Review article

Gamification in marketing: Insights on current and future research directions based on a bibliometric and theories, contexts, characteristics and methodologies analysis

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ABSTRACT

Gamification involves using game design elements in non-game contexts. It is an emerging strategy that, being able to motivate consumer engagement with brands, has been increasingly used by companies in marketing activities. Recently, the application of gamification to marketing has become increasingly popular, with an increasing amount of research outputs. However, a clear overview of the field, a theoretical orientation or an agenda for research are still missing, which justifies the analysis of the existing literature joining these two fields of research. The motivation for conducting this review was twofold: Firstly, it is helpful to attain a broad overview of this developing field, synthesizing the existing knowledge in a structured way, understanding how gamification research in marketing has progressed and what type of knowledge has been acquired; secondly, it allows us to provide valuable information that will guide future research. Thus, this study provides a hybrid review, which integrates a bibliometric and TCCM analysis, of gamification in marketing by analyzing 114 articles. The data was retrieved from the Scopus scientific database. The bibliometric analysis showed the existence of 8 clusters, mostly representing current areas of research. It was found that the focus of the literature, so far, has been on studying which game elements should be implemented in a gamification system, as well as examining the impact of gamification experiences on engagement and consumer's behaviors. The TCCM analysis revealed the major theories and methodological approaches explored in published articles. The use of self-determination theory and quantitative methodology, based on primary data using online surveys, stands out. These complementary analyzes allowed to provide future research directions to scholars and practitioners working in this domain, promoting the advancement of scientific knowledge, contextual relevance and methodological rigor. Moreover, this review also helps marketers make more informed strategic decisions and supports successful gamification design.

1. Introduction

In recent years, gamification has become a relevant topic in different areas and has been widely and increasingly used in the marketing context [1–3], as evidenced by leading companies, such as Nike, Amazon and Starbucks, that increasingly gamify aspects of their marketing activity [4–7].

Gamification refers to the use of game components, game dynamics, and game mechanics in non-game contexts [8], to make an application, product or service funnier, motivating and engaging [9]. It can also be described as a set of activities and processes employed to solve problems by utilizing or applying game element characteristics [8–10]. "The term 'gamification' was widely popularized in 2010, when researchers and practitioners started questioning whether one could embed game elements into ordinary processes and make them more game-like" [10]. Worldwide, gamification has become an important business on its own [11]. The global gamification market was valued at $10.19 billion in 2020 and it is estimated to reach $38.42 billion by 2026 [12]. This growth can be attributed, in particular, to the capacity gamification has to stimulate and increase customer engagement [13], which is a significant driver for favorable consumption behaviors by consumers towards companies and brands [14–17].

As a research discipline in marketing, gamification is recently experiencing a fast growth, but what is actually known of the phenomenon tends to come from fragmented pieces of knowledge. The knowledge accumulated so far is not structured or unified. It is necessary to review and synthesize the existing literature on the theme. Reviewing the past literature is a fundamental component of every academic area. However, as far as the authors know, despite this growing trend, to date there is no study that uses scientific mapping or TCCM analysis to analyze published scientific research works that focus on the field of gamification applied to marketing. The bibliometric studies developed that analyze gamification include the various domains in which it has been applied [18,19] or focus on a domain other than marketing (e.g. education and health) [20,21]. Thus, the objective of this research is to fill this gap, providing a comprehensive and structured overview of how the field of gamification and marketing is developing and progressing, and an agenda with future research recommendations.

Using bibliometric analysis and TCCM framework, this study seeks to answer the following research questions: RQ1. Who or which are the most relevant and influential authors, articles, journals and countries that have contributed to gamification research in marketing? RQ2. How are gamification and marketing articles clustered and which current research streams exist? RQ3. What are the theories, contexts, characteristics, and methods widely used in gamification research applied to marketing? RQ4. What are the future research directions in the field, given the existing gaps identified in the literature?

In the present work we have chosen to consider a hybrid review, since we believe the two approaches followed provide complementary insights into the field. Bibliometric analysis offers a set of advantages that are worth highlighting. It (1) allows discovering the intellectual structure of the theme, identifying the most influential authors, countries and journals, as well as networking patterns; (2) detects dominant research topics, identifying clusters; (3) offers essential insights into the evolution of the literature and sheds light on the matured and emerging areas of the field; and (4) allows building foundations for the future, delineating research gaps and future research paths [19,22]. Compared with traditional literature reviews, bibliometric analysis is a more objective and less biased analytical approach [23]. Massive amounts of scientific data, such as the number of citations and the occurrence of keywords, enable a better understanding of a subject area. However, bibliometric review analysis does not take into account the theories, contexts, characteristics and applied research methods present in the selected data [24]. So, we have chosen to adopt a hybrid review, also using the TCCM (theories, contexts, characteristics and methods) framework, developed by Paul and Rosado-Serrano [25]. Framework-based reviews are often informative, insightful and impactful [24]. Moreover, TCCM framework enables more robust understanding of the gamification and marketing field, as it increases the breadth, improving the rigor and relevance of reviewing literature [26].

Nowadays, people are more predisposed to using gamification. With the COVID-19 pandemic, individuals have started using more digital platforms and services (e.g. online sites and applications) and this behavior manifests itself in the post-pandemic period [27, 28]. Furthermore, the field of gamification applied to marketing has grown significantly in recent years [7]. In this regard, it is crucial to have a visual overview of the cumulative scientific development on this topic of study, as it helps researchers identifying the origins and current significance of gamification, as well as to plan their future research in the field. By gathering, organizing and examining existing knowledge on the topic and presenting it in a structured manner, this review can also be useful for professionals who want to improve their understanding of gamification implementation.

This paper is organized as follows: after the introduction, Section 2 provides a conceptual background on gamification and its application to marketing. Section 3 describes this study research design. Sections 4 and 5 presents and discusses the results obtained and Section 6 identifies gaps in the literature that can be used as guidelines for defining future research paths. The main conclusions are presented in Section 7.

2. Gamification and marketing: an introduction

2.1. From games to gamification

Currently games are a dominant form of entertainment in the daily lives of all demographic groups and are estimated to continue to be in the future [29]. Games are known for their potential to influence players, offering them cognitive (e.g. more accurate attention allocation and enhanced creativity), social (e.g. social skills and prosocial behavior), and emotional (e.g. manage their moods and enhancing their emotional states) benefits [30]. Moreover, games also contribute to intrinsic motivation [31] and flow [15], a positive emotional experience, during which gamers are immersed in an intrinsically rewarding activity experiencing a high sense of control

while simultaneously evoking a loss of self-consciousness [32].

Taking advantage of the nature of games, the concept of gamification emerged [9]. The key idea of gamification focuses on using the enormous motivational power that specific elements of games can trigger, to arouse greater involvement and commitment from users and, consequently, correspond to the central objective(s) of the system [2,17,33]. However, to date, there is still no consensus on the definition of this concept. The most commonly cited definition is the one proposed by Deterding et al. [9]: gamification refers to the use of game design elements in non-game contexts. According to Seaborn and Fels [33], gamification is related to the intentional use of game elements (namely, their principles, methods, models, patterns and objects) in non-game tasks and contexts, with the aim of providing an identical experience to that obtained when an individual plays something.

The main difference between gamification and games is that gamification is commonly used to advance goals outside the game (e.g. greener consumption) whereas playing games is considered purely autotelic - a rewarding activity in itself - or intrinsically motivated [29]. According to Rodrigues et al. [18], gamification is "a fresh mode of thinking, developing, designing and deploying software applications, which aspires to change individuals' attitudes and behaviors" (p.2).

Robson et al. [34] suggested a framework of three gamification principles: mechanics, dynamics, and emotions (MDE). The mechanics include the goals, rules, setting, context, types of interactions and boundary of the situation to be gamified [34]. These elements depend exclusively on the designers' decisions and do not change from one user to another or across time [18]. Mechanics provide feedback and typically include badges, points, levels, missions, progress bars and leaderboards [35,36]. In turn, the dynamics are behaviors and interactions that emerge from the customers' gamified experience [36]. Cooperation and information sharing, competition between users or unintended actions (e.g. cheating) are valid examples of dynamics that can occur as a result of the mechanics introduced [36]. Finally, the emotional components include the positive and negative affective reactions induced by the gamified experiences [36].

To motivate behavior, gamification works directly with intrinsic motivation (e.g. fun, curiosity and pleasure) and extrinsic motivation (e.g. rewards, money and status) of individuals [31]. Thus, a well-designed gamification experience should include reinforcements and emotions - whether positive or negative - and should generally lead to satisfying outcomes for individuals [18,34].

2.2. Gamification in marketing

In the past few years, gamification has emerged as a trend within business [7,29] and, specifically, in the context of marketing [4, 14]. Marketers' enthusiasm for gamification has been driven by the observation that games engage people and that this engagement is sustained over time. There is, therefore, an inherently positive perspective on the use of game design elements in marketing [37,38].

However, it should be noted that, in reality, many game mechanics used in marketing cannot be considered as totally innovative. Loyalty programs, for instance, which have been used in marketing for decades, can also resemble game mechanisms [14]. However, even though the goals are similar, gamification differs from simple loyalty programs [39], since these programs simply aim to offer economic benefits to their clients (redeemable for points) for the continuous use of services [39]. Gamification, on the other hand, aims to motivate consumers' engagement, providing not only economic benefits, but also motivational and social benefits [40].

Thus, in a synthetic way, it can be said that, in the context of marketing, gamification is seen as consisting of the use of game design elements to enhance non-game goods and services by increasing customer value and encouraging value-creating behaviors, such as increased consumption, greater loyalty, engagement, or product advocacy [35].

