BRAND EQUITY IN A DIGITAL AGE: SYSTEMATIC LITERATURE REVIEW

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Abstract
Keller’s seminal paper on “Conceptualizing, Measuring and Managing Customer-Based Brand Equity” published in 1993 in the Journal of Marketing represents a starting point for researching the brand equity construct. However, in the last 10 years, with tremendous development of (communication) technology and, lately, with COVID-19 pandemic, things have changed and most brands moved their businesses to the on-line environment. Because of that, the concept of brand equity should be reconsidered. This paper reviews literature on brand equity in digital era by spotting gaps and finding fruitful areas for future research. To that end, bibliometric analysis followed by a narrative review of articles published in the Web of Science database is conducted. The paper will contribute to the brand management literature by offering streams for new research.

Keywords: brand equity, digital age, customer-based brand equity, digital marketing, literature review.
1. INTRODUCTION

The importance of branding arises from the fact that brands act as facilitators in consumers’ decision making, have strong symbolic value and present important financial assets to companies (Oh et al., 2020). They are deeply rooted in everyday life and vocabulary of consumers while branding is incorporated in all kinds of organizations. Initially brands were important in domains of products and services, but today new branded entities arise at a very fast pace (e.g., platform brands, smart brands, idea brands) (Swaminathan et al., 2020). Their complexity, versatility, and richness of meanings for decades have sparked interests from both researchers and marketers (Oh et al., 2020).

The idea of measuring the differential effects of brands in relation to the unbranded goods has created one of the most popular fields in branding research – brand equity (BE). Motivation for studying BE mainly comes from the need to estimate financial value of the brand, to improve marketing productivity in terms of business strategy and to better understand consumer behaviour (Keller, 1993). Strong brands are associated with high levels of differentiation, loyalty, positive word-of-mouth, and long-term relationships with consumers (Feiz and Moradi, 2020).

At the beginning, the research on BE was focused on financial value in terms of revenue and market shares (Farquhar, 1989). Later, the notion that brand value exists in the minds of consumers created the most widely research field of consumer-based brand equity (CBBE) (Keller, 1993). Consumer is still a central topic of branding, but new technologies radically change dynamics of branding, facilitate broader reach and Internet allows marketers to gain deeper insights into human needs and create new marketplace (Rejeb et al., 2020). In addition to technology, the pandemic provoked by COVID-19 has changed human behaviour in unprecedented ways as brands and humans increasingly rely on technology in every aspect of their lives. Having in mind aforementioned changes, the main goal of this paper is to reconsider the topic of BE and investigate in what ways has it been, as one of the fundamental topics in marketing, transformed by the latest technological trends.

To reach that goal and uncover future research directions, bibliometric analysis based on keywords co-occurrence and narrative review have been conducted. The review is based on articles published in Web of Science database from 2011 to 2022. As a result, the most fruitful areas of research are positioned at the intersection of brand equity and product and service innovation, integrated marketing communication (IMC), and artificial intelligence (AI).

2. METHODOLOGY

A structured literature review in four phases was performed on the impact of technology on BE over the last decade. Focus on the last decade is due to tremendous changes in the marketing landscape and macro trends that shaped and
changed customer behaviour (Brinker, 2020). The first phase involved search of papers based on keywords in Web of Science database: TS = ‘brand equity’ OR ‘BE’ AND TS = ‘technology’. The rationale behind choosing ‘technology’ for a keyword combination is because it encompasses digital changes as well but gives more profound insight in how changes in marketing emerge due to technological advances. The initial search query at the intersection of BE and technology initially resulted with 227 papers. The second phase involved revision of results based on paper type (articles and review articles), language (English) and time of publication from 2011 to 2021. In the third phase papers were revised based on direct relevance to the topic and the total of 82 articles were selected for the review. The search was completed on the 27th of January 2022. The last phase involved analysis based on keywords co-occurrence and application of the narrative review (Sylvester, 2013) as a traditional way to review the current state of the knowledge in the field. The overview of methodological approach is shown in Table 1.

Table 1

| Type of Analysis     | Qualitative                  |
|----------------------|------------------------------|
| Database             | Web of Science               |
| Years of publication | 2011-2021                    |
| Search query         | “brand equity” OR “BE” AND “technology” |
| Language             | English                      |
| Paper Type           | articles, review articles    |

For visualization of keyword co-occurrence VOSviewer 1.6.11 software was used, and keyword coupling is shown in Figure 1. The choice of main topics and subtopics covered in the paper was based on keyword clusters and having the three important perspectives in mind: the customer, the firm, and the society perspective.
Based on clusters of keywords and holistic view on the topic, the paper structure is organized as follows. First, the main trajectories of change in digital and technology-enabled era of marketing are described. This is followed by different approaches to the construct of BE and its development over time. The central part of the paper covers emerging topics of the field: product and service innovation, IMC, and AI. Finally, the concluding remarks, future research directions and research limitations are presented.

