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The Role of Technology in Users' Wellbeing: Conceptualising Digital Wellbeing in Hospitality and Future Research Directions

Abstract

Mental health concerns due to excess use of technology, accelerated by the COVID-19 pandemic, require increased research studies that explore the role of technology in users' wellbeing. This article aims to provide a conceptualisation of digital wellbeing (DWB) in hospitality, or wellbeing in digital settings. An integrative literature review was used to identify three main enablers of DWB in hospitality: digital devices, digital interfaces, and digital applications. A conceptual model of DWB in the hospitality industry was created emphasising the importance of designing digital experiences that foster positive emotions, engagement, relationships, meaning, and achievement of users to support their hedonic and eudaimonic wellbeing. The paper provides insights for the hospitality sector to enhance DWB. Future research should focus on empirical analyses of users' perceptions to refine and validate the proposed model and examine ethical issues concerning digital wellbeing.

Keywords: technology and wellbeing; digital wellbeing; hotel services; artificial intelligence

The Role of Technology in Users' Wellbeing: Conceptualising Digital Wellbeing in Hospitality and Future Research Directions

Introduction

Digitisation is essential for the sustainability of businesses in the hospitality sector (Stankov & Gretzel, 2021). Hotels are increasingly reliant on advanced technology to connect with guests, with robots and mobile applications becoming popular areas of research in hospitality (Chen et al., 2021). Due to increased digital connectivity, studies indicate that guests display a growing desire to utilise the Internet to research, review, book hotel rooms, communicate needs and to enhance their experience (Buhalis & Leung, 2018). However, digitisation has both positive and negative effects. For instance, while digitisation has the potential to co-create experiences with guests, leading to higher levels of customer satisfaction (Stankov & Gretzel, 2021), prior empirical work notes that the excessive use of technology may be problematic for both customers and employees. Studies cite potential for impacts on physical and mental health (Lee et al., 2014; Stankov et al., 2019), including technostress, technological failures, noise pollution, poor design, and information overload (Monge Roffarello & De Russis, 2019).

Research critiquing the impacts of excessive use of mobile technology demonstrates its potential to reduce productivity (Duke & Montag, 2017) and diminish scarce resources such as time (Bergert et al., 2020). Subsequent mental health issues due to frequent use of technology, exacerbated by the COVID-19 pandemic, have led to the necessity for increased research foci which critically examine the role of technology in users' wellbeing. Consequently, the aim of this manuscript is to conceptualise digital wellbeing in the hospitality sector, contributing a conceptual model of the enablers, or facilitators, of digital wellbeing for testing and application in future studies. The development of the conceptual model is critical in order to delineate digital wellbeing into its constitute parts and link digital wellbeing enablers to hedonic and

eudaimonic wellbeing dimensions. This new knowledge can then be leveraged by businesses to develop focused, new, wellbeing-inducing, experiences for customers - thereby expanding beyond traditional products and services. The following section defines digital wellbeing (DWB) and justifies the utilisation of a specific model from psychology to study DWB in hospitality contexts.

Defining digital wellbeing

In hospitality, studies which consider the concept of wellbeing focus predominantly on the workforce, considering issues such as commitment and job satisfaction (Gordon & Shi, 2021; Nisar et al., 2021). Despite mounting studies on wellbeing in hospitality, there is limited discourse focused on the concept of digital wellbeing, that is, wellbeing experienced through interactions with integrated communication environments (Stankov & Gretzel, 2021). This lack of knowledge is surprising due to the technological transformation undertaken by businesses which comprise the hospitality sector (Marsden, 2019). Outside hospitality, the concept of digital wellbeing has attracted growing attention since mobile technology, particularly smartphones, developed 4G mobile connections (Deloitte, 2019). Google introduced the concept of digital wellbeing to encourage users to find a healthy balance and connect with the most suitable technological applications to optimise user experiences (Google, 2021; Waite, 2018). Following the leadership of Google, other large corporations (e.g., Apple and Facebook) launched digital wellbeing features in existing interfaces (Marsden, 2018; 2019). Digital wellbeing is considered to represent discourse focused on the responsible use of technology, designed to enhance rather than detract from wellbeing (Marsden, 2019).

Overall, digital wellbeing is a complex and multifaceted concept that can be more specifically defined as a state of an individual's overall happiness in the context of digital lives, including the impact of digital technologies on the quality of life of that individual (Burr et al., 2020; Floridi et al., 2018). Recent literature emphasises that digital wellbeing involves the

responsible use of technology and a balance between benefits and potential harm associated with digital technologies (Büchi, 2021). Digital wellbeing in the literature at large encompasses a range of factors such as emotional and social wellbeing, physical health, productivity, digital literacy, privacy, ethics, and security (Burr et al., 2020).

Some literature on digital wellbeing even includes elements such as environmental sustainability (Moşteanu, 2020) and digital citizenship (Isman & Canan Gungoren 2014; Millard et al., 2018). Nevertheless, typically, digital wellbeing is conceived as a subjective, individual, and hence, psychological experience (Vanden Abeele, 2021) - this psychological interpretation is adopted in this paper.