Overall, most published definitions share gamification adoption of game-like tactics, along with its capacity to engage consumers and create consumer-perceived value [6,41]. Gamification experiences promote three forms of user engagement outcomes – cognitive, emotional, and behavioral [42]. The cognitive dimension refers to the level of customer concentration towards the engagement focal object (e.g. product or brand). The emotional dimension includes customers' sense of belonging to the brand, company or community. The behavioral dimension refers to a customer's energy level and mental resilience in interacting with the engagement focal object and to the level of customer's interaction, which is reflected in the two-way communication intensity [42]. Furthermore, it was found that the application of gamification in a marketing environment can increase the ability of a system to satisfy consumers' intrinsic needs, such as autonomy, competence and achievement, and this will contribute to a greater consumers' engagement with the brand [43].

Most of the existing marketing studies on gamification have focused on branding, outlining benefits of applying gaming mechanisms, and concluding that gamification contributes to the development of the relationship between consumers and brands [1]. Gamification was found to be positively associated not only with brand engagement (emotional, cognitive, social and behavioral) [1, 38,44] but also with brand attitude [17], brand co-creation experiences [42,45,46], brand awareness [47], brand love [14] and brand equity [7,14]. It has also been shown that the application of game design elements in marketing contexts allows to achieve greater customer loyalty [14,47,48], willingness to pay more [16], positive word-of-mouth [14,43] and purchase intention [40,41,49]. Moreover, gamification contributes to increasing consumer interaction, website/application visits, positive recommendations and sales [16,41,43,48]. Thus, gamification tools can be used on e-commerce to generate conversion, create content, promote loyalty and, at the same time, help to boost business profitability [50].

As presented in this topic, considerable research efforts have already been made to investigate whether gamification leads to noticeable benefits in the area of marketing. Although there is an extent of evidence, since this is a popular field of research with potential, there is no published work yet that provides an overview of the entire diverging theoretical landscape. Thus, this paper seeks to synthesize the literature on gamification and marketing, to gain insight into both the present landscape and forthcoming trends in this area.

3. Material and methods

In this work we conduct both a bibliometric analysis and a framework-based systematic review (using TCCM framework), in order to analyze the current state of the art and to identify existing gaps in the literature and possible paths for future research [11,51]. These analyses were performed using the Scopus scientific database, as it is the most comprehensive peer-reviewed database [52]. Scopus is highly reputed and offers noteworthy publications from influential journals and research scholars [53]. According to the Elsevier website, in 2023, more than 26,000 journals are listed in Scopus, with about 84 million publications and more than 1.8 billion citations. Compared to Web of Science, another multidisciplinary popular database, Scopus offers better coverage [54]. Furthermore, several authors are using this database for bibliometric analysis [54,55].

Our goal was to consider articles that focused on gamification applied to marketing, and our search was based on having two words appearing together in the same document (gamification and marketing), either in the title, abstract or keywords. Thus, the search conducted in Scopus was based on the following criteria: TITLE-ABS-KEY ("gamif*" AND "marketing"). The use of * allowed us to access articles that used the word "gamification" or any of its variations (e.g. "gamified" and "gamifying"). The choice of broader keywords, as opposed to the choice of keywords with a more limited scope, was made consciously, as it is considered important, at this stage, to obtain a broader perspective and to draw a general profile of the theme, since these two areas only recently merged.

The original dataset obtained from Scopus, without applying any additional filters, consisted of 403 documents. Documents were extracted on 30-01-2023. It was recognized as important to define a set of filters to ensure that only publications meeting the inclusion and exclusion criteria would be analyzed, thereby eliminating the noise introduced by relying solely on keyword searches. Fig. 1 details the inclusion and exclusion criteria, using the PRISMA flowchart proposed by Moher et al. [56]. The PRISMA protocol has four stages - identification, screening, eligibility and inclusion - and provides a clear guideline for the reviewing process [57].

Firstly, we identified 403 documents. In the screening stage, only studies published between 2010 and 2022 were considered, since the term gamification was only widely popularized in 2010 [10]. Since we conducted our search in January 2023, we did not include articles published in 2023. Moreover, only articles published in journals were included to ensure that they all had been peer-reviewed. Studies that are not written in English were excluded, given that research results with an impact in this area are mostly published in international English language publications. After this screening stage, all the articles were read and assessed (eligibility stage), ensuring that only articles focusing on gamification applied to marketing were included. After this stage, a total of 289 documents were excluded, since they did not fit the intended purpose. In total, 114 articles were included for analysis.

In this study, beyond the tools used for performance analysis that are available in Scopus, VOSviewer scientific mapping was also used. VOSviewer is a software tool, developed by Van Eck and Waltman [51], that allows to create, visualize and explore bibliometric networks. Moreover, VOSviewer has become "a popular tool for analyzing and reviewing scholarship, and has been widely employed to profile numerous literatures across the sciences in the past few years" [58]. A search query of "TITLE-ABS-KEY (VOSviewer)" on Scopus for all years led to 4680 documents (March 2023). If we take into account the numbers of the last 4 years only (2020–2023), this tool has been used in 4221 articles, indicating its growing popularity among bibliometric researchers. The research design of the present study is explained in Fig. 2.

The following sections will present the results obtained from the bibliometric and TCCM analysis, and the conclusions we can draw about possible gaps in the literature, which correspond to opportunities for future lines of research.
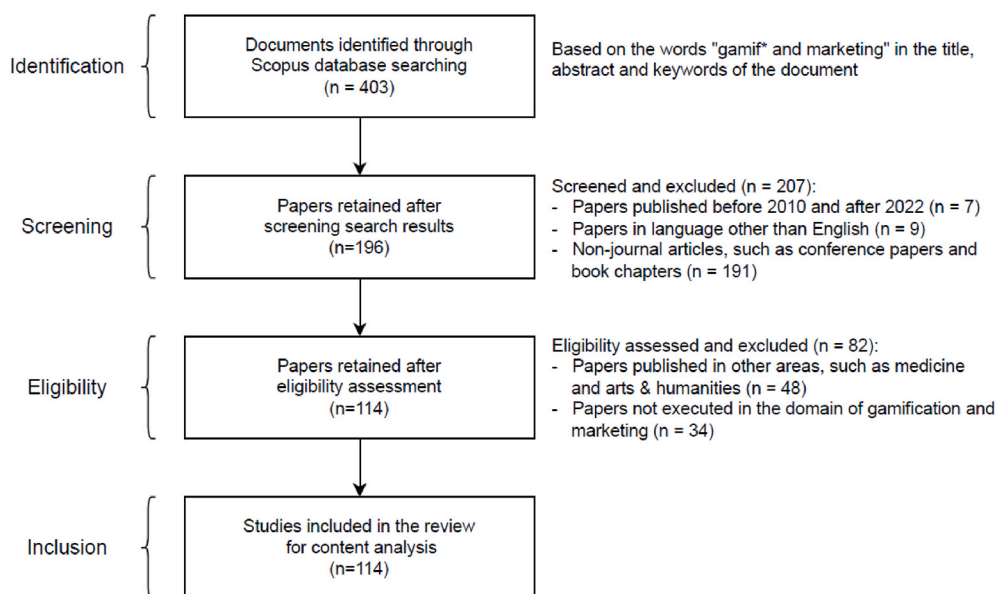

Fig. 1. Flowchart of the papers selection process using the PRISMA protocol.
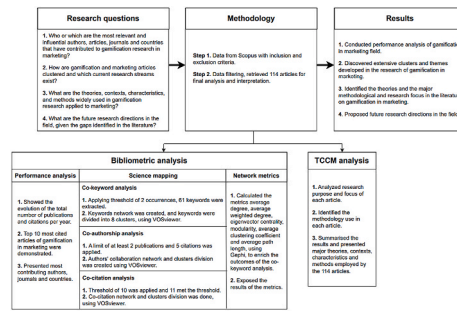
Fig. 2. Research design of the study.

4. Bibliometric analysis

In this section, the main results obtained with the bibliometric study will be presented. Initially, a performance analysis will be shown, based on Scopus, which focuses on the production and evolution of the research, being possible to identify which are the most cited and influential publications, which authors and countries have done most of the work in this area, as well as what are the journals where most publications are published [55]. Subsequently, the results of the science mapping will be displayed and interpreted, based on the bibliometric maps of co-keyword, co-authorship and co-citation. Finally, some network metrics will be presented.

4.1. Performance analysis: how has this field evolved from a bibliometric perspective?

Performance analysis examines the performance of different research constituents (e.g. authors, countries, and journals) in the field [55]. The first articles were published in 2013. One of these articles seeks to understand whether gamification is something more than a marketing instrument to manipulate consumer behavior [59]. Other seeks to analyze the impact of gamification on consumer engagement in utilitarian trading service usage [39]. Between 2013 and 2022, the total number of citations was 2993. In general, the average number of citations per publication is 26.25, and the average per year is 299.3 citations. However, the distribution of citations among publications is not homogeneous. Of the 114 documents, 92 were cited at least once. This means that 80.7 % of the researchers' work produced some kind of impact on the research community on gamification in the field of marketing. In the data considered, there are 53 publications that were cited more than 10 times. There are studies that are widely recognized and have a greater impact on the literature and others that, despite having potential, still do not have many citations, possibly because they have only recently been published. Table 1 presents the top 10 most cited articles of gamification in marketing with their corresponding themes.

