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# International Journal of Marketing, Innovation and Strategy

## Regular Issue

Title: International Journal of Marketing, Innovation and Strategy (IJMIS)
Volume: 2
Number: 1/2024
ISSN: 2975-9226 (online)
Publication Frequency: Semestral
Editors: Irina Saur-Amaral & Sandra Filipe
Cover: Irina Saur-Amaral & Sandra Filipe
Publisher: UA Editora - Universidade de Aveiro
Open Access Journal Available at: https://proa.ua.pt/index.php/ijmis

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- business reorientation as a result of Covid-19 pandemics;
- consumer behaviour & market research;
- data science, artificial intelligence, machine learning, social media strategy, marketing and business intelligence;
- destination marketing and niche tourism;
- digital / integrated communication, advertising and promotion;
- entrepreneurship, competitiveness and innovation in small and medium-sized companies;
- innovative approaches to teaching & learning in marketing, innovation and strategy;
- open innovation, business models and business model innovation;
- social marketing, corporate social responsibility and circular economy;
- other topics in marketing, innovation and strategy.

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International Journal of Marketing, Innovation and Strategy

2024, No. 2(1): 3-16
10.34624/ijmis.v2i01.37906
ISSN: 2975-9226

# Intellectual Capital and Innovation:
## A Systematic Literature Review

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**Abstract**

Innovation is a cornerstone of firms' performance and survival. Although existing literature suggests a connection between Intellectual Capital and Innovation, this relationship has been analysed through various lenses and methodologies and there is no dominant framework. This raises the question where the study of the relationship between intellectual capital and innovation currently stands, and we address it by performing a systematic literature review of 178 full-text papers published between 1998 and January 2021, indexed in ISI Web of Knowledge – Current Contents. We examine the existing research on the Intellectual Capital – Innovation nexus, identifying the main research areas and setting the stage for future studies. Our findings reveal a growing but unstructured body of work, organized mainly around Intellectual Capital components (human capital, structural capital, and relational capital) and their specific roles in driving innovation. This article provides a theoretical framework for consolidating knowledge on the relationship between Intellectual Capital and Innovation, outlining practical implications and emerging research directions.

**Keywords:** Human Capital, Innovation, Intellectual Capital, Relational Capital, Structural Capital, Systematic literature review

**To cite this article:**

Sardo, F., Saur-Amaral, I., & Serrasqueiro, Z. (2024). Intellectual Capital and Innovation: A Systematic Literature Review. *International Journal of Marketing Innovation and Strategy,* Vol. 2, No. 1, pp. 3-16. doi.org/10.34624/ijmis.v2i01.37906.

**Received**: October 31, 2023; **Accepted**: October 25, 2024; **Published**: October 31, 2024

# 1. Introduction

The connection between intellectual capital and innovation is currently underexplored. Some isolated contributions have been made by scholars part of the intellectual capital community or to the innovation community (e.g., Agostini and Nosella, 2017, Chen et al., 2015, Engelman et al., 2017), yet there is no common framework to integrate the knowledge and provide a comprehensive perspective of what is currently known and what are the areas to study so that we may better understand the different dimensions of this connection.

Innovation is considered a cornerstone of firms' performance and survival (Ruiz-Jiménez and Fuentes-Fuentes, 2018). Therefore, there is a need for continuous innovation in order to overcome competition in a challenging and dynamic business environment. Intellectual capital contributes to firms' innovative capacity (Sardo and Serrasqueiro, 2018). Intellectual capital is a new source of competitive advantage, since it is difficult to replicate or to use it efficiently (FitzPatrick et al., 2013), and it is a source of firm value (Bontis, 1999), firm earnings (Liu and Wong, 2011) and firm wealth (Guerrini et al., 2014). Intellectual capital also affects the dynamics of a firm's growth opportunities due to the capacity to produce technological innovations (Liu and Wong, 2011) through investment in research and development activities (Chen et al., 2005).

The majority of previous papers that analysed the Intellectual Capital-Innovation nexus, decomposed Intellectual Capital into three components: *human capital*, which refers to the sum of employees' knowledge, competence, innovativeness, commitment and wisdom (Sardo and Serrasqueiro, 2018); *structural capital*, which can be seen as the basic structure of a firm that supports and empowers human capital (Bontis, 1998) and is considered the support infrastructure for the establishment and maintenance of relationships with key external stakeholders (Molodchik et al., 2014); and *relational capital*, which refers to the knowledge embedded in the identification, development and maintenance of external relationships (Bontis, 1999). Despite previous literature indicating a connection between Intellectual Capital and Innovation (e.g., Agostini and Nosella, 2017, Chen et al., 2015, Engelman et al., 2017), the research examining this relationship remains fragmented.

Our paper aims to tackle that issue and develop a comprehensive framework based on the scholarly contributions that have been published on ISI Web of Knowledge – Current Contents, from 1998 to 2021, on Intellectual Capital and Innovation, identifying research trends and knowledge gaps and capturing the multifaceted role of IC in fostering innovation. We aim to contribute to a structured understanding of the relationship between Intellectual Capital and Innovation, highlighting areas where empirical research is abundant and others where further investigation is needed.

The remainder of the paper is structured as follows. Section 2 describes the methodological approach used to perform this study. The findings of this study are presented in the Section 3. Section 4 draws the conclusion.

# 2. Methodology

To answer the research question, we perform a systematic literature review, following the Tranfield et al. (2003) and Saur-Amaral et al. (2018) procedure: definition of the search protocol, search execution and results analysis and presentation, using two academic software to support the research: Endnote X9 and NVivo 12. We build upon the approach previously used by Buenechea-Elberdin (2017) to explore the relationship between intellectual capital and innovation, upscaling the analysis performed in her seminal paper.

Our search took place on the 26th of January 2021 on the Current Contents Connect database of ISI Web of Knowledge. We applied the search equation "intellectual capital" AND innov* IN Topic, filtered on Social & Behavioural Sciences Edition and Business Collection, with a timeframe of 1998 to the date of the search.

We then filtered the results by: Document Type = (Article or Review) AND Research Areas = (Business Economics) AND Languages = (English). We obtained an initial sample of 247 results, which we exported to Endnote X9. Further, all abstracts were manually analysed and all the papers that did not have an abstract or were not related to the topic under study were eliminated, leading us to a final sample of 178 papers whose full text papers were collected.

This final sample undertook two levels of analysis. The first one included a bibliometric-like study showing the key journals related to the topic, as well as top authors in the field, using a descriptive statistics approach. The second one included a qualitative analysis performed with NVivo 12 on the results imported from Endnote, which reveals the research questions, the methodologies, and the future research directions, and allowed the development of a theoretical state-of-the art framework which reveals the focus area of intellectual capital in innovation, as well as the way the different components of intellectual capital have been studied along the years when linked to innovation.

# 3. Findings

## *3.1. Descriptive Statistics*

The data related to the sample, more specifically information on the journal where each paper was published, the publication year and the authors of each paper were used to analyse the publication trends, as well as top journals and top authors.

As it may be seen in Figure 1, there is an increase of interest in the Intellectual Capital-Innovation nexus registered from 1998 onwards, reaching its peak on 2020 with 19 published papers on ISI Web of Knowledge. While there has not been an exponential increase, there is a tendency of growth.