PERMA as a multidimensional wellbeing model

In a psychological sense, the term wellbeing (Ryan & Deci, 2001) is normally conceived as: (a) hedonism that regards wellbeing as pleasure (Kahneman et al., 1999); and (b) eudaimonia that conceives wellbeing as not simply being pleasure and gratification. The eudaimonic perspective stresses the realisation of human potentials and living according to one's true self as the correct pathway to human wellbeing (Waterman, 1993). Seligman's (2011) PERMA model has been described as a key and seminal model of multidimensional hedonic and eudaimonic wellbeing (Vanden Abeele, 2021). Khaw and Kern state the "PERMA theory has quickly risen in the psychological discourse" (2014, p. 12). PERMA is an acronym of five dimensions of psychological wellbeing: positive emotions (P), engagement (E), relationships (R), meaning (M) and accomplishment or achievement (A) (Seligman, 2011). PERMA has been applied in the tourism sector to conceptualise psychological wellbeing of tourism and hospitality stakeholders, especially visitors (Filep & Laing, 2019; Filep & Pearce, 2013). The five underlying dimensions of wellbeing conceptualised in the PERMA model are defined and measured in empirical research, and effectively operationalise the measurement of wellbeing (Butler & Kern, 2016). Within the PERMA model, positive emotions and engagement are

dimensions which have been identified in existing studies to capture mostly hedonic wellbeing (Alizadeh, 2021). The other three dimensions of relationships, meaning and accomplishment are related to personal growth and development, reflecting mostly eudaimonic wellbeing (Vada et al., 2020). The dimensions are mutually exclusive and independent of each other. Recent literature called for adoption of PERMA dimensions to analyse digital environments in tourism and hospitality settings (Filep et al., 2022). Yet, ambiguity surrounding the specific dimensions which underpin the concept of digital wellbeing remains (Stankov & Gretzel, 2021), with the PERMA model offering a potential opportunity to elucidate a nuanced conceptualisation of digital wellbeing.

Consequently, the exact psychological aspects which underpin digital wellbeing require further exploration, through engagement with both the parent discipline of psychology (Ryan & Deci, 2001) and conceptually related fields such as tourism (Filep & Pearce, 2013; Stankov & Gretzel, 2021), communication and information communication technology (Vanden Abeele at el., 2020). Stankov and Gretzel (2021) critically assess preliminary avenues for the application of the concept of digital wellbeing in tourism, emphasising the importance of achieving positive consequences of tourism activities, as they enhance individuals' quality of life (Uysal et al., 2016). Stankov and Gretzel (2021) proposed a digital wellbeing continuum, ranging from everyday life to tourism, ending with a call for more research in this area. However, despite this, no in-depth, exploratory assessment of what constitutes digital wellbeing in hospitality has ever been undertaken. Drawing on the established PERMA model, the paper unearths and critically assesses the specific psychological dimensions which underpin digital wellbeing in the hospitality sector.

Methodology

As digital wellbeing is an emergent concept, an inductive exploratory approach consisting of an integrative literature review was employed to identify, evaluate, and synthesise

existing studies relevant to the topic of digital wellbeing. It is recognised that digital wellbeing requires initial conceptualisation and theoretical development. Systematic and semi-systematic reviews are popular in the hospitality field (Kim et al., 2018), however such reviews typically involve analyses of the literature over an extended period of time (up to several decades) (Snyder, 2019) and have been criticised for being descriptive and lacking adequate conceptual depth and theoretical potency.

In contrast, integrative literature reviews, are useful in studying an emerging topic of interest within a specific field with no major history of literature (Torraco, 2005), as is the case for digital wellbeing. Similar integrative review phases have been adopted in other studies in the tourism and hospitality field where literature was also scant (e.g., see Filep et al., 2022). Torraco's (2005) phased approach to conducting an integrative literature review consisting of a clear and replicable method, was implemented**.** The review consisted of three sequential phases (with phase two having four separate stages).

Phase 1. Conceptualising psychological wellbeing

The first phase consisted of identifying a conceptual structure (or a guiding theory) to approach the topic of interest (Torraco, 2005). Following a discussion amongst the research team, the PERMA model of psychological wellbeing was adopted to conceptualise psychological wellbeing due to its prominence in positive psychology. Other multidimensional psychological wellbeing models such as DREAMA (detachment-relaxation, engagement, affiliation, meaning and achievement) (Filep et al., 2022) and DRAMMA (detachment-recovery, autonomy, mastery, meaning, and affiliation) (Newman et al., 2014) were considered by the research team, but were seen as inferior to the PERMA model for this specific investigation. This is because, unlike the two aforementioned models, PERMA has been adopted in studies that examined psychological wellbeing in digital environments including

work by Jones et al. (2014) in a study which examined the concept of flourishing through videogames. DRAMMA is specifically a leisure experience model (Newman et al., 2014) and DREAMA is a tourist experience model (Filep et al., 2022). In contrast, PERMA is a generic eudaimonic and hedonic human wellbeing model, and thus, considered most appropriate.

Phase 2: Delineating digital enablers

Phase 2 involved delineating digital enablers introduced by Stankov and Gretzel (2021) as crucial to understanding digital wellbeing. Digital enablers are divided into three categories to better comprehend their uses in digital wellbeing: 1) digital devices, 2) digital interfaces, and 3) digital applications (see Figure 1).

INCLUDE FIGURE 1 HERE

The hospitality sector has adopted these enablers to enhance guests' experiences. For example, recent innovations such as virtual reality (VR), augmented reality (AR), artificial intelligence (AI) and robots have been identified in empirical studies as beneficial to the development of smart hotel experiences (Buhalis & Leung, 2018; Kim et al., 2021). During the COVID-19 pandemic, digital enablers have improved hygiene and cleanliness, with some innovations remaining in the sector following the pandemic (Pillai et al., 2021). While three major digital enablers have been established by Stankov and Gretzel (2021) they have not been explicitly linked to specific psychological wellbeing domains in prior studies.

