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Article

The Impact of Industrial Tourism on Brand Equity in Iran

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Abstract The aim of this study is to investigate how industrial tourism influences brand equity in the context of Iran, integrating qualitative and quantitative approaches across three complementary phases. In Phase 1, a metasynthesis combined with grounded theory was applied to identify the multidimensional impacts of industrial tourism on visited sites and visitors, providing the conceptual foundation for the study. Phase 2 employed a structured questionnaire with 385 industrial tourists to quantitatively assess the effects of industrial tourism on the four dimensions of brand equity, awareness, perceived quality, brand associations, and loyalty, derived from the conceptual model. Phase 3 conducted in-depth interviews with 25 industrial tourists to explore their experiential perceptions and contextualize the quantitative findings. The results show that industrial tourism significantly enhances brand equity, particularly through increased brand awareness and perceived quality, while also influencing associations and loyalty. This three-phase design demonstrates how integrating theoretical synthesis, empirical measurement, and experiential insights offers a comprehensive understanding of the role of industrial tourism in strengthening both corporate brands and regional identity in an emerging market setting.

Keywords industrial tourism; visitors; visited sites; metasynthesis; grounded theory

1. Introduction

Industrial tourism has emerged as a specialized niche within the broader tourism sector, garnering increasing attention due to its capacity to offer unique, authentic experiences that provide firsthand insights into a region's economic and cultural fabric [1–3]. Early initiatives, such as the 1997 Industrial Tourism Foundation in Rotterdam, which promoted port visits with Dutch government support, and the 2000 declaration of York, Pennsylvania, as the “Industrial Tour Capital”, illustrate how industrial regions have embraced tourism not only as a revenue stream but also as a strategic marketing and branding tool [4]. Today, industrial tourism serves a dual purpose: it enhances destination image while showcasing the distinctive industrial character of regions, thereby contributing to both economic development and cultural preservation [5].

Despite its growing practical relevance, industrial tourism is still widely described as a young and underexplored field [6–8]. Most empirical research to date has concentrated on sub-niches such as culinary or heritage tourism rather than on industrial production sites themselves [9–15]. Even the limited body of work examining industrial attractions rarely extends beyond descriptive visitor profiles to address strategic marketing outcomes such as brand equity. Moreover, almost all existing studies focus on European cases, leaving emerging industrial economies, including Iran, largely overlooked [7,11,16–18]. This omission is critical because the national context can significantly moderate the relationship between tourism experiences and brand perceptions. Against this backdrop, the present study addresses a dual gap: first, the paucity of research linking industrial tourism experiences to the four classical dimensions of brand equity; and second, the absence of empirical evidence from Iran's nascent but rapidly internationalizing manufacturing sector.

In many European countries, by contrast, industrial heritage is now recognized as an integral component of local culture, preserved as a key element of regional identity [19]. Such preservation not only stimulates local economic and cultural development but also enhances residents' quality of life by attracting special-interest tourists while minimizing the negative impacts typically associated with mass tourism [20]. Taken together, these gaps highlight the importance of

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examining industrial tourism not merely as a heritage phenomenon but as a strategic branding mechanism, which forms the core focus of the following discussion. Beyond its economic advantages, industrial tourism functions as a strategic instrument for both businesses and destinations by integrating heritage preservation with economic diversification. Converting operational factories, historical industrial sites, and production facilities into tourist attractions creates memorable experiences that deepen consumer engagement and foster brand loyalty [18,21]. Guided tours, interactive workshops, and other experiential activities serve to reinforce a region's cultural narrative and elevate the perceived quality of associated brands [22]. This experiential marketing approach effectively builds emotional connections between visitors and brands, thereby positively influencing brand equity [23,24].

The role of branding in industrial tourism is critical, as it shapes consumer perceptions and establishes competitive advantages. Brand equity in this context is built upon elements such as brand loyalty, perceived quality, brand awareness, and brand associations [25,26]. When companies create environments that allow direct interaction with industrial processes, they stimulate both emotional and cognitive responses that enhance brand image [27]. Immersive activities such as guided tours and hands-on workshops not only create lasting memories but also build deeper consumer connections that traditional advertising often fails to achieve [28–30]. Factors like high-quality facilities, engaging interactive experiences, and consistent service standards contribute significantly to perceived quality, which in turn bolsters brand image and consumer trust [6,31–33]. Additionally, comprehensive marketing strategies that highlight a site's unique heritage and innovative practices have been shown to significantly boost brand awareness [29,34], with digital channels such as influencer campaigns and virtual tours playing an increasingly pivotal role [26]. Industrial tourism also provides brands with a platform to tell their stories, emphasizing heritage, core values, and innovation [16,35]. Iconic cases like Cadbury and Jack Daniel's illustrate how transforming production facilities into tourist attractions can effectively communicate a company's commitment to quality and heritage [36]. However, debates persist regarding the definition of industrial tourism. While Frew [4] restricts the concept to tourism at operational sites where tourism is not the primary activity, Chen & Morrison [37] argue that even sites offering insights into production processes are integral to industrial tourism.

Ultimately, the significance of industrial tourism lies in its dual impact on both supply and demand. It not only enhances the image of industrial sites but also shapes visitor perceptions and behaviors. To address the identified research gap, this study explores the connection between industrial tourism and the branding of industrial products—a linkage particularly relevant for internationalization efforts in Iran, a country with a relatively nascent history in industrial tourism. To this end, a sequential mixed-methods design was adopted, integrating a seven-step qualitative metasynthesis and grounded-theory analysis with a survey of 385 tourists and 25 follow-up, in-depth interviews, in order to clarify how industrial-tourism experiences at Iranian production sites affect both destination-level outcomes (relationships, identity, innovation, marketing, economics, and environmental stewardship) and the four dimensions of brand equity (awareness, perceived quality, associations, and loyalty). Accordingly, the following hypotheses guided the research. H1: Greater brand awareness derived from industrial-tourism experiences positively influences visitors' perceived quality of the host brand. H2: Higher brand awareness engendered by industrial-tourism participation fosters more favorable brand associations. H3: Visitors' perceived quality of the host brand positively influences their loyalty to the brand. H4: Visitors' perceived quality of the host brand positively influences the richness of their brand associations. H5: Favorable brand associations cultivated through industrial-tourism experiences positively influence visitors' loyalty to the host brand.

In the following sections, we first reviewed the theoretical foundations relevant to the research problem and formulated a set of hypotheses derived from the literature. These hypotheses were then examined through a three-stage process of analysis and empirical validation. Finally, we engaged in a comprehensive discussion of the results, highlighting their theoretical and practical implications, and concluded with key findings that contribute to advancing knowledge in the field and offer directions for future research.

2. Theoretical Foundations

The theoretical exploration of industrial tourism can be traced back several centuries. The practice of visiting both active and inactive companies originated in the seventeenth century when British aristocrats embarked on the “Grand Tour” of mainland Europe [38]. This early

form of travel was not solely for leisure; it combined cultural enrichment with educational pursuits. Members of the upper classes from England, France, and Germany journeyed across Europe to gain insights into emerging cultural trends and technological advancements [39]. Over time, this tradition evolved into specialized tourism forms, with early factory tours, considered the precursors to modern industrial tourism, emerging in the nineteenth century [4]. Notable early attractions included the Netherlands' flower markets and cheese factories, France's vineyards and chocolate factories, as well as tobacco factories, stock exchanges in Greece and Malta, and chocolate factories in the United States [40].

Economic prosperity in the nineteenth and twentieth centuries played a significant role in the development of mass tourism. Following World War II, rising incomes, reduced travel costs, and increased automobile ownership transformed leisure travel into a widespread activity, especially in developed countries [41]. During this period, the commercial approach to tourism began to take shape, and the term "industrial tourism" started to be used to describe this new niche that leveraged industrial sites as tourist attractions [42]. Industrial tourism denotes the organized visitation, interpretation, and experience of both operating and disused industrial facilities, together with associated infrastructures such as company museums, visitor centers, and science and technology sites, when these places are purposefully offered as attractions [36,43]. At the same time, consumer behavior in tourism underwent dramatic changes since the 1950s, leading to a diversification of the tourism market. This evolution gave rise to new segments, including industrial tourism [44,45]. The contemporary usage of the term "industrial tourism" to denote "industry as a tourist attraction" is relatively new. In the 1980s, Britain, then facing industrial decline and the abandonment of many factories, saw the birth of industrial heritage tourism [46]. Initially, abandoned industrial sites were the focus of industrial archaeologists, but by the 1980s, regions began to recognize their potential for tourism, both economically and culturally [46,47].

