

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theoretical concepts and real-world applications. Its findings are an invaluable resource for managers of all public health systems when making decisions.

**Keywords:** marketing, brand equity, citizens, Health Service Executive, Ireland.

## 1. INTRODUCTION

In terms of public health, an effective system is essential for addressing the social determinants of health. These determinants significantly impact the well-being of individuals and communities (Kreuter et al., 2021). Such systems are also vital for ensuring equitable access to healthcare services during emergencies, thereby promoting social justice (Kooli, 2021). Strengthening public health systems worldwide could enhance preparedness and mitigate the impact of future pandemics (Khorram et al., 2024).

In Ireland, the public health service is commonly known as the Health Service Executive (HSE). Cullinan et al. (2021) observe that HSE is highly regarded for providing essential services to the population and for its critical role in promoting equity and accessibility. However, Hayes and O'Reilly (2023) caution that the system's complex and evolving structure poses a significant challenge to efficient service delivery. In line with this, Smyth et al. (2024) highlight HSE initiatives aimed at reforming organisational structures, improving the quality of patient-centred services, and addressing funding and workforce capacity issues.

Meanwhile, the purpose of branding has evolved from maximising shareholder wealth to a more holistic approach that considers responsibilities towards multiple stakeholders, economic development, the environment, and human well-being (Parris & Guzmán, 2023). Furthermore, brand equity is widely recognised as an asset for companies (Oliveira et al., 2023). In the healthcare sector, for instance, it increases the perceived value of a hospital brand among patients and consumers (Górska, 2022).

Willmott (2001) also emphasises the importance of connecting the brand with the community and contributing positively to society. Consequently, customer engagement with the brand (i.e., brand citizenship behaviour) strengthens customer satisfaction and increases brand equity (Sangari et al., 2024). At the level of public institutions, brand equity can be strengthened through the active involvement of citizens (Teodoro & An, 2018).

In line with the human well-being framework outlined by Parris and Guzmán (2023), this study examines the HSE through citizens' perceptions of brand equity. The study has two main objectives: (1) to identify the key variables that influence brand equity in the HSE among citizens, and (2) to establish whether perceptions of brand equity differ according to citizens' educational level and occupational status. The study aims to provide HSE managers with specific information on the aspects of brand equity that citizens value most. It also demonstrates how these perceptions change based on various sociodemographic factors. This provides optimal information for decision-

making, enabling managers to better understand the population and consequently design effective segmentation strategies to enhance the quality and efficiency of care for current and/or future patients.

## **2. CONCEPTUAL FRAMEWORK**

### **2.1. The brand equity of the public health service, as perceived by citizens**

The concept of brand equity has been discussed in accounting and marketing literature, which emphasises the need for a long-term approach to brand management (Wood, 2000). In a healthcare context, brand equity refers to the value that patients attribute to a brand, influenced by their perceptions and experiences (Adisasmito, 2019). Consequently, building brand equity in the healthcare sector can impact factors such as hospital image, the number of job applications received by the hospital, the hospital's efficiency and productivity, and patients' willingness to revisit the hospital (Khosravizadeh et al., 2017).

In the context of public health services, Chakravarthi (2013) emphasises the importance of examining the impact of policies and planning on public health. Similarly, Kim et al. (2021) emphasise the importance of viewing the public as customers when designing health policies and marketing strategies, with the aim of enhancing public perception of brand equity. Building on the work of Mpofu et al. (2015), the aim is to increase community acceptance of, and participation in, public health programmes by improving brand equity.

This research reviews some of the main academic proposals concerning brand equity models (Aaker, 1992; Buil et al., 2010; Casanoves et al., 2018; Christodoulides & De Chernatony, 2010; Delgado-Ballester & Munuera, 2002; Faircloth et al. 2001; Farquhar, 1989; Keller, 1993; Kim & Kim, 2004; Lee & Leh, 2011; Liu et al. 2015; Pappu et al. 2005; Pinar et al. 2011; Washburn & Plank, 2002; Yoo & Donthu, 2001), all of which identify four key drivers. These are brand awareness (Chahal & Bala, 2012; Panchal et al., 2012; Sheikh & Asemani, 2024), brand image (Dada, 2021; Febriani, 2021; Purnama & Wening, 2023), perceived quality (Chahal & Bala, 2012; Charukitpipat, 2024; Panchal et al., 2012) and brand loyalty (Kim et al., 2021; Panchal et al., 2012; Zia et al., 2021). The following section builds on these studies by focusing on each of these elements.

#### **2.1.1. Brand awareness**

Focusing on brand awareness in public healthcare, Holanda (2017) examined the influence of branding on brand awareness at the dental hospital of Hang Tuah University. The study highlighted the significant impact on patient recognition and perception of the hospital. Priono et al. (2023) emphasised that brand awareness influences return visits by outpatient hospital patients. Furthermore, Hafilah'Adani and Dewanto (2024) discovered that higher brand awareness greatly increases the likelihood of patients selecting a hospital. This research highlights the importance of branding efforts in attracting new patients to healthcare facilities.