Digital devices

Digital devices are electronic devices that use distinct user generated data to process information for various operations. Digital devices related to hospitality businesses are smartphones, tablets and wearables (Stankov et al., 2019; Stankov & Gretzel, 2021). A smartphone is the standard digital device utilised by consumers, a popular part of everyday life, and thus, has been researched extensively (Monge Roffarello & De Russis, 2019; Stankov et

al., 2019). Research shows that guests primarily utilise smartphones for booking rooms, reservations and searching for locations in destinations (Law et al., 2015). Service kiosks (touchscreen computers allowing quick access to information), smart televisions, Amazon eco-devices, chatbots, AI concierges (Artificial Intelligence systems that assist hotel guests with resolving their queries), laptops, and tablets are all digital devices used to support digital wellbeing (Monge Roffarello & Russis, 2019). Although research demonstrates that guests regard digital devices as helpful, a body of work has also emerged and is developing rapidly which considers devices as stressors (La Torre et al., 2018).

Digital interfaces

Digital interfaces refer to computer networks that connect guests to other digital devices (Kansakar et al., 2019; Leung & Law, 2013). Hotel internet and Wi-Fi connections are crucial interfaces that affect customer satisfaction (Cobanoglu et al., 2011). The quality and price of Wi-Fi connections can be a deal-breaker in the selection of hotels (Eriksson & Fagerstrøm, 2018). Digital interfaces depend on the personal data and search history of customers. Amazon eco-devices, QR codes, chatbots with AI interface, Alexa, Google Home Assistant, AR/VR apps all have a digital interface (Proven Partners, 2021). For instance, chatbots have an interface that can recommend restaurants, entertainment centres and instantly respond to guests' inquiries (Tavitiyaman et al., 2020). Together with digital devices, voice control systems, for example, Alexa or Siri, can control hotel room features such as temperature or light intensity (Kim, 2016; Perez, 2018).

Digital applications

Digital applications are software programs developed by hospitality-related businesses to provide wellbeing support to customers, designed to make guests' daily activities more convenient (Monge Roffarello & De Russis, 2019). For example, most companies have apps

for spa bookings, remote check-in and check-out, laundry service, room access, room service, fitness and wellness apps, among others (Monge Roffarello & De Russis, 2019; Proven Partners, 2021). Studies have shown that perceived ease of use positively impacts hotel guests' acceptance of these digital applications (Huang et al., 2019). Although digital applications are growing in popularity in the hospitality industry, there is a lack of knowledge on how they can hinder or promote psychological wellbeing.

After the digital wellbeing has been conceptualised through the PERMA lens and digital enablers (applications, interfaces, devices) were outlined, researchers aimed to link the specific enablers to the PERMA dimensions. This involved four methodological stages. In Stage One, building on an approach initially adopted by Stankov & Gretzel (2021), a search on Google Scholar platform with keywords: 'digital devices and wellbeing', 'digital interfaces and wellbeing', 'digital applications and wellbeing' was completed in early December 2022. This broad, initial, search generated thousands of works, which had been published on this topic since the year 2015 when the digital wellbeing concept first emerged for potential inclusion in the database. Traditionally, integrative literature reviews incorporate a range of databases such as Web of Science and Scopus, in addition to Google Scholar to source and select articles related to the specific area of inquiry. However, following the approach applied by Zarezadeh et al (2022) in their study on the analysis of literature on big data and hotel guest experiences, this research solely relied on Google Scholar. A comparison on the size of academic search engines and bibliographic databases, reveals Google Scholar as the most comprehensive academic search engine (Gusenbauer, 2019).

In Stage Two an expert review panel was convened to refine the list of items, with the mandate of the panel to ensure items included were hospitality focused, with those judged outside of hospitality excluded from the dataset. This was an intensive process, which involved screening the title, abstracts and keywords of thousands of published papers (Weiler et al.,

2012). The expert panel consisted of three senior tourism and hospitality academics from different institutions – all of whom are close to the topic. They were selected based on their global reputations. They followed specific exclusion and inclusion criteria as specified in Table 1. This process led to the ultimate inclusion of 50 manuscripts in the database for potential inclusion in an integrative literature review.

INSERT TABLE 1 HERE

In Stage Three, the expert panel was re-convened in person (10-15 December 2022) and each of the 50 manuscripts were reviewed to discern connections to the five PERMA dimensions, of positive emotions, engagement, relationships, meaning and achievement. In this stage definitions of the five PERMA dimensions, as outlined by Seligman (2011), were utilised to determine if the 50 papers were linked to the dimensions. Those articles deemed not relevant to PERMA dimensions by the expert panel were excluded from further analysis. This ultimately resulted in 15 articles for final inclusion and in-depth analysis in the integrative review. Although this is a modest number of articles, the number of selected articles is in line with prior integrative literature reviews. For example, in Stroup's (2014) integrative literature review study of simulation applications in foundational nursing education, the search and evaluation of items yielded 15 research articles that were included in the review. While their study was outside the hospitality field, the review similarly dealt with an emergent concept, as is the case with digital wellbeing. Within tourism and hospitality research, recent integrative literature reviews with a narrow scope similarly included small samples – for example, 16 items in the case of Lee et al (2022) integrative review.

The fourth and final stage followed data analysis approaches for integrative reviews outlined by Younas et al. (2022). In the fourth and final phase, summary tables entailing the features of the reviewed 15 articles such as their methods, linkages to each PERMA dimensions, major findings, and key limitations were devised to help summarise the key information. The

final list of these articles is shown next to the corresponding PERMA dimension and related digital enabler in Table 2.