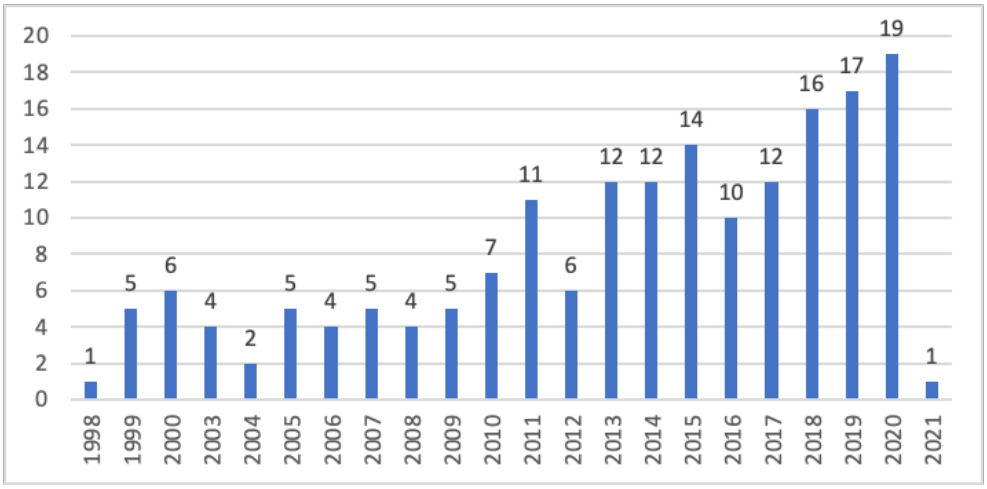


**Figure 1** Paper distribution by year.

The most prolific authors (see Figure 2) are Kianto, A. (6 papers), Amores-Salvado, J. and Delgado-Verde, M. (5 papers each one of the authors), and Maylor, H., Navas-Lopez, J.E., Saenz, J., Swart, J. and Turner, N. (4 papers each one of the authors). However, considering the period of our sample (1998 to January 2021), we may note that there is no consolidated author with regular publications in the field.

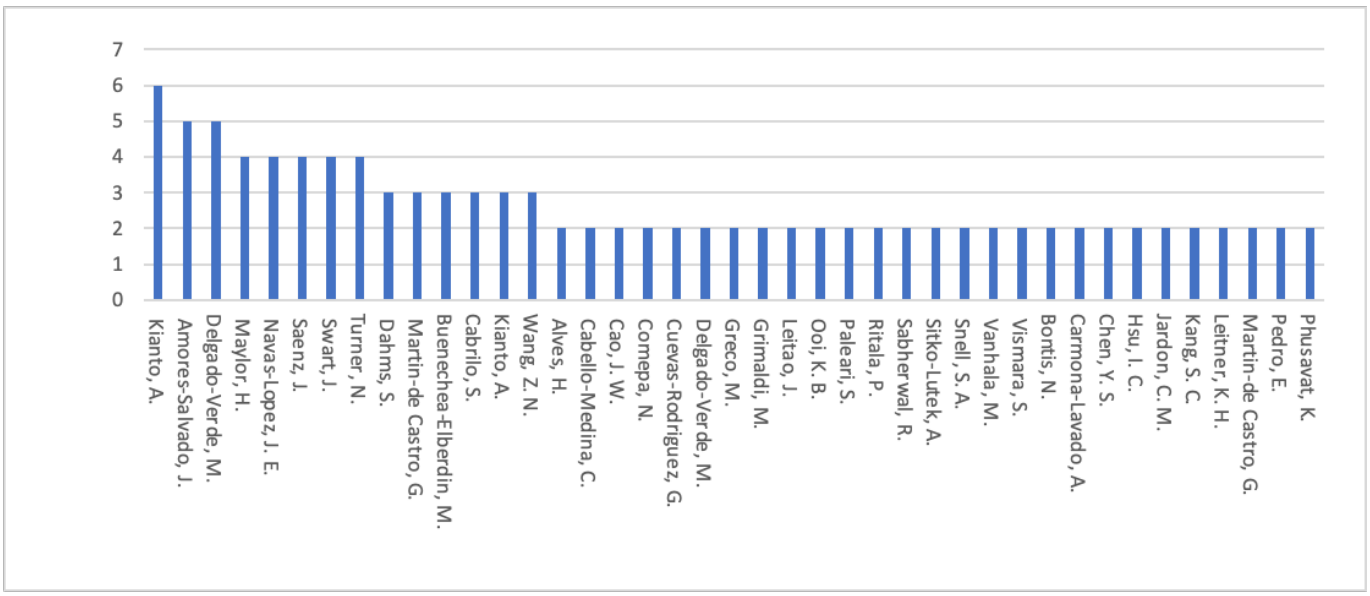


**Figure 2** Number of papers per author (authors with at least 2 papers).

Regarding paper distribution per journals and per year during the analyzed period (see Figure 3), the most influent publications are Journal of Intellectual Capital (29 papers) and Knowledge Management Research & Practice (20 papers), which occupy at a certain distance the top positions.

They are followed by International Journal of Technology Management (13 papers), Management Decision (10 papers), Journal of Knowledge Management (9 papers), R & D Management (6 papers), Journal of Business Research (5 papers), and International Journal of Human Resource Management (4 papers).

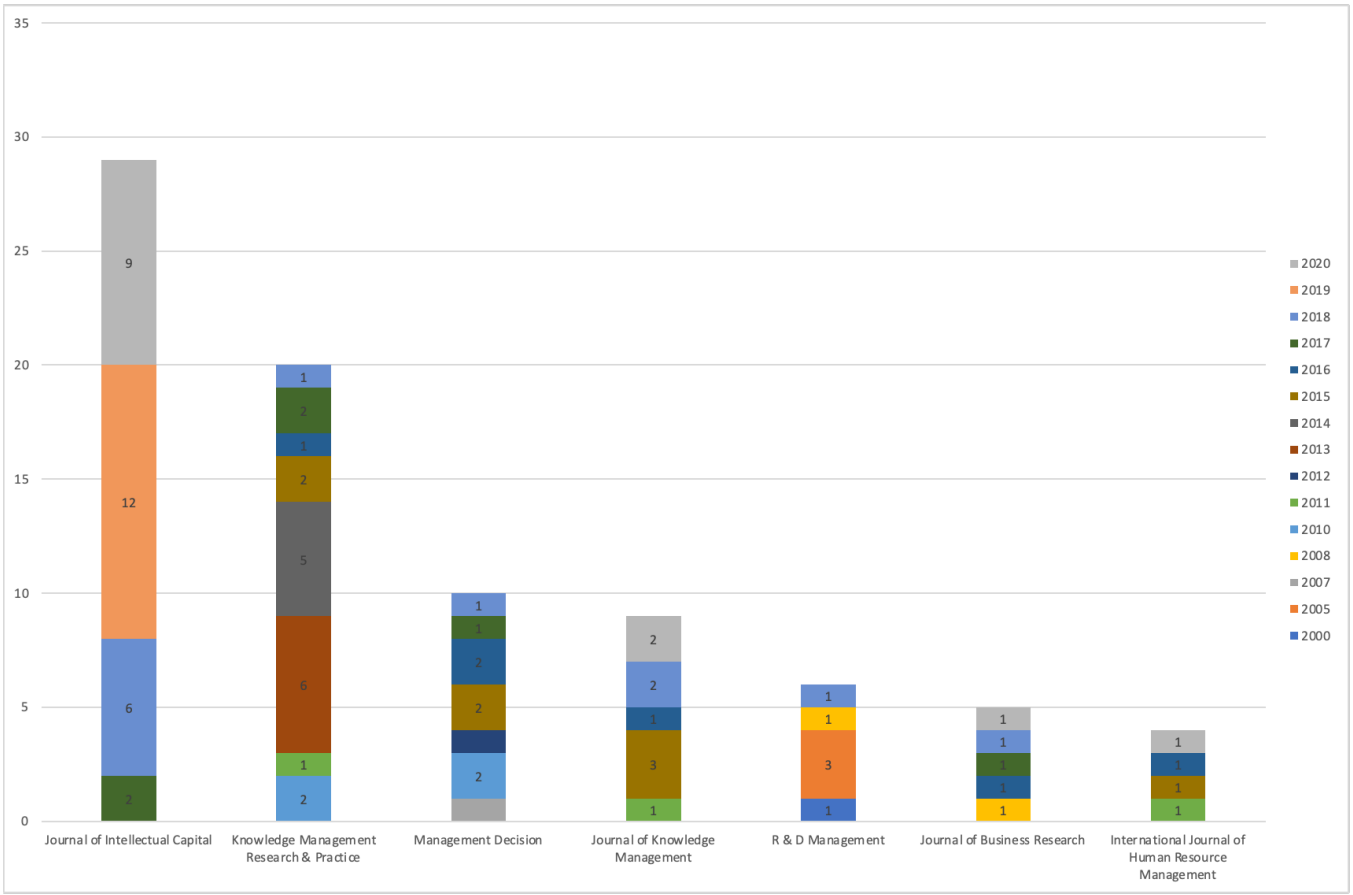


**Figure 3** Number of papers per top journals (minimum 4 papers): 1998 - 2020.

However, when we analyse the period 2015-2020 (see Figure 4) for these top journals, we observe that Journal of Intellectual Capital continues to be the journal with most papers published in the field, but in the second position we have Journal of Knowledge Management, with a recent interest in the topic.