Electronic Commerce Research and Applications is the scientific journal with most citations. In total, this journal has 471 citations and an average of 235.5 citations per publication. The journal article with most citations is Hamari [39]. Furthermore, Journal of Business Research is the journal with the highest number of publications on the topic under study. Table 2 lists the 4 most influential journals in terms of total number of publications and citations.

Regarding authors, Rory Mulcahy is the researcher who contributes most to the research in this area. With 6 publications on the theme (two in 2018; one in 2020; two in 2021 and one in 2022), Mulcahy gathers a total of 138 citations and an average number of citations per publication of 23. The distribution of publications over time demonstrates consistent and sustained interest in the topic. Mulcahy's publications are related with social marketing and sustainability and, in general, the author analyzes how gamification can

Table 1
Most cited articles in the field of gamification in marketing.

Ref.	Title of Article	Journal	TC	C/Y
[39]	Transforming homo economicus into homo ludens: A field experiment on gamification in a utilitarian peer-to-peer trading service	Electronic Commerce Research and Applications	462	46.2
[6]	A definition for gamification: Anchoring gamification in the service marketing literature	Electronic Markets	413	68.8
[35]	Gamification and mobile marketing effectiveness	Journal of Interactive Marketing	209	29.9
[60]	Tourists as mobile gamers: Gamification for tourism marketing	Journal of Travel and Tourism Marketing	126	18.0
[2]	Gameful experience in gamification: Construction and validation of a gameful experience scale [GAMEX]	Journal of Interactive Marketing	101	20.2
[7]	Does gamification affect brand engagement and equity? A study in online brand communities	Journal of Business Research	91	30.3
[1]	Gamified interactions: Whether, when, and how games facilitate self–brand connections	Journal of the Academy of Marketing Science	59	11.8
[61]	Gamification and service marketing	SpringerPlus	56	7.0
[45]	Gamification as a platform for brand co-creation experiences	Journal of Brand Management	49	6.2
[49]	The effects of gamified customer benefits and characteristics on behavioral engagement and purchase: Evidence from mobile exercise application uses	Journal of Business Research	48	9.6

Note: TC = total citations; C/Y = cites per year.

Table 2

Number of publications and citations of major journals.

Journal	Total publications	Total citations
Journal of Business Research	6	283
Journal of Social Marketing	4	27
European Journal of Marketing	3	36
Sustainability	3	63

Source: Scopus

stimulate sustainable consumer behavior, examining users' experiences with a gamified application or service. In addition to Rory Mulcahy, the authors who have contributed the most to the research were Juho Hamari, Timo Dietrich and Rebekah Russell-Bennett, with 4 articles published each. Hamari presents a total of 1007 citations and an average number of citations per publication of 251.75, being the author with the highest number of citations in the dataset under analysis. His studies have a significant impact and recognition in the field. This author's publications aim to show empirical evidence of the effects of gamification on the relationship that develops between consumers and brands, reviewing the literature or describing the results of experiences conducted in contexts such as online brand communities or gamified services. Dietrich's publications aim to examine the implementation of innovative gamification technologies (such as virtual reality and augmented reality) to social marketing programs targeted at adolescents or children. In total, Dietrich reaches 115 citations and Russell-Bennett 47 citations. Russell-bennett's 4 publications, co-authored with Mulcahy, refer to the impact of gamification on sustainable consumer behaviors. The nature of the topics studied by each author suggests that gamification is being explored in different contexts and with different objectives. Table 3 lists the most influential authors in gamification research within the field of marketing.

Regarding countries, the United States of America (18 publications and 682 citations), Australia (13 publications and 264 citations), India (12 publications and 69 citations), United Kingdom (10 publications and 480 citations) and Spain (7 publications and 117 citations) stand out. This finding allows us to understand how research in gamification and marketing is distributed globally. Geographic diversity and a concentration in developed economies are evident.

4.2. Science mapping: most studied topics and research networks

Science mapping examines the intellectual interactions and structural connections among research constituents [55], to provide a better understanding of how the field of gamification and marketing has been researched and developed. The VOSviewer scientific mapping techniques analyzed in this study include co-keyword analysis, co-authorship analysis and co-citation analysis.

4.2.1. Clusters of studied topics: Co-keyword analysis

The co-keyword analysis contributes with relevant knowledge for the literature, as it identifies the most popular keywords, trending keywords, and dominant research paths in the field of study. It is a technique that examines the actual content of the publication itself, and assumes that keywords that frequently appear together have a thematic relationship with one another [55]. This helps to visualize how different research topics are interconnected. VOSviewer analyzes the content of documents, and suggests keywords that are identified if they appear in a certain minimum number of publications. These keywords correspond to nodes in the network that illustrate the relationships between these keywords/concepts. A bibliometric map is nothing more than a network, in which each node corresponds to a word, and two nodes are linked together if these words appear together in at least one publication.

Thus, this analysis was based on the co-occurrence between the keywords identified by the software (similar examples can be found, e.g. Refs. [11,19]). The terms were obtained based on all keywords and the binary counting method was selected. A minimum limit of 2 occurrences of the keyword was applied, meaning that a keyword only needs to appear in two different publications in the sample to be considered in this network, since the goal is to understand which themes are more recently investigated.

Based on the conceptual scheme developed by Brinberg and McGrath [62] we coded keywords into six categories: concept, data collection, data analysis, substantive actor, substantive geography and substantive industry. Keywords that do not denote a concept, a method, or a sample are removed (e.g. "Elsevier", "managerial implications" and "literature review"). Moreover, abbreviated words were also combined with their complete terms (e.g. "electronic commerce" and "e-commerce" or "mobile apps" and "mobile applications").

In total, the bibliometric map obtained contains 61 keywords, grouped into 8 clusters. Clusters are made up of keywords that VOSviewer considers to be close to each other, and more distant from other clusters, taking into account the publications in which

Table 3

Number of publications and citations of major authors.

Author	Total articles	Total citations
Mulcahy, R.	6	138
Hamari, J.	4	1007
Russell-Bennett, R.	4	115
Dietrich, T.	4	47

Source: Scopus

these keywords are found [51,53]. The map corresponds, thus, to a network with 61 nodes and 264 arcs. An arc links two keywords as long as they appear in the same publication. Each arc can have a weight (also called strength) that is calculated through the total number of publications in which those keywords appear simultaneously [51]. In this network, the sum of the weights of all arcs is equal to 410.

Fig. 3 shows the map obtained during this analysis. To support the visual analysis of this data, in this network, the representation of each node is related to the total number of occurrences of that word in the documents (the weight of that node). The higher this number, the bigger the size of the corresponding node and the size of its caption (the word it corresponds to). The distance between words, calculated by the shortest path between them (considering the number of arcs that separate them) is an indicator of the degree of correlation between them, taking into account the articles in the sample [51,53]. Thus, the bigger the size of the circle that represents the node, the more studied is the subject/concept to which the respective word refers to. Words that are in the same cluster have a stronger relationship with each other [51,53]. The different clusters identified are represented by different colors.

In the paragraphs below, we describe the topic contents of each of the eight topic areas of gamification applied to marketing, that correspond to the eight clusters identified in the network. We have named each cluster considering the prevalent themes that can be found in each of them. The most frequent keywords in the documents that make up each cluster were examined, as well as the title and abstract of these documents, to ensure that the cluster names were appropriate and informative.

Cluster 1 (Fig. 4), named **gameful experience of customers in gamification**, contains 23 % of the total keywords. The most used keyword in this cluster is "gamification", which appears in 89 articles and is connected to 60 keywords. This cluster has other dominant keywords such as "e-commerce", "customer experience", "interactivity", "flow", "gameful experience", "game" and "brand engagement", meaning that the focus of this cluster is on the gameful experience of consumers when interacting and engaging with certain gamified platforms. Gameful experiences (such as flow and customer engagement), intertwining with interaction design, pull consumers into the brand and engages them [7,38,44]. Berger et al. [1], for example, building on flow theory, show that gamified interactions that are highly interactive and challenging facilitate self-brand connections, because games lead to cognitive and emotional brand engagement.

Cluster 2 (Fig. 5), entitled **adoption of gamification by customers**, contains 13.1 % of the total keywords. The dominant keywords in this cluster are "game elements" (4 occurrences and 8 links) and "pls-sem" (partial least squares structural equation modelling) (4 occurrences and 12 links), but there is another important keyword that appears in cluster 2 which is "technology adoption". Gamification is regarded as a technology-based system [17]. So, these keywords indicate that this cluster considers the study of factors affecting the intention to adopt gamified systems, that incorporate game elements, by customers [63]. Moreover, much of the research in this topic area uses partial least squares structural equation modelling analysis to test the model [64,65].