Regarding brand awareness and brand equity, Chahal and Bala (2012) emphasise that factors such as brand awareness and perceived quality are key contributors to service brand equity in the healthcare sector. Meanwhile, Panchal et al. (2012) highlight how brand awareness, perceived quality, and brand loyalty can provide a sustained competitive advantage and influence the construction of brand equity in the Indian pharmaceutical industry. Finally, Sheikh and Asemani (2024) argue that increasing brand awareness can strengthen overall brand equity and impact prescribing practices within the healthcare sector.

Considering the above, the first research hypothesis can be proposed:

- H1: The perception of brand awareness influences the perception of HSE brand equity among citizens.

### **2.1.2. Brand image**

Baldwin et al. (2011) focus on brand image in public healthcare, emphasising that a positive brand image can increase public trust and engagement. Therefore, building a brand image requires a coherent strategy and the effective communication of the sector's values and mission. Consistent with this, Dalaki et al. (2019) identify service quality, patient satisfaction, and organisational reputation as key internal and external factors in improving hospital image and patient trust. Furthermore, Maulana and Ayuningtyas (2023) highlight that a positive brand image fosters patient trust and loyalty, thereby influencing their choice of hospital.

In terms of brand image and brand equity, Dada (2021) suggests that a positive brand image can give a company a competitive advantage and strengthen its brand equity. Meanwhile, Febriani (2021) found that effective marketing communication can significantly improve brand image, trust, and loyalty, thereby strengthening brand equity. Finally, Purnama and Wening (2023) argue that brand equity increases when consumers have a high level of brand awareness and maintain a positive brand image.

The second research hypothesis can be derived from the above:

- H2: The perception of brand image influences the perception of HSE brand equity among citizens.

### **2.1.3. Perceived quality**

Narang (2010) highlights that the perceived quality of the public healthcare system has a significant influence on patient satisfaction, trust, and utilisation. Carvalho and Rodrigues (2022) contend that positive perceptions of quality can enhance efficiency and sustainability, thereby fostering trust in and acceptance of the public health system. Kumar et al. (2024) emphasise that effective service delivery and positive perceptions are vital for successful healthcare branding.

Regarding perceived quality and brand equity, Chahal and Bala (2012) — upon further developing their previous work in the healthcare sector — propose that maximising

perceived quality can enhance service brand equity. Similarly, Panchal et al. (2012) emphasise the significance of perceived quality in establishing brand equity within the Indian pharmaceutical industry. Finally, Charukitpipat (2024) emphasises the importance of improving service quality to develop long-term patient relationships and strengthen brand equity within the healthcare sector.

Considering the above, the following third research hypothesis can be proposed:

- H3: The perception of perceived quality influences the perception of HSE brand equity among citizens.

#### **2.1.4. Brand loyalty**

Focusing on brand loyalty in public healthcare system, Yaghoubi et al. (2017) emphasise that building brand loyalty in the delivery of medical services can enhance patient satisfaction and improve the efficiency of public health systems. Consistent with this, Kalthor et al. (2021) argue that fostering brand loyalty could result in a public healthcare system that is more efficient and patient centred. Furthermore, Senyapar (2024) asserts that brand loyalty is vital for establishing trust and enhancing the perception of health services within public healthcare systems.

Regarding brand loyalty and brand equity, building on the work discussed above, Panchal et al. (2012) emphasise that brand loyalty positively influences the creation of brand equity in the Indian pharmaceutical industry. Similarly, Kim et al. (2021) argue that public trust and satisfaction strengthen loyalty to, and the reputation of, the healthcare system. This, in turn, improves brand equity. Finally, Zia et al. (2021) highlight the significant relationship between brand loyalty and brand equity, emphasising the importance of companies focusing on customer needs to gain a competitive advantage.

The fourth research hypothesis can be derived from the above:

- H4: The perception of brand loyalty influences the perception of HSE brand equity among citizens.

## **2.2. The impact of sociodemographic variables on citizens' perceptions of public health brand equity**

### **2.2.1. Differences in perception of the public health brand equity, depending on citizens' educational level**

To determine whether there are differences in brand equity perceptions, it is necessary to consider the factor of educational level. Drawing on previous literature, Hysi and Shyle (2015) discuss how the image and perceived quality of universities affect their brand equity, acknowledging that these factors may vary depending on the students' level of education. Rojas et al. (2018) examine how factors such as educational level influence perceptions of the Game of Thrones brand, considering aspects related to sex, violence, and stereotypes. Meanwhile, Vora and Jayswal (2018) analyse the effect

of various demographic factors, including educational level, on brand equity in the context of advergames. Mourad et al. (2020) examined how perceptions of brand equity in higher education institutions vary according to academic level (i.e., undergraduate versus postgraduate). Finally, Senayah et al. (2024) analyse how different demographic characteristics, including educational level, influence experience with fashion brands in emerging economies.