INSERT TABLE 2 HERE

Phase 3: Integrating the PERMA model

In Phase 3 of research (and following the four stages of article analysis as detailed above), the final classification of digital enablers, specifically digital devices, digital interfaces and digital applications, through the lens of the PERMA model was developed. This phase allowed the research team to link digital devices, interfaces and applications to the pillars of wellbeing, and thereby better conceptualise digital wellbeing in hospitality settings, meeting the aim of the study. Guests for example may evaluate their perceived digital wellbeing based on these psychological wellbeing dimensions, with differing perceptions of service quality related to these technologies (Tavitiyaman et al., 2020). The conceptual linkages with each PERMA dimension are presented in the following section.

Positive Emotions

Positive emotions are the cornerstone of psychological, hedonic wellbeing, including the four key positive emotions of joy, contentment, interest, and love (Butler & Kern, 2016; Seligman, 2011). Technology evokes an emotional response – the valence of that emotional response is dependent on goals. Prior studies have established that the process of utilising technology in hospitality settings which leads to improvements in service efficiency evokes complex emotions (Kim et al., 2021). In particular, the use of digital devices in guest-facing systems, such as self-check-in kiosks, in-room tablets and smartphones, installed with easy-to-use interfaces for guests to manage services has been identified to trigger emotional responses (Kansakar et al., 2019). Whether it is checking into the hotel room, ordering in-room dining or

controlling lighting through guests' mobile phones, digital devices have the potential to facilitate services for guests (Hertzfeld, 2017). Similarly, digital applications co-exist with digital devices to provide functionalities designed to elicit guests' positive emotions (digital keys on mobile phones, check-in functions at self-service kiosks, motion sensors in guests' rooms to control room temperature).

Despite the potential for devices to elicit positive emotions, studies have begun to examine the potential of digital devices to be overwhelming and stressful, also eliciting emotions such as anger and frustration (Stankov & Filimonau, 2019). This is highly dependent on ease of use, which is subjective and dependent on guests' demographics and past experiences (Huang et al., 2019; Kim et al., 2021; Tavitiyaman et al., 2020). For example, prior studies have found that in-room control applications only achieve guest satisfaction if the hotel has a higher standard of quality than guests' homes (Beldona et al., 2018). A digital interface, on the other hand, is less visible to guests, with Wi-Fi connection regarded as one of the most critical digital interfaces among guests (Eriksson & Fagerstrøm, 2018). Literature from the perspective of hotels primarily assess guests' perspective when evaluating the performance of technology. Aside from digital interfaces which are fundamental to connect hotel guests to digital applications, pleasurable experiences of digital devices and digital applications are dependent on the perceived ease of use, usefulness, and level of technology guests use in their daily lives. Based on this argument, digital devices and applications will possibly contribute to more hedonic wellbeing and more powerful emotions than digital interfaces.

Engagement

O'Brien et al. (2018) note that user engagement (a sense of immersion and mindfulness) in human-computer interaction depends on four dimensions: aesthetic appeal, focused attention, perceived usability and rewards. Evidence is mounting that mobile apps foster customer engagement as guests can be absorbed in the aesthetic appeal of the hotel (Huang et al., 2019).

Hotel social media platforms can also be engaging, especially if messages are tailor-made, according to guests' profiles (Sánchez-Casado et al., 2019), as can be digital concierge apps with map navigations, voice recognition and real-time inquiry (Selfridge & Johnston, 2015).

Scarce literature relates customer engagement explicitly to hotel technology, such as service robots (Flavián et al., 2021). Nonetheless, in a hotel-based VR experience, Flavian et al. (2021) confirmed that VR headsets (a digital device) produced higher engagement than smartphones and desktop computers. Smartphones, in turn, were more engaging than stationary devices. However, this research did not confirm the effect of engagement produced by VR usage on guests' loyalty which remains an important understudied aspect of understanding engagement as part of digital wellbeing. Overall, it appears that digital devices and digital applications have special potential to engage hotel guests, yet, future research is required on this issue. While technology offers potential for instant engagement with guest services with standardised responses (Prentice & Nguyen, 2020), it has also been shown that non-functioning technology can lead to a lack of engagement (Nangpiire et al., 2021; Stankov et al., 2019).

Relationships

A person with high quality relationships should receive support, feel loved and satisfied with others (Butler & Kern, 2016). Two digital enablers are especially useful to examine the role of relationships in digital wellbeing: technologies linked to social customer relationship marketing and AI driven services (Prentice & Nguyen, 2020; Sigala, 2018). Social customer relationship marketing (social CRM) manages customer experiences through social media/social CRM technologies (Sigala, 2018), developing long-term relationships. As such, supporting technology that enables social CRM is an important digital enabler. Data collected by social CRM can be transferred to hotel property management systems to personalise guest experiences in the future, anticipating guests' needs and making them feel special (Neuhofer

et al., 2015). Yet, the role of social CRM in enabling or hindering wellbeing is underexplored, providing an opportunity for future researchers to examine this topic.

Prior studies have demonstrated that AI interfaces have the potential to connect computer services to hotel guests in various ways (e.g., check-in service, key issuance and reservation services). However, there remains room for studying the impact of AI interactions on psychological wellbeing, especially the relationship dimension conceptualised by the PERMA model. Prentice and Nguyen (2020) reported that hotel guests are less satisfied with AI-driven services than those performed by humans since AI can only give out standardised responses due to the machine's lack of flexibility and versatility. Employees' empathy reflects humans' proactive care for guests which is hard for AI to emulate. This preliminary work demonstrates that no matter how well digital interfaces are designed in terms of aesthetics, usability, or attention intensity, hotel guests still value the human touch (at least for now). Nevertheless, there is scope to examine the way empathy can be emulated in future AI driven services in the hospitality sector.