Cluster 3 (Fig. 6), called **gamification in tourism marketing**, like cluster 2, contains 13.1 % of the keywords. The most dominating keyword in this cluster is "marketing", with 25 occurrences and 41 links. Other dominant terms in this cluster are "innovation", "tourism", "destination" and "virtual reality". All these keywords have a high degree of correlation, which reveal that the articles
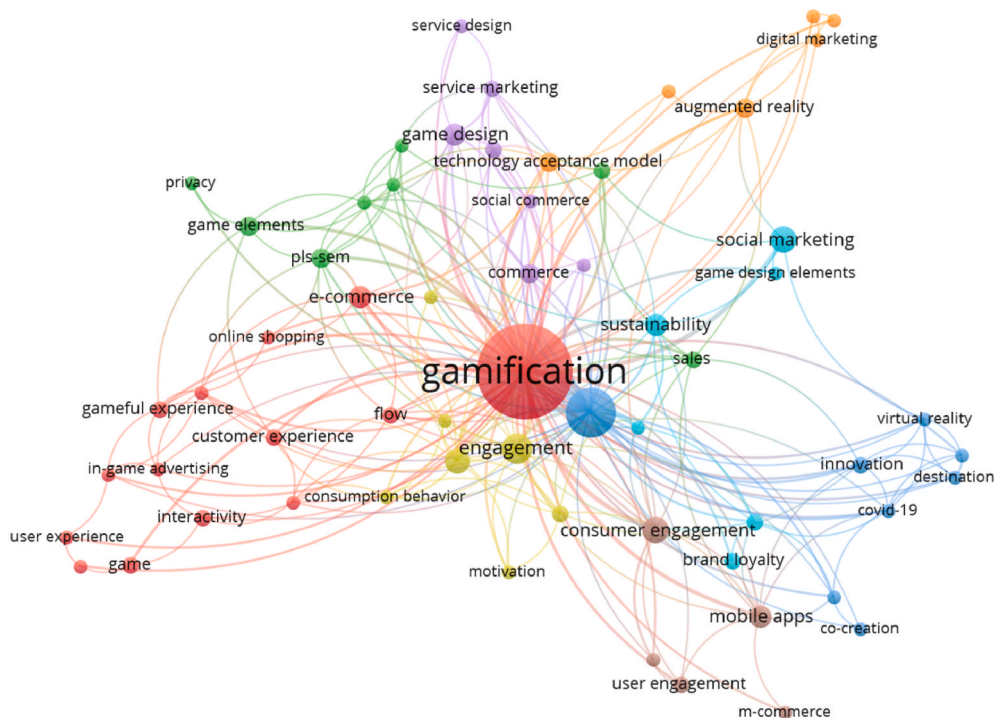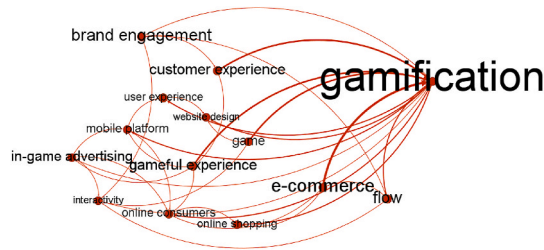

Fig. 3. Keywords connection network.
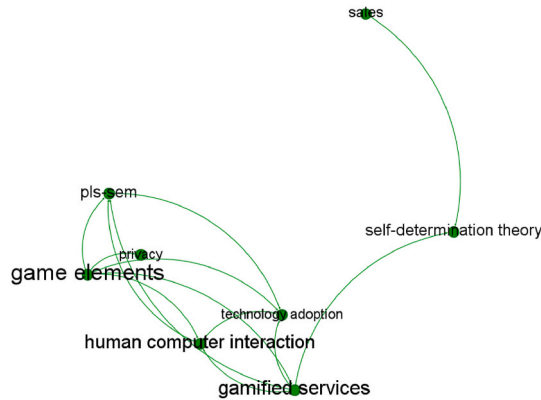
Fig. 4. Cluster 1.

Fig. 5. Cluster 2.

Fig. 6. Cluster 3.

associated with this cluster are especially focused on investigating the potential of gamification as a marketing tool to promote a place as a tourist destination [46,60,66]. It was found that the use of innovative strategies, such as gamified virtual immersive platforms, creates value for the destination, while increasing the interest of the participants [66] and it was also demonstrated that gamification leads to the "co-creation" of products and services in tourist marketing [46].

Cluster 4 (Fig. 7), entitled **gamification in advertising**, contains 11.5 % of the total items. In this cluster, the keywords that have received more attention in the literature are "engagement" (9 occurrences and 17 links) and "retail" (6 occurrences and 15 links). These two keywords are very broad, but clearly demonstrate that one of the lines of research has been to explore the impact gamification has on retail companies by motivating engagement [44,67]. Another major line of research that emerges in cluster 4 is related with the idea of how the use of gamification in advertising affects consumer's engagement and behavior, namely their attitude and purchase intention [3,40,68]. Gamified advertising is becoming a trending topic in marketing literature and can be very effective if it contributes to the creation of consumers' benefits [40]. Hu and Wise [68], for example, found that playable advertising increases consumers' "perceived control", which, in turn, leads to more positive attitudes toward the advertised products.
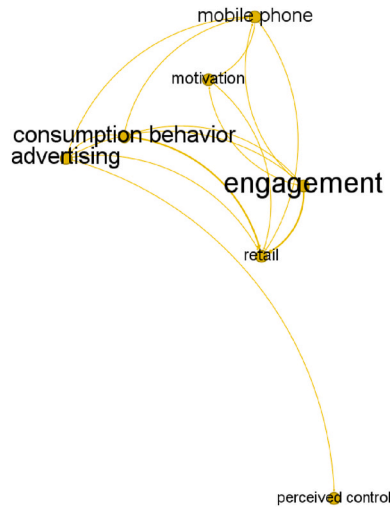
Fig. 7. Cluster 4.

As for **cluster 5** (Fig. 8), the keywords with a higher frequency of occurrence are "game design" (5 occurrences and 10 links), "commerce" (4 occurrences and 15 links) and "service marketing" (3 occurrences and 9 links). This cluster is named **gamification in service marketing** and contains 11.5 % of the keywords, being focused in understanding how to design transformative marketing services through gamification [69–72]. Several authors explore the effects of game design elements (such as "badges", rewards and immersive storytelling) on transformative services [61,70,72] and have concluded that gamification is an adequate tool to improve "service design" [16,71].

Cluster 6 (Fig. 9), entitled **gamification in social marketing and sustainability**, contains 9.8 % of the total keywords. The keywords "social marketing" (7 occurrences and 6 links) and "sustainability" (5 occurrences and 11 links) show that there are studies investigating the impact of gamification on social marketing [73,74] and consumer's sustainable behaviors [15,75]. Gamification can be used, for example, to promote the practice of physical activity by individuals [74] or to encourage consumers to enrol in sustainable energy behavior [15]. Furthermore, the articles associated with this cluster investigate the role of gamification on marketing outcomes, such as "brand attitude" and "brand loyalty" [17,47].

Cluster 7 (Fig. 10)designated by **possibilities to apply gamification**, presents keywords "augmented reality" (4 occurrences and 11 links) and "technology acceptance model" (4 occurrences and 10 links). This cluster contains 9.8 % of the total keywords and includes some of the publications that explore the different possibilities of gamification application with a focus on "digital marketing". However, unlike the other clusters, it is not possible to explicitly find a coherent research flow. The remaining keywords in this cluster are generic and have little weight. This may be the result of having a minimum limit of 2 occurrences of the keyword in the VOSViewer analysis. Thus, to be a node in this network, a keyword only needs to appear in two different publications belonging the sample. Cluster 7 is, thus, not as informative regarding current research as the others are. Even so, through the map, it was possible to see that there is a growing interest in investigating opportunities to integrate gamification experiences in the context of emerging phenomena, like "augmented reality". In addition, the keyword "technology acceptance model" reveals that much of the research was developed based on this model [76].

Finally, in relation to **cluster 8** (Fig. 11), the words most frequently mentioned and with the strongest links are "consumer engagement" (7 occurrences and 13 links) and "mobile apps" (5 occurrences and 12 links). This cluster is named **customer**

Fig. 8. Cluster 5.

Fig. 9. Cluster 6.
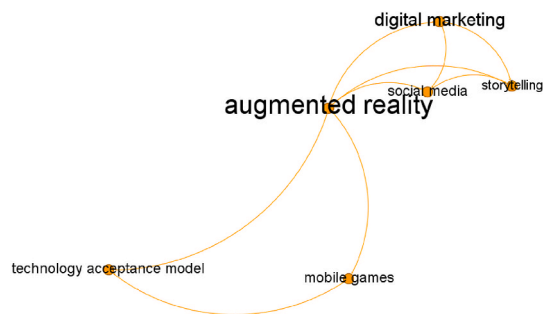
Fig. 10. Cluster 7.
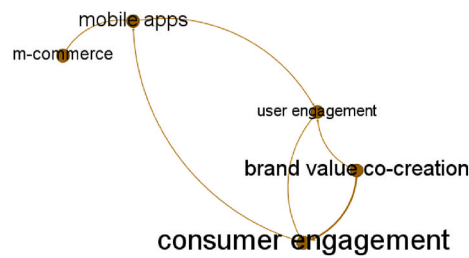
Fig. 11. Cluster 8.

Table 4
Top 10 of occurrence of keywords and total link strength.

Keyword	Occurrences	Total link strength
Gamification	89	180
Marketing	25	77
Engagement	9	29
Consumer engagement	7	21
Social marketing	7	12
Retail	6	23
Game design	5	17
Mobile apps	5	17
Sustainability	5	17
E-commerce	5	15

Source: VOSviewer

engagement with mobile apps gamification and contains 8.2 % of the keywords. Gamification on the mobile platform has the potential to create unprecedented engagement with customers [3]. In this context, mobile apps have become one of the potential channels to reach and influence consumers. Several articles in this area focus on how mobile app gamification drives consumer engagement and their intent [43,76,77]. It was found that gamification increases customer engagement which, in turn, leads to greater intention to use the app [43], contributes to "brand value co-creation" [45], among others.

This co-keyword analysis map allowed us to frame the existing body of vast literature that has been in place over the past years and point out the dominant research paths in the field of gamification and marketing. The different clusters presented on the map highlight the application of gamification within various contexts, such as e-commerce, tourism, advertising and sustainability, revealing specific areas of interest in the literature. This diversity indicates that gamification is a versatile tool, applicable in many areas to increase customer engagement. This analysis reveals that engagement is a recurring topic in several clusters, suggesting that marketers can benefit from the use of gamification elements to increase interaction with customers, motivate desired behaviors and improve customer retention.