Knowledge Management Research & Practice and Management Decision have no papers published in 2019 and 2020, which may indicate a loss of interest from the editorial team in the topic. Also, R&D Management published only one paper.

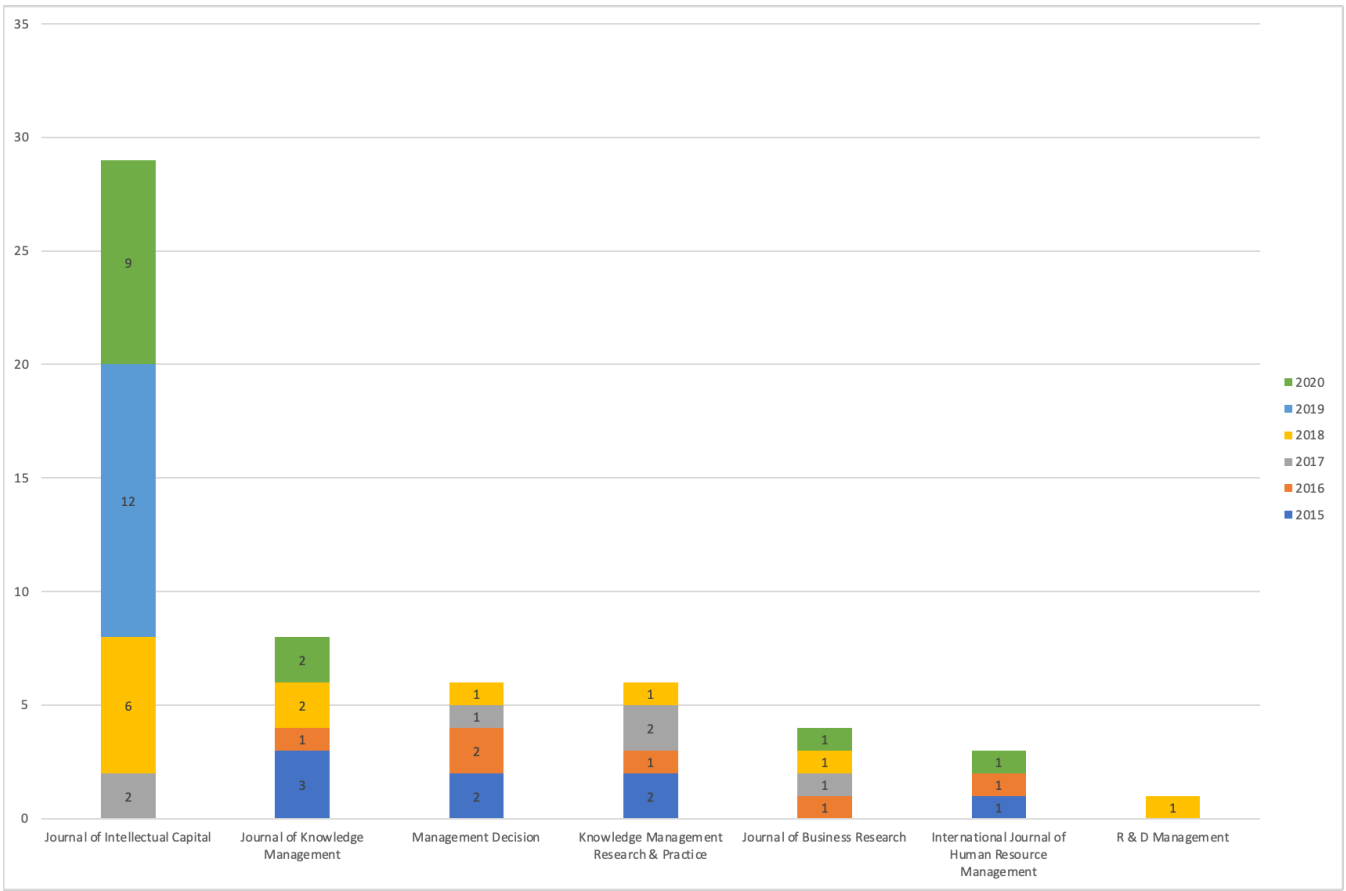


**Figure 4** Number of papers per top journals: 2015 - 2020.

## *3.2. Qualitative Analysis*

After the descriptive statistical analysis was performed, all full text papers and corresponding information were imported in NVivo 12, where a thorough content analysis was performed. Based on the specific literature on Intellectual Capital and experience from previous systematic literature reviews, the authors developed a preliminary framework that was used as a starting point for coding (See Figure 5).

The preliminary structure was enriched during the coding, which was performed by two researchers, and we present the main results in the following pages.

### *3.2.1. Article Type*

Most of the papers are empirical, with most of the papers using quantitative methods, with a specific focus on questionnaire-based surveys (e.g. Buenechea-Elberdin et al., 2017, Beltramino et al., 2020), mainly performed on a sample of firms extracted from specific databases (e.g. SABI for Spanish or Portuguese firms). Studies with secondary data (e.g. Molodchik et al., 2019) occupy the second position, however longitudinal studies are rather rare. Note that from the top journals, only Journal of Intellectual Capital published a relevant number of studies using secondary data, others prefer the surveys.

In terms of statistical analysis, the two most used approaches are practically at a tie: regression (e.g. Ting et al., 2020) and structural equation modelling (e.g. Gurlek, 2021), used in the papers published in all top journals.

The qualitative papers use mainly a case study approach (e.g. Pedro et al., 2019). From the top journals, only Journal of Intellectual Capital and Knowledge Management Research & Practice published qualitative papers, while proportionally it was very rare, as the preferred approach is quantitative.


**Figure 5** Preliminary coding structure used for content analysis in NVivo

Taking the lenses of the national context studied by the authors in the empirical papers, the context most studied is Spain (e.g. Buenechea-Elberdin et al., 2017), followed by Taiwan (e.g. Cabrilo et al., 2020), China (e.g. Wang et al., 2019), United States (e.g. McDowell et al., 2018) and Italy (e.g. Agostini and Nosella, 2017). Remaining countries presented in Figure 6 have lower numbers.

In the top journals, Journal of Intellectual Capital has a wide variety of national contexts, followed by Knowledge Management Research & Practice, while the remaining top journals have less than a dozen countries in the papers they published on the topic.