All this makes it possible to formulate the first set of moderating hypotheses:

- H5: Citizens' educational level influences their perception of the HSE's brand equity.
  - H5a. Citizens' educational level influences their perception of the HSE's brand awareness.
  - H5b. Citizens' educational level influences their perception of the HSE's brand image.
  - H5c. Citizens' educational level influences their perception of the HSE's perceived quality.
  - H5d. Citizens' educational level influences their perception of the HSE's brand loyalty.

#### **2.2.2. Differences in perception of the public health brand equity, depending on citizens' occupational status**

As in the previous case, occupational status is also a factor in determining whether differences in the perception of brand equity exist. Building on previous literature, Keller et al. (2010) conducted market research to investigate how perceptions of brand equity can vary across different market segments, including occupational groups. Srinivasan et al. (2014) confirm that different professions have distinct preferences for and levels of consumption of luxury products, which are influenced by socio-economic and status factors. Singh (2018) examined factors influencing the lingerie shopping experience in relation to consumers' age and occupation. They emphasised the importance of tailoring marketing strategies to the specific preferences of each group. Furthermore, Gilch (2022) analysed how occupational fit influences applicants' perceptions of an employer brand's image. Finally, Widodo and Mahadika (2023) analysed the factors influencing purchase intentions for electronic products during the pandemic. They identified trust, perceived usefulness, and ease of use as key variables. They also examine how gender and occupation moderate these relationships.

All of this enables us to formulate the second block of moderating hypotheses:

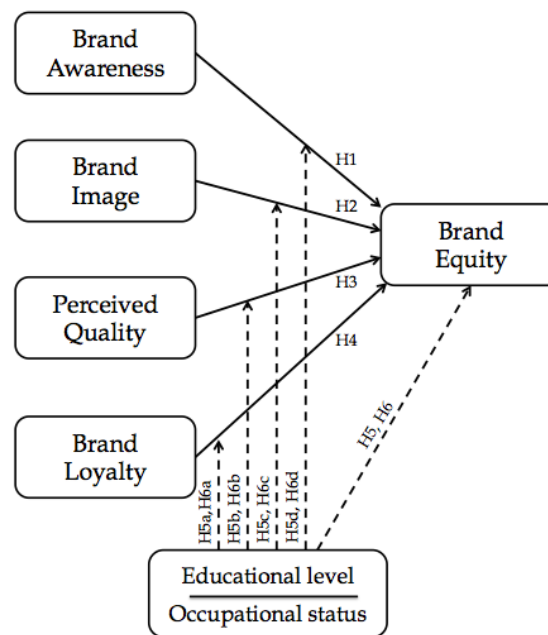
- H6: Citizens' occupational status influences their perception of the HSE's brand equity.
  - H6a. Citizens' occupational status influences their perception of the HSE's brand awareness.
  - H6b. Citizens' occupational status influences their perception of the HSE's brand image.

- H6c. Citizens' occupational status influences their perception of the HSE's perceived quality.
- H6d. Citizens' occupational status influences their perception of the HSE's brand loyalty.

Figure 1 shows our proposed theoretical model, which is designed to support the present research.

**Figure 1**

*Theoretical model proposed for this research*



**Source:** Own elaboration.

### 3. METHODOLOGY

To achieve the proposed objectives, we conducted a quantitative study analysing the brand equity of the Ireland's Health Service Executive (HSE). According to publichealth.ie, the HSE is Ireland's national public health and social care service, dedicated to delivering compassionate, high-quality care to people of all ages. The HSE has a workforce of over 150,000, comprising healthcare professionals, support workers, and administrative staff. It operates under the remit of the Department of Health and is guided by the values of care, compassion, trust, and learning.

The fieldwork was conducted in Cork, Ireland. Non-probability convenience sampling was employed to quantify the target population, for which official data from Cork City Council was used. The city was found to be home to 210,853 people, all of whom were residents at the time of the research. Data were collected via a paper questionnaire distributed to 449 citizens. After filtering, 418 valid responses were obtained. While convenience sampling may introduce bias into the sample, valuable data can still be

collected if the research is conducted meticulously, and measures are in place to control for bias and uncertainty. The representativeness and diversity of the sample can be evaluated and managed to enhance the effectiveness of convenience sampling (Golzar et al., 2022). Furthermore, a larger sample size helps mitigate bias and reduce uncertainty in this approach (Skowronek & Dürr, 2009).

Notable data from the sample profile shows that the group is mixed, consisting of 58.37% women, 41.39% men, and a small number of individuals who do not identify as either gender. Responses were obtained from citizens of eight Irish counties, primarily from County Cork (97.37%), followed by Dublin (1.2%). The sample comprises more than 40 nationalities, the majority of whom are Irish (66.7%), followed by Italian and French nationals representing 5.26% and 2.6%, respectively. Additionally, 16.97% of the sample were under 20 years old, 51.67% were aged 20–29, 32.8% were aged 30–49, and the remainder were aged 50 or over. Almost 40% of citizens are regular patients of the public healthcare system, 26.56% of the private system, and almost 30% use both. The remainder use neither or other systems. Notably, 13.6% of respondents have completed secondary education, 52.39% have a university degree and just over 26% have a master's or doctoral degree. Finally, over 72.7% of those interviewed have lived in Ireland for over 10 years. Therefore, most responses are of high quality, as they come from experienced users of the HSE.