After analyzing the topic contents of each of the eight clusters, Table 4 lists the 10 keywords that occur most in the sample of literature considered, as well as their respective links (total strength of the arcs to which the respective nodes belong to).

In addition to being able to create clusters based on the distance between words, it is also possible to create clusters by looking at the year of the respective publications. This analysis gives rise to a new figure (Fig. 12), with the same base network. In this figure it becomes easier to visualize the timeline use of each keyword. The colors represent the average publication dates of the documents from which the words were extracted, with the most recent topics shown in yellow and the oldest in dark blue [51].

In general, the words that appear most in older publications are grouped in cluster 5, and concern mainly themes related to game design, service marketing and social commerce. In turn, the results show that the most recent keywords are grouped in cluster 3 and refer mostly to topics related to tourism, co-creation and virtual reality. Past research was sought to conceptualize gamification in the area of marketing [6] and was most focused on the implementation of the gamification process, mainly in the context of services. Initially, publications focused more on understanding what game design elements (like progress paths, feedback, rewards, badges) should be implemented in a gamification platform [39,61]. Currently, the literature is more focused on the consequences of implementing gamification. This demonstrates that scientific interest in the area of gamification and marketing has successfully broadened and expanded. Scholars are moving beyond a basic understanding of what gamification is and how to implement it, to examining how it affects consumer behaviors and business outcomes, which indicates development and progress in the field. The keywords "tourism" and "co-creation" stand out, with an average publication date of 2021.5. Moreover, terms in yellow, like "mobile platform", "mobile
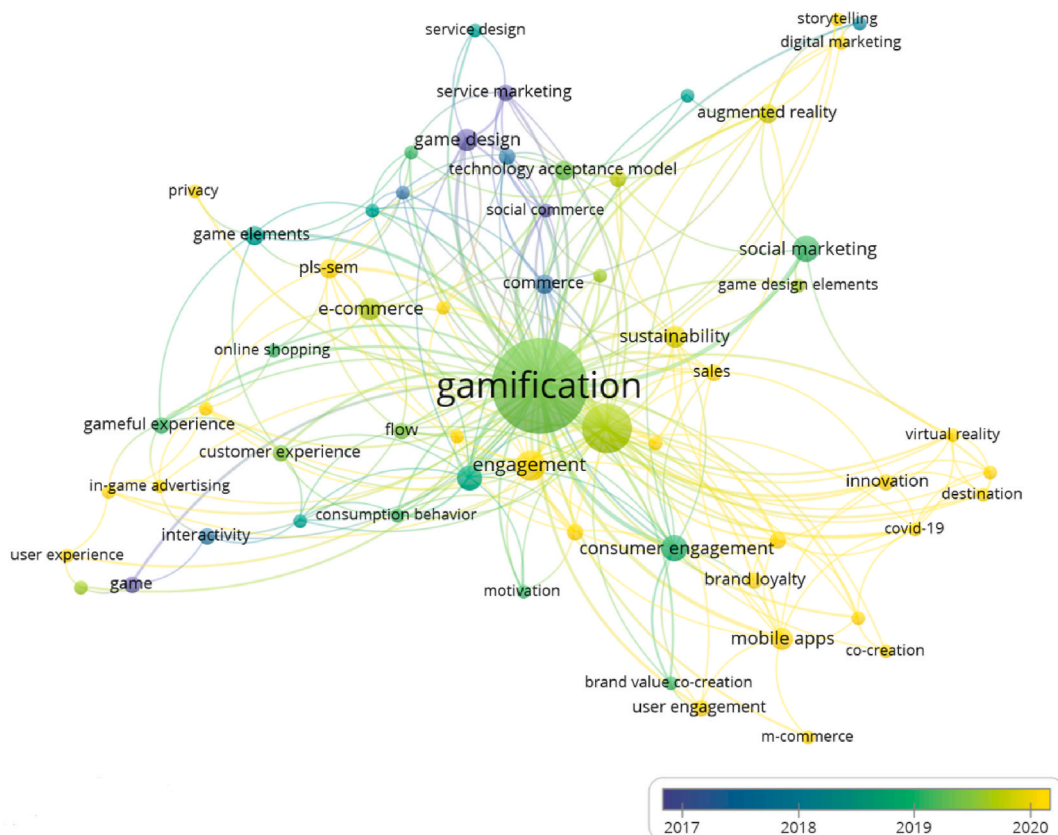

Fig. 12. Grouping of keywords by year.

apps", "mobile phone" and "m-commerce" reveal that current studies are especially focused on mobile.

4.2.2. Research networks: co-authorship analysis

In this topic, an authors' collaboration network was developed and analyzed, as it helps to discover the existence of regular groups of scholars who collaborate to produce influential research on the application of gamification in marketing.

A total of 290 authors contributed to the 114 articles in the dataset. To draw a clear and meaningful co-authorship map, authors whose contribution had some impact in the community were analyzed. Setting a minimum level of contribution to the field is important in this dataset since more than 92 % of the authors have published a single paper, and 18 % of the authors have not received a single citation. For these reasons, a limit was applied to select authors who have published at least two publications and have received at least 5 citations for their overall production. Since the average number of citations per publication is approximately 26, this threshold seems realistic and not extremely restrictive. The number of authors meeting these thresholds is 20, which represents almost 7 % of the total number of authors in the dataset. This demonstrates that the number of scholars producing influential research on gamification in marketing is still small.

Fig. 13 shows an overall view of the authors' collaboration network.

In the network, each author is represented by a node. The links among the nodes represent the collaboration relations between the authors and the size of the node is proportional to the number of publications of the author. As Fig. 13 shows, the bibliometric map obtained contains 9 clusters of collaboration, represented by different colors. However, the clusters are disconnected from each other. This suggests that there are regular collaboration structures within certain research groups (intra-cluster collaboration), but not much collaboration among different research groups (inter-cluster collaboration) [19].

The size of the intra-cluster collaboration networks ranges from 2 to 4 authors. The most common collaboration is between three authors (3 clusters), followed by papers with two authors (2 clusters). The network presented in Fig. 13 shows three authors without links due to the established limit of two publications per author. So, there are collaborations that these authors have with other authors that were not considered in the network, because these other authors have one publication only. Regarding the inter-cluster networks, it was found that the level of collaboration between different clusters is very low. Only one collaboration structure was found between two different clusters. The collaborative structure is between cluster 2 and cluster 4. The link between these two groups is materialized through a joint publication by Rory Mulcahy (cluster 4) and Timo Dietrich (cluster 2), analyzing which of the game attributes users prefer in social marketing programs.

The co-authors analysis shows a fragmented research community, with well-defined but disconnected collaboration groups. The lack of inter-cluster collaboration indicates a low level of collaboration between different research groups, which can mean a redundancy of efforts, where different groups work on similar topics without knowledge of each other's work. Academics and institutions can work to build a more collaborative community, for example, through conferences, workshops and joint research projects. These efforts can enrich the field by allowing the exchange of diverse ideas and perspectives, and avoiding duplication of research.

4.2.3. Co-citation analysis

In addition to the author collaboration network, a co-citation network was also developed to understand how frequently two
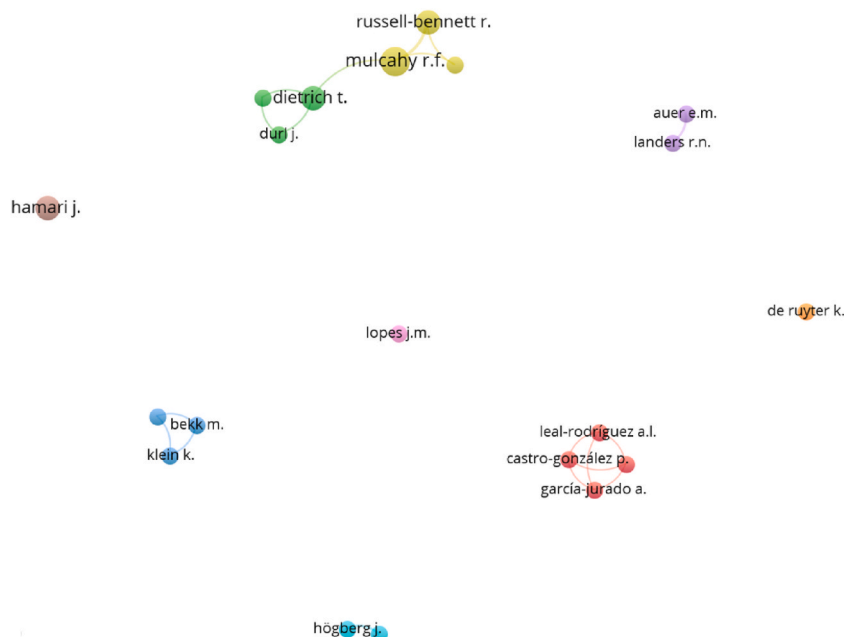

Fig. 13. Authors' collaboration network.

articles are cited together by a third paper, indicating thus key research streams, key studies and broader intellectual structure of the field [78]. A considerable number of authors must quote the two previous papers to be strongly co-cited [54].

In our co-citation analysis, the minimum number of citations for a cited reference was established as 10, out of 7257 cited references, and 11 met the threshold. Network visualization of co-citation analysis, created by VOSviewer software, is show in Fig. 14.