Meaning and Achievement

The last two pillars of PERMA are grouped together in this paper as there is arguably the least number of studies on digital enablers that can be connected to them. Meaning is an objective judgement that a person is serving something that s/he believes is bigger than the self (Seligman, 2011). Meaning is focused on leading a purposeful life, feeling valued, pursuing activities that are worthwhile and possessing a sense of direction (Butler & Kern, 2016**).** Achievement is equivalent to pursuing success, accomplishment and mastery of a skill, even if it brings no positive emotions, no meaning or positive relationships (Seligman, 2011).

A growing number of hospitality businesses have developed various wellness programs, with technology equipped to enable a sense of meaning. For instance, the Morgans Hotel Group

has created a 'Buddhify app', which facilitates meditation during hotel stays (Bohn, 2016). The connection between meditation and meaning in life is well established, with studies demonstrating the effectiveness of a meditation intervention on increasing meaning in life (Bloch et al., 2017). While this study amongst others provides evidence that meditation helps one find meaning, the role and the utility of meditation apps in generating meaningful experiences in a hospitality setting is underexplored, providing a useful future research direction.

In terms of achievement, Bilgihan et al. (2016) found that business travellers at hotels rated internet connectivity as the most important technology, facilitating productive work practices. However, the role of internet connectivity during hotel stays in specifically enabling a sense of accomplishment (leading to better work outcomes) remains unexplored. A sense of achievement can also be studied by analysing how hotel guests pursue certain physical tasks during hotel stays. Hotels offer on-demand virtual fitness classes to enable guests to choose the most suitable workout programs during their stay (Langham Hotels International, 2021; Little, 2019). Studies could potentially examine the role of these virtual fitness classes in facilitating guests' achievements and overall sense of wellbeing, with an emphasis on comparing virtual with non-virtual classes.

Results

Conceptualisation of digital wellbeing

Based on the preceding analysis, a comprehensive conceptualisation of digital wellbeing in hospitality is shown in Figure 2.

INSERT FIGURE 2 HERE

As in Stankov and Gretzel's (2021) original work, digital enablers are divided into devices, applications and interfaces. However, unlike their work, this new conceptualisation classifies digital enablers according to specific hedonic and eudaimonic wellbeing dimensions, based on the PERMA model. A major distinction between Stankov and Gretzel's (2021) work and this work is therefore the delineation of hedonic and eudaimonic dimensions (as summarised by the PERMA model) when digital wellbeing is conceived as a psychological construct. In other words, this study sees wellbeing as multidimensional and breaks down wellbeing into its constitute parts (as summarised by the PERMA model). This distinction is critical as PERMA allows for wellbeing to be more explicitly defined or interrogated as part of the emergent concept of DWB. Arrows linked to specific PERMA dimensions are grounded in the analysis of the literature, as shown by the relationships between a specific PERMA dimension and a digital enabler. As such, a particular digital enabler may lead to a higher sense of meaning, while another enabler may be predominantly hedonic, generating positive emotions while not making the user experience more meaningful. Conversely, other enablers may actually detract or diminish PERMA pillars, and hence hinder psychological wellbeing. Psychological wellbeing is depicted as an outcome of PERMA to delineate hedonic from eudaimonic wellbeing while also presenting the two forms of wellbeing in a holistic way (as a circle). This graphical presentation fits the previously mentioned definition of human wellbeing (Ryan & Deci, 2001), recognising that PERMA dimensions independently lead to greater wellbeing (Seligman, 2011).

Although prior research has established that the PERMA model (Seligman, 2011) is applicable to understanding DWB (Phaekwamdee et al., 2022) and, more generally, wellbeing in digital settings (Morgan & Simmons, 2021), this is the first major study that explicitly connects the wellbeing dimensions to DWB enablers and integrates this into a conceptual model. In this way the study expands positive psychology literature which has

traditionally focused on understanding wellbeing in terms of human-to-human contact, as opposed to human interactions with technology in digital environments (Phaekwamdee et al, 2022). Prior research in tourism and hospitality has applied PERMA to study volunteer experiences at sporting events (Zhou et al., 2021), food and culinary experiences (Pourfakhimi et al., 2020), but has not applied PERMA to digital contexts. The conceptualisation contributes to an evolving debate on digital wellbeing in hospitality and conceptually related contexts, providing a critical lens to explore the relevance of the emergent concept to the hospitality industry.

Research Agenda and Research Implications

An agenda for researchers can be developed based on Figure 2. With linkages between digital enablers in hospitality and wellbeing dimensions being established, researchers can examine a specific enabler to understand how it affects users' hedonic and eudaimonic wellbeing. For example, the following research questions can be asked: "To what extent do hotel-based VR experiences enable a sense of engagement in guests that is rewarding and long lasting?" or "How do smart phone apps induce or diminish hospitality employees' positive emotions?" or "How is the level of wellbeing impacted through interactions with Alexa during hotel stays?" We see such questions as relevant and applicable to young and senior employees and young and senior customers, depending on diverse contexts and circumstances. Beyond examining such research questions, future researchers may wish to further develop the above generic conceptualisation of DWB in hospitality based on hospitality sectors, recognising the breadth of the industry. As DWB is an emergent concept, especially in the hospitality sector, future conceptual studies will provide fertile ground for subsequent empirical assessment.