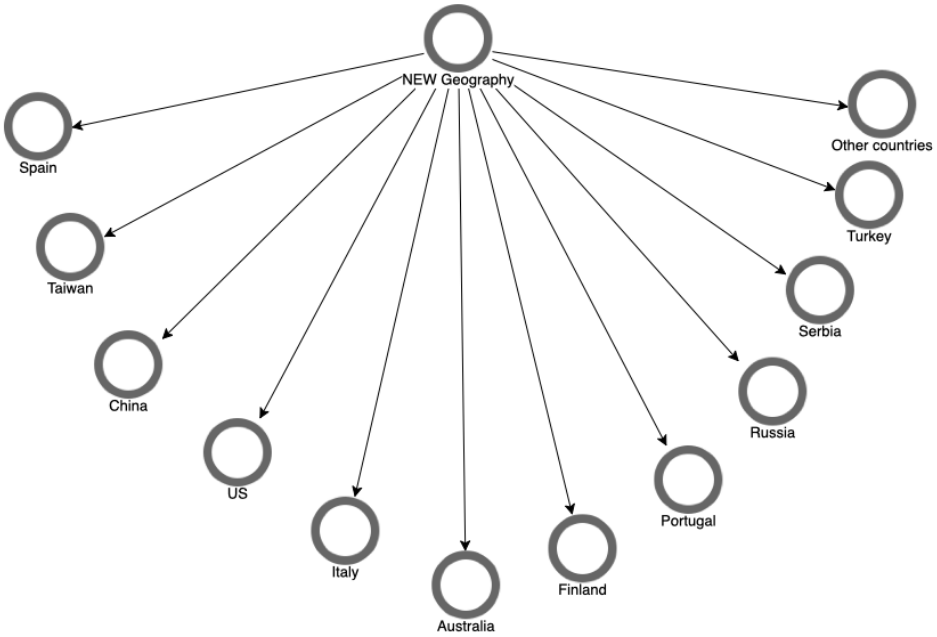


**Figure 6** Geographical contexts studied by the authors

Regarding the conceptual papers, they seldom mention the type of methodology used for developing the research, which we consider a weakness. Some studies use systematic literature reviews (e.g. Paoloni et al., 2020) while other use bibliometric studies (e.g. Cezanne et al., 2019, Martin-de Castro et al., 2019), however most of them do not clarify the search process used to select the sample for the analysis, nor the process used to analyse them. From the top journals, Journal of Business Research and International Journal of Human Resources Management did not have any conceptual paper in our sample.

Figure 7 presents a simplified version of the final coding structure in NVivo on the elements associated with Article Type.

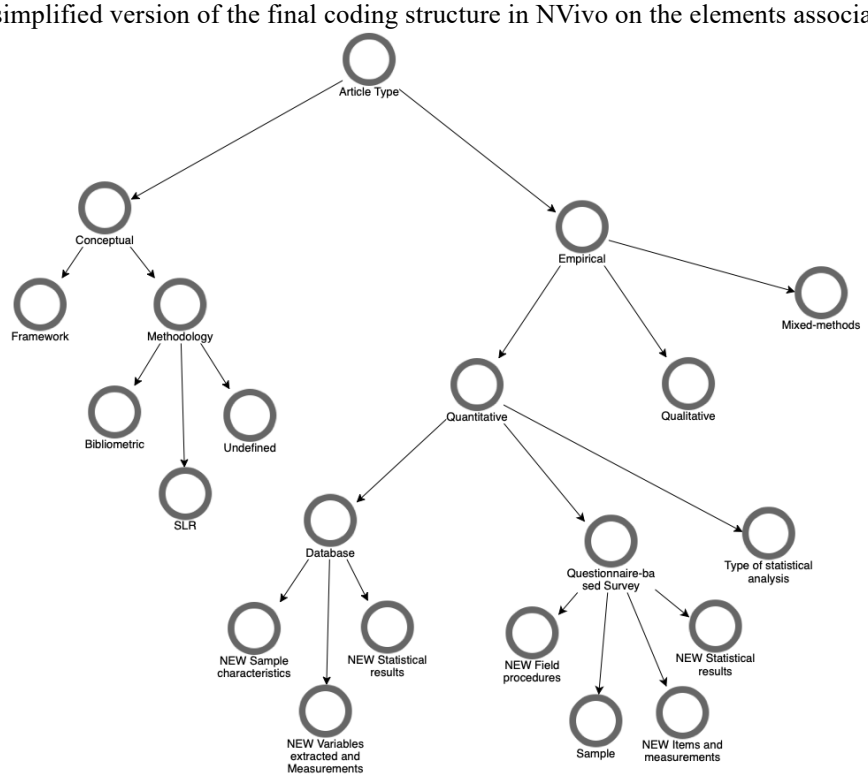


**Figure 7** Simplified version of the coding structure for Article Type

### *3.2.2. Research Goals*

The research goals are rather varied and encompass different topics. Some examples for quantitative papers (the majority in our sample) are presented in Table 1.

**Table 1** Example of research goals for the quantitative papers included in the sample

| ***Research goal*** | **Author** |
|---|---|
| "*impact of human, organisational and relational capital on RIP, whether the organisational and relational capital act as mediators in the relationship between human capital and RIP and whether organisational capital moderates the relationship between relational capital and RIP*[1]" | (Agostini and Nosella, 2017) |
| "*relationship between social capital and innovation through knowledge sharing and intellectual capital*" | |
| "*analyze the influence of the structural capital of SMEs in the capacity of innovation and organizational performance, in the context of an emerging country*" | (Allameh, 2018) |
| "*the role of human attributes, including knowledge, skills and motivation (i.e. traditional HC), learning capability (i.e. renewal capital) and entrepreneurial attitude (i.e. entrepreneurial capital) on innovation in high-tech versus low-tech companies*" | |
| "*reconstructs the measurement model of intellectual capital, expanding the concept to include both internal and external dimensions, both of which have the same three elements: human, structural, and relationship capital. To test the reliability and validity of this new model, we explore the impact of each element on innovation performance*" | (Beltramino et al., 2020) |
| "*examines how IC and KM affect each other, and also investigates their consequences, viewing three intermediate consequences (dynamic capabilities, efficiency, and innovativeness) to mediate their effects on firm performance.*" | |
| "*To analyse the impact of the company's technology innovation strategy on the three components of IC; To analyse the relations among the three components of IC; To analyse how IC impacts on technology innovation performance; To verify the influence of context-specific variables such as firm size, technology intensity, geographical area and experience of the company on the above-mentioned relations.*" | (Buenechea-Elberdin et al., 2017) |

Source: own elaboration

### *3.2.3. Intellectual Capital Components*

Regarding the Intellectual Capital Components, our initial coding framework contemplated human capital, which refers to the sum of employees' knowledge, competence, innovativeness, commitment and wisdom (Sardo and Serrasqueiro, 2018); structural capital, which can be seen as the basic structure of a firm that supports and empowers human capital (Bontis, 1998) and is considered the support infrastructure for the establishment and maintenance of relationships with key external stakeholders (Molodchik et al., 2014); and relational capital, which refers to the knowledge embedded in the identification, development and maintenance of external relationships (Bontis, 1999).

While this is still the dominant classification, we observed that authors use alternative classifications (see Figure 8), sometimes overlapping the dominant ones, which turn difficult the comprehension of the components and exactly what is being studied.

Although the classification of intellectual capital into the three components, human capital, structural capital and relational capital, is the dominant one, other components have been discussed recently in the literature with regards to the relationship between intellectual capital and innovation, such as organizational capital (Ahmed et al., 2019, Duodu and Rowlinson, 2019), innovation capital (Jardon et al., 2018, Ng et al., 2014), process capital (Cappellin, 2003, Phusavat et al., 2013), operational capital (Menor et al., 2007), customer capital (Chatzoglou and Chatzoudes, 2018, Verbano and Crema, 2016) and social capital (Ahmed et al., 2019, Martinez et al., 2019). Also, some authors split relational capital into external relational capital and internal relational capital (Jardon, 2015, Zaragoza-Saez et al., 2016), and trust capital (Oliveira et al., 2020).

The dominant classification of the intellectual capital components is also assumed by authors publishing in the two top journals with more paper publications, i.e., Journal of Intellectual Capital and Knowledge Management Research & Practice.