3. DIGITAL AGE OF MARKETING

One of the major changes affecting brands comes from advances in technology and its impact on how consumers interact with brands. Namely, the Internet of Things (IoT), AI, augmented reality (AR), and virtual reality (VR) are adopted by online platforms and inevitably change how consumers connect with brands, products and services (Oh et al., 2020). Given the worldwide availability of internet, the online environment and its dynamic nature is one of the most important challenges brands face today (Veloutsou and Guzman, 2017).
Marketing technology landscape has shown exponential growth from 2011 until 2020. According to the data from Chief Marketing Technology Blog, which monitors trends in marketing technology, martech landscape has grown 5,233% since 2011 (Brinker, 2020). One of the consequences of these changes is hyper-connectivity. It is defined as “proliferation of networks of people, devices, and other entities as well as the continuous access to other people, machines, and organizations, regardless of time and location” (Swaminathan, 2020, p. 1). Hyper-connectivity has three aspects:

a) information availability and speed of information dissemination,
b) networks of people and devices, and growth of platforms, and
c) device-to-device connectivity.

The COVID-19 pandemic has acted as a catalyst for many changes as traditional interaction between consumers and brands has become impossible. These obstacles have forced brands across industries to adopt new digital technologies and consequently made consumers more open to them (Kim et al., 2021). Companies today have an unprecedented ability to collect and analyse customer data in real-time, create personalized offers, build customer knowledge, and strengthen relationships (Rust et al., 2015). In their research on the past, present and future of branding, Oh et al. (2020) delineate three areas to be relevant for the future of brand research:

1) progress in technology and its impact on the role of brands,
2) wider scope of brand research, beyond products and companies, and
3) Big Data leading to changes of branding strategies.

All the above, together with the constant rise in social media use, development, and application of AI in marketing (Puntoni et al., 2020) has led to need to examine the role of BE in this fast-changing environment. AI is a game-changer as brands implement new algorithms to make better decisions, deliver better services and communicate more efficiently with their target audience (Varsha et al., 2021).

4. DIFFERENT APPROACHES TO BRAND EQUITY

Brands have been effective carriers of functional and symbolic meaning for ages. They manage to constantly influence consumer behaviour and thoughts, shape experiences and assist in connecting consumer’s personal meaning to company’s products (Oh et al., 2020). For businesses, brands are valuable assets, so it does not surprise that the BE has attracted so much attention from both researchers and practitioners (Rojas-Lamorena et al., 2022).

Despite the consensus on importance of BE, there is still an ongoing debate on its definition, conceptualization, and measurement. Since the early 90s when this topic emerged there have been several attempts to define BE (Aaker, 1991; Ailawadi et al., 2003; Allaway et al., 2011; Farquhar, 1989; Keller, 1993). The common thread among these definitions is that brand name offers something more compared to the unbranded product and that BE affects brand volume, market
share and other quantitative outcomes. In the broadest sense, BE is an added value that a brand brings to a company's products (Yoo et al, 2000).

BE has mainly been studied from two perspectives: the firm and consumer perspective. Firm-based brand equity (FBBE) focuses on financial value created by brands which is the outcome of consumers’ perceptions and responses to a brand name (Christodoulides and de Chernatony, 2010). Financial perspective measures the effects of marketing actions on stock market value, brand acquisitions and other financial outcomes (Keller and Lehman, 2006).

The most influential work in academic research on BE from the consumer perspective has been done by Aaker (1991) and Keller (1993). Aaker’s model proposes five dimensions of CBBE - brand loyalty, brand awareness, perceived quality, brand associations, and other propriety brand assets. On the other hand, Keller (1993) focus is on brand knowledge as a main antecedent of CBBE consisting of brand awareness (recall and recognition) and brand image (types, favourability, strength, and uniqueness of brand associations). This view is in line with the psychological approach to BE “consumer-psychology-of-brands” model which proposes that BE resides in the minds of customers (Schmitt, 2012).

With the rise of service-dominant logic and customer-centric approach, Rust et al (2015) conceptualized customer equity as the sum of value equity, BE and relationship equity. Value equity is perception of objective value based on quality, price, and convenience while BE comes from subjective attributes given to a brand by consumer such as associations and emotional attachment. Relationship equity refers to the customers’ intention to maintain relationship with a brand over time. Another popular conceptualization of BE if offered by Keller and Lehman (2003) according to which BE consists of three categories:

1) customer mindset measures - awareness, associations, loyalty, and perceived quality;
2) product market measures – brand’s market performance (price premium, market share, revenue); and
3) financial market measures – value of a brand as a financial asset.