The following five variables were evaluated using a five-point Likert scale, where 1 means 'strongly disagree' and 5 means 'strongly agree': (1) brand awareness, (2) brand image, (3) perceived quality, (4) brand loyalty and (5) brand equity. These measures were adapted from validated scales developed by Aaker (1992), Keller (1993), and Yoo and Donthu (2001), and were selected because they are relevant to the attitudinal framework of this study. In line with these prior studies, the items were customised to align with the HSE context.

Several techniques were employed in the analysis of the data. Structural equation modelling (SEM) was used because it enables the examination of relationships between complex variables (Schumacker & Lomax, 2004). It can address issues such as missing data and multicollinearity and examine indirect effects (Westland, 2015). Following the work of Hair et al. (2019), partial least squares structural equation modelling (PLS-SEM) was also used. This methodology enables the investigation of relationships between variables within theoretical frameworks (Sarstedt et al., 2020). SmartPLS4 software was used as it employs the PLS-SEM technique.

Conversely, the measurement model has previously been studied to evaluate internal consistency based on the following: (1) Cronbach's alpha; (2) convergent validity through average variance extracted (AVE); (3) convergent validity through cross-loadings; and (4) discriminant validity of the model through the heterotrait-monotrait relationship (HTMT). The theoretical model examines the potential relationship between the four variables and brand equity. Additionally, the moderating effects of citizens' educational level and occupational status have been studied.

Finally, we conducted descriptive and multivariate analyses using the IBM SPSS Statistics 29 software. According to López et al. (2023), statistics enable us to interpret the information gathered from our research. We therefore used descriptive analysis to characterise our sample. Furthermore, Guyatt et al. (1995) states that regression techniques help us to understand the relationships between variables and to determine which variables influence others. Kim (2017) states that analysis of variance (ANOVA) is an efficient method for analysing experimental data. Armstrong et al. (2002) state that ANOVA is the most appropriate method for determining whether there are differences in the means of three or more groups rather than performing repeated comparisons using Student's t-test.

Based on these studies, the statistical analysis in this study involved applying two methods: (1) hypothesis testing, and (2) analysis of variance according to educational level and occupational status, based on brand equity and on each of its elements separately. Post-hoc analysis was not performed for the ANOVAs as our study focused on whether different groups classified by educational level and occupational status had a significant effect on average brand awareness perception, rather than identifying the specific groups in which these differences occurred.

## 4. RESULTS AND DISCUSSION

### 4.1. Confirmatory factor analysis

Firstly, the psychometric characteristics of the instrument were examined by analysing the quality of each proposed item and validating the instrument itself. The reliability of the constructs was then assessed using Cronbach's alpha (CA). Values greater than 0.7 were obtained in all cases (Hair et al., 2019). Composite reliability (CR: rho\_c), which provides a more robust estimate of reliability, was also above the acceptable limit of 0.70, reflecting strong internal consistency (Hair et al., 2019; Sarstedt et al., 2020). Additionally, an average variance extracted (AVE) analysis was performed. Except for brand image, the variance captured by the latent constructs of the indicators was greater than or close to 50%, supporting convergent validity.

**Table 1.**

*Reliability and construct validity*

| Factor            | CA    | CR (rho_a) | CR (rho_c) | AVE   |
|-------------------|-------|------------|------------|-------|
| Brand Awareness   | 0.768 | 0.842      | 0.829      | 0.511 |
| Brand Image       | 0.877 | 0.891      | 0.899      | 0.413 |
| Perceived Quality | 0.934 | 0.946      | 0.942      | 0.484 |
| Brand Loyalty     | 0.914 | 0.926      | 0.926      | 0.495 |
| Brand Equity      | 0.860 | 0.868      | 0.905      | 0.706 |

**Source:** Own elaboration.

Conversely, examining the cross-loading results in Table 2 shows that each indicator has a higher factor loading in its own construct than in the others. These results lend support to the reliability of the model and its convergent validity.