[1] RIP means Radical Innovative Performance

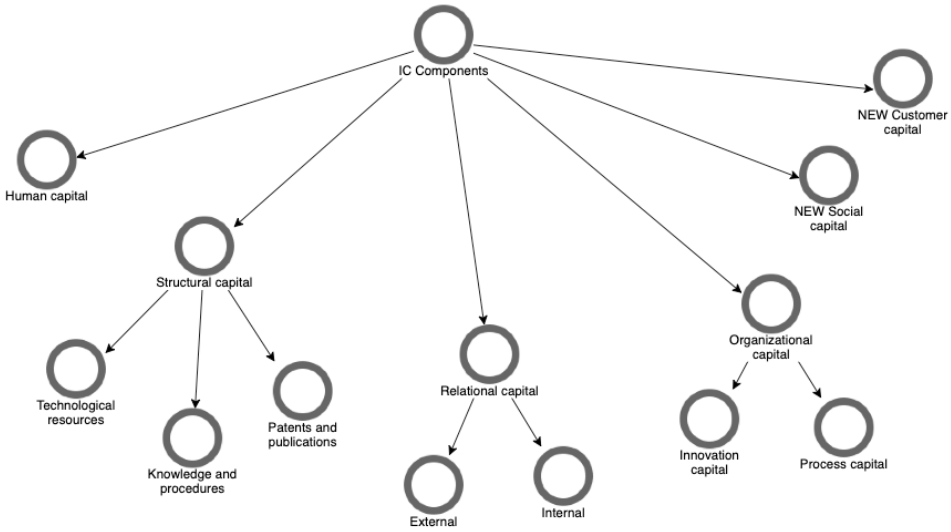


**Figure 8** Intellectual Capital Components: taxonomies used in the sample

### *3.2.4. Relationship between Intellectual Capital and Innovation*

The relationship between Intellectual Capital and Innovation was the key focus of our systematic literature review. After concluding the analysis, we identified different perspectives taken by the authors. It is difficult to identify a dominant approach and the field of study is, in our view, unconsolidated. More, differences have been identified by scholars according to the type of firm (new ventures, SMEs, incumbent, international), geographical context or industry.

Some authors will link intellectual capital to the innovative performance of the firm (e.g. Phusavat et al., 2013, McDowell et al., 2018, Wu et al., 2007), while others will consider all or specific intellectual capital components as antecedents of the development of innovative capabilities for the firm (e.g. Subramaniam and Youndt, 2005, Jardon, 2018) or influencing factors of the degree of firm innovativeness, which will eventually lead to innovative performance.

Barrena-Martinez et al. (2020), for instance, developed and tested a model relating human capital, structural capital, relational capital and absorptive capacity with open innovation success. Their results indicate that the three intellectual capital components have a positive impact on open innovation success, and the absorptive capacity plays a role in the relationships observed between human and structural capital.

Similarly, Oliveira et al. (2020) explored the relationship between knowledge sharing, intellectual capital, absorptive capacity, innovation and organizational performance and their results show that the relationship between intellectual capital and innovation is partially mediated by absorptive capacity. Relationships have been identified among all the analysed dimensions. Soo et al. (2017) also studied the role of intellectual capital in the development of absorptive capacity, which was seen to be mediating its relationship with innovation performance. Lazzarotti et al. (2015) had already studied in the past intellectual capital components as an antecedent to absorptive capacity, showing they enhanced innovative performance resulting from collaboration. In this line of research, Ahmed et al. (2019) studied the mediating role of potential and realized absorptive capacity in intellectual capital and business performance. Their results reveal that contrary to potential absorptive capacity, the realized absorptive capacity positively mediates the relationship between intellectual capital components and business performance. Furthermore, human capital and organizational capital had a major positive influence in this relationship.

Agostini and Nosella (2017) investigated the impact of intellectual capital components on radical innovation performance, and results show that human capital is directly associated with radical innovation performance, and that organizational and relational capital mediates the relationship between human capital and radical innovation performance.

Subramaniam and Youndt (2005) analysed the impact of intellectual components on incremental and radical innovative capabilities. Results show that human capital by itself negatively impacts on radical innovative capability but when interacted with social capital its effects are positive on radical innovative capability. Organizational capital positively influences incremental innovative capability.

Phusavat et al. (2013) take another perspective and conclude that innovation positively impacts intellectual capital, in contrast with other authors that indicate that it is intellectual capital that positively impacts innovation. This may indicate the

existence of endogeneity in the relationship between intellectual capital and innovation, which could be explored in future studies.

Jardon (2018) focused on SMEs and his results indicate that human capital indirectly affects innovativeness, and that the effect of relational capital is performed through the structural capital. McDowell et al. (2018) studied SMEs, as well, and their results indicate that innovativeness partially mediated the relationship between intellectual capital (specifically human capital and organizational capital) and firm performance.

Liu et al. (2020) used intellectual capital as mediator, studying the impact of organizational learning on the capacity for new service development. Their results show that intellectual capital plays a mediator role between organizational learning and new service development.

Duodu and Rowlinson (2019) studied the relationship between intellectual components and exploratory and exploitative innovation. Findings reveal that while social capital and organizational capital have a positive effect on both type of innovation, this effect was not verified for human capital.

Martinez et al. (2019) analysed the relationship between the diversity in alliance portfolios and innovation performance, and results suggest that human capital and social capital partially mediates this relationship.

### *3.2.5. Key Contributions*

A sample of the key contributions from the last three years is included in Table 2.

**Table 2** Example of key contribution from the papers published between 2018 and 2021

| ***Contributions*** | ***Author*** |
|---|---|
| "*the three dimensions of social capital, namely the structural, relational, and cognitive social capital, had positive effects on knowledge sharing; knowledge sharing had positive effects on three components of intellectual capital (human capital, structural capital and relational capital); and intellectual capital dimensions, which in turn, lead to innovation.*" | (Allameh, 2018) |
| "*both firm's technology level and type of innovation affect how IC influences innovation performance*" | (Buenechea-Elberdin et al., 2018a) |
| "*necessity of considering the technological level of the firm as a contingency variable affecting the IC–innovation relationship*" | (Buenechea-Elberdin et al., 2018b) |
| "*the role of human attributes, including knowledge, skills and motivation (i.e. traditional HC), learning capability (i.e. renewal capital) and entrepreneurial attitude (i.e. entrepreneurial capital) on innovation in high-tech versus low-tech companies*" | (Buenechea-Elberdin et al., 2017) |
| "*human capital generates relational capital. The relational capital needs structural capital to improve the innovativeness of subsistence small businesses.*" | (Jardon, 2018) |
| "*results suggest the presence of at least a partial mediating influence operated by innovation on human and organizational capital and firm performance. Alternatively, social capital does not significantly influence innovation levels and firm performance, in contrast with the results of most prior research. In addition, human capital positively influences both innovation and performance, although its effect on performance is partially mediated by innovation.*" | (McDowell et al., 2018) |
| "*potential absorptive capacity does not intervene in the relationship between the components of IC and those of business performance. However, realized absorptive capacity, measured as the transformation and exploitation of knowledge, played a positive mediating role in the relationship between the dimensions of IC and those of business performance. Social capital was also noted as a weak predictor of business performance, while human capital and organizational capital had a profound positive influence."* | (Ahmed et al., 2019) |
| *"Social capital (SC) and organisational capital (OC) each have significant positive linear effects on exploratory and exploitative innovation, while human capital (HC) has no direct linear effect on either innovation type. HC, however, affects both exploratory and exploitative innovation through SC or OC. None of the three IC dimensions has a significant quadratic effect on exploratory or exploitative innovation."* | (Duodu and Rowlinson, 2019) |
| *"findings from a sample of drug development trajectories show that human, structural, and social capital decrease the likelihood of discontinuation, indicating that NPD projects rich in intellectual capital take longer to be terminated"* | (Subramanian and van de Vrande, 2019) |
| *"the three IC constructs positively affect OI performance, with relational and human capital subject to diminishing returns."* | (Barrena-Martinez et al., 2020) |

| ***Contributions*** | ***Author*** |
|---|---|
| *"human, renewal, and entrepreneurial capital all positively affect organizational learning practices. Furthermore, organizational learning practices contribute to innovation performance on their own and in combination with the tested human-based intellectual capital dimensions."* | (Cabrilo and Dahms, 2020) |

Source: own elaboration

The intellectual capital components have been reported as key elements for firms' innovation performance. Previous studies have established interesting links between intellectual capital and various types of innovation, which opens new doors of opportunity to further investigate.

### *3.2.6. Future Research Directions*

Future research directions are not particularly innovative. Most authors suggest expanding the sample or including other industries and other geographical contexts. Also, alternative statistical methods are suggested, yet there are no specific elements worth mentioning in this point. Authors seem to be mostly focused on validating their models in different contexts.