For a long time, BE as a concept has been neglected in the business-to-business sector since marketers in these sectors have been sceptical about branding and primarily focused on the functional aspect of their offerings (Leek and Christodoulides, 2011). However, it has created a new area at the intersection of marketing and human resources as employees are playing increasingly important role by representing brands in interactions with actual and potential customers. Hence, internal branding has emerged a trending topic for industrial markets and employees’ brand commitment and brand-oriented corporate culture are significant requirements for building a strong corporate brand (Baumgarth and Schmidt, 2010; Schmidt and Baumgarth, 2018). From employees' perspective it is about what they do (brand consistent behaviour), what they say (brand endorsement) and what they intend to do in the future concerning the brand (brand allegiance) (King et al,
2011). It is an intangible asset that brings value to a firm through attitudes and behaviour of its employees (Tavassoli et al, 2014).

With the rise of environmental concerns, research on green BE attracted more attention. It is conceptualized as a set of brand assets and liabilities about green commitments and environmental concerns linked to a brand, its name and symbol that add to or subtract from the value provided by the product or service (Chen, 2010). It consists of green brand name, green satisfaction, and trust. Green BE delivers value for firms, consumers, and society as a whole in terms of increasing environmental awareness and creating competitive advantage (Delafrooz and Goli, 2015).

Table 2 summarizes different concepts of BE in marketing literature.

### Table 2
Different conceptualizations of brand equity

| BRAND EQUITY CONCEPTUALIZATION | Definition | Dimensions | Authors |
|-------------------------------|------------|------------|---------|
| **Firm-Based Brand Equity**   | The added value endowed by the brand to a product. | revenue premium measure | Farquhar (1989) |
| **Financial-Based Brand Equity** | The marketing effects or outcomes that accrue to a product with its brand name compared with those that would accrue if the same product would not have the brand name. | revenue premium measure over a private label product | Ailawadi and Lehmann (2003) |
| **Consumer-based Brand Equity** | The incremental cash flows which accrue to branded products over unbranded products. | estimation technique to extract BE from firm's other assets | Simon and Sullivan (1993) |
| **Green Brand Equity** | The differential effect of brand knowledge on consumer response to the marketing of the brand. | brand awareness (recall and recognition) and brand image (types, favourability, strength, and uniqueness of brand associations) | Keller (1993) |
| **Retailer Brand Equity** | A set of brand assets or liabilities that add or subtract from the value provided by a product or a service. | brand loyalty, brand awareness, perceived quality, brand associations and other propriety brand assets | Aaker (1991) |
| **Employee-Based Brand Equity / Internal Brand Equity** | The total of the discounted lifetime values summed over all the firm’s current and potential customer. | value equity, BE and relationship equity | Rust et al (2015) |
| **Retailer Brand Equity** | A set of brand assets and liabilities about green commitments and environmental concerns linked to a brand, its name and symbol that add to or subtract from the value provided by the product or service. | green brand name, green satisfaction, and green trust | Chen (2010) |
| **Retailer Brand Equity** | From employees’ perspective it is about what they do (brand consistent behaviour), what they say brand endorsement) and what they intend to do in the future concerning the brand (brand allegiance) | brand endorsement, brand allegiance and brand-consistent behaviour | King et al (2011) |

Source: Authors’ research
The first part of the paper summarizes the development of BE in marketing literature and sets foundations for explaining the technological trends that affects this concept over the last ten years.

5. **EMERGING TOPICS ON THE IMPACT OF TECHNOLOGY ON BRAND EQUITY**

Having analysed the current state of the field on technological impact on BE available in Web of Science database, the following domains of research (as shown in Figure 2) were distinguished: product and service innovation, IMC and AI. Each topic covers several subtopics emerging in the field. Namely, product and service innovation are analysed within different industries: hospitality and banking industry, retail and e-commerce, technology-based companies, and use of AR. Within the IMC, the paper is focused on social media, the use of social media for luxury brands and online brand communities. The third field, AI encompasses use of robots, chatbots and interactive agents, customer experience and blockchain technology.