**Table 2.**

*Cross-loading results*

| Indicator | Brand Awareness (BA) | Brand Image (BI) | Perceived Quality (PQ) | Brand Loyalty (BL) | Brand Equity (BE) |
|-----------|----------------------|------------------|------------------------|--------------------|-------------------|
| BA1       | 0.387                | 0.169            | 0.070                  | 0.091              | 0.017             |
| BA2       | 0.772                | 0.585            | 0.517                  | 0.409              | 0.246             |
| BA3       | 0.538                | 0.345            | 0.263                  | 0.354              | 0.083             |
| BA4       | 0.855                | 0.566            | 0.493                  | 0.419              | 0.223             |
| BA5       | 0.889                | 0.588            | 0.503                  | 0.417              | 0.254             |
| BI1       | 0.488                | 0.685            | 0.573                  | 0.449              | 0.277             |
| BI2       | 0.524                | 0.723            | 0.566                  | 0.536              | 0.406             |
| BI3       | 0.619                | 0.799            | 0.675                  | 0.562              | 0.321             |
| BI4       | 0.339                | 0.629            | 0.524                  | 0.489              | 0.262             |
| BI5       | 0.354                | 0.568            | 0.470                  | 0.447              | 0.245             |
| BI6       | 0.514                | 0.784            | 0.671                  | 0.573              | 0.334             |
| BI7       | 0.423                | 0.693            | 0.677                  | 0.547              | 0.373             |
| BI8       | 0.433                | 0.642            | 0.534                  | 0.452              | 0.240             |
| BI9       | 0.452                | 0.534            | 0.393                  | 0.378              | 0.252             |
| BI10      | 0.157                | 0.403            | 0.336                  | 0.358              | 0.247             |
| BI11      | 0.517                | 0.696            | 0.548                  | 0.516              | 0.364             |
| BI12      | 0.399                | 0.590            | 0.536                  | 0.451              | 0.261             |
| BI13      | 0.472                | 0.481            | 0.409                  | 0.364              | 0.137             |
| PQ1       | 0.443                | 0.650            | 0.673                  | 0.489              | 0.318             |
| PQ2       | 0.247                | 0.460            | 0.612                  | 0.413              | 0.330             |
| PQ3       | 0.490                | 0.689            | 0.767                  | 0.588              | 0.361             |
| PQ4       | 0.617                | 0.740            | 0.772                  | 0.604              | 0.321             |
| PQ5       | 0.381                | 0.412            | 0.440                  | 0.429              | 0.147             |
| PQ6       | 0.327                | 0.399            | 0.440                  | 0.383              | 0.167             |
| PQ7       | 0.362                | 0.394            | 0.408                  | 0.343              | 0.147             |
| PQ8       | 0.378                | 0.495            | 0.576                  | 0.393              | 0.220             |
| PQ9       | 0.612                | 0.725            | 0.778                  | 0.602              | 0.397             |
| PQ10      | 0.485                | 0.568            | 0.612                  | 0.564              | 0.294             |
| PQ11      | 0.378                | 0.572            | 0.697                  | 0.568              | 0.355             |
| PQ12      | 0.275                | 0.498            | 0.700                  | 0.538              | 0.274             |
| PQ13      | 0.241                | 0.484            | 0.678                  | 0.521              | 0.278             |
| PQ14      | 0.411                | 0.647            | 0.831                  | 0.643              | 0.357             |

|      |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|
| PQ15 | 0.491 | 0.705 | 0.831 | 0.639 | 0.375 |
| PQ16 | 0.452 | 0.671 | 0.842 | 0.660 | 0.350 |
| PQ17 | 0.414 | 0.629 | 0.809 | 0.631 | 0.351 |
| PQ18 | 0.374 | 0.628 | 0.803 | 0.633 | 0.344 |
| BL1  | 0.448 | 0.593 | 0.601 | 0.741 | 0.340 |
| BL2  | 0.455 | 0.662 | 0.676 | 0.741 | 0.464 |
| BL3  | 0.430 | 0.637 | 0.665 | 0.774 | 0.411 |
| BL4  | 0.390 | 0.604 | 0.678 | 0.805 | 0.374 |
| BL5  | 0.427 | 0.584 | 0.611 | 0.774 | 0.372 |
| BL6  | 0.377 | 0.456 | 0.400 | 0.632 | 0.273 |
| BL7  | 0.423 | 0.646 | 0.682 | 0.795 | 0.356 |
| BL8  | 0.280 | 0.465 | 0.472 | 0.669 | 0.265 |
| BL9  | 0.188 | 0.354 | 0.360 | 0.607 | 0.225 |
| BL10 | 0.197 | 0.345 | 0.387 | 0.610 | 0.253 |
| BL11 | 0.211 | 0.351 | 0.395 | 0.580 | 0.348 |
| BL12 | 0.235 | 0.292 | 0.285 | 0.536 | 0.200 |
| BL13 | 0.383 | 0.582 | 0.653 | 0.802 | 0.412 |
| BE1  | 0.230 | 0.399 | 0.381 | 0.426 | 0.860 |
| BE2  | 0.244 | 0.386 | 0.369 | 0.420 | 0.865 |
| BE3  | 0.239 | 0.427 | 0.401 | 0.438 | 0.863 |
| BE4  | 0.218 | 0.341 | 0.347 | 0.347 | 0.768 |

**Source:** Own elaboration.

To study the discriminant validity of the model, Heterotrait-Monotrait (HTMT) ratio values were used instead of the Fornell-Larcker criterion. According to Henseler et al. (2015), the latter method may not be sensitive enough to detect a lack of discriminant validity in more complex models. Table 3 shows that all the HTMT values are below the recommended threshold of 0.9, indicating adequate discriminant validity between the constructs. In other words, the model's structure is conceptually robust, with the latent variables differing statistically.