The bibliometric map obtained contains 2 clusters, 11 articles (nodes) and 55 links (relationship among articles) as the most cited. These articles indicate that academic researchers assigned importance to published works on gamification in marketing, citing them in their research papers and the 2 clusters reveal that there are at least two streams of research within the field.

Cluster 1 (red) contains six articles. Müller-Stewens et al. [5] examines the effect of gamified information presentation on consumer adoption of innovative products. Hofacker et al. [35] explore how gamification can enhance mobile marketing, including mobile advertising, mobile promotion and mobile shopper marketing. Huotari and Hamari [6] propose a definition for gamification from a service marketing perspective, as previously mentioned. Harwood and Garry [48] identify key processes and outcomes of customer engagement and behavior within virtual gamified platforms. Hamari and Koivisto [79] examine the relationship between hedonic, utilitarian and social motivations and continued use intention as well as attitude towards gamification. Finally, the article by Fornell and Larcker [80] focuses on the structural equation model (SEM). Although this article is not directly related to the theme of gamification, it has been frequently cited by studies in the area that use the corresponding methodological approach.

Cluster 2 (green) has 5 articles, two of which are reviews. Hamari [39] conducts a field experiment by gamifying a utilitarian peer-to-peer trading service, implementing the game mechanism of badges. Yang et al. [17] examine the effects of gamification on customers' intention to engage in the gamification process and their attitudes toward the brand. Xi and Hamari [81] investigate the relationships among user interactions, gamification features (immersion, achievement and social-related) and intrinsic need satisfaction (autonomy, competence and relatedness). Seaborn and Fels [33] present a standard definition for gamification in the field of marketing, based on a multidisciplinary review. Koivisto and Hamari [82] analyze research models and results in empirical studies on gamification, to see if gamification is really effective.

The most highly cited reference was "Examining the impact of gamification on intention of engagement and brand attitude in the marketing context" by authors Yang et al. [17] published by "Computers in human behavior", with 18 citations. The second most highly cited reference was by Huotari and Hamari [6], entitled "A definition for gamification: anchoring gamification in the service marketing literature", published in "Electronic markets", which has 17 citations.

In this analysis, it is evident that Juho Hamari significantly mapped out the theme of gamification in marketing, with his works receiving a large number of citations in less than a decade. Identifying the most pertinent authors and influential key references can guide future research, as it provides information to academics regarding the current studies of greatest impact and interest that are reliable sources of knowledge in the area.

4.3. Information retrieved from the networks built: network metrics

To enrich the outcomes of the co-keyword analysis, some network metrics were analyzed. Network metrics "shed light on the
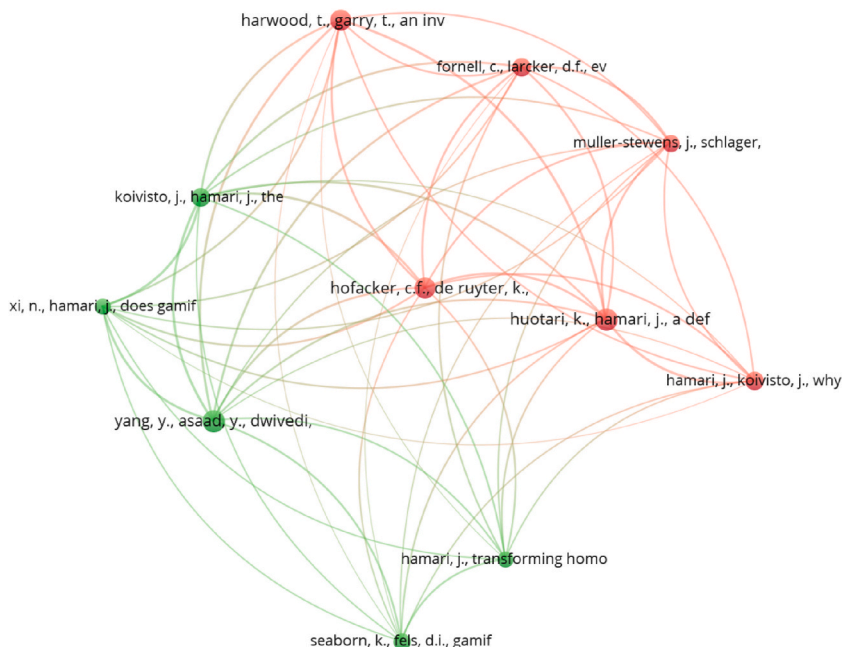

Fig. 14. Network of co-citation analysis.

relative importance of research constituents [...], which may not necessarily be reflected through publications or citations" (p. 290) [55]. The metrics analyzed, using Gephi, were: average degree, average weighted degree, eigenvector centrality, modularity, average clustering coefficient and average path length.

The degree of a node is the number of connections that it has to other nodes in the network (number of arcs), that reflect the number of relations that a node has. Our network has an average degree of 4.328, indicating that there is certain interconnection between topics, but not to the point of being a densely connected network. There are nodes in the network with few or no connections. This means that the average number of links from one keyword to another keyword, across the entire network, is approximately 4. However, some links have more weight than others. Therefore, we have to take these differences into account by calculating the weighted degree of nodes. The weighted degree of a node is similar to the degree but considers the weight of each link in the network. The average weighted degree of the network is 6.721. Considering the strength of each link, the total number of links a keyword has on the network is almost 7. This value suggests a greater intensity of connections in some parts of the network, while other parts may be more dispersed. There are keywords that play central roles in the field and there is opportunity to expand connections. Furthermore, it was found that the largest nodes - with highest degree - are not always those with the highest weighted degree.

Eigenvector centrality measures node importance in a network based on a node's connections. It is a measure of the influence of a node in a network. A higher value of eigenvector centrality reflects the importance of a keyword in the network, indicating its role in transmitting information to other highly-connected keywords [55]. The eigenvector centrality of the network is 0.01952. The item "technology adoption" has a score of 1, being the keyword with the highest level of influence within the network. In turn, keywords such as "advertising", "co-creation", "brand value co-creation", "brand attitude" and "augmented reality" have a score of 0, probably because many of those connections are with similarly low-scored keywords or because they are new concepts in this field that have not yet had time to influence the network. It is worth noting that the influence of a publication is dependent on the time it has passed since its publication. This time dimension is completely absent from these metrics. Therefore, it is expected that keywords appearing only in recent publications will have less influence on the network as a whole.

Global clustering coefficient is a measure of the likelihood that two nodes adjacent to a node are also adjacent to each other. In other words, it is the likelihood that a node is part of a triangle. The average clustering coefficient for the entire network is the average of all the coefficients for all the nodes in the map which, in this case, is equal to 0.345. As we can see, the average is relatively low (close to 0). In this context, it shows that, although two different keywords can be both linked to the same third keyword, there is a low probability of them both appearing together in one publication. This may leads us to conclude that existing studies are more focused on specific topics and areas, and there are still not enough studies merging different areas together.

The average path length is the average number of arcs along the shortest paths for all possible pairs of network nodes. In this case, the average path length is 1.915, which means that, on average, by traversing only 1.915 links we may cover most of the nodes of the network. This may lead us to conclude that, in this research area, most of the existing concepts are somehow connected with each other, not being very far away (even if they are not directly linked as shown by the previous metric).

Table 5 shows a summary with the results of the metrics for the network.

These metrics provide insights into the connectivity and cohesion of the network, the influence of nodes and the structure of the network as a whole. With this information, researchers can make more informed decisions on how to contribute to the advancement of knowledge in the field of gamification applied to marketing.

5. TCCM analysis

Through a content analysis, this section reports on the theories, contexts, characteristics, and methodologies (TCCM) employed by previous scholars to uncover past findings. The analysis was performed on the same database consisting of 114 journal articles listed in the Scopus database.

5.1. Theory

Theories encapsulate the perspectives that scholars rely upon to guide their investigation [83]. In addition to serving as a means for academic advancement, theories provide scholars with a guide for seeking answers to their research questions [83]. In the area of gamification applied to marketing, the literature reveals the prominent use of self-determination theory (13 articles), technology acceptance model (10 articles), and flow theory (6 articles) [1,16,17,69,76]. Table 6 lists all the theories used to guide gamification

Table 5
Summary of network metrics.

Metric	Total network
Average Degree	4.328
Average Weighted Degree	6.721
Eigenvector Centrality	0.01952
Modularity	0.109
Average Clustering Coefficient	0.345
Average Path Length	1.915

Source: Gephi

Table 6
List of theories.

Theory	N articles	Theory	N articles
Affect-*as*-information theory	1	Self-determination theory	13
Cognitive evaluation theory	1	Self-system model of motivational development	1
Diffusion theory	1	Service package model	1
Effort justification theory	1	Social cognitive theory	3
Elemental game tetrad model	2	Social comparison theory	1
Expected utility theory	1	Social impact theory	1
Experiential economy theory	1	Social presence theory	1
Flow theory	6	Social proof theory	1
Fogg's behavior model	1	Symbolic interaction theory	1
Goal orientation theory	1	Technology acceptance model	10
Goal setting theory	2	Theory of cognitive dissonance	1
Motivation theory	2	Theory of consumption value	1
Objective self-awareness theory	1	Theory of holistic experience	1
Perceived value theory	1	Theory of planned behavior	4
Psychological ownership theory	1	Theory of reasoned action	3
Psychological reactance theory	1	Uncertainty reduction theory	1
Regulatory fit theory	1	Unified theory of acceptance and use of technology	3
Sales management model	1	Uses and gratifications theory	3
Schema theory	1	Utility theory	1
Self-construal theory	1	Without theory	67

and marketing research.