![Figure 2 Key topics over the last decade of research on BE and technology](image)

Source: Authors’ research

5.1. **Product and service innovation**

Taking into consideration service-oriented economy and rising importance of technology in times of pandemic; information and communication technologies are of the most prominent industries today (Wu, 2014; El Samen, 2015). Service innovation is defined as “a new process or offering that is put into practice and is adopted by and creates value for one or more stakeholders” (Gustafsson et al, 2020, p. 114). To succeed in a highly competitive marketplace,
companies must innovate and deploy technological advancements to track customers’ purchase histories and recognize their consumption patterns. Using customer recognition is one of the ways which helps companies to segment their customer in past and new ones and align their pricing strategies with consumer behaviour (Li, 2021). Same research has shown that brands with higher level of BE, i.e. stronger brands have higher chance of innovation success and have more incentives to invest in innovation. Brands that score higher on BE are less affected when a failure in implementation occurs (Liao and Cheng, 2013).

**Hospitality industry.** The customer experience in hospitality industry has been fundamentally changed since the COVID-19 pandemic (Hao and Chon, 2021). Due to health concerns and new behavioural norms, wide range of contactless services has been added to the customer experience like voice control, motion-sensing, mobile control, robotic service, thermal sensing, facial recognition, temperature measurement camera, 5G network and IoT (Hao, 2021). Hao and Chon (2021) have shown that customer experience and customer delight play are important antecedents of customer equity which consequently impacts brand trust. Travel application attributes like perceived usefulness, price advantage and user interface attractiveness directly enhance customer engagement which, in turn, increases BE (Tian et al, 2021).

Measuring branding effectiveness for tourism destinations meets its own set of challenges since destination brand is related to different types of tourists with different expectations having the same experience at the same time. For successful management of destination as a brand, BE, customer satisfaction and cultural distance have emerged as important factors (Tran et al, 2021).

Han et al (2021) explored how travellers’ engagement on social media, attitude, awareness, attachment, and trust relate to loyalty towards hotel brands. What they found is that given the same level of social media engagement, older customers tend to show higher level of brand awareness and loyalty. Research done in luxury hotel industry showed that advanced technology has direct impact on perceived quality and image of a hotel (two out of three BE dimensions) (Šerić et al, 2016).

Cultural attractions like museums and galleries are also under the rising pressure to implement new technologies like mixed reality, AR and VR to enrich customer experience and attract new visitors (Rahaman et al, 2019). Bae et al (2020) have shown that integration of mixed reality in cultural sites with special attention to interactivity and vividness influences customer satisfaction and loyalty thus enhancing BE. Given the experiential nature of hospitality industry and growing integration of new technologies into customer experience, the following research direction arises:

**RESEARCH DIRECTION 1:** Comparison of overall satisfaction with customer experiences based on number of touchpoints delivered by humans versus technology-based touchpoints.
Technology-based companies. In terms of mobile value-added services, service attributes of personalization, identifiability, and perceived enjoyment have a significant positive influence on BE elements (brand loyalty, perceived quality, brand awareness and brand associations) (Wang and Li, 2012). Smartphone usage is one of the most powerful tools used for work, communication, and shopping today and users do not consider just usefulness and compatibility with their lifestyle but also estimate BE (especially in terms of cost effectiveness) and social influence when choosing a smartphone brand (Hsu and Lin, 2015). Repurchase intention for smartphone users are significantly determined by brand experience, BE and customer satisfaction (Hussain and Ahmed, 2020). Important factors of BE and loyalty in information and communication technology service providers is service leadership and customization-control (Xu et al., 2014). With the rising demand of new and innovative technological solutions, BE in the context of tech-based companies deserves additional research, thus, the second research direction arises:

RESEARCH DIRECTION 2: What kind of organizational culture within technology-based companies fosters both technical innovation and consumer focus to maintain long-term customer relationships and BE?

Banking industry. A decade ago, m-banking was recognized as one of the most prominent fields in banking service industry (Lin, 2011). To attract and maintain customer base, m-banking must create unique and interactive experiences which present an opportunity for banks to engage with customers on a deeper level (Jamshidi et al., 2018). The authors examined users of m-banking apps and found out that flow experience has significant impact on brand trust and BE. In banking sector, BE formed through social media and brand personality in terms of responsibility and activeness positively affects brand loyalty (Garanti and Kissi, 2019). Considering the nature of banking industry and customers’ security concerns the next research direction arises:

RESEARCH DIRECTION 3: The research on the trade-off between perceived risk of m-banking app usage (e.g., data privacy, account security) and perceived usefulness across different age groups should be examined.

Retail and e-commerce. Retailers and markets are increasingly trying to reach consumers through e-commerce platforms (Parker and Kuo, 2021). Retail industry has undergone major changes caused by new digital channels (e.g., social media and mobile applications) that altered both consumer shopping behaviour and retail business models (Razaei and Valaei, 2017; Verhoef et al., 2015). Considering substantial technological changes, shift in consumer behaviour and increased competition, offering products through multiple channels has become indispensable (Bilgicer et al., 2015). Consequently, it is necessary for brands to incorporate customer experience in their strategies to establish strong online brands (Chen and Mathews, 2013).