**Table 3.**

*Heterotrait-Monotrait Ratio (HTMT)*

|                        | Brand Awareness (BA) | Brand Equity (BE) | Brand Image (BI) | Brand Loyalty (BL) | Perceived Quality (PQ) |
|------------------------|----------------------|-------------------|------------------|--------------------|------------------------|
| Brand Awareness (BA)   |                      |                   |                  |                    |                        |
| Brand Equity (BE)      | 0.292                |                   |                  |                    |                        |
| Brand Image (BI)       | 0.773                | 0.516             |                  |                    |                        |
| Brand Loyalty (BL)     | 0.552                | 0.529             | 0.805            |                    |                        |
| Perceived Quality (PQ) | 0.647                | 0.487             | 0.928            | 0.820              |                        |

**Source:** Own elaboration.

Furthermore, after calculating the collinearity indicator (VIF), it was observed that all these indicators were below 5, indicating acceptable levels and suggesting that there were no serious collinearity problems. The indicators referring to (1) brand awareness: BA1: 1.166; BA2: 1.430; BA3: 1.264; BA4: 2.457; BA5: 2.628; (2) brand image: BI1: 1.776; BI2: 1.951; BI3: 2.527; BI4: 1.658; BI5: 1.543; BI6: 2.196; BI7: 1.817; BI8: 1.695; BI9: 1.384; BI10: 1.159; BI11: 1.892; BI12: 1.506; BI13: 1.457; (3) perceived quality: PQ1: 1.840; PQ2: 1.742; PQ3: 2.751; PQ4: 2.871; PQ5: 1.744; PQ6: 1.999; PQ7: 1.978; PQ8: 1.744; PQ9: 2.756; PQ10: 1.663; PQ11: 1.922; PQ12: 3.990; PQ13: 4.273; PQ14: 3.822; PQ15: 3.805; PQ16: 4.211; PQ17: 3.784; PQ18: 3.746; (4) brand loyalty: BL1: 2.011; BL2: 2.636; BL3: 2.615; BL4: 2.814; BL5: 2.472; BL6: 1.847; BL7: 2.471; BL8: 2.428; BL9: 2.180; BL10: 1.870; BL11: 1.563; BL12: 1.756; BL13: 2.537; and (3) brand equity: BE1: 2.248; BE2: 2.389; BE3: 2.167; BE4: 1.662.

Based on these findings, we can conclude that the model is reliable, valid, and suitable for structural analysis. The constructs demonstrate internal consistency, as measured by Cronbach's alpha, as well as acceptable convergent validity, as evidenced by HTMT indices and cross-loading analysis. This confirms that they measure theoretically independent dimensions and are conceptually distinct.

#### **4.2. Hypothesis test**

Secondly, as shown in Table 4, regression methods were used to carry out hypothesis testing.

**Table 4.**

*Hypothesis testing*

| Hypothesis | $\beta$ Stand. | R-square | Intercept | $\beta$ Non-Stand. | t-statistic | p-value |
|------------|----------------|----------|-----------|--------------------|-------------|---------|
| H1         | 0.228          | 0.052    | 1,7       | 0.306              | 4,781       | <0.001  |
| H2         | 0.439          | 0.192    | 0.894     | 0.666              | 9.956       | <0.001  |
| H3         | 0.423          | 0.179    | 1.090     | 0.622              | 9..534      | <0.001  |
| H4         | 0.450          | 0.203    | 1.220     | 0.592              | 10.282      | <0.001  |

**Source:** Own elaboration.

The results suggest that the model designed in this study satisfactorily explains the four proposed hypotheses when applied to the population, as each has a p-value of less than 0.001. A positive relationship was demonstrated between brand awareness, brand image, perceived quality, and brand loyalty with respect to brand equity. Brand loyalty is the most significant variable. Hypotheses H1, H2, H3 and H4 are therefore accepted.

#### 4.3. Analysis of variance

Thirdly and finally, as all the variables were found to be significant, an analysis of variance was performed on each one to calculate the mean response and compare perceptions of brand equity. An additional ANOVA was performed to measure these perceptions in relation to citizens' educational level (see Table 5).

**Table 5.**

*Analysis of variance based on educational level*

| Hypothesis | Dependent Variable | F-statistic | p-value |
|------------|--------------------|-------------|---------|
| H5         | Brand Equity       | 2.840       | 0.016   |
| H5a        | Brand Awareness    | 0.321       | 0.901   |
| H5b        | Brand Image        | 0.505       | 0.773   |
| H5c        | Perceived Quality  | 1.749       | 0.122   |
| H5d        | Brand Loyalty      | 2.155       | 0.058   |

**Source:** Own elaboration.

The educational level is divided into the following categories: (1) Primary education, (2) Secondary education, (3) Vocational training, (4) Bachelor's degree, (5) Master's degree, and (6) Doctorate. We then want to analyse citizens' educational level, as these are influential factors in the perception of brand equity. After performing an analysis of variance (ANOVA), we observe that the p-value of the F-statistic is 0.016, which is less than the significance level of 0.05. Therefore, at a 5% significance level, there is a statistically significant difference in the average perception of brand equity across different levels of education. Hypothesis H5 is accepted.