Given the concerns raised by previous research on the complexity and overlap of multiple dimensions of wellbeing (Butler & Kern, 2016), a robust system approach is required to investigate hedonic and eudaimonic digital wellbeing. These concepts require new

approaches to data collection and research methodologies which can ascertain the validity and reliability of these constructs over time. As research has shown that impacts of eudaimonic digital wellbeing are usually more delayed compared to those of hedonic digital wellbeing (Oishi et al., 2001; Steger et al., 2008), experimental, quantitative, and longitudinal approaches appear to be particularly suitable (Vanden Abeele, 2020). Considering that digital wellbeing in hospitality is still at the inception stage with preliminary research, scholars need to approach and conceptualise this paradox of interest from a critical perspective. Current research on the classification of digital wellbeing into hedonic and eudaimonic is still inadequate to capture the opportunities and challenges of digital wellbeing in hospitality. This paper serves to stimulate an ongoing and constructive conversation.

Several practical implications related to wellbeing have emerged from this paper. It is clear that digital enablers - digital devices, interfaces, and applications that contribute to users' positive psychological states - are key factors facilitating the creation of digital experiences that foster positive emotions, engagement, relationships, meaning, and achievement - all of which are essential components of wellbeing. Understanding the enablers of digital wellbeing is crucial for businesses and individuals seeking to design and use digital technology in ways that support and promote their overall psychological wellbeing. By identifying and leveraging these enablers, individuals and businesses can create digital experiences that enhance their users' satisfaction and potentially improve their quality of life. There are three major potential practical implications of understanding the enablers of digital wellbeing. Firstly, businesses can use this knowledge to design and develop digital devices, interfaces, and applications that promote positive psychological states and enhance users' overall wellbeing. For example, hotels could offer digital devices or interfaces that allow guests to customise their room temperature, lighting, or music to create a more comfortable and personalised experience, leading to increased satisfaction and wellbeing. Secondly, individuals can use this

understanding to identify and use digital technology in ways that support their own wellbeing. For instance, they could use digital applications or devices that help them to manage their mental health, such as mindfulness or meditation apps. Finally, policymakers and regulators could use this knowledge to develop guidelines and regulations for the design and use of digital technology that promote users' wellbeing in the hospitality sector. By promoting digital experiences that enhance wellbeing, businesses, individuals, and policymakers can contribute to creating a more positive and fulfilling digital world. One of the key benefits of this new conceptualisation for practitioners may be the classification of digital wellbeing into hedonic and eudaimonic pillars. Hedonic digital wellbeing initiatives are considered relaxing and easy to assess, while eudaimonic digital wellbeing initiatives are challenging, high risk, and require more effort from consumers. Industry practitioners should acknowledge this distinction and include initiatives that possess both hedonic and eudaimonic elements, helping to broaden product and service offerings for their target markets.

Conclusion

This paper conceptualised digital wellbeing in the hospitality sector, leading to a conceptual model of the enablers, or facilitators, of digital wellbeing for testing and application in future research. The discussion in the paper was focused on understanding digital wellbeing as a psychological condition in hospitality, rather than digital wellbeing as a socio-cultural construct, although both perspectives are valid (Vanden Abeele & Nguyen, 2022). The model identifies three key enablers of DWB: digital devices, digital interfaces, and digital applications. Based on the PERMA dimensions of wellbeing, the proposed conceptual model emphasises the importance of designing digital experiences that foster positive emotions, engagement, relationships, meaning, and a sense of achievement in hospitality contexts. This model can guide future research and inform the design of digital technologies that enhances customers' wellbeing and satisfaction, as well as their overall quality of life. By prioritizing DWB in digital

strategies, hospitality businesses can create more positive and meaningful experiences for their guests, leading to increased satisfaction and potentially improving the overall quality of life of individuals.

The following specific conclusions and propositions can be deduced from the previous analysis:

1. The PERMA dimensions of wellbeing can be used to further explore digital enablers within the conceptual model of DWB in hospitality.
2. Digital experiences that foster positive emotions, engagement, relationships, meaning, and achievement all contribute to customers' or employees' hedonic and eudaimonic wellbeing and their overall quality of life.
3. Understanding the enablers of digital wellbeing can help businesses design digital experiences that enhance customers' satisfaction and potentially improve their quality of life.
4. Digital enablers refer to the digital devices, interfaces, and applications that contribute to users' positive psychological states and enhance their overall wellbeing when engaging with digital technology.
5. Future research should conduct empirical analysis of users' perceptions of the enablers of DWB in hospitality to refine and validate the conceptual model.

Beyond empirical work further conceptual analyses can also be conducted. For example, Vanden Abeele and Nguyen argue that digital wellbeing and digital disconnection are "two sides of the same coin" (2022, p. 178) and that there is "a strong conceptual link between digital wellbeing and digital disconnection" (2022, p. 174). This is because digital disconnection is defined as the act of placing temporary limits to one's connectivity as a means to regain control, and enhance one's well-being (Syvertsen, 2020; Vanden Abeele & Nguyen, 2022). It would be valuable to examine the theoretical framework of digital disconnection more closely in

hospitality in future studies and determine if it would be useful in improving Figure 2, as presented in this paper**.** Equally, the body of knowledge on digital social responsibility (DSR) - the expression of social responsibility through digital tools - is fast gaining popularity in business and management disciplines (Puwirat & Tripopsakul, 2019). DSR needs to be considered in future discussions of digital wellbeing. In a major study of digital social responsibility initiative programmes, it was found DSRs have positive, significant effects on customer trust (CT) (Puwirat & Tripopsakul, 2019) and there is substantial evidence that customer trust builds and maintains psychological wellbeing (Helliwell & Wang, 2011).