In the wake of COVID-19 pandemic, most brands have moved their stores to online environment and directed investments into enhancing e-platform features
Parker and Kuo (2021) present results of a research conducted on a female sample belonging to the generation Y in attempt to uncover important aspects of e-commerce platforms when it comes to fashion. The results showed that e-commerce platforms are seen primarily as utilitarian instead of hedonic and find that there is a significant degree of reluctance to buy expensive items online.

Pena-Garcia et al (2018) have done cross-cultural research among Spanish and Colombian online shoppers to uncover the antecedents in loyalty formation and found out that the more experienced online shopper is, the more he/she demands hedonic elements in his/her online shopping experience. In a highly competitive retail environment, store equity is a strong point of differentiation (Gil-Saura et al, 2016). Technical innovation together with store image have the most significant impact on store BE (Fuentes-Blasco et al, 2017).

Transition from brick-and-mortar to click-and-mortar store for food products has been lagging behind other product categories (Badenhop and Frasquet, 2021). However, latest data show that social distancing provoked by the COVID-19 pandemic has accelerated the change in consumer behaviour in this area and now 63% of consumers globally by groceries online compared to average before the pandemic which was 9% (Global consumer insights survey, 2020). The latter trends have sparked interest in academic research to take a closer look into dimensions of retailer BE consisting of retailer awareness, retailer associations, perceived retailer quality, retailer loyalty and retailer reputation (Lee and Lee, 2018). Study conducted in Germany by Badenhop and Frasquet (2021) has showed that key attributes defining retailer BE for multichannel supermarkets are retailer awareness, retailer associations, perceived retailer quality, retailer loyalty retailer associations, perceived retailer quality, retailer loyalty together with perceived usefulness. Based on differences among industries when it comes to success factors of their e-commerce platforms, it would be useful to:

**RESEARCH DIRECTION 4:** Clearly distinguish factors that influence formation of online retail BE compared retail equity of physical stores.

**Augmented reality.** One of the key trends in marketing digitalization is usage of AR which is immersive technology visually integrating virtual elements into physical environment with real-time interactivity (Javornik, 2016). For brands, AR contributes to the customer experience and customer journey through creating new touchpoints and opportunities for personalized experience (Javornik et al, 2021). Service innovation like AR provide additional value for customers by enhancing customer engagement which, in turn, influences customer equity (i.e., value, relationship, and BE) (Kim et al, 2021). Even though the use of AR can bring many benefits for the marketers, there are possible pitfalls of this technology given that most AR apps present short-term entertainment. From this arises the following research direction:

**RESEARCH DIRECTION 5:** What are the best content strategies for AR app development in order to maintain long-term interest of the target audience?
5.2. Integrated marketing communications

Today, IMC is a customer-oriented process fostered by technology that aims at creating a strong BE by coordinating different marketing tools and channels (Šerić et al., 2014). For marketing communication to positively contribute to BE, it must be integrated across different channels and consistent over time (Delgado-Ballester et al., 2012). In hospitality industry there is a strong, positive relationship between social Web and IMC on one hand, and BE and IMC on the other hand (Šerić, 2017). Also, IMC positively impacts all dimensions of hotel BE - brand image, perceived quality, and brand loyalty (Šerić and Gil-Saura, 2012). In addition to IMC, another important element affecting consumers’ perceptions of hotel brands is communication consistency (Šerić et al., 2016).

Elements of social media marketing, namely clear website, website security, online interactivity and collaboration with other related websites have positive effect on brand trust and brand loyalty in the context of hotels (Tatar and Eren-Erdogmus, 2016). BE of a company’s website as a platform that present company’s identity can also be deciding factor in formation of brand trust and purchase intentions (Chang et al., 2019). Deepa and Baral (2021) have examined the antecedents of employee-based BE and found out that IMC helps companies to fulfil employer value proposition and create employee-based BE.

Social media. Consumers increasingly connect online using social media which changes their daily routines and ways of communication (Veloutsou and Guzman, 2017). New forms of social media are constantly emerging and creating new opportunities for companies to connect with their target audience and communicate their message (Rojas-Lamorena et al., 2022). Social media does not just change the ways of interaction between consumers and brands, but data collected through social media present an important source of information and insight for companies (Luo and Zhang, 2013). Nearly half of the world’s population (3.6 billion in 2020) are social media users and it is estimated that by 2025 this number will rise to 4.41 billion (Statista, 2022).