It is possible to conclude that much of the existing research is well grounded on the application of diversified and well-established theories. Even so, 67 of the 114 articles (58.8 %) did not use any theory. In total, 39 different theories have been applied to gamification and marketing research in 47 articles. The number of different theories used indicates that the current theoretical landscape is broad, meaning that there is still no depth in scholarly insights. Much of the research depends only on literature reviews to guide academic investigations. This shortcoming can be addressed through this study which offers a comprehensive list of theories that can be used as a platform for future research (Table 6). However, new theoretical lenses can be applied to explain uncovered areas, such as the expectation-confirmation theory and the expectancy-value theory, in order to evaluate the impact of consumers' presumptions on their actual behavior [84].

5.2. Context

Contexts describe some circumstances that entail in an investigation [83]. This review, motivated by the work presented in Lim et al. [83], considers two main contexts that characterize the articles under study: countries and population (see Table 7). Lim et al. [83] additionally considered "platform" for defining context, but we believe it does not apply to the current study.

In terms of countries, most research on the application of gamification in marketing has been conducted in Australia, China and the United States of America. Most studys have considered data collected from countries in Asia and in the European Union. Africa and South America appear to be underrepresented and, therefore, deserve scrutiny in future investigations. There is an opportunity to study gamification in marketing in various regions, to ensure future generalization of results. It may also be interesting to consider different contexts by performing a cross-country analysis.

Table 7
Contextual coverage.

Context	N articles	Context	N articles
Countries		**Countries (cont.)**	
Australia	8	Greece	1
China	8	Indonesia	1
United States of America	7	Jordan	1
India	5	Lithuania	1
Korea	3	Sweden	1
Iran	2	Thailand	1
Pakistan	2	Several different countries	10
Portugal	2	**Population**	
Spain	2	Users of the gamified system	16
Taiwan	2	Students/Young people	15
United Kingdom	2	Managers and/or marketing professionals	7
Germany	1	Young adults	6
Egypt	1	Users with experience using smartphone applications	6
Finland	1	Game users	4
Ghana	1	Others	10

In terms of population, the field has been diverse and scattered. The participants of the research developed in the area are mostly users of a gamified system (like websites, applications or branded communities) and students or young people [7,17,43,64,76]. Younger consumers may accept and use new technology more commonly than older generations, which might affect their reactions. Thus, future studies may use different samples. In addition to analyzing consumers' interactions with gamified systems, it may be interesting to hear opinions about gamification from other stakeholders, such as suppliers, store sellers, legal team, and others.

5.3. Characteristics

Characteristics relate to antecedents and outcomes [25]. In essence, antecedents clarify the reasons for engaging or not engaging in a given behavior, whereas outcomes encapsulate the consequences that emerge after behavioral performance or non-performance [83]. Gamification research in the field of marketing has allowed the identification of various key features, including antecedents and outcomes (Table 8). The authors manually reviewed the 114 articles in the database to identify the antecedents and consequences used by the researchers, in order to contextualize the field of study, detect possible patterns and identify variables that have been less studied, which can generate new hypotheses for future research. However, existing literature is so fragmented, diverse and even inconsistent in terms of empirical evidences that it is difficult to draw a conclusive proposition about these key features. For example, despite the increase in studies on gamification and marketing in the past decade, there is still a lack of consensus on which game elements are suitable for which marketing activities.

Nevertheless, in terms of game elements, the most studied antecedents in the literature are rewards (6 articles), badges (5 articles), points (5 articles), social connection/interactions (5 articles), feedback (4 articles), and challenge (4 articles) [7,15,16,43,61,63,69,72, 85]. The results of empirical studies showed that the use of these gamification elements had a positive impact on consumer's engagement and behaviors, which can provide several benefits to companies. Still, future investigations may explore other game elements, such as rules, chat functions, customizable aesthetics, content unlocking, notifications, location, and time constraints. Moreover, in the articles of this review, other antecedents were also analyzed, as can be seen in Table 8, being the most studied the perceived ease of use (4 articles), perceived usefulness (4 articles), and perceived enjoyment (4 articles) [63,76,85]. According to theories on technology acceptance and adoption, these aspects are considered to be key determinants for the continued use of various systems. Future studies can explore other antecedents, such as perceived risk, perceived value, perceived mobility, personal innovativeness, game experience, social influence, among others.

These antecedents may produce an indirect influence on outcomes. This review revealed that customer engagement (10 articles) was the most investigated consequence in the literature, followed by brand engagement (7 articles), continued intention to use (7 articles) and purchase intention (7 articles) [38,43,44,47,49,76,77]. The impact of gamification on consumer engagement is a hotly debated issue in the area of marketing [86] and there is a consensus in the literature that it stimulates and increases consumer engagement with the brand.

The variety of antecedents and results is vast, due to the wide dispersion of the research models. This breadth corresponds to the broad range of theories. The analysis of results indicates that the empirical research is mostly interested in how gamification implementations are perceived and experienced by customers, whether they are enjoyable or useful, and whether customers feel motivated and engaged by the systems features. We expect more studies to unveil other antecedents and outcomes that may have significant influence on gamification applied to marketing.

5.4. Methods

Methods shed light on the nature of empirical evidence through which the investigation develops [83]. The research approach used in the field of gamification and marketing is essentially fourfold: conceptual, qualitative, quantitative and experimental. As listed in Table 9, approximately 42 % of the articles in the review employed a quantitative methodology (48 articles), with analysis based on structural equation modeling (37 articles) being the preferred method of analysis. Twenty-two articles adopted field experiments, with single (10) and multiple (6) experiments being the most used. Qualitative and conceptual methods were the least used. It was found that the first articles developed were largely exploratory, mainly conceptual and qualitative. With the development of research, researchers began to implement much more quantitative methodology and, in the last two years, it is possible to witness the adoption of hybrid methodologies. In the future, the challenge is to develop more mixed methods approaches, which may include, for example, artificial neural network approaches or bayesian networks. It may also be worthwhile for future researchers to implement more analytical approaches like meta-analysis or other econometric tools, to enhance the methodological rigor in gamification and marketing research.

The research data used were mostly primary data. Only six studies decided to use secondary data belonging to companies, referring to gamified platforms (such as apps or social networks) or online reviews of a website [1,66]. In terms of primary data, online surveys were undoubtedly highly popular, especially in quantitative methodologies. Most qualitative studies were based on interviews and focus groups. There is a lack of variety in data artifacts that could be properly utilized. Future scholars can use data gathered directly from the gamified system, to measure its effectiveness objectively, using, for example, website backstage databases.

6. Future research agenda on gamification and marketing

After identifying the cluster themes, all articles were carefully read, including their recommendations for future research directions. This generated a list of future research guidelines that were based on suggestions given in published articles that had not yet

Table 8
Research characteristics.

Antecedents			Outcomes	
Achievement	Feedback	Progress paths	Aesthetic appeal	Focused attention
Altruism	Flow	Quiz	App rating	Hedonic value
Attitude toward use	Fun	Rank	Attitude toward advertising	Impulsive buying
Attractiveness of the site	Goal clarity	Rewards	Behavioral intention	Intrinsic and extrinsic motivations
Badges	Goal difficulty	Self-benefit	Brand advocacy	Perceived ease of use
Behavior change	Immersion	Self-development	Brand attachment	Perceived enjoyment/pleasure
Behavior monitoring	Incentive provision	Self-expression	Brand attitude	Perceived usefulness
Challenge	Interactivity	Sense of community	Brand awareness	Positive affect
Character	Intrinsic and extrinsic motivations	Social comparison	Brand engagement	Purchase intention
Competition	Leaderboards	Social connection/interactions	Brand love	Reward satisfaction
Control	Novelty	Social influence	Brand loyalty	Satisfaction
Convenience	Object visual presentation	Social recognition	Co-creation	Social interaction
Customization	Perceived ease of use	Storytelling	Consumer loyalty	Switch
Design aesthetics	Perceived enjoyment	Subjective norm	Consumption behavior	Unplanned purchase
Distributive justice	Perceived usefulness	Success	Continued intention to use	Word-of-mouth
Effort expectancy	Perceived value	Symbolic benefits	Customer commitment	
Environmental concern	Personal integrative	Utilitarian and hedonic motivations	Customer engagement	
Epistemic	Playability	Virtual training	Electronic word-of-mouth	
Expressive freedom	Points	Vividness	Experience	
Facilitating conditions	Product knowledge	Willingness to use	Flow	

Table 9
Research methodology and methods.

Approach	N articles	Approach	N articles
Qualitative	18	Conceptual	15
Case study	6	**Experimental**	**22**
Thematic analysis	6	Single experiment	10
Content analysis	3	Multiple experiment	6
Other qualitative analyses (e.g. inductive and deductive approach or fs/QCA)	3	Choice experiment	3
Quantitative	**48**	Simulated experiment	3
SEM	21	**Others** (e.g. developed a measurement scale, a method or a gamified platform or a design framework)	**17**
PLS-SEM or PLS-VBSEM	16		
Regression analysis	8		
Other quantitative analyses (e.g. ANOVA or ANN modeling)	3		

been addressed by previous researchers. The list of future research questions for each cluster theme is reported in Table 10, highlighting the potential for investigation in several areas.

More studies are needed to investigate the extent in which the dimensions of game design (or combinations of them) trigger consumers' flow state [15], i.e., a psychological state where people are fully immersed and involved in an activity [32]. Understanding how the different elements of gamification contribute to improving flow and examining the implications of negative experiences or misuse of game mechanics may be relevant to the literature, as it can impact customers' engagement and satisfaction, and brand loyalty [84]. Additionally, a potential path to new investigations may be to analyze whether the implementation of gamification on online platforms (e.g. websites, applications, marketplaces) can affect customers' purchases from the traditional physical stores [85].