That said, it may appear rather contradictory to focus on the validation, when the field is unconsolidated. One food for thought for the scholars in this field.

## 4. Conclusions

The relationship between Intellectual Capital and Innovation has become a focal area of study over recent decades, with scholars recognizing Intellectual Capital as a potential source of competitive advantage and a driver of innovative capabilities. This systematic literature review reveals that while there is a considerable body of work exploring this relationship, it remains an unconsolidated field, marked by divergent theoretical perspectives, methodological approaches, and empirical findings. The fragmented nature of research is particularly evident in the contrasting ways Intellectual Capital components are defined, measured, and linked to innovation outcomes.

Our findings suggest that the traditional components of Intellectual Capital - human, structural, and relational capital - are consistently associated with firms' innovative performance. However, this relationship is complex and multidimensional, often varying based on industry, firm size, and geographical context. For example, human capital is frequently cited as a primary driver of innovation, yet its effect on radical versus incremental innovation remains an area for further exploration. Structural capital, while often positioned as a support mechanism for human capital, has also been found to play a direct role in enabling absorptive capacity and innovation ambidexterity in firms. Relational capital, which provides access to external knowledge and collaborative opportunities, is crucial for open innovation and cross-firm knowledge sharing, yet its impact can vary significantly across sectors.

Despite these developments, the field is still short of longitudinal studies that could capture the dynamic nature of the Intellectual Capital - Innovation relationship over time. Moreover, many studies rely on quantitative methodologies, particularly cross-sectional surveys and regression analyses, which may overlook the nuanced ways in which Intellectual Capital contributes to innovation in different contexts. Future research could benefit from integrating qualitative methods, such as case studies, which allow for a deeper exploration of context-specific factors. Additionally, more studies incorporating a longitudinal perspective would enable researchers to observe how IC investments translate into sustained innovation outcomes over time, thereby offering more robust insights.

Furthermore, the study of mediating and moderating variables remains underdeveloped. While there is evidence suggesting that factors like absorptive capacity, organizational learning, and technological readiness play a role in shaping the Intellectual Capital - Innovation nexus, these variables are often examined in isolation. Future research should consider more integrative models that explore how these mediating factors interact with different Intellectual Capital components to influence innovation outcomes.

In conclusion, while significant strides have been made in understanding the Intellectual Capital - Innovation relationship, there is a need for more cohesive and comprehensive research frameworks. By advancing methodological rigor and exploring new theoretical angles, scholars can better elucidate the ways in which Intellectual Capital serves as an innovation stimulus. This ongoing research effort is essential for providing managers and policymakers with actionable insights that can guide Intellectual Capital investments and innovation strategies, ultimately supporting sustainable growth.

## Acknowledgements

This work was financially supported by /04058/2020 and UIDP/04058/2020), funded by national funds through FCT - Fundação para a Ciência e a Tecnologia, and by NECE-UBI, Research Centre for Business Sciences, funded by FCT – Fundação para a Ciência e a Tecnologia, IP, project UIDB/04630/2020.

## References

Agostini, L. & Nosella, A. 2017. Enhancing radical innovation performance through intellectual capital components. *Journal of Intellectual Capital,* 18**,** 789-806.

Ahmed, S. S., Guozhu, J., Mubarik, S., Khan, M. & Khan, E. 2019. Intellectual capital and business performance: the role of dimensions of absorptive capacity. *Journal of Intellectual Capital,* 21**,** 23-39.

Allameh, S. M. 2018. Antecedents and consequences of intellectual capital: The role of social capital, knowledge sharing and innovation. *Journal of Intellectual Capital,* 19**,** 858-874.

Barrena-Martinez, J., Cricelli, L., Ferrandiz, E., Greco, M. & Grimaldi, M. 2020. Joint forces: Towards an integration of intellectual capital theory and the open innovation paradigm. *Journal of Business Research,* 112**,** 261-270.

Beltramino, N. S., Garcia-Perez-De-Lema, D. & Valdez-Juarez, L. E. 2020. The structural capital, the innovation and the performance of the industrial SMES. *Journal of Intellectual Capital,* 21**,** 913-945.

Bontis, N. 1998. Intellectual capital: an exploratory study that develops measures and models. *Management Decision,* 36**,** 63-76.

Bontis, N. 1999. Managing organizational knowledge by diagnosing intellectual capital: framing and advancing the state of the field. *International Journal of Technology Management,* 18**,** 433-462.

Buenechea-Elberdin, M. 2017. Structured literature review about intellectual capital and innovation. *Journal of Intellectual Capital,* 18**,** 262–285.

Buenechea-Elberdin, M., Kianto, A. & Saenz, J. 2018a. Intellectual capital drivers of product and managerial innovation in high-tech and low-tech firms. *R & D Management,* 48**,** 290-307.

Buenechea-Elberdin, M., Saenz, J. & Kianto, A. 2017. Exploring the role of human capital, renewal capital and entrepreneurial capital in innovation performance in high-tech and low-tech firms. *Knowledge Management Research & Practice,* 15**,** 369-379.

Buenechea-Elberdin, M., Saenz, J. & Kianto, A. 2018b. Knowledge management strategies, intellectual capital, and innovation performance: a comparison between high- and low-tech firms. *Journal of Knowledge Management,* 22**,** 1757-1781.

Cabrilo, S. & Dahms, S. 2020. The Role of Multidimensional Intellectual Capital and Organizational Learning Practices in Innovation Performance. *European Management Review,* 17**,** 835-855.

Cabrilo, S., Dahms, S., Mutuc, E. B. & Marlin, J. 2020. The role of IT practices in facilitating relational and trust capital for superior innovation performance: the case of Taiwanese companies. *Journal of Intellectual Capital,* 21**,** 753-779.

Cappellin, R. 2003. Territorial knowledge management: towards a metrics of the cognitive dimension of agglomeration economies. *International Journal of Technology Management,* 26**,** 303-325.

Cezanne, C., Krafft, J. & Saglietto, L. 2019. A Survey of the Literature on Human Capital-Intensive Firms. *Journal of Economic Surveys,* 33**,** 458-480.

Chatzoglou, P. & Chatzoudes, D. 2018. The role of innovation in building competitive advantages: an empirical investigation. *European Journal of Innovation Management,* 21**,** 44-69.

Chen, J., Zhao, X. T. & Wang, Y. D. 2015. A new measurement of intellectual capital and its impact on innovation performance in an open innovation paradigm. *International Journal of Technology Management,* 67**,** 1-25.

Chen, M., Cheng, S. & Hwang, Y. 2005. An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital,* 6**,** 159-176.

Duodu, B. & Rowlinson, S. 2019. Intellectual capital for exploratory and exploitative innovation Exploring linear and quadratic effects in construction contractor firms. *Journal of Intellectual Capital,* 20**,** 382-405.

Engelman, R. M., Fracasso, E. M., Schmidt, S. & Zen, A. C. 2017. Intellectual capital, absorptive capacity and product innovation. *Management Decision,* 55**,** 474-490.

Fitzpatrick, M., Davey, J., Muller, L. & Davey, H. 2013. Value-creating assets in tourism management: applying marketing's service-dominant logic in the hotel industry. *Tourism Management,* 36**,** 86–98.

Guerrini, A., Romano, G. & Leardini, C. 2014. Does intellectual capital efficiency affect financial performance in the case of Italian listed firms. *International Journal of Learning and Intellectual Capital,* 11**,** 127-148.

Gurlek, M. 2021. Effects of high-performance work systems (HPWSs) on intellectual capital, organizational ambidexterity and knowledge absorptive capacity: evidence from the hotel industry. *Journal of Hospitality Marketing & Management,* 30**,** 38-70.

Hsu, I. C. & Sabherwal, R. 2012. Relationship between Intellectual Capital and Knowledge Management: An Empirical Investigation. *Decision Sciences,* 43**,** 489-524.

Jardon, C. F., Molodchik, M. & Paklina, S. 2018. Strategic behaviour of Russian companies with regard to intangibles. *Management Decision,* 56**,** 2373-2390.