Study by Nunez-Gomez et al (2020) conducted on a sample of kids aged 8 to 14 in Spain showed that kids’ interaction on social media positively affects brand preferences and loyalty. Technology has also changed media information systems and the way news are consumed, distributed, and monetized (Klass, forthcoming). Customer social participation in general has shown significant positive impact on BE formation (Chae and Ko, 2016). Wagner Mainardes and Vieira Cardoso (2019) draw attention to the connection between social media usage and shopping behaviour in physical stores. The authors concluded that the use of social media, together with both firm and user-generated content positively influence trust of the physical store.

There are two main types of content related to social media: user-generated content created by consumers and firm-generated content created through official brand social media channels (Colicev et al., 2018). The recent research focused on how user-generated content affects brand image and sales to
build BE (Goh et al., 2013; Kuksov et al., 2013). More advanced research should encompass both user-generated content and firm-generated content in formation of social media equity and its impact on overall BE. However, not all generations of consumer approach social media use in the same manner. Hence, the next research direction is the research on:

**RESEARCH DIRECTION 6: Cross-generational differences (e.g. generation X, generation Y – millennials, and generation Alpha) on factors that foster user-generated content and shape social media platform preferences.**

**Luxury brands and social media.** Luxury brands are one of the fastest growing segments among global brands partially due to the utilization of the latest trends in digital marketing (Conti, 2018). They are distinctive due to their high quality and premium prices, high level of symbolic and hedonic values, heritage, and uniqueness (Kastanakis and Balabanis, 2014). Given the differences relative to non-luxury brands, luxury brands require special approach when it comes to strategy, building BE and maintaining relationships with consumers (Godey et al., 2016).

According to the global consulting company Bain & Co. (2019), by 2025 digital purchases will represent a quarter of the luxury market’s value. Javornik et al. (2021) showed that AR in the context of luxury brands can support their uniqueness and attributes which indirectly builds BE through brand experience and customer journey. Brand experience is shown to be of strategic importance when it comes to luxury brands (Dion and Borraz, 2017). In investigating motives for engagement with luxury brands on social media, Bazi et al. (2020) identified six groups of motives: perceived content relevancy, brand-customer relationship, hedonic, aesthetic, socio-psychological motives, BE and technology factors. Review of literature on social media use and luxury brands by Creevey et al. (2019) directs to five fruitful areas of future research: luxury brand strategy and services, user-generated content, young consumers, moments of luxury and storytelling. As young consumers’ behaviour is increasingly shaped by influencers it would be useful to:

**RESEARCH DIRECTION 7: Measure person BE and how the use of influencers based on their person BE affects overall BE they represent in terms of luxury brands.**

**Online brand communities.** Customers tend to buy from companies that gather strong communities of enthusiasts and provide a sense of belonging (Rust et al., 2015). They also tend to base their societal identity on consumption and relate with other like-minded consumers (Capece and Campisi, 2013). Social media has facilitated the interaction between consumers and formation of groups with shared identities around brands (Nunez-Gomez et al., 2020; Wirtz et al., 2013). Online brand communities are specialized communities with no geographical boundaries gathered based on admiration towards a brand with the shared understanding of brand meaning. They have three characteristics in common: a shared consciousness (so called ‘’we-ness’’), rituals and traditions that bind them and a sense of moral responsibility to a community as a whole (Muniz and O’Guinn, 2001). For online brand communities, Wirtz et al. (2013) have focused the following dimensions that
shape their behaviour: brand orientation, internet-use, funding, and governance. These virtual communities are of special interest for marketers as they serve as valuable source of information and trust for consumers (Ho and Dempsey, 2010). Investigating online brand communities in the luxury fashion, Brogi et al (2013) have found out that communities’ dynamic in terms of brand community participation, generated content, members’ perception of brand quality positively influence BE.

As they constantly grow in number of members, online brand communities are becoming important platform for facilitation of consumer-brand relationships. Social capital consisting of shared language, shared vision, social trust, and reciprocity are all vital elements in formation of strong network which result in loyalty and BE (Meek et al, 2019). Members of online brand communities are important market segment since they represent those consumers who identify and engage more strongly with the brand (Alden et al, 2016). They are more loyal and surpass the role passive message receivers but act as co-creators of brand message (Mahrous and Abdelmaaboud, 2017).

BE has mainly been measured in the post-launch context and missed the opportunity to correct possible negative outcomes of marketing activities. Hence, Divakaran and Kumar (2018) used community-based BE to examine pre-launch favourability of post-launch decisions. They showed that community-based BE can be useful in predicting new products success, customer satisfaction and helping companies to better predict possible pitfalls in new product launch. However, the antecedents of community-based BE remain under researched:

RESEARCH DIRECTION 8: Which factors are vital in formation of strong online brand communities and what is their power to mitigate brand mistakes (foster brand forgiveness)?