Limitations

This research is subject to four key limitations that should be acknowledged. Firstly, reliance on an integrative literature review limits the study to existing research without primary data collection, deemed appropriate due to the embryonic nature of the concept of digital wellbeing. While this manuscript provides conceptualisation of digital wellbeing in the hospitality industry and its key enablers, future research could benefit from empirical analyses to validate the proposed conceptual model. A second potential limitation of the proposed conceptualisation is that psychological multidimensional wellbeing, as defined by PERMA, is a subjective state, and empirical research should be planned to investigate users' perceptions of each technology. Thirdly this study predominantly focused on the positive aspects of digital experiences, neglecting potential negative effects and practical challenges in implementation. Future research could consider a more comprehensive examination of both positive and negative experiences elicited by the use of digital tools in the hospitality sector. If guests and staff experience negative DWB experiences legal responsibilities of providing such technologies can be examined in future research. Finally, this study did not focus on ethical issues. Recent research revealed ethical issues concerning digital well-being related to human–computer interactions, and autonomy and self-determination (Burr et al., 2020). These topics

need to be investigated. Overall, the above limitations provide valuable opportunities for further research to address gaps and deepen understanding of digital wellbeing in the context of hospitality.

Given that digital wellbeing is a multi-faceted phenomenon, further theoretical and empirical research of its hedonic and eudaimonic components is required. Consequently, the importance of digital wellbeing cannot be neglected in future discussions of digitisation in the hospitality sector. There will be a continual need to explore opportunities and challenges in enhancing digital wellbeing initiatives in hospitality, as new digital devices emerge in the modern era of metaverse technology (Chen, 2023; Gursoy et al., 2022) and artificial intelligence (Kim et al. 2023, Kong et al., 2023).

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The authors report there are no competing interests to declare.

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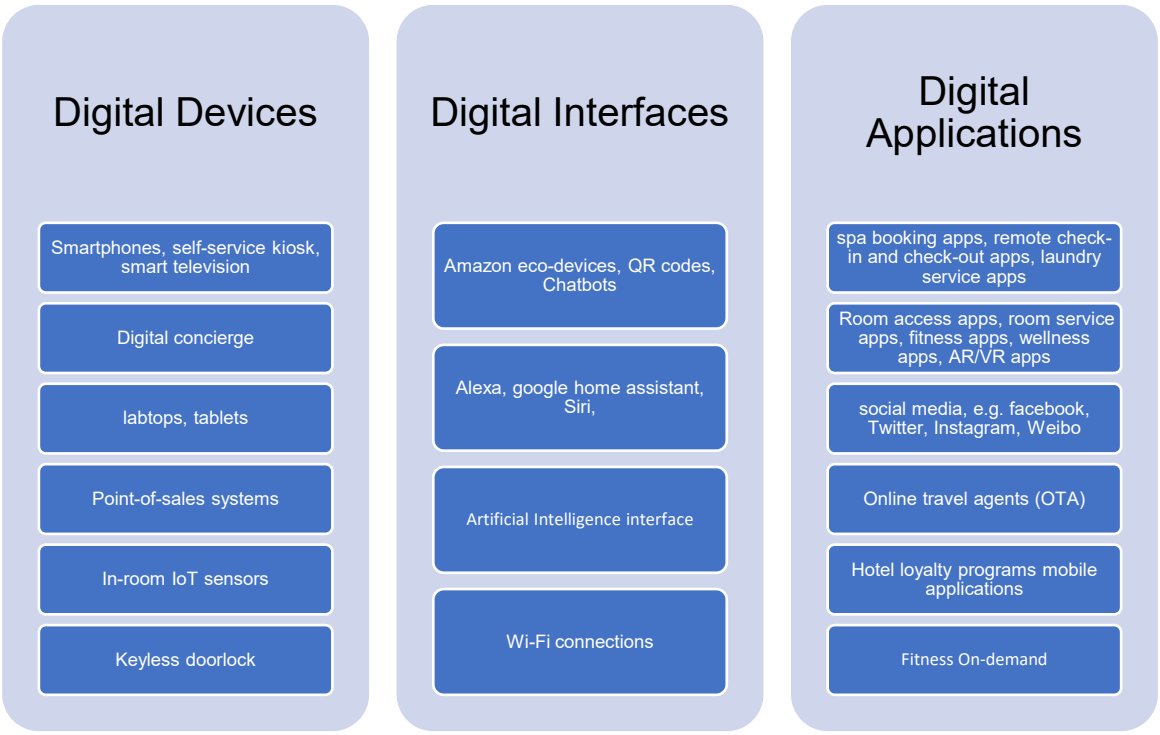

Figure 1. Digital enablers of wellbeing in hospitality; adapted from Stankov and Gretzel (2021)