As industrial heritage tourism matured, its scope broadened to include visits to operating companies. In 1974, Simonson defined industrial tourism as "visiting the site of a production facility", a definition that covers educational tours, product sampling, and the opportunity to purchase products or souvenirs [48,49]. A seminal moment came in 1988 when the British Tourist Authority launched its "See Industry at Work" campaign [50]. This initiative was among the first organized efforts to promote visits to active companies and spurred similar efforts internationally. In 2001, the French region of Pays de la Loire initiated the "Visit Our Companies" program to enhance industrial tourism, followed by Shanghai's industrial tourism promotion center in 2005 and Turin's "Made in Torino; Tour the Excellent" program [51]. In 2006, Angers in the Pays de la Loire hosted the first European conference on company visits, emphasizing the opportunities that industrial tourism creates for both businesses and the regions in which they are situated. Researchers have noted that industrial tourism not only deepens the connection between companies and local communities but also diversifies tourism offerings through behind-the-scenes tours and interactive engagements with production processes [52]. Moreover, the rising global interest in this niche reflects its potential to foster regional economic development while preserving industrial heritage [53].

Other successful industrial tourism programs have been established in Amsterdam (Netherlands), Nagoya (Japan), the Rhône-Alpes region (France), and Western Australia [50]. Industrial tourism has also become a strategic driver of urban regeneration and economic diversification in China, where former production centers have been reinvented as vibrant cultural hubs. In Jingdezhen, long celebrated as the "Porcelain Capital of the World", defunct kilns have been converted into creative parks that integrate exhibition spaces, artist studios, and visitor workshops, transforming static heritage into dynamic platforms for cultural exchange [54,55]. The Nanfeng Kiln District in Foshan illustrates the tensions inherent in such transformations: while commodification generates new revenue streams and visitor engagement, it also risks diluting the authenticity of traditional craftsmanship if heritage preservation is subordinated to mass-tourism imperatives [55]. In Quanzhou, similar dynamics have emerged, with over 140 million industrial-site visits generating more than \$3 billion in 2017, underscoring the scale of economic opportunity even as challenges of community inclusion and equitable benefit-sharing remain unresolved [56].

Today, industrial tourism is especially prominent in Europe. The European Route of Industrial Heritage, established in 1999 through collaboration among the United Kingdom, Belgium, Germany, and the Netherlands, is a prime example [7]. Supported by funding from the Creative Europe program in 2014 and later integrated into the European Cultural Route in 2019, this

network recognizes the Industrial Revolution as a transformative event that reshaped social, economic, and cultural landscapes across Europe. Within industrial tourism, scholars distinguish several types of attractions. Broadly, three categories can be identified: (a) open industrial centers where companies allow unmodified access to their operations, (b) centers with dedicated public relations units designed to manage visitor experiences, and (c) commercial units located near production sites. Building on this, Otgaar & Klijs [50] introduced the concept of the “industrial experience world”, which encompasses industrial heritage routes, industrial experience landscapes, company museums, and business parks.

Several key motivations drive industrial centers to open their doors to visitors. These include maintaining and enhancing corporate reputation, promoting brands and products, and building sustainable relationships with local communities [21]. As Purcarea & Rațiu [57] suggest, every visitor has the potential to become an ambassador for the company. Moreover, Mitchell & Orwig [58] argue that industrial tourism can create a powerful bond between consumers and brands, a notion further supported by McBoyle [59]. Even companies that do not interact directly with end consumers may benefit from such visits, as they help build trust and understanding throughout the supply chain. Additionally, opportunities to generate extra revenue through entrance fees and on-site sales provide strong incentives for companies to embrace industrial tourism.

However, companies may also hesitate to invest in industrial tourism. High development costs, potential safety and security risks, and concerns over theft or industrial espionage represent significant barriers, especially for knowledge-based companies and startups, where the protection of innovative ideas is crucial [4]. Both modern and traditional production processes have the potential to attract visitors, particularly when attractions are designed to be interactive. Research suggests that attractions encouraging active participation tend to be more successful in drawing tourists [60]. The accessibility of industrial sites is another crucial factor; Dodd [48] even posits that industrial tourism might influence companies’ location decisions as they strive to enhance visitor accessibility. Equally important are promotional activities such as distributing brochures, running advertising campaigns, collaborating with tourism offices, and capitalizing on word-of-mouth communication [48,59]. This combination of factors defines the “industrial tourism potential” of a company or region, which depends on the attractiveness of the industrial sites, the availability of organized tours, the quality of location and visitor facilities, and the effectiveness of promotional strategies [5].

The multiplier effect of industrial tourism is also noteworthy. Frew [4] argues that industrial tourism can generate employment within the broader tourism industry, and its appeal may even encourage tourists to extend their stays, further boosting the local economy. Moreover, many industrial sites possess large buildings and expansive land that can be repurposed for a variety of commercial uses. Researchers such as Otgaar & Klijs [50] and Frew [4] have proposed that industrial tourism can serve as a strategic tool in regional competition, functioning as an effective marketing instrument. This is particularly relevant for regions like Iran, where industrial parks or science and technology parks are home to many knowledge-based companies and startups, thereby offering significant potential for regional development. From a broader perspective, industrial tourism simultaneously enhances the image of individual companies and uplifts the reputation of their surrounding regions. This dual effect renders industrial tourism a potent tool for co-branding, where places (such as industrial parks or science and technology parks), products, and producers are marketed in tandem [61,62]. When the values and images promoted by companies and their products align with those of the region, co-branding emerges as an effective strategy [63]. Yet, several issues persist at the company level, namely, the number of visitors, visitor composition, and the overall scale of tourism activities. Most host companies have a limited capacity for visitor intake. Firms that can generate direct revenue from tourism, such as food production factories, tend to be more willing to accommodate larger audiences compared to companies that do not expect immediate financial returns. Moreover, many companies are reluctant to invest in visitor facilities and guides unless they are convinced of clear economic benefits. This hesitancy is particularly pronounced when the industrial site was not originally designed for public visitation, leading to potential safety risks. As a result, most companies favor business or educational visitors over leisure tourists. In contrast, consumer goods companies are generally more open to leisure visitors if they are likely to be potential buyers who can provide direct financial benefits [5]. Conversely, some companies categorically reject large numbers of tourists, citing fears of theft, sabotage, or on-site accidents.

The transformation of the global economy from the latter half of the twentieth century onward has also reshaped industrial tourism. In today's post-industrial society, knowledge and services have increasingly replaced traditional manufacturing as the main drivers of economic value and employment. This shift, sometimes described as the third wave of technology [64], has left many regions with post-industrial landscapes characterized by abandoned factories, mines, and other relics of past industrial activity. In this context, industrial heritage and industrial tourism are increasingly viewed as complementary concepts. While industrial tourism invites visitors to explore sites and learn about historical and current production processes, industrial heritage tourism emphasizes preservation, maintenance, and promotion of these culturally significant assets [50]. Andrade & Caamaño-Franco [20] highlight the importance of differentiating between pre-industrial heritage, industrial revolution heritage, and living industry, distinguishing between archaeological industrial heritage and the contemporary living industry. Lee [6] further classifies industrial tourism resources into three groups: industrial resources related to production processes, transportation-related resources such as roads and railways, and socio-cultural attractions that showcase a region's industrial past, such as worker housing.

Industrial heritage tourism is often conceptualized as a subset of cultural tourism. Its focus on preserving and interpreting inherited cultural assets, whether buildings, art, or natural landscapes, extends beyond mere economic contribution, playing a pivotal role in maintaining social identity [65]. Meng et al. [66] contend that the unique social value inherent in heritage is reason enough for its preservation, with financial considerations taking a secondary role. Industrial heritage can be viewed as a tapestry of nostalgic landscapes, comprising sites, buildings, machinery, worker housing, and entire industrial settlements, which together evoke the cultural identity of industrial communities [67,68]. Furthermore, industrial heritage tourism contributes significantly to creating a distinct sense of place—characterized by uniqueness, authenticity, sustainability, and active participation [69,70]. Xie [68] identifies six key characteristics for studying industrial heritage tourism: capabilities, stakeholders, reuse, economy, authenticity, and perceptions. In summary, the theoretical foundations of industrial tourism reveal a multifaceted phenomenon that spans historical, economic, cultural, and marketing dimensions. This comprehensive framework not only elucidates the evolution of industrial tourism from its early origins to its contemporary manifestations but also underscores its capacity to drive regional development and enhance corporate branding in today's post-industrial society.

3. Hypotheses Development

Industrial tourism has evolved from a peripheral curiosity to what Otgaar [5] calls a “co-branding interface” through which firms, destinations, and visitors jointly construct place identities. Case evidence from the Ruhr's Capital-of-Culture campaign shows that guided access to factories and mines enables tourism marketers to translate heavy-industry narratives into aspirational regional images, thereby broadening the public's cognitive map of the host brand [16]. Similar place-making dynamics have been documented in Austria's Styrian Iron Route, where heritage interpretation reconnects residents with long-dormant mining traditions while simultaneously attracting new audiences [17]. Collectively, these theoretical and empirical insights suggest that industrial tourism operates at the intersection of branding, place-making, and regional development. As evidenced by the evolution of industrial tourism from its origins in heritage conservation to its current role as a strategic branding tool, a consistent theme emerges: industrial tourism not only enhances the visibility and perceived value of individual companies but also shapes the broader reputational landscape of entire regions. Notably, scholars have emphasized that the effectiveness of industrial tourism hinges on its ability to generate memorable experiences, foster positive brand associations, and cultivate loyalty among visitors. Accordingly, the conceptual frameworks reviewed above provide a direct basis for hypothesizing the sequential pathways through which industrial-tourism experiences affect key dimensions of brand equity, including awareness, perceived quality, brand associations, and loyalty. These hypothesized relationships are detailed in the following section.