5.3. Artificial intelligence

Another topic of interest for both marketers and researchers is the use of AI in marketing since there is virtually no industry that is not affected by AI. Driverless cars, AI-assisted sales agents, companion robots, emotional and spiritual support AI, algorithms predicting consumer behaviour in retail are just some of the transformative examples of AI use (Davenport et al, 2020). E-Brands like Amazon, Netflix and eBay are fostered by the rise of AI and use of new technologies to deliver value-based services and build BE (Varsha et al, 2021). Companies like Google, Spotify and Under Armour are just some of the world-renowned companies that use AI solutions like Microsoft Cognitive Services, Amazon Lex or IBM Watson to improve their performance (Vlačić et al, 2021).

AI relies on technologies such as machine learning and deep learning, natural language processing, neural networks, rule-based expert systems and robots (Davenport, 2021). It is set to provide unprecedented access to advanced systems that offer highly personalized and accurate information across devices and data sets (Bock et al, 2020).
Marketing AI is defined as “the development of artificial agents that, given the information they have about consumers, competitors, and the focal company, suggest and/or take marketing actions to achieve the best marketing outcome” (Overgoor et al., 2019, p. 2]. As presented in figure 3, it is closely aligned with analysis of micro and macro environment, the process of segmenting, targeting, and positioning, strategic planning, new product development, pricing decisions, distribution channels and IMC (Varsha et al., 2021).

![Figure 3 Framework of AI in branding](Source: Varsha et al (2021, p. 225)]

Robots, chatbots, and interactive agents. Natural language processing has enabled the development of chatbots or Machine Talk that assist consumers in making decisions, buying products and facilitate communication between consumers and companies (Dale, 2016). This new way of communication is transforming customer experiences and shaping brand preferences (Suri et al., 2017).

Interactive agents use algorithmic structures to communicate with users, predict solutions to different queries and enhance communication between users of the same application (Etlinger, 2017). Influenced by the latest advancements in AI technologies, use of robots in customer service has gained momentum (Xiao and Kumar, 2021). However, it a challenging task for many companies to successfully incorporate robotics into customer services (Ackerman, 2016). The use of robots, chatbots and interactive agents is mainly researched from the firm perspective, hence the next research direction is found:

**Research Direction 9:** When bots and interactive agents have the role of customer or intermediary in purchase process what is the suitable approach to measure its CBBE?
**Customer experience and AI.** In the service industry, customer experience is a source of long-term differentiation and has an important impact on BE affecting customer satisfaction, loyalty, and brand identification. Customers with positive brand experience use brands to create their social identity, sense of value and uniqueness (Feiz and Moradi, 2020).

Customer experience encompasses number of interactions between consumers and brand along the customer journey and consists of emotional, cognitive, behavioural, sensorial, and social dimensions (Lemon and Verhoef, 2016). Based on this view, Puntoni et al (2020) build a framework that reflects consumers’ interaction with AI comprising of data capture, classification, delegation, and social aspect. It is argued that AI may as well be powerful in building trust and human perceptions since robots are more objective and not subject to fatigue and other human errors. Some chatbot and virtual assistant developers devote special attention to building the cognitive trust by offering quick and precise solutions, but without the social element. On the other hand, some are devoted to building socially assistive robots with strong affective component (Bock et al, 2020). Given the importance of trust in formation of BE, the following research direction arises:

**RESEARCH DIRECTION 10: Who is the main source of trust in customer experience that incorporates AI agents?**

**Blockchain technology.** One of the technologies that helps brands to better understand their target audience and consumers to have more control over their personal data is blockchain technology. It was initially created as a support for cryptocurrencies and intended to eliminate third parties in transactions (Rajeb et al, 2020). Blockchain is defined as a “digital, decentralized, and distributed ledger in which transactions are logged and added in chronological order with the goal of creating permanent and tamperproof records (Treiblmaier, 2018, p. 574). In the marketing landscape, blockchain empowers consumer-centric paradigm and fosters disintermediation, privacy protection, security and enables loyalty programs (Rajeb et al, 2020). The future research on blockchain should be undertaken from the society perspective and as the following research direction suggests:

**RESEARCH DIRECTION 11: Investigate the environmental impact of blockchain technologies and green BE of blockchain companies.**

6. **CONCLUSION AND FUTURE RESEARCH DIRECTIONS**

It would be almost impossible to imagine today’s society and consumer decision-making without brands. They are valuable in terms of bringing financial value to the companies, but more importantly, when clearly positioned in the minds of consumers they facilitate choice, build loyalty, and foster long-term relationships. Since the beginning of the research on BE in the early 90s, the
research was mainly focused on easily measurable outcomes of strong brands such as revenue or market share. With the rising need for differentiation and clear distinctiveness in the marketplace, companies realized that their true value resides in the minds of the consumers. CBBE is one of the most widely researched areas of branding and over time, it has been adopted across almost all industries as a measure of differential effect a brand has in relation to the unbranded goods.