The success of gamification obviously depends on consumer adoption, leading to an interest in studying what factors or how types of rewards offered can influence the consumer's intention to enter in a gamification experience, and whether adoption of gamification varies between different age groups [64,87]. Furthermore, research into the reasons that lead to abandonment of gamified systems can offer valuable information to improve retention or to recover individuals [45].

In the tourism sector future works could explore whether location based and augmented location games enhance tourists' experiences at the destination [60] and, for example, if innovative technologies (such as virtual reality or 3D-representation technologies), combined with gamification, create value for the destination, raising tourists' interest in visiting it [66]. In turn, in advertising, the focus will be on understanding how gamification can improve consumer's attitude towards game advertisement [3] and if playable ads, that combine interactivity with gamification, have an effect on the mobile context [68]. Playable ads have been increasingly applied to promote brands [3], so, these lines of research have implications for interactive marketing strategies and the effectiveness of

Table 10
Future research guidelines.

Research questions	Ref.
Cluster 1: Gameful experience of customers in gamification	
How do different elements of gamification contribute to improving consumers' state of flow?	[15]
What are the implications of negative gamified experiences and misuse of game mechanics?	[84]
Can adding gamification to online platforms make customers less likely to purchasing from the traditional stores?	[85]
Cluster 2: Adoption of gamification by customers	
Do the types of rewards offered to consumers influence the adoption and use of gamification?	[87]
Does the adoption of gamification vary across different age groups?	[64]
What are the main reasons that lead to the abandonment of gamified systems?	[45]
Cluster 3: Gamification in tourism marketing	
Do location based and augmented location games improve tourists' experience at the destination?	[60]
How can innovative technologies lead to business decisions or individual visitor selections of specific destinations?	[66]
Cluster 4: Gamification in advertising	
How can gamification improve consumer's attitude towards in game advertisement?	[3]
Do playable ads have an effect in the mobile context?	[68]
Cluster 5: Gamification in marketing services	
How can software developers consider users' privacy protection during the development of a gamified service?	[88]
Which elements of gamification can contribute to the improvement of the design of services in industrial contexts or business-to-business environments?	[71]
Cluster 6: Gamification in social marketing and sustainability	
Are preferences for game elements in social marketing programs different depending on the platform or specific context?	[15]
Cluster 7: Possibilities to apply gamification	
What are the effects of implementing gamification features on wearable devices or the sharing economy?	[89]
Is it possible to use gamification for fostering individuals' co-creation of physical tasks, as commercial operations encompassing sales and merchandising activities?	[84]
Cluster 8: Customer engagement with gamification	
How do demographic, cultural, economic, and psychographic characteristics affect customer engagement with gamification?	[16, 87]

gamified advertising.

In marketing services, a suggestion for future research is to analyze how software developers can protect customers' privacy while designing gamified services [88]. To increase people's trust, this is an important aspect to consider, since a considerable amount of users' personal information may be stored and monitored by these systems. Moreover, it would be interesting to study what elements of gamification can contribute the most to the improvement of the design of services in industrial contexts or business-to-business environments [71]. In social marketing, scholars could investigate if preferences for game elements differ depending on the platform or specific context, which could lead to the development of more effective marketing campaigns [15].

Regarding the possibilities to apply gamification, there are some research topics that can be potentially interesting. A possible path may be to investigate the implementation of gamification features (e.g. immersive features) in wearable devices or its impact in sharing economy [89]. In addition, it may also be interesting to explore the possibility of using gamification for fostering individuals' co-creation of physical tasks, such as commercial operations encompassing sales and merchandising activities [84].

Finally, a significant research direction is the analysis of the role of demographic, cultural, economic and psychographic characteristics, including personality factors and experiences, in customer engagement with gamification [16], which could definitely help in better understanding customers' attitudes and behavior towards gamified systems. This knowledge can guide the development of targeted gamified experiences.

A limitation common to most of the studies analyzed is that they are cross-sectional in nature. Accordingly, future studies should seek to examine the preference of game elements longitudinally, as potentially preferences for game attributes may change over time as customers become more experienced. Moreover, researchers should also employ longitudinal designs to observe the impact of gamification on consumer's attitudes and behaviors over time.

In terms of methodology, one possible direction for future research could be the integration of qualitative and quantitative methodologies, as it allows for a more in-depth analysis and a more complete view of the effects of gamification in marketing contexts. Furthermore, the lack of studies using secondary data suggests an opportunity to explore and analyze direct data from gamified systems.

Most studies on gamification in the field of marketing have focused on the positive aspect of this technology and its strengths. However, this technology, as other technologies, is not without flaws and weaknesses. The shortcomings of gamification can be examined from two points of view: the shortcomings related to the nature of this technology and the weaknesses in connection with the design and implementation. Thus, it is recommended that future research primarily identifies inherent shortcomings as well as weaknesses in gamification design, and subsequently offers solutions to address the flaws.

To conclude, another suggestion for future research is to develop a type of gamification that is more personalized, to better adapt to the different needs of consumers. To this end, it is essential that objective metrics are defined to track, monitor and empirically evaluate the results of gamification experiences [19]. If the gamification design process supports the collection of empirical data about gamification experiences, it is possible to create personalized experiences for each consumer using machine learning and data mining techniques [19].

7. Conclusion

In order to contribute to the future development of this research field, this study aimed to identify insights on current and future research directions in the field of gamification and marketing, based on a bibliometric and TCCM analysis.

The Scopus analysis allowed us to identify the articles, the authors, the most influential countries, and the journals with the most publications on the subject. The role of the United States of America, Australia, and India is highlighted. It was also verified that the author Rory Mulcahy is the one with the highest number of publications and that Juho Hamari is the most cited author. It is also important to note that Journal of Business Research is the journal that published the highest number of papers on the implementation of gamification in marketing and that articles published in Electronic Commerce Research and Applications are the most cited. It is also possible to conclude that there is a growing interest of researchers in studying these two topics simultaneously.

The results of the analysis of the bibliometric maps revealed that gamification articles in the area of marketing can be categorized into eight streams, namely "gameful experience of customers in gamification", "adoption of gamification by customers", "gamification in tourism marketing", "gamification in advertising", "gamification in service marketing", "gamification in social marketing and sustainability", "possibilities to apply gamification" and "customer engagement with mobile apps gamification". It was found that the focus of the literature, so far, has been on studying which game elements should be implemented in a gamification system, as well as exploring the impact of gamification experiences on engagement and consumer's behaviors, frequently in combination with other technologies/platforms, such as mobile applications, e-commerce sites, augmented reality and social media.

Furthermore, through TCCM analysis, this study uncovered many theoretical, contextual, and methodological insights that were not previously revealed. Specifically, our review revealed that: (1) there is no shortage of theories for gamification in marketing, but an abundance, as we identified the use of 39 different theories in 114 articles; even so, a significant portion of published works is not grounded on a given theory; (2) most research developed in the area has been conducted in Australia, China and United States of America; (3) the participants of the research are mostly users of a gamified system or students/young people; (4) the most tested game elements were rewards, badges, points, and social interaction; (5) the most analyzed antecedents in the current literature were perceived ease of use, perceived usefulness, and perceived enjoyment, and the outcomes were customer engagement, brand engagement, purchase intention, and continued intention to use; (6) structural equation modeling and single experiment are the preferred methods of analysis, and (7) among gamification and marketing studies, primary data collection methods such as online surveys, interviews, and focus groups are predominantly favored.

Building upon the insights from our review, we presented a set of thematic pathways that we encourage future gamification and marketing researchers to consider for advancing theoretical novelty, enhancing contextual relevance, and improving methodological rigor. The conclusions obtained contribute to a more complete understanding of how marketing has been focusing on gamification and provide useful information that can help in raising new research questions.

This work demonstrates that gamification in marketing is an emerging theme. It is an evolving area, which is not yet consolidated, as we can see from the wide variety of theories used in the sample articles. The present work enables academic researchers in the marketing discipline to identify leaders in terms of citations and publications, while also showcasing the growth of this research area across various topics, contexts, and methodologies. Moreover, scholars can find relevant information about existing collaborations, most popular keywords, trending keywords, and future research paths. This study provides several approaches for researchers who wish to explore this topic further, but it also helps marketers make more informed decisions. Professionals can improve their understanding of gamification in an international context by identifying the main areas of gamification application through the eight clusters identified in the co-keyword analysis. In addition, they can see what they gain from the application of gamification in marketing strategies.

This bibliometric review helps to find current trends and emerging research directions. However, like any other scientific mapping study, this work has some limitations that must be considered in the analysis of the results and in the conclusions presented. While care has been taken to include all significant work, the study is limited to the Scopus database. Scopus was used because it is the most comprehensive peer-reviewed database, but we cannot exclude the possibility of other interesting and valuable works in this area not being present in this platform. Furthermore, more than half of the articles in this study (65 out of 114) were published in past three years. Therefore, since the topic is relatively new and constantly evolving, it is essential that similar studies be carried out in the future to understand the evolving nature of the theme.

Disclosure statement

The authors report there are no competing interests to declare.

CRediT authorship contribution statement

Patrícia Marques Santos: Writing – original draft, Validation, Software, Methodology, Formal analysis, Conceptualization. **Joana Matos Dias:** Writing – review & editing, Validation, Supervision, Methodology, Conceptualization. **Cristela Maia Bairrada:** Writing – review & editing, Validation, Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to

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