Jardon, C. M. 2015. The use of intellectual capital to obtain competitive advantages in regional small and medium enterprises. *Knowledge Management Research & Practice,* 13**,** 486-496.

Jardon, C. M. 2018. Moderating effect of intellectual capital on innovativeness in Latin American subsistence small businesses. *Knowledge Management Research & Practice,* 16**,** 134-143.

Lazzarotti, V., Manzini, R. & Pellegrini, L. 2015. Is your open-innovation successful? The mediating role of a firm's organizational and social context. *International Journal of Human Resource Management,* 26**,** 2453-2485.

Liu, C. H., Gan, B. N., Luo, B. N. & Zhang, Y. C. 2020. Clarifying the effect of organization learning on service innovation: the mediating role of intellectual capital. *International Journal of Human Resource Management,* 31**,** 1207-1234.

Liu, Q. & Wong, K. P. 2011. Intellectual Capital and Financing Decisions: Evidence from the US Patent Data. *Management Science,* 57**,** 1861-1878.

Martin-De Castro, G., Diez-Vial, I. & Delgado-Verde, M. 2019. Intellectual capital and the firm: evolution and research trends. *Journal of Intellectual Capital,* 20**,** 555-580.

Martinez, M. G., Zouaghi, F. & Garcia, M. S. 2019. Casting a Wide Net for Innovation: Mediating Effect of R&D Human and Social Capital to Unlock the Value from Alliance Portfolio Diversity. *British Journal of Management,* 30**,** 769-790.

Mcdowell, W. C., Peake, W. O., Coder, L. & Harris, M. L. 2018. Building small firm performance through intellectual capital development: Exploring innovation as the "black box". *Journal of Business Research,* 88**,** 321-327.

Menor, L. J., Kristal, M. M. & Rosenzweig, E. D. 2007. Examining the influence of operational intellectual capital on capabilities and performance. *M&Som-Manufacturing & Service Operations Management,* 9**,** 559-578.

Molodchik, M. A., Jardon, C. M. & Bykova, A. A. 2019. The performance effect of intellectual capital in the Russian context Industry vs company level. *Journal of Intellectual Capital,* 20**,** 335-354.

Molodchik, M. A., Shakina, E. A. & Barajas, A. 2014. Metrics for the elements of intellectual capital in an economy driven by knowledge. *Journal of Intellectual Capital,* 15**,** 206-226.

Ng, A. W., Macbeth, D. & Southern, G. 2014. Entrepreneurial performance of early-stage ventures: dynamic resource management for development and growth. *International Entrepreneurship and Management Journal,* 10**,** 503-521.

Oliveira, M., Curado, C., Balle, A. R. & Kianto, A. 2020. Knowledge sharing, intellectual capital and organizational results in SMES: are they related? *Journal of Intellectual Capital,* 21**,** 893-911.

Paoloni, N., Mattei, G., Dello Strologo, A. & Celli, M. 2020. The present and future of intellectual capital in the healthcare sector A systematic literature review. *Journal of Intellectual Capital,* 21**,** 357-379.

Pedro, E., Leitao, J. & Alves, H. 2019. The intellectual capital of higher education institutions Operationalizing measurement through a strategic prospective lens. *Journal of Intellectual Capital,* 20**,** 355-381.

Phusavat, K., Comepa, N., Sitko-Lutek, A. & Ooi, K. B. 2013. Productivity management: integrating the intellectual capital. *Industrial Management & Data Systems,* 113**,** 840-855.

Ruiz-Jiménez, M. J. & Fuentes-Fuentes, M. 2018. Knowledge combination, innovation, organizational performance in technology firms. *Industrial Management and Data Systems,* 113**,** 523-540.

Sardo, F. & Serrasqueiro, Z. 2018. Intellectual Capital, Growth Opportunities, and Financial Performance in European Firms: Dynamic Panel Data Analysis. *Journal of Intellectual Capital,* 19**,** 747-767.

Saur-Amaral, I., Soares, R. & Proença, J. 2018. Business Model Innovation: Towards a Conceptual Framework. *Tourism Management Studies,* 14**,** 80-93.

Soo, C., Tian, A. W., Teo, S. T. T. & Cordery, J. 2017. Intellectual Capital-Enhancing HR, Absorptive Capacity, and Innovation. *Human Resource Management,* 56**,** 431-454.

Subramaniam, M. & Youndt, M. A. 2005. The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal,* 48**,** 450-463.

Subramanian, A. M. & Van De Vrande, V. 2019. The role of intellectual capital in new product development: Can it become a liability? *Journal of Operations Management,* 65**,** 517-535.

Ting, I. W. K., Ren, C., Chen, F. C. & Kweh, Q. L. 2020. Interpreting the dynamic performance effect of intellectual capital through a value-added-based perspective. *Journal of Intellectual Capital,* 21**,** 381-401.

Tranfield, D., Denyer, D. & Smart, P. 2003. Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management,* 14**,** 207-222.

Verbano, C. & Crema, M. 2016. Linking technology innovation strategy, intellectual capital and technology innovation performance in manufacturing SMEs. *Technology Analysis & Strategic Management,* 28**,** 524-540.

Wang, Y. Y., Su, X., Wang, H. & Zou, R. Y. 2019. Intellectual capital and technological dynamic capability: evidence from Chinese enterprises. *Journal of Intellectual Capital,* 20**,** 453-471.

Wu, S. H., Lin, L. Y. & Hsu, M. Y. 2007. Intellectual capital, dynamic capabilities and innovative performance of organisations. *International Journal of Technology Management,* 39**,** 279-296.

Zaragoza-Saez, P., Claver-Cortes, E., Marco-Lajara, B. & Ubeda-Garcia, M. 2016. Influence of intellectual capital upon knowledge creation in Spanish subsidiaries: an empirical study. *Knowledge Management Research & Practice,* 14**,** 489-501.

International Journal of Marketing, Innovation and Strategy

2024, 2(1): 17-24
10.34624/ijmis.v2i01.34522
ISSN: 2975-9226

# The use of digital marketing channels in the internationalization strategies of B2B companies:
## The perception of Portuguese managers

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**Abstract**

In the age of globalization, digital marketing is an essential strategy for companies in all business sectors. While the literature highlights the effectiveness of digital marketing in the Business-to-Consumer (B2C) market, its adoption and performance in Business-to-Business (B2B) markets require further research. This article aims to address this gap by exploring the ability of digital marketing to facilitate the internationalization of B2B companies. Two research objectives were established: (i) to understand the attitudes of those responsible for B2B companies regarding digital marketing in their internationalization strategy; (ii) to explore the preferences and effectiveness of digital marketing channels for entering and enhancing their presence in international markets. The study employed a qualitative methodology, conducting 15 semi-structured face-to-face interviews with managers of Portuguese B2B companies, whether they had international experience or were planning to expand internationally, followed by subsequent content analysis. The results indicate that some participants remain skeptical about the effectiveness of digital marketing in the B2B context, while others recognize the role of digital channels in attracting international customers, facilitating relationship management, and justifying new investments.

**Keywords:** Digital channels, Digital marketing, Internationalization strategy, Technology adoption.

**To cite this article:**

Filipe, S., Barbosa, B., & Amaral Santos, C. (2024). The use of digital marketing channels in the internationalization strategies of B2B companies: The perception of Portuguese managers. *International Journal of Marketing Innovation and Strategy,* Vol. 2, No. 1, pp. 17-24. doi.org/10.34624/ijmis.v2i01.34522.

**Received**: November 03, 2023; **Accepted**: October 25, 2024; **Published**: October 25, 2024

# 1. Introduction

Globalization and the internalization of enterprises have created important opportunities for market expansion (Burakovs′kyj, & Voloshyn, 2021; Gao et al., 2010). Specifically in the case of Portuguese companies, this opportunity for internationalization becomes more pressing, as the internal market is often not enough to ensure their survival or the desired profitability. In this context, companies often choose to enter foreign markets to achieve their strategic and marketing objectives. However, an internationalization process is something much more complex than a simple entry into the international market (Nurfarida et al., 2022), and it involves taking some risks and investing in resources (Eriksson et al., 2015). Not all entrepreneurs will be willing to take on the risks inherent in internationalization and/or will have the necessary resources for this process. In this sense, digital marketing can be a way to minimize obstacles in this process and leverage the effectiveness of internationalization strategies.