When once-invisible production processes are made transparent, visitors form vivid episodic memories that heighten the salience of both the firm and its locale, strengthening brand awareness [5]. Educational-heritage components in factory tours have been shown to reconfigure visitors' cognitive structures and supply credible quality cues; together, these effects translate awareness into perceived quality [18,21]. Curated storytelling then links industrial capability to broader

narratives of creativity, regional identity, and renewal, thereby shaping brand associations [16,71]. In this study, we define “richness of brand associations” as the breadth and strength of associative meanings captured by our brand-association indicators (higher scores reflect more varied and strongly held associations). Accordingly, we hypothesize:

H1. Brand awareness generated by industrial-tourism experiences positively influences visitors’ perceived quality of the host brand.

H2. Brand awareness generated by industrial-tourism experiences positively influences the richness of brand associations.

Montenegro et al. [21] catalog a spectrum of intangible benefits, trust, authenticity, perceived workmanship [72] that flow from observing “living industries” in action. Quantitative evidence from Taiwanese slow-travelers indicates that comfort, safety, and demonstrable craftsmanship significantly predict behavioral intention to revisit [72]. Likewise, Szromek et al. [11] find that post-production heritage sites succeed commercially only when visitors perceive the rehabilitated facilities as professionally curated and technically sound. These insights imply a dual role for perceived quality: it both consolidates symbolic meanings and propels repeat patronage. Hence, **H3: Visitors’ perceived quality of the host brand positively influences their loyalty to the brand. H4: Visitors’ perceived quality of the host brand positively influences the breadth and strength of their brand associations.** Research on Austrian and Polish heritage routes underscores that emotionally charged symbols, miners’ rituals, blast-furnace soundscapes, and artisanal workshops nurture affective bonds that extend beyond utilitarian evaluations [11,17]. Vargas-Sánchez et al. [73] argue that such “experiential authenticity” differentiates industrial tourism from conventional factory publicity, providing a narrative reservoir from which loyal advocacy emerges. Digital-marketing analyses by [26] corroborate that online storytelling amplifies these associations, converting visitors into virtual ambassadors. Thus, **H5: Favorable brand associations cultivated through industrial-tourism experiences positively influence visitors’ loyalty to the host brand.** In summary, extant scholarship converges on a sequential branding logic in which industrial-tourism encounters first elevate awareness, then translate that awareness into richer cognitive and affective structures, and finally consolidate those structures through perceptions of quality that culminate in loyalty. The five hypotheses articulated above operationalize this logic and will be subjected to empirical verification in the subsequent sections of the paper.

4. Materials and Methods

This study adopts a three-phase methodology (summarized in Table 1) to examine the multifaceted effects of industrial tourism on both visited sites and tourists. Each phase is designed to achieve distinct objectives using appropriate qualitative and quantitative methods, thereby ensuring a robust and comprehensive approach.

Table 1. Phases, objectives, methods, and study samples of the research.

Phase	Objective	Method	Study Sample
First Phase	Identifying the impacts of industrial tourism on visited sites and visitors	Integration of Sandelowski, Barroso, and Voils’ seven-step metasynthesis approach with Grounded Theory using MAXQDA	Review of theoretical foundations on industrial tourism and consultations with eight relevant experts
Second Phase	Measuring the extent of industrial tourism impacts on brand equity	Quantitative method using questionnaires	385 tourists visiting industrial units in Iran
Third Phase	In-depth examination of industrial tourists’ perspectives toward visited sites	Qualitative method through in-depth interviews	25 industrial tourists

The first phase focuses on discerning how industrial tourism influences both industrial facilities and their visitors. This objective is addressed through a metasynthesis approach (Figure 1), following the seven-step procedure proposed by Sandelowski et al. [74], integrated with grounded theory via MAXQDA software. These nine studies (summarized in Table 2) were examined in seven stages based on their direct relationship to industrial tourism as well as the topic under study. Metasynthesis here involves synthesizing insights from nine previously published

studies, identified through systematic keyword searches (e.g., “industrial tourism”, “brand equity”) in databases such as Scopus, Web of Science, and ScienceDirect. This approach prioritizes qualitative insights rather than statistical data aggregation. After gathering relevant sources, the metasynthesis proceeded with initial coding, which was subsequently refined into broader sub-categories and thematic clusters. Quality control measures, including iterative reviews and consultations with eight industry experts, ensured analytic rigor. The key outcomes were grouped into two principal categories: (1) impacts on visited sites, such as relationship building, branding, innovation, marketing, economic influences, and environmental effects, and (2) impacts on visitors, encompassing experiential learning, educational benefits, cultural enrichment, and economic considerations [75].

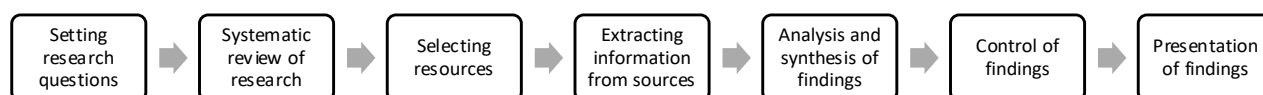


Figure 1. Steps of the metasynthesis method.

Table 2. Summary of articles.

Title	Year	Reference	Findings
Building brand equity through industrial tourism	2017	Chow et al. [23]	This study sought to examine customers' perceptions of the value of a branded tourism factory through the concept of brand equity. More specifically, it was hypothesized that brand equity, which is composed of brand awareness, brand associations, and perceived quality, contributes to brand loyalty. Both qualitative and quantitative methods were employed in different phases of this study. Analysis of the data from 312 valid questionnaires revealed that brand associations and perceived quality both positively and significantly predict brand loyalty.
Towards a common agenda for the development of industrial tourism.	2012	Otgaard [5]	Building on case studies of four European regions, this article discusses and tests the empirical applicability of a common agenda for the development of industrial tourism. Relevant factors explaining actors' willingness to cooperate are 1) the characteristics of the visitor flow, 2) co-branding and the image fit, and 3) the potential of industrial tourism products.
Theoretical and methodological model for the study of social perception of the impact of industrial tourism on local development.	2018	Andrade & Caamaño-Franco [20]	The general objective of this research is to analyze industrial tourism's contribution to local development in four case studies that form part of the industrial tourism in Spain and Portugal. For this purpose, a quantitative methodology has been proposed and designed through surveying the local population, the results of which show that the tourism type analyzed has positive impacts on each of the local development capitals or dimensions (symbolic, heritage, social, human, economic, and infrastructure).
The analysis of sustainable development strategies for industrial tourism based on IOA-NRM approach.	2019	Lin [18]	This study can help industrial operators review their value-driving forces while also helping them to understand the critical success factors for industrial transformation and determine the appropriate tourism transformation strategy. Additionally, this study explores tourists' need for industrial tourism and integrates the tourists' preference for service innovation and service demands for industrial tourism. This study proposes the IOA-NRM (innovation opportunity analysis-Network Relation Map) approach, which combines the IOA technique and NRM technique. The service/function of EH (educational heritage) not only increases the product/service knowledge for customers but also strengthens their enterprise identification with educational heritage consciousness.
Industrial tourism as a factor of sustainability and competitiveness in operating industrial companies.	2023	Montenegro et al. [21]	This paper presents a systematic literature review (SLR) about industrial tourism and intends to show how this product can increase sustainability and competitiveness in operating industrial companies. It uses bibliometric analysis with data from 32 journal articles that address this topic. Industrial tourism allows industrial companies to achieve environmental, social, and economic benefits and can be seen as a marketing tool and a promoter of innovation within companies.