Similarly, ANOVAs were conducted to determine whether educational level influences the average perception of brand awareness, brand image, perceived quality, and brand loyalty among citizens. As all observed p-values were greater than 0.05, there was no statistically significant difference between the means of these variables and the different educational levels at a 5% significance level. Therefore, hypotheses H5a, H5b, H5c and H5d were rejected.

An ANOVA was also performed to measure brand perception according to citizens' occupational status (see Table 6).

**Table 6.**

*Analysis of variance based on occupational status*

| Hypothesis | Dependent Variable | F-statistic | p-value |
|------------|--------------------|-------------|---------|
| H6         | Brand Equity       | 1.070       | 0.384   |
| H6a        | Brand Awareness    | 1.765       | 0.052   |
| H6b        | Brand Image        | 2.536       | 0.003   |
| H6c        | Perceived Quality  | 2.311       | 0.007   |
| H6d        | Brand Loyalty      | 2.138       | 0.014   |

**Source:** Own elaboration.

Occupational status is categorised as follows: (1) full-time student, (2) intern, (3) employee, (4) self-employed, (5) freelancer, (6) civil servant, (7) homemaker, (8) volunteer, (9) unemployed, (10) disabled person, (11) retired person, (12) athlete, and (13) other. We want to analyse citizens' occupations because they are an influential factor in the perception of brand equity. After performing an analysis of variance (ANOVA), we observed that the p-value of the F-statistic was 0.384, which is greater than 0.05. This indicates that, at a significance level of 5%, there is no statistically significant difference in the average perception of brand equity among citizens with different occupations. Hypothesis H6 is therefore rejected.

Similarly, ANOVAs were conducted to determine whether occupational status influences the average perception of brand awareness, brand image, perceived quality, and brand loyalty among citizens. While the p-value for brand awareness was greater than 0.05, those for the other variables were all less than 0.05. This confirms that there are no significant differences in average brand awareness levels across occupational groups. However, significant differences were found in brand image, perceived quality, and brand loyalty at a 5% significance level. Hypothesis H6a was rejected, while hypotheses H6b, H6c and H6d were accepted.

## 5. CONCLUSIONS

The aim of this study was to analyse the importance of the brand equity of Ireland's Health Service Executive (HSE). Fifteen of the main academic proposals concerning brand equity models were examined for this purpose (Aaker, 1992; Buil et al., 2010; Casanoves-Boix et al., 2018; Christodoulides & De Chernatony, 2010; Delgado & Munuera, 2002; Faircloth et al. 2001; Farquhar, 1989; Keller, 1993; Kim & Kim, 2004; Lee & Leh, 2011; Liu et al. 2015; Pappu et al. 2005; Pinar et al. 2011; Washburn & Plank, 2002; Yoo & Donthu, 2001). As these models address the concept within specific contexts, they may not be applicable to different cultures or markets. This research therefore makes a unique contribution by focusing on Irish culture and the public health service market.

Upon reviewing the results, we observed that the proposed model exhibited positive and direct associations with the four variables and their relationship with brand equity. These findings are consistent with previous literature on brand awareness (Chahal & Bala, 2012; Panchal et al., 2012; Sheikh & Asemani, 2024), brand image (Dada, 2021; Febriani, 2021; Purnama & Wening, 2023), perceived quality (Chahal & Bala, 2012; Charukitpipat, 2024; Panchal et al., 2012) and brand loyalty (Kim et al., 2021; Panchal et al., 2012; Zia et al., 2021). Brand loyalty is the most significant factor in building brand equity. Conversely, the results corresponding to the moderating hypotheses confirm that: (1) There is a statistically significant difference in the average perception of brand equity based on educational level, in line with previous studies (Hysi & Shyle, 2015; Mourad et al., 2020; Rojas et al., 2018; Senayah et al., 2024; Vora & Jayswal, 2018). However, no differences were found when the variables were considered separately; and (2) Statistically significant differences were found in the average perception of brand image, perceived quality, and brand loyalty among citizens with different occupational statuses. These findings are consistent with those of previous studies (Gilch, 2022; Keller et al., 2010; Singh, 2018; Srinivasan et al., 2014; Widodo & Mahadika, 2023). However, no such differences were found in terms of brand equity or brand awareness.

Based on the results obtained, the following business implications are proposed: (1) Brand equity is a key asset for all organisations, especially those in the public health sector. Following Vantamay's (2013) work, specific branding actions are recommended to maintain and enhance positive public perception. Furthermore, citizens' educational level is an important factor to consider, and effective segmentation by group is recommended for public health communication campaigns; (2) As Hafilah'Adani and Dewanto (2024) pointed out, increasing awareness and visibility of the public health system among the population can increase the likelihood that citizens will choose its services instead of considering alternative options, which would result in public health losing market share; (3) Improving the brand image of the public health system could strengthen trust in and the reputation of the health service, as demonstrated by Baldwin et al. (2011). This could attract more users and facilitate acceptance of new health initiatives or programmes; (4) Following Narang's (2010) guidelines, improving the perceived quality of services offered by the public health system can increase user

satisfaction and strengthen confidence. This is particularly important in an environment where the average perception varies according to citizens' occupational statuses; and (5) As Senyapar (2024) indicates, promoting user loyalty to the public health system can guarantee a solid base of regular patients, encourage ongoing service use, and generate recommendations to other potential users.