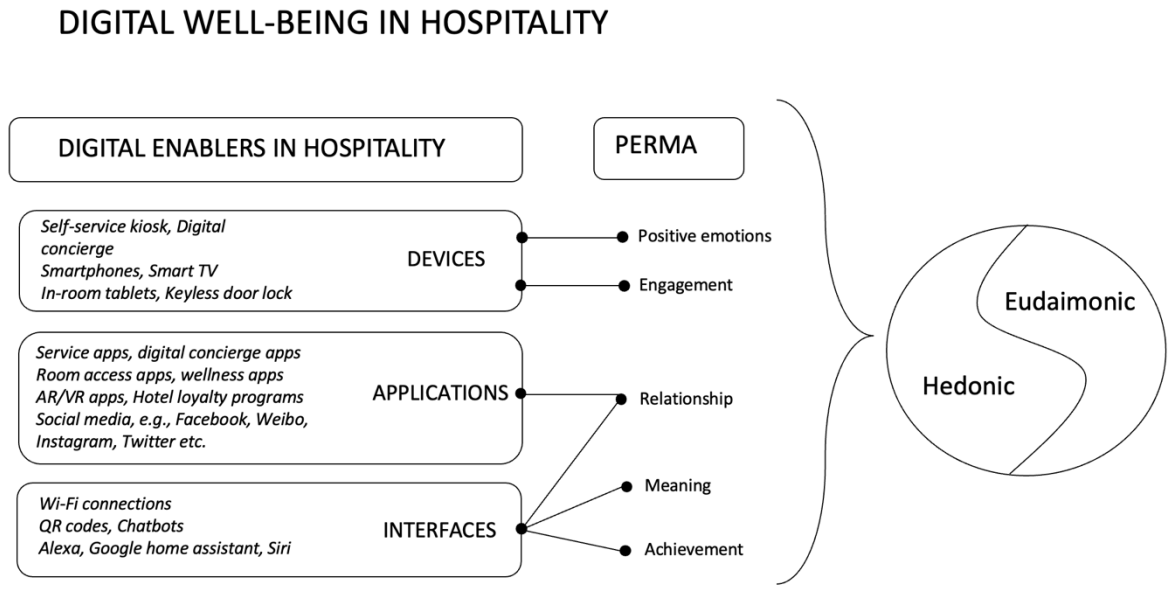

Figure 2: Conceptualisation of digital wellbeing in hospitality

Table 1. Inclusion and exclusion criteria

Criteria	**Inclusion**	**Exclusion**
Study	Original conceptual/theoretical and empirical studies	
Type	Peer reviewed journal articles and conference papers	Non-peer reviewed papers, books and book chapters
Date	2015 to 2022	Any study published before 2015 or after December 2022
Language	English	Any other language
Sector	Hospitality focused in tourism, hospitality, marketing, and related outlets.	Non-hospitality focused
Sample	Employees or customers	Other samples
Relevance	PERMA dimensions related	Not related to PERMA dimensions

Table 2: Summary of hospitality literature related to PERMA dimensions

Year	Name of Journal / Conference	Author(s)	Title	Related PERMA dimension(s)	Related digital enablers
2015	ICMI'15: Proceedings OF THE 2015 ACM on International Conferences on Multimodal Interaction	Selfridge and Johnston	Interact: Tightly-coupling Multimodal Dialog with an Interactive Virtual Assistant	Engagement	Digital Applications
	Electronic Markets	Neuhofer et al.	Smart technologies for personalized experiences: a case study in the hospitality domain	Relationship	Digital Applications
2016	Journal of Hospitality and Tourism Technology	Bilgihan et al.	Hotel guest preferences of in-room technology amenities	Meaning and Achievement	Digital Devices; Digital Applications Digital Interfaces
2018	International Journal of Contemporary Hospitality Management	Beldona et al.	Evaluating hotel guest technologies: does home matter?	Positive Emotions	Digital Devices; Digital Applications Digital Interfaces
	Journal of Hospitality and Tourism Research	Eriksson and Fagerstrøm	The Relative Impact of Wi-Fi Service on Young Consumers' Hotel Booking Online	Positive Emotions	Digital Interfaces
	International Journal of Contemporary Hospitality Management	Sigala	Implementing social customer relationship management: A process framework and implications in tourism and hospitality	Relationship	Digital Applications

2019	IEEE Consumer Electronics Magazine	Kansakar et al.	Technology in the Hospitality Industry: Prospects and Challenges	Positive emotions	Digital Devices; Digital Applications Digital Interfaces
	International Journal of Hospitality Management	Stankov et al.	Calm ICT design in hotels: A critical review of applications and implications	Positive emotions; Engagement	Digital Devices; Digital Applications Digital Interfaces
	Journal of Hospitality Marketing and Management	Huang et al.	Examining an extended technology acceptance model with experience construct on hotel consumers' adoption of mobile applications	Positive Emotions; Engagement	Digital Applications
	Tourism Analysis	Sánchez-Casado et al.	Social media, customers' experience, and hotel loyalty programs	Engagement	Digital Applications
2020	Journal of China Tourism Research	Tavitiyaman et al.	How Tourists Perceive the Usefulness of Technology Adoption in Hotels: Interaction Effect of Past Experience and Education Level	Positive emotions	Digital Devices; Digital Applications Digital Interfaces
	Journal of Retailing and Consumer Services	Prentice and Nguyen	Engaging and retaining customers with AI and employee service	Engagement; Relationships; Meaning and Achievement	Digital Devices; Digital Applications Digital Interfaces
2021	Sustainability	Kim et al.	The role of expected benefits towards smart hotels in shaping customer behavior: Comparison by age and gender	Positve Emotions	Digital Devices; Digital Applications Digital Interfaces
	Journal of Hospitality Marketing and Management	Flavián et al.	Impacts of technological embodiment through virtual reality on potential guests' emotions and engagement	Engagement	Digital Devices; Digital Applications

2022	Journal of Research in Interactive Marketing	Nangpiire et al.	Customer engagement and value co-creation/destruction: the internal fostering and hindering factors and actors in the tourist/hotel experience	Engagement	Used the term 'technology' throughout the discussion without mentioning any particular enablers