Table 2. (Continued)

An investigation of factors determining industrial tourism attractiveness.	2016	Lee [6]	This study explores the opinions of an expert panel on the factors determining the attractiveness of industrial tourism generally and factory tours in particular. Thirty-four determinants were derived from previous studies conducted about visits to both operational and nonoperational industrial sites. They were then categorized in a four-level hierarchical structure based on the “4 A’s” of tourism destination management practices, namely, attractions, access, amenities, and ancillary services. The results showed that on-site attractions, safety and security systems, and external access are the major dimensions in determining industrial tourism attractiveness. While the observation of the production process is an essential and important component of tourism factories, the provision of transport services and on-site restaurants constitutes a supporting role in enhancing industrial tourism attractiveness.
Industrial heritage in tourism marketing: legitimizing post-industrial development strategies of the Ruhr Region, Germany.	2022	Berkenbosch et al. [16]	This paper explores how two sites in the Ruhr area in Germany, Zollverein and Landschaftspark Duisburg-Nord, are narrated in marketing brochures with selective industrial heritage narratives. Industrial heritage is utilized for both immediate marketing purposes and as a tool for memory and identity politics. Through thematic analysis, we uncover that industrial heritage legitimizes the Ruhr – Europe’s largest post-industrial region – as a distinct region by providing a seemingly uncontested, neutral, and universal industrial history targeted at a wide audience. Simultaneously, the established narratives reinterpret industrial heritage as places of consumption, valued for their aesthetics and facilities for sports, arts, and leisure.
How to measure the regional impact of industrial tourism?	2011	Otgaar & Klijs [50]	This article adds to this debate by discussing the regional impact of industrial tourism in a more structured way. This discussion will make clear which kind of economic impacts can be expected from (industrial) tourism and the capability of each of the modelling techniques to adequately measure and/or predict these. This analysis will be complemented by an overview of other impacts of industrial tourism, which are not (fully) included in these economic modelling techniques.
Developing industrial heritage tourism: A case study of the proposed jeep museum in Toledo, Ohio.	2006	Xie [68]	This paper identifies six key attributes of developing industrial heritage tourism from the previous literature. The investigation revealed that although the potentials for conserving and interpreting the museum are valued highly, there exist conflicting views by various stakeholders. Problems are attributed to poor community perceptions, a lack of strong support from the Jeep industry, the controversial reuse of existing facilities, ill-informed economic benefits, and the issue of authenticity.

In the second phase, the study evaluates the extent to which industrial tourism affects four dimensions of brand equity: awareness, loyalty, association, and perceived quality. Drawing on the theoretical framework established in Phase 1 and the model proposed by Chow et al. [23], the research team developed a structured questionnaire comprising 21 items (Appendix A). The instrument comprised two sections: Section A (profiling and visit context) covering demographic variables (gender, age, marital status, education, monthly income) and trip-related variables (tour organizer, transportation, travel style, prior product-use experience); and Section B with 21 items measuring the four brand-equity dimensions (awareness, associations, perceived quality, and loyalty). The full wording and codes for both sections are provided in Appendix A. For construct operationalization, brand associations were measured with items capturing the breadth (variety of attributes/meanings) and strength (clarity and conviction) of associations; higher scores indicate more varied and strongly held associations. Data were collected from 385 tourists visiting industrial units across Iran, with the sample size calculated using Cochran’s formula for unknown populations. The industrial units visited by tourists were all active. Using Cochran’s formula, we targeted 385 respondents; the realized sample comprised 385 usable questionnaires ($N = 385$). All tables and percentages are reported for $N = 385$. The scope of industrial activities has also been mostly in the food industry, automotive industry, home appliance industry (refrigerator, television, washing machine, etc.), and textile industry. Random sampling techniques were employed to ensure representativeness, and face-to-face administration enhanced response accuracy.

by allowing clarifications when necessary. Respondents used a five-point Likert scale ranging from “very low” to “very high” to indicate their level of agreement with each statement. Following data collection, the responses were entered in the SPSS and SmartPLS software packages, where descriptive statistics, binomial tests, Friedman tests, and path analyses were conducted to investigate and validate the causal relationships posited in the conceptual model.

The final phase offers a qualitative deep dive into how industrial tourists perceive their experiences. Employing a purposive sampling strategy, 25 industrial tourists were selected for in-depth interviews. These semi-structured interviews centered on open-ended questions, such as “Which aspects of the facility had the greatest impact on you?” and “How has your perception of the brand changed after the tour?” This format allowed participants to share their experiences while ensuring that all core research themes were consistently addressed. The interviews were transcribed and analyzed using grounded theory methods, again supported by MAXQDA to systematically code and extract emergent themes. This qualitative lens added nuance to the quantitative findings, revealing deeper insights into visitors’ motivations, emotional connections to the brands, and overall impressions of the industrial sites.

Taken together, these three phases form a cohesive methodological framework that integrates metasynthesis, grounded theory, and quantitative survey techniques. Phase 1 supplies a broad conceptual understanding of industrial tourism’s impacts, Phase 2 empirically tests how these impacts manifest in brand equity, and Phase 3 enriches the analysis with subjective experiences and visitor perceptions. By triangulating evidence from multiple methods, this study provides a rigorous foundation for exploring how industrial tourism shapes both corporate branding and broader regional development, offering valuable implications for academics, industry practitioners, and policymakers alike.

5. Results

5.1. Findings of the Metasynthesis Study

The initial findings of the research, derived from constructing subcategories through the metasynthesis method and grounded theory, indicate that the impacts of industrial tourism on the sites visited include core categories such as relationships, identity, branding, innovation, marketing, economy, and environment. On the visitor side, the impacts include relationship building, experiential learning, education, cultural, and economic aspects (see [Tables 3 and 4](#)).

Table 3. Impacts of industrial tourism—sites visited.

Core Category	Broad Category	Subcategories
Relationships	Interactions	Building trust and understanding in the supply chain; creating sustainable relationships with the community; bridging business and society; creating interactions with customers
Identity	Leisure	Improving employee morale; increasing tourists with special interests; creating recreational areas; extending stays
	Identity	Social values; national identity
	Thoughts	Changing employees’ mindsets; serving cognitive needs; changing managers’ mindsets
Branding	Image	Demonstrating regional economic innovation; ensuring reputation; maintaining reputation; showcasing regional excellence; improving the image of the region; company image as producer, employer, and citizen; adding new elements to existing images; confirming existing images; improving destination image; enhancing individual business images and the overall regional image
	Branding	Linking consumers to a brand; creating brand loyalty; joint branding of destination and firms; branding locations, products, and producers together; branding producers; branding products; branding places
Innovation	Knowledge	Sharing experiences; sharing knowledge and information
	Renewal	Reviving industrial heritage; sustainable development of old industrial areas
	Expansion	Expanding the scope of activities
	Innovation	Sharing ideas; creating new opportunities; fostering innovation

Table 3. (Continued)

Marketing	Quality	Improving quality of life in the region; ensuring internal and external safety; demonstrating care for quality
	Competition	A tool in regional competition
	Advertising/PR	Turning visitors into company ambassadors; effective public-relations tools; advertising to promote products; advertising brands
	Marketing	Shaping customer needs and demands; forecasting customer needs; using industrial tourism as a marketing tool
Economic	Employment	Attracting potential workforce; creating additional jobs for locals; generating employment
	Income	Multifunctional use of land and buildings; economic benefits for SMEs; increasing revenue for cultural institutions; on-site sales; generating additional income
Environment	Protection	Encouraging the protection of natural resources; creating green spaces

Table 4. Impacts of industrial tourism—visitors.

Core Category	Broad Category	Subcategories
Building relationships	Building relationships	Rapid and direct transfer of needs; establishing communication with producers
Experiential	Experience	Using other customers' experiences; discovering new aspects through the visit
Education	Awareness	Awareness of new and innovative products/services; acquiring information; awareness of products and their performance
	Education	Gaining skills; satisfying curiosity; learning about production processes
Cultural	Trust	Confirming/denying brand image in visitors' minds; increasing visitor trust
	Identity	Preserving and enhancing national identity; creating a sense of place
	Cultural development	Preserving and enhancing social values; developing local culture
Economic	Economic benefit	Attraction at visited sites; better comparison and selection; possibility of direct and cheaper purchases

5.2. Analysis

5.2.1. First Phase: Findings of the Metasynthesis Study

Industrial tourism has various effects on two categories: the visited sites and the visitors. At the visited sites, industrial tourism, by establishing a relationship between consumers and producers, leads to the creation or enhancement of trust, and these interactions themselves constitute a form of marketing for the sites. In recent years, it has been observed that many customers have shown greater resistance to traditional forms of advertising and marketing, such as print and television advertising. Instead, many customers are increasingly seeking comprehensive, authentic, multisensory, and memorable experiences of the products and services they intend to purchase, which is referred to as experiential marketing.

Therefore, many industries are pursuing industrial tourism as an excellent method for experiential marketing. For many managers, industrial tourism can be an effective marketing strategy because many industrial tourists are not only themselves greatly influenced but also convey their experiences orally, by word of mouth, to friends and relatives, which is far more valuable than commercial advertising. On the other hand, advertising is necessary, first to state that the doors of industries are open to tourists, and second to attract tourists. Certainly, as long as there is no publicizing of the industries' willingness to host visitors, industries we mostly imagine as having closed doors, we cannot expect industrial tourism, and consequently, its positive effects. Of course, most companies are not willing to invest in advertising for the simple reason that demand for tours is significantly greater than supply. This may not be true in some countries, but usually, after the start of industrial tourism, demand rises sufficiently and beyond the capacity of the industries. This is especially the case for industries that produce consumer goods or those that produce new and rare products. Moreover, many industries that are renowned at the national or international level but, for various reasons, have not opened their doors, would likely face substantial demand were they to take measures to do so.