However, technological revolution that has taken place during the last decade has dramatically changed both consumer behaviour and companies’ strategies. The main goal of this paper was to investigate how the latest changed in technology and those provoked by the COVID-19 pandemic affected BE as a measure of brand value in the fast-changing environment. To this end, the total of 82 articles in the Web of Science database were reviewed and the following research streams delineated: service and product innovation, IMC and AI. Within each area, the focus was to find research directions that would complement the extant research by offering the new perspective on the field whether it is consumer, firm, or society perspective. All research directions are showed in table 3.

Table 3

| RESEARCH TOPIC                          | Future research directions                                                                 |
|-----------------------------------------|------------------------------------------------------------------------------------------|
| **Product and Service Innovation**      |                                                                                          |
| hospitality industry                    | Comparison of overall satisfaction with customer experiences based on number of           |
|                                         | touchpoints delivered by humans versus contactless, tech-based touchpoints.               |
| technology-based companies              | What kind of organizational culture within technology-based companies fosters both technical|
|                                         | innovation and consumer focus to maintain long-term customer relationships and BE?         |
| banking industry                        | The research on the trade-off between perceived risk of m-banking app usage (e.g., data privacy, |
|                                         | account security) and perceived usefulness across different age groups should be examined.  |
| retail and e-commerce                   | Clearly distinguish factors that influence formation of online retail BE compared retail    |
|                                         | equity of physical stores.                                                               |
| augmented reality                       | What are the best content strategies for AR app development in order to maintain long-     |
|                                         | term interest of the target audience?                                                   |
| **Integrated Marketing Communication**  |                                                                                          |
| social media                            | Cross-generational differences (e.g., generation X, generation Y – millennials, and       |
|                                         | generation Alpha) on factors that foster user-generated content and shape social media     |
|                                         | platform preferences.                                                                   |
| luxury brands and social media          | Person BE and how the use of influencers based on their person BE affects overall BE      |
|                                         | they represent in terms of luxury brands.                                               |
| online brand communities                | Which factors are vital in formation of strong online brand communities and what is their   |
|                                         | power to mitigate brand mistakes (foster brand forgiveness)?                             |
| **Artificial Intelligence**             |                                                                                          |
| robots, chatbots and interactive        | When bots and interactive agents have the role of customer or intermediary in purchase    |
| agents                                   | process what is the suitable approach to measure its CBBE?                               |
| customer experience and AI             | Who is the main source of trust in customer experience that incorporates AI agents?       |
| blockchain technology                   | The environmental impact of blockchain technologies and green BE of blockchain companies.  |
Considering the richness of research on BE and the intense dynamics of the field, one of the main limitations of this research refers to the relatively narrow timeframe focused on the last decade of research. In a similar vein, focus only on papers published in one database (Web of Science) and papers published in English may have led to omitting some important papers.

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TRŽIŠNA VRIJEDNOST MARKE U DIGITALNOM DOBU: PREGLED LITERATURE

Sažetak
Kellerov rad Conceptualizing, Measuring and Managing Customer-Based Brand Equity, objavljen 1993. godine u Journal of Marketing, predstavlja polaznu točku u istraživanju koncepta tržišne vrijednosti marke. Međutim, u posljednjih 10 godina, sa snažnim razvojem (komunikacijske) tehnologije i, u posljednje vrijeme, s pandemijom COVID-19, stvari su se promijenile i većina marki je svoje poslovanje preselila u online okruženje. Zbog toga je potrebno preispitati koncept tržišne vrijednosti marke. Ovaj rad daje pregled literature o tržišnoj vrijednosti marke u digitalnom dobu uočavanjem praznina na tržištu i predlaže smjerove za buduća istraživanja. U tu svrhu provedena je bibliometrijska analiza popraćena opisom članaka objavljenih u Web of Science bazi podataka. Rad pridonosi literaturi o upravljanju markama predlažući smjerove budućih istraživanja u području tržišne vrijednosti marke.

Ključne riječi: tržišna vrijednost marke, digitalno doba, tržišna vrijednost marke temeljena na potrošačima, digitalni marketing, pregled literature.

JEL klasifikacija: M31, M37, L86.