Finally, it is important to consider the limitations of the study and potential future research areas, such as: (1) The study was conducted in Ireland. In the context of Wang and Mao (2021), this could be used to make perceptual comparisons with other territories; (2) The sample comprised only citizens but could be expanded to include other stakeholders in the healthcare system, such as employees and employers, as suggested by Casanoves et al. (2019); (3) The public healthcare sector was analysed. It would be interesting to study citizens' perceptions of the private sector, as suggested by Arora and Neha (2016), to determine whether there are differences in brand equity; (4) A quantitative technique was used to collect the data. Qualitative methods could be employed to provide a different perspective, as suggested by Renjith et al. (2021); (5) Fieldwork was carried out at a single point in time. Longitudinal studies could be conducted to visualise possible variations in perceptions over time, building on the work of Luffarelli et al. (2023); and (6) The corresponding results revealed differences in average brand image, perceived quality, and brand loyalty perceptions among citizens with different occupational statuses. However, no such differences were found in terms of brand equity or brand awareness. This may be because if brand awareness is not statistically significant, then neither should brand equity be, since brand equity is constructed based on these four variables, which must always go hand in hand. Alternatively, this finding may be specific to the Irish cultural context. Conducting this study in other countries would therefore be interesting to ascertain whether similar results are obtained.

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## 7. ANNEXES

English wording of items and questions used. Please indicate your level of agreement or disagreement with the following statements using the scale below (1 = strongly disagree; 5 = strongly agree)

### Brand Awareness (BA)

- BA1. I have heard of the Ireland's Health Service Executive (HSE).  
BA2. In general, I have a positive opinion of the HSE.  
BA3. I know the HSE well.  
BA4. If I knew someone experiencing health issues, I would recommend contacting the HSE.  
BA5. I would recommend the HSE to anyone looking for medical advice.

### Brand Image (BI)

- BI1. In my opinion, Ireland's Health Service Executive (HSE) provides good value for money.  
BI2. I would prefer to receive care from the HSE than from any other provider.  
BI3. I have confidence in the HSE.  
BI4. It offers me special benefits.  
BI5. It has a rich history.  
BI6. It meets all my needs.  
BI7. It is effective and efficient (in terms of speed, responsiveness, etc.).  
BI8. Information and support are easily accessible.  
BI9. Compared to other Irish healthcare services, HSE prices are generally lower.

- BI10. The HSE is a place where people I admire, and respect would like to work.  
BI11. If I had been dealing with physical health issues, I would have been satisfied with the treatment I received from the HSE.  
BI12. The same applies if I had experienced psychological health issues.  
BI13. I have a positive opinion of HSE employees.

#### Perceived Quality (PQ)

- PQ1: In terms of healthcare quality, I would say that Ireland's Health Service Executive (HSE) offers good value for money.  
PQ2: I would also rate the HSE highly in terms of waiting times for treatment.  
PQ3: Overall, the HSE meets my needs.  
PQ4: My overall opinion of the HSE is positive.  
PQ5: HSE employees (doctors, nurses, etc.) are innovative.  
PQ6: HSE employees are interested in patients' opinions.  
PQ7: HSE employees value the opinions of their colleagues.  
PQ8: HSE employees have a positive view of the HSE.  
PQ9: I would recommend the HSE to others.  
PQ10: The HSE is a relevant brand to me.  
PQ11: As an HSE patient (or potential patient), I benefit from advantages that no other healthcare provider could offer.  
PQ12. It's exciting!  
PQ13. It's fun.  
PQ14: It gives me a warm feeling.  
PQ15: It makes me feel secure.  
PQ16. It makes me feel emotionally stable.  
PQ17. It makes me feel self-respectful.  
PQ18. It makes me feel socially accepted.

#### Brand Loyalty (BL)

- BL1. As a patient (or potential patient), I am loyal to Ireland's Health Service Executive (HSE).  
BL2. The HSE is the kind of health service I want in Ireland.  
BL3. I prefer the HSE brand to any other.  
BL4. The HSE is special to me.  
BL5. I identify with the HSE's values.  
BL6. I identify with the values of HSE workers.  
BL7. As a patient (or potential patient), I feel a sense of belonging to the HSE.  
BL8. I feel connected to HSE workers.  
BL9. I also feel a connection with HSE patients.  
BL10. I enjoy talking to other people about the HSE.  
BL11. I am interested in learning more about the HSE.  
BL12. I often read news about the HSE in digital and/or print formats.  
BL13. I am proud that others know I support the HSE.

### Brand Equity (BE)

BE1. It is better to be a patient of Ireland's Health Service Executive (HSE) than of a private healthcare provider.

BE2. Even though they have the same characteristics, I would rather be an HSE patient.

BE3. I would still prefer to be an HSE patient, even if a private healthcare provider were just as good.

BE4. If the private healthcare provider is no different to the HSE, it makes more sense to be an HSE patient.

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