Today, industrial tourism is regarded by tourists as a form of tourism through which they can perceive a brand's authenticity. Moreover, the benefits of industrial tourism can extend to the

regional economy, because with the arrival of tourists, many other sectors, such as accommodation and catering, also benefit, and even other types of tourism, such as nature tourism, shopping tourism, and the like, can be offered. In addition to monetary benefits, industrial tourism also has an educational function, which, by allowing tourists to observe industrial processes that are currently seldom experienced, can lead to the formation of ideas in the minds of tourists or even the transfer of ideas to industry owners. On the other hand, given the sufficient number of sites available for visits and demonstrations, a great variety can be created for tourists. Alongside these points, the interest of local people and business owners in developing and promoting new types of tourism to create competitive advantages and also greater income likewise leads the visited sites to pay more attention to this form of tourism, which is considered an additional source of revenue for companies through fees related to visits, souvenir sales, hotel services, catering, transportation support, and so forth. Tourist-attractive companies are one of the important factors in the development of industrial tourism. In general, companies producing consumer goods (such as agriculture, automotive, and food) have an initial advantage compared to other companies and are the most successful. Consumer orientation is particularly relevant to attracting industrial tourists with leisure motivations. In general, companies active in commercial sectors are primarily attractive to technical visitors. For companies that do not produce directly for the end consumer, attractiveness to end consumers seems to depend on the recognizability of their inputs in consumer products. Industrial tourism can be used to demonstrate this, but in any case, some companies clearly have a more favorable starting position than others. The necessity of compensating for the shortage of tourist attractions in destinations where traditional attractions, such as natural (beaches, forests, ...), cultural (historical monuments, ...), or man-made (towers, bridges, ...), are scarce or nonexistent has led them to attract tourists by highlighting their industrial assets. Another impact of industrial tourism is the branding of many tourist destinations through industrial tourism in places that historically or in the contemporary era have prominent industrial characteristics. This, alongside the need to make tourism year-round (all-season) by using the industrial tourism approach, can contribute to the development of destinations. In general, most leisure trips take place in summer, especially for destinations that have been developed with a focus on the sea and forests. Industrial tourism is generally less dependent on the seasons suitable for leisure tourism and may even offer a more enjoyable experience in the off-season, especially since diversifying types of tourism, given the existence of industrial tourism potential, which in fact means the presence of numerous options for longer tourist stays, also maximizes the positive effects of tourism. On the other hand, even in destinations where primary attractions exist, there is a need for attractions or tourist destinations that complement the main and traditional ones in order to extend the positive effects of tourism across different locations.

Industrial companies targeted for industrial tourism have several different approaches to hosting tourists. Companies may host large groups of tourists for a few days of the year. More active companies hire guides (mostly part-time) for industrial tourists. To minimize the costs of hiring guides, companies usually ask people to book tours in advance so that they can make optimal use of available capacity. In some cases, companies also prefer visits to take place on weekends. There are also companies that prefer an even distribution of visitors over time. Therefore, tours should be scheduled in accordance with the time-related demands of the host companies. Another point is that using company retirees as guides for tourists can, in addition to reducing the costs of training unfamiliar tourism guides, provide visitors with better interpretation of the sites visited. The same holds for guides who are known as local guides.

Alongside these points, the necessity of creating sustainable financial resources for the maintenance of industrial heritage through industrial tourism has also drawn greater attention to it. In the case of industrial sites that are not currently operational, they may still constitute an important cultural or historical landmark, yet it is often difficult for the responsible institutions to justify the costs of their upkeep. However, visitor revenues from such sites can provide funding for maintenance and repairs.

5.2.2. Second Phase: Analysis of Survey Data

The survey provides a clear picture of who participates in industrial tourism in Iran and how their brand perceptions change after the visit. The sample skews young ($\approx 80\%$ under 40) and mostly single ($\approx 89\%$), with a sizable proportion of school-organized group visits ($\approx 63\%$), which together indicate a demand base dominated by early-stage, price-sensitive visitors (Table 5).

Regarding visitation patterns, a significant portion of respondents reported having visited industrial sites, indicating an emerging interest in this niche form of tourism. Using a binomial test that split 5-point Likert items at the midpoint (3), we find that awareness improves (e.g., 67% rate the visited brands more recognizable than alternatives; 54% report thinking of these brands first; 54% report increased familiarity), while the composite perceived-quality indicator is above the midpoint for 70% of respondents. In contrast, loyalty remains low (69% ≤ 3), with 58% unlikely to recommend, 64% not extending trust to other products, and 83% unwilling to continue buying at higher prices. These patterns align with the Friedman test (mean ranks: awareness 3.06 > quality 2.94 > associations 2.16 > loyalty 1.84), confirming a gap between cognitive/affective gains and behavioral consolidation.

Table 5. General information of respondents.

Description	Frequency	Percentage (%)
Gender:		
Male	230	59.7
Female	155	40.3
Marital status:		
Married	44	11.4
Single	341	88.6
Age:		
≤ 19	68	17.7
20–39	305	79.2
40–64	11	2.9
≥ 65	1	0.3
Education:		
Under diploma	4	1.0
Diploma	60	15.6
Bachelor	222	57.7
Master and above	99	25.7
Monthly income (\$):		
<100	262	68.1
100–199	62	16.1
200–249	21	5.5
250–350	22	5.7
>350	18	4.7
Tour organizer:		
School	242	62.9
Self	43	11.2
Company	23	6.0
Travel agency	15	3.9
Other	62	16.1
Transportation:		
Car	90	23.4
Tour bus	83	21.6
Bus	183	47.5
Motorcycle	3	0.8
Other	26	6.8
Travel style:		
Group travel	297	77.1
Personal travel	88	22.9
Product-used experience:		
Yes	231	60.0
No	154	40.0

In Table 6, the items related to each indicator are identified by codes. First, the results of the binomial test for the items are reported, and then the results for each indicator are presented. The results of the binomial test show that for items that were significant—such as “To what extent has industrial tourism made the visited brands more familiar than other brands?”—67% of visitors reported above the midpoint, i.e., 3, stating that the visit led them to know the brands better. For the item “How comfortable was the environment of the factories visited?”, 61% were dissatisfied with the comfort of the factory environments. This is because factories had essentially made no provisions for visits and were not designed that way from the outset. Moreover, the topic of industrial tourism and planning for it has been unfamiliar and new for factories in Iran and has not been taken very seriously. Nevertheless, 66% of visitors were satisfied with the behavior of the employees and managers of the factories. This appropriate conduct, together with the novelty of such visits, led 68% of respondents to state that the guides inside the factories resulted in an understanding of the production process in the factories. This understanding was so great that, regarding the question “To what extent was cutting-edge technology used in the factories?”, 62% rated it below average, and about 60% stated that after visiting the factories, their thoughts were greatly influenced. The strong impact of these visits led many respondents to observe the discrepancy between slogans and the factories’ actual practice. Accordingly, 77% stated that they were influenced by the slogans of the visited brands less than the average, and 80% stated that the brands are not close to the realities of their lives. Therefore, 64% of tourists believe that being in the factories led them not to trust other products of the visited brands, and in this regard 58% stated that to a low or very low extent they would recommend the visited brand to others, and even 69% expressed very low or low loyalty to the visited brand. Overall, in the awareness index, 74% stated that these visits increased their awareness of the visited brand. In the perceived quality index, 70% of respondents believed that the visit influenced their perception of the quality of the factories, and 56% considered the visits to have affected their brand associations with the brand in question, which ultimately led to loyalty to the visited brand among 44%. Finally, 66% of respondents held that the visits had a high or very high impact on them.

Table 6. Binomial test results.

		Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
To what extent has industrial tourism increased your familiarity with the brands visited? (1)	Group 1	≤3	177	0.46	0.50	0.126
	Group 2	>3	208	0.54		
	Total		385	1.00		
To what extent has industrial tourism made it easier for you to recognize the brands? (1)	Group 1	≤3	210	0.55	0.50	0.083
	Group 2	>3	175	0.45		
	Total		385	1.00		
To what extent has industrial tourism made you think of these brands first? (1)	Group 1	≤3	179	0.46	0.50	0.185
	Group 2	>3	206	0.54		
	Total		385	1.00		
To what extent has industrial tourism made the visited brands more recognizable compared to other brands? (1)	Group 1	≤3	126	0.33	0.50	0.000
	Group 2	>3	259	0.67		
	Total		385	1.00		
How comfortable was the environment of the factories you visited? (2)	Group 1	≤3	233	0.61	0.50	0.000
	Group 2	>3	152	0.39		
	Total		385	1.00		
How satisfactory was the reception by the officials? (2)	Group 1	≤3	131	0.34	0.50	0.000
	Group 2	>3	254	0.66		
	Total		385	1.00		
To what extent did the explanations provided by the factory guides enhance your understanding of the production processes? (2)	Group 1	≤3	124	0.32	0.50	0.000
	Group 2	>3	261	0.68		
	Total		385	1.00		

Table 6. (Continued)

How advanced was the technology used in the factories? (2)	Group 1	≤3	237	0.62	0.50	0.000
	Group 2	>3	148	0.38		
	Total		385	1.00		
To what extent did visiting the factories increase your confidence in the safety of the products? (2)	Group 1	≤3	180	0.47	0.50	0.221
	Group 2	>3	205	0.53		
	Total		385	1.00		
To what extent did visiting the factories increase your trust in the hygiene of the produced products? (2)	Group 1	≤3	205	0.53	0.50	0.221
	Group 2	>3	180	0.47		
	Total		385	1.00		
How good was the factory environment? (3)	Group 1	≤3	206	0.54	0.50	0.185
	Group 2	>3	179	0.46		
	Total		385	1.00		
To what extent were your thoughts influenced by the visit to the factories? (3)	Group 1	≤3	159	0.41	0.50	0.001
	Group 2	>3	226	0.59		
	Total		385	1.00		
How much trust do you have in the brands visited? (3)	Group 1	≤3	212	0.55	0.50	0.053
	Group 2	>3	173	0.45		
	Total		385	1.00		
To what extent are you influenced by the slogans of the brands visited? (3)	Group 1	≤3	298	0.77	0.50	0.000
	Group 2	>3	87	0.23		
	Total		385	1.00		
To what extent are the brand names close to your life realities? (3)	Group 1	≤3	307	0.80	0.50	0.000
	Group 2	>3	78	0.20		
	Total		385	1.00		
To what extent did visiting the factories lead you to trust other products from the visited brands? (3)	Group 1	≤3	246	0.64	0.50	0.000
	Group 2	>3	139	0.36		
	Total		385	1.00		
To what extent do you purchase from other brands? (4)	Group 1	≤3	283	0.74	0.50	0.000
	Group 2	>3	102	0.26		
	Total		385	1.00		
To what extent do you recommend the visited brands to others? (4)	Group 1	≤3	225	0.58	0.50	0.001
	Group 2	>3	160	0.42		
	Total		385	1.00		
To what extent do you buy from the visited brands? (4)	Group 1	≤3	226	0.59	0.50	0.001
	Group 2	>3	159	0.41		
	Total		385	1.00		
To what extent would you continue buying from the visited brands if they were expensive? (4)	Group 1	≤3	318	0.83	0.50	0.000
	Group 2	>3	67	0.17		
	Total		385	1.00		
To what extent do you feel loyal to the visited brands? (4)	Group 1	≤3	266	0.69	0.50	0.000
	Group 2	>3	119	0.31		
	Total		385	1.00		
Indicators						
Brand awareness (1)	Group 1	≤3	100	0.26	0.50	0.000
	Group 2	>3	285	0.74		
	Total		385	1.00		
Perceived quality (2)	Group 1	≤3	114	0.30	0.50	0.000
	Group 2	>3	271	0.70		
	Total		385	1.00		

Table 6. (Continued)

Brand Associations (3)	Group 1	≤3	168	0.44	0.50	0.014
	Group 2	>3	217	0.56		
	Total		385	1.00		
Brand loyalty (4)	Group 1	≤3	226	0.59	0.50	0.001
	Group 2	>3	159	0.41		
	Total		385	1.00		
Total indicators	Group 1	≤3	129	0.34	0.50	0.000
	Group 2	>3	256	0.66		
	Total		385	1.00		

Note: The “Observed Prop.” and “Test Prop.” values refer exclusively to Group 1 (≤3). Group 2 (>3) represents the complementary category, and its proportion is implicitly included in the calculation (1—Group 1). The binomial test was performed by comparing Group 1 against the expected proportion (0.50).

The results of the Friedman test (Table 7) also indicate that the effects of the visits were, in order of significance, on the awareness index, perceived quality, brand association, and brand loyalty.

Table 7. Friedman test of brand-equity dimensions (Brand Awareness, Perceived Quality, Brand Associations, and Brand Loyalty).

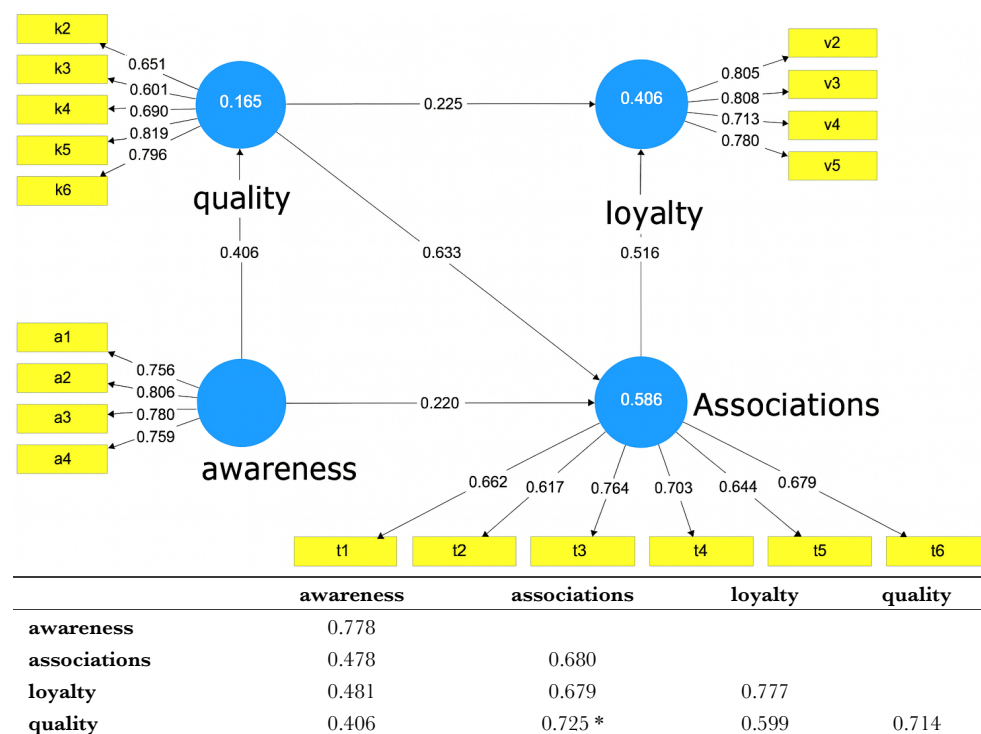
	Mean Rank
awareness	3.06
quality	2.94
associations	2.16
loyalty	1.84
N	385
Chi-Square	258.946
df	3
Asymp. Sig.	0.000

The next figures illustrate the conceptual structure of destination brand equity, grounded in its four brand-equity dimensions: awareness, associations, perceived quality, and loyalty, and depict the direct and indirect relationships among these variables. We refer to the four brand-equity dimensions as Brand Awareness (salience and recognition of the brand), Perceived Quality (overall judgement of product/service quality), Brand Associations (breadth and strength of meanings linked to the brand), and Brand Loyalty (intention to repurchase/recommend and resistance to switching). The “Indicators” reported earlier are dimension-level composite indices.

The path analysis model reveals that the awareness index significantly influences both perceived quality and brand association. Specifically, awareness has a direct effect of 0.406 on perceived quality and a slightly smaller impact of 0.22 on brand association. This suggests that increasing consumer awareness of a brand can enhance their perception of its quality and influence their association with the brand. Figure 2 illustrates all the structural relationships among the model’s latent (hidden or unobservable) variables, while Figure 3 presents their respective t-values. These figures together detail the full set of effects beyond those highlighted in the text.

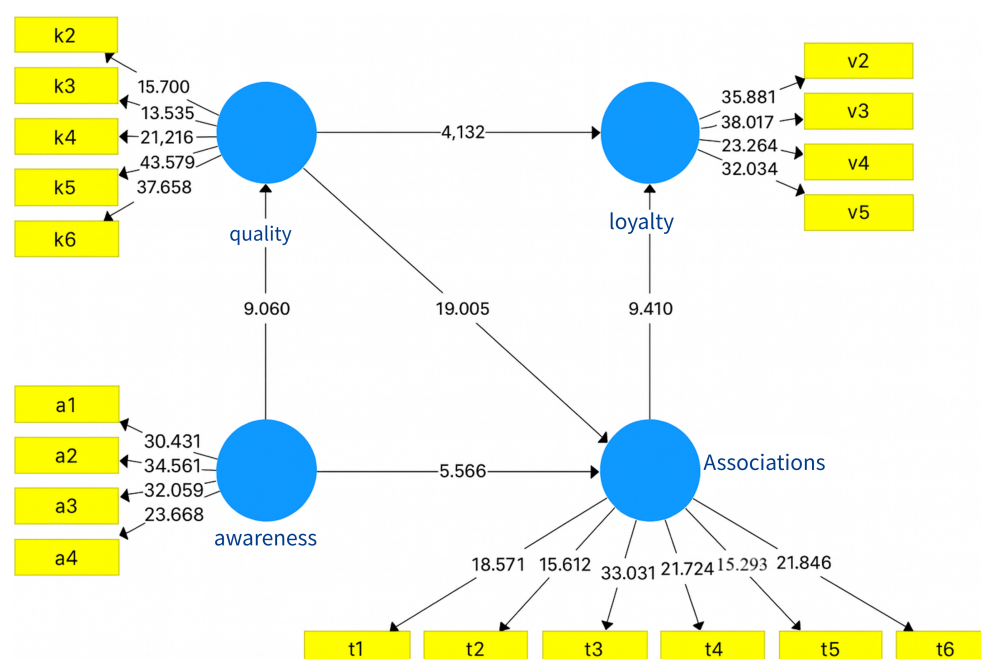
As shown in Table 8, Cronbach’s Alpha and Composite Reliability indexes have been used to evaluate the reliability/internal consistency of the variables of the measurement model. In this regard, values above 0.7 are acceptable for these indicators, and the closer this value is to 1, the better the results will be. In the following, the Average Variance Extracted (AVE) has been used to measure and check the convergence validity of the research model. Convergent validity is used to check that each variable has the highest correlation with its construct compared to other variables. This index examines the explanation of the variance of the indicators by the latent variable; in other words, it measures and examines the degree of correlation between the latent variables and their related questions, and the minimum acceptable value for this index is 0.5. And finally, the Rho coefficient has been used, which is the most important test to measure the convergence and one-dimensionality of latent variables in partial least squares estimation, and values above 0.7 are acceptable for this index. As can be seen in Table 8, the values of Cronbach’s alpha, Composite Reliability, Average Variance Extracted, and Rho extracted for all variables are acceptable. The square root of the variance extracted of each latent variable must be greater

than the maximum correlation of that variable with other variables in the model; in other words, the AVE of each construct must be higher than its squared correlation with any other construct. In simpler terms, the values in the main diameter of the matrix should be greater than the value of correlation between them arranged in the lower-left cells of the main diameter (assessment of discriminant validity using the Fornell-Larcker criterion, which can be checked above, in the table annexed to Figure 2).



Note: Square roots of AVEs (in the diagonal) and correlations to all other constructs. * Although this figure represents a slight anomaly in terms of the discriminant validity of the construct “associations”, it remains consistent with the overall validity pattern.

Figure 2. Path analysis results.



Note: The scales of perceived quality and brand loyalty were respecified, adjusting the measurement of both constructs, removing one indicator in each of them, improving the parsimony and fit of the model. In our view, this fact does not substantially affect the constructs' validity.

Figure 3. T values of each index.

Table 8. Reliability and validity.

	Cronbach's Alpha	Composite Reliability	AVE	Rho
awareness	0.782	0.860	0.605	0.782
associations	0.766	0.837	0.462 *	0.774
loyalty	0.781	0.859	0.604	0.787
quality	0.759	0.837	0.510	0.786

* Very close to the threshold of 0.5.

The significance of the relationships of each index can be seen in [Table 9](#).

Table 9. Significance of the relationships.

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
associations ← awareness	0.220	0.220	0.039	5.656	0.000
quality ← awareness	0.406	0.406	0.045	9.060	0.000
loyalty ← associations	0.516	0.520	0.055	9.410	0.000
associations ← quality	0.635	0.637	0.033	19.005	0.000
loyalty ← quality	0.225	0.223	0.054	4.132	0.000

5.2.3. Third Phase: Results from the Interviews

As for the third section, which consisted of interviews with 25 visitors, a total of seven core questions were asked (see [Appendix B](#)).

In the first question, “While you were visiting the factory, which parts of it had the greatest impact on you?”, the responses most frequently referred to: the large spaces of the factories; the modes of production and packaging; observance of hygiene in factories, especially in the food industry, versus the lack of hygiene in some units; whether tasks were performed manually or mechanized; orderliness in production; adherence to safety; the extent to which environmental considerations, particularly air, were observed; the male-dominated nature of the environment; the research and development sections; and quality control. From this question, effects can be discerned in terms of brand awareness and perceived quality among the visitors. Moreover, the awareness construct identified in the first stage of the research was reaffirmed.

The second question was about the description of its characteristics after touring the factory. From the visitors’ perspective, the most important characteristics were: the degree of order in the factory; the behavior of the staff; the size of the factory spaces; the extent of the use of modern technology; the degree of receptivity to innovations; the degree of alignment with market demand; the level of employees’ precision; the degree of attention to the physical and mental condition of employees; the cleanliness or dirtiness of the factory environment; and the degree of observance of safety for both employees and visitors. In the responses to this question as well, brand awareness and perceived quality were emphasized. A noteworthy point in the responses is the attention to human factors, such as the condition of the employees, in addition to the physical characteristics of the factories.

In the third question (if there were any differences, what differences were there between your perceptions of this brand before and after the visit?), the most important difference concerned the extent of the use of modern technologies: prior to the visit, the impression was that it was more backward, and after the visit they realized the use of smart, up-to-date equipment. The second difference related to the level of loyalty to the visited brands, which either increased greatly or trust in them was completely lost. The third point was the degree of order that exists in the factories; before the visit, the place was mostly imagined to be disorganized and messy. Another point was awareness of the very existence of the visited brands, of which they had not been aware before the visit. Another point concerns the complex process of producing various products, which, before the visit, was usually imagined to be simpler. In the responses to this question as well, all four indicators examined in the previous stage, awareness, quality, association, and loyalty to the brand, are evident, especially the brand-loyalty indicator, which can play a highly effective role in the development of factories.

The fourth question concerned whether you would like to visit that factory again, yes or no, and why. The majority answered “yes”, citing a desire to observe the factory’s progress, and some saw the reason as deepening their experience after the first visit. Among those who answered

“no”, some attributed it to the completeness of the initial visit, while others mentioned fatigue due to extensive walking in the factory. These responses indicate the importance of the role of tour guides during factory visits and of how the visits are scheduled. In fact, the role of guides in improving tourists’ experience of industrial tourism is very important.

Regarding the fifth question (after touring the factory, what recommendations for improvement do you suggest?), most responses focused on greater use of new and smart equipment. Some mentioned the need for an industrial psychologist to address employees’ problems. Greater observance of matters related to employee health, such as better ventilation, was also emphasized. Raising wages and benefits to increase employee motivation was noted. Greater use of research and an active research-and-development department were also highlighted by the visitors. Attention to market demand, especially international markets, greater cleanliness, and more advertising were likewise emphasized by the visitors. In the responses to this question as well, the importance of adopting a comprehensive view of the key issues in industrial tourism is underscored. In fact, in industrial tourism, a wide range of matters, including physical and built-environmental, human, order and safety, health-related issues, planning, and so on, must be taken into account.

Concerning the sixth question (what is the most important factor that influences your brand preference?), the most mentioned by visitors were: quality, being Iranian-made, observance of hygiene, packaging, price, after-sales service, the extent of the use of modern technologies, and the brand’s reputation and track record. In the final question as well, the role of brand quality in brand preference was seen as very prominent.

A summary follows in [Table 10](#).

Table 10. Summary of factory visitors’ interview responses.

Question	Main responses
While you were visiting the factory, which parts had the greatest impact on you?	Large factory spaces; production and packaging methods; observance of hygiene in factories (especially in food industries) vs. lack of hygiene in some units; tasks performed manually or mechanized; orderliness in production; adherence to safety; observance of environmental considerations (especially air quality); male-dominated environment; R&D sections; quality control.
After touring the factory, how do you describe its characteristics?	Degree of order; staff behavior; size of factory spaces; extent of use of modern technology; receptivity to innovations; alignment with market demand; employees’ precision; attention to employees’ physical and mental condition; cleanliness or dirtiness of the factory; degree of safety for employees and tourists.
If there were differences, what changed between your perceptions before vs. after the visit?	Extent of use of modern technologies; level of loyalty to the visited brands after the visit; degree of order in factories; awareness of the visited brands; recognition of the complex process of producing various products.
Would you like to visit the factory again? Why?	Yes: to observe the factory’s progress; to deepen the experience after the first visit. No: the first visit felt complete; fatigue due to extensive walking inside the factory.
After touring the factory, what recommendations for improvement do you suggest?	Greater use of new and smart equipment; employ an industrial psychologist to address employees’ problems; better ventilation and other health-related measures; higher wages and benefits to boost motivation; stronger use of research and an active R&D unit; closer attention to market demand (especially international); greater cleanliness; more advertising.
What is the most important factor influencing your brand preference?	Quality; being Iranian-made; observance of hygiene; packaging; price; after-sales service; extent of modern technology use; brand reputation and track record.

6. Discussion and Conclusions

The model reveals statistically robust pathways from awareness to both perceived quality ($\beta = 0.406, p < 0.001$) and associations ($\beta = 0.220, p < 0.001$), with quality further reinforcing associations ($\beta = 0.635, p < 0.001$) and contributing directly to loyalty ($\beta = 0.225, p < 0.001$), while associations are the strongest direct driver of loyalty ($\beta = 0.516, p < 0.001$) ([Table 9](#)). Yet, absolute loyalty levels remain modest (e.g., 69% ≤ 3 on felt loyalty; 58% unlikely to recommend), indicating a conversion gap: industrial tourism raises the propensity toward loyalty via cognitive and affective gains (awareness and quality), but current frictions in the visit experience and audience composition dampen the translation of these gains into sustained loyal behavior (see also [Table 9](#)).

From a theoretical standpoint, our findings extend prior work showing that immersive, on-site experiences shape consumer judgments more effectively than conventional promotion by supplying credible quality cues and linking industrial capability to regional identity [[11,17,21,26,34](#)]. To make this linkage explicit in our manuscript, we map the structural

results to the hypotheses: H1 (awareness $\rightarrow$ perceived quality), H2 (awareness $\rightarrow$ associations), H3 (perceived quality $\rightarrow$ loyalty), H4 (perceived quality $\rightarrow$ associations), and H5 (associations $\rightarrow$ loyalty) are all supported (Table 9).

Evidence from the survey and interviews indicates that four frictions dampen the translation of cognitive/affective gains into loyal behavior: (1) service–environment deficits, with 61% rating comfort at or below the midpoint (Table 6) and interviewees citing ventilation, walking load and safety choreography; (2) message–practice misalignment, as 77% report weak persuasion by slogans and 80% perceive brand names as distant from everyday realities (Table 6), echoed by interview remarks on discrepancies between on-site practice and messaging; (3) price sensitivity, whereby 70% report perceived quality above the midpoint yet 83% would not continue buying at higher prices (Table 6); and (4) audience structure, given the dominance of school-organized ($\approx$ 63%) and group (77%) travel (Table 5), which implies lower prior involvement and weaker post-visit advocacy. Together, these frictions reconcile the statistically robust paths from awareness to quality/associations and on to loyalty (Table 9) and the ranked effects (awareness > quality > associations > loyalty; Table 7) with the still-modest absolute levels of loyalty, by showing where the experience and market context absorb much of the potential uplift.

Beyond the structural model, the Iranian evidence reinforces branding logics observed internationally, where experiential elements such as factory visits, live demonstrations, and storytelling enhance awareness, shape associations, and consolidate loyalty [5,18,21]. Similar to cases in the Ruhr region [16], Austria [17], and Taiwan [18,72], authentic exposure to industrial processes strengthens visitor–brand ties, yet in Iran these associations are uniquely infused with meanings of technological self-reliance and national pride, dimensions less accentuated in Western contexts [34,71]. At the same time, comparative programs such as “Visit Our Companies” in France or initiatives in Shanghai and Pays de la Loire [51] illustrate how structured tours, safety protocols, and integrated promotion elevate value creation. The Iranian setting reveals parallel challenges, safety concerns, infrastructure gaps, and firm hesitancy that echo findings from other destinations [4,48,72], underscoring the need for regulatory frameworks, training, and co-branding strategies to leverage industrial tourism as a vehicle for both regional development and brand equity in emerging economies.

The practical implications are substantial. For firms, well-designed factory tours, hands-on workshops, and interpretive programs can lift awareness and perceived quality while cultivating favorable associations that support loyalty. For policymakers and destination managers, standardized guidelines and safety protocols, coupled with targeted promotion and digital access, can expand reach and improve experience quality [26]. At the regional scale, industrial tourism can complement broader regeneration strategies and generate spillovers for hospitality and retail sectors through multiplier effects [4]. Networked approaches that connect industrial centers, knowledge-based companies, and startups can further coordinate supply, raise standards, and professionalize interpretation [19]. Comparative evidence underscores both convergence and context. European initiatives, exemplified by coordinated routes and heritage networks, illustrate how industrial narratives can be mobilized at scale [7]. Asian cases reveal parallel dynamics of creative reuse and large-scale mobilization, alongside tensions around authenticity and equitable benefit-sharing, as seen in kiln districts and high-volume industrial-site visitation [54,55,56]. Against this backdrop, Iran’s earlier-stage ecosystem presents both constraints (infrastructure, limited foreign visitation) and advantages (policy headroom to adopt best practices and avoid over-commodification), suggesting that carefully sequenced capability building can yield outsized brand-equity gains.

Several limitations temper these conclusions. The sample skews younger and lower-income, potentially constraining generalizability; managerial perspectives were not directly incorporated; and the cross-sectional design cannot capture temporal dynamics. Future research should broaden the respondent base, integrate industry and policy stakeholders, and employ longitudinal designs. There is also scope to examine how specific digital tools, such as virtual tours and interactive platforms, mediate post-visit memory and word-of-mouth in industrial settings [37].

In short, the evidence shows that industrial-tourism experiences do more than generate immediate visitation and revenue; they create durable brand value by channeling awareness into quality assessments and symbolic meanings that culminate in loyalty. For emerging contexts, aligning firm-level experience design with supportive destination policy and leveraging digital amplification can make industrial tourism a sustainable lever for both brand equity and regional development [26,36,58].

The following recommendations are proposed for the development of industrial tourism:

- Establish systematic regulations and guidelines to facilitate the growth of industrial tourism;
- Provide training programs for industrial site owners to enhance their readiness for hosting visitors;
- Develop and implement a dedicated curriculum for industrial tourism guiding, accompanied by specialized training courses;
- Renovate and repurpose outdated and deteriorated factories and workshops to support industrial tourism initiatives;
- Identify and designate industries with strong potential for attracting tourists;
- Compile and publish an Industrial Tourism Atlas; and
- Establish a collaborative network connecting industrial centers, knowledge-based companies, startups, and related actors as part of a creative ecosystem.

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Data Availability

The datasets generated and/or analyzed during the current study are not publicly available due to confidentiality agreements with participants and industry partners. However, anonymized data supporting the findings of this study may be made available upon reasonable request.

Author Contributions

Conceptualization: M.H., & A.A.V.S.; Data curation: Y.S.S., & Z.D.; Formal analysis: M.H.; Methodology: M.H., & A.A.V.S.; Project administration: M.H.; Supervision: A.A.V.S.; Validation: A.A.V.S.; Writing – original draft: M.H.; Writing – review & editing: N.M.L., & A.A.V.S.

Conflicts of Interest

The authors have no conflict of interest to declare.

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Appendix A

Table A1. Conceptual structure of destination brand equity: dimensions and scales of measurement.

P1 Gender: Male/Female/Other/Prefer not to say			
P2 Age (years): ≤19/20–39/40–64/≥65			
P3 Marital status: Single/Married/Other			
P4 Education: Under diploma/Diploma/Bachelor/Master+			
P5 Monthly income (USD): <100/100–199/200–249/250–350/>350			
Brand Awareness		Perceived Quality	
a1	To what extent has industrial tourism increased your knowledge of the brands you visited?	k1	How comfortable was the environment of the factories you visited?
a2	To what extent has industrial tourism helped you recognize brands more easily?	k2	How satisfactory was the behavior of the reception staff?
a3	To what extent has industrial tourism made you think of these brands first?	k3	To what extent did the factory guides' explanations help you understand the production process?
a4	To what extent do the visited brands now feel more familiar than other brands?	k4	To what extent was advanced technology used in the factories?
		k5	How confident did you feel about product safety after visiting the factories?
		k6	How confident did you feel about the hygiene of the products after the visit?
Brand Associations		Brand Loyalty	
t1	How pleasant was the overall atmosphere of the factory?	v1	How often do you buy other products from these brands?
t2	To what extent were your thoughts influenced after visiting the factories?	v2	To what extent do you recommend the visited brands to others?
t3	How much trust do you have in the visited brands?	v3	To what extent do you purchase products from the visited brands?
t4	To what extent are you influenced by the slogans of the visited brands?	v4	To what extent would you still buy from these brands if their prices increased?
t5	To what extent do the brand names relate to your real-life experiences?	v5	To what extent do you feel loyal to the visited brands?
t6	To what extent did visiting the factories make you trust other products from the same brands?		

Source: [23].

Appendix B

Qualitative questionnaire

Factory visited:

Gender:

Marital status:

Age:

Education level:

Income amount:

Tour organizer:

Vehicle type:

Type of visit (group or individual):

Did you have experience using the product of the brand you visited?

1. While you were visiting the factory, which parts of it had the greatest impact on you?
2. After touring this factory, how would you describe the features of the factory?
3. If there are any differences, what are the differences in your respective impressions of this brand “before touring” and “after touring” this factory?
4. Would you like to come to this tourism factory again? Why or why not?
5. After touring this factory, what recommendation would you suggest for improvement?
6. What is the most important factor that influences your brand preference?