Digital tools combined with traditional marketing lead to better business performance, so the potential contributions and benefits are widely recognized (e.g., Fortes et al., 2016; Lee & Falahat, 2019; Lee et al., 2019). In this context, digital marketing is an essential strategy for companies in all business sectors, including B2B markets, as demonstrated by contributions in the literature (e.g., Chong et al., 2016; Lee & Falahat, 2019; Watson et al., 2018) and may facilitate and/or enhance internationalization strategies (Limani & Broja, 2020), playing an important role in the survival, development, and success of small and new companies and new investments in the markets (Hervé et al., 2020; Hervé et al., 2021; Teixeira et al., 2018).

While the literature highlights the effectiveness of digital marketing for the Business to Consumer (B2C) market, its adoption and performance in Business to Business (B2B) markets need further research. In addition, most studies on the contributions of digital marketing in enhancing internationalization are focused on small and medium-sized enterprises. This article aims to fill these gaps by exploring the ability of digital marketing to leverage the internationalization strategies of B2B companies. Thus, two research objectives were established: (i) to understand the attitudes of those responsible for B2B companies towards digital marketing in their internationalization strategies; (ii) to explore the preference and effectiveness of digital marketing channels to enter and enhance the presence in international markets.

This article addresses a topic that is still little considered in the academic literature, as it analyzes the use of digital marketing to promote internationalization in the B2B context and the attitudes and difficulties faced by companies that neglect digital marketing when approaching global markets. The insights of B2B managers offer empirical evidence that can inspire other managers and provide relevant suggestions for future research.

This article consists of 4 main sections. After this introduction, the second section is dedicated to the literature review, offering a synthesis of the most relevant contributions to internationalization strategies and, in particular, the adoption and benefits of digital marketing by B2B companies for this purpose. Subsequently, section 3 describes the methodology conducted by the authors in conducting the empirical study and section 4 presents and discusses the main results of the empirical study. The article culminates in section 4 with the conclusion, identifying its main limitations and suggesting possibilities for future research.

# 2. Literature review

The literature review focuses on two main subtopics: (i) opportunities offered by the internet in internationalization strategies; (ii) the adoption and contributions of digital marketing in B2B companies.

## *2.1. Opportunities offered by the internet in internationalization strategies*

The internationalization of companies consists of their involvement in international markets, operating within the foreign market. This internationalization process can be carried out in several ways: exporting, licensing, joint ventures, and establishment of subsidiaries, among others (Johanson & Vahlne, 1990). Small and Medium-sized Enterprises (SMEs), especially in developed regions, often internationalize to gain knowledge, adopt innovative practices, and improve their overall performance (Boermans & Roelfsema, 2016). According to Cuervo-Cazurra et al. (2015), a company's international expansion is driven by four reasons: to sell more, in which the company exploits the existing resources at home and obtains better conditions from the host country; buy better, in which the company exploits existing resources abroad and avoids poor conditions in the country of origin; upgrade, in which the company exploits new resources, and obtains better conditions from the host country; and escape, in which the company exploits new resources and avoids the poor conditions of the country of origin.

The diffusion of the internet, the development of information and communication technologies, and advances in digital technology facilitate the internationalization process of companies in various areas (Bell & Loane, 2010; Jean & Kim, 2020; Ramonienė et al., 2015). The internet enables all companies, in the B2B and B2C context, and from its inception, to improve their activities in the international market and explore new international opportunities. This has the advantage of allowing companies to reach new markets/customers, constituting a complementarity or even an alternative to physical presence (Sinkovics et al., 2013), making it possible to reduce some costs and risks inherent to internationalization. Nowadays, any company that intends to start and develop an internationalization process needs to understand the benefits and potential of the digitalization (Hervé et al., 2020; Hervé et al., 202; Lee et al, 2019; Limani & Broja, 2020).

The internet facilitates the execution of many day-to-day activities of companies, and its use as a strategic tool has increased

strongly (Pezderka & Sinkovics, 2011). The widespread use of the Internet and the advancement in digital technology has provided the opportunity for companies to leverage their information processing resources and be globally connected (Sinkovics et al., 2013). According to Bell and Loane (2010), if initially the internet was described by the academic literature as an enabler for the internationalization of companies, allowing them to establish a global presence, obtain more information about international markets and communicate effectively with these markets, more recently the literature identifies it as a creator and driver of innovative international opportunities (Bell & Loane, 2010). Over time, the academic literature has developed research on the use of the internet and Web 2.0 for the internationalization of companies. Some more theoretical approaches seek to propose research models (e.g., Alrawi, 2007; Berthon et al., 2012; Buttriss & Wilkinson, 2003; Burakovs′kyj, & Voloshyn, 2021). At the same time, other authors have conducted empirical studies with the application of qualitative methodologies (e.g., Bell & Loane, 2010; Etemad et al., 2010; Mathews & Healy, 2007; Ojala et al., 2018) and quantitative methodologies (e.g., Bianchi & Mathews, 2016; Kim, 2019; Lal, 2004; Moon & Jain, 2007; Mostafa, et al., 2005; Sinkovics et al., 2013) to better understand this phenomenon.

The deliberate use of information and communication technologies (ICT) for internationalization purposes is called "internetalization" by Bell et al. (2001) and "active online internationalization" by Yamin and Sinkovics (2006). Etemad, et al., (2010) state that "internetization" is a necessary condition for internationalization in the emerging economy, considering it as a process of adoption, diffusion and development of internet-based technologies that has been increasingly used for internationalization, especially by innovative companies.

## *2.2. The adoption and contributions of digital marketing in B2B companies*

Digital marketing is a new marketing approach boosting traditional marketing with digital elements (Järvinen et al., 2012), namely websites, social networks, online stores, mobile applications, among others. These elements stand out as channels of communication with the customer and also as sales channels, and for allowing companies to reach their customers quickly. More recently, and as Puspaningrum (2020) points out, marketing has turned to social media, given that on these platforms companies establish closer relationships with the target audience, allowing them to influence the consumer's purchase decision-making processes and generate word-of-mouth communication. According to Torres (2012), for companies to be able to invest and define strategies, they have to previously identify the digital assets that their target audiences use the most, that is, the set of online points of contact between the company and its target audience.

Digitalization, and especially social media, has had important consequences for companies, products and brands (Muntinga et al., 2011). Digital marketing offers opportunities for SMEs to attract new customers and retain existing ones more effectively, as well as developments in digitalization, which, like social media, are positively related to the growth, performance and competitiveness of these companies (Taiminen & Karjaluoto, 2015). Thus, it becomes evident that digital marketing is indispensable nowadays for any type of business, namely in B2B companies (Angelos et al.., 2017). However, there are still differences in academic research and at the business level between B2B and B2C contexts.

Most of the academic literature focuses its studies on B2C companies (Iankova et al., 2019), highlighting themes such as customer acquisition, brand building, and purchase/post-purchase, while the academic literature in the B2B context is still scarce (Salo, 2017), being essentially directed towards segmentation, customer engagement, content provision, and lead nurturing (Vieira et al., 2019).

In the business environment, it is also noted that there is still some resistance to the adoption of digital marketing by B2B companies. The managers of these companies use social listening insufficiently in marketing activities, a practice that would be peculiarly advantageous both in the identification of business opportunities and in the recognition of the strengths and weaknesses of brands (Angelos et al., 2017). These managers still have some uncertainty about the relevance of some digital marketing tools and consider their adoption as more challenging and demanding compared to B2C companies (Iankova et al., 2019).

Digital marketing is an essential strategy for companies in all business sectors, including B2B markets, as demonstrated by recent contributions in the literature (e.g., Chong et al., 2016; Lee & Falahat, 2019; Watson et al., 2018) and may facilitate and/or enhance internationalization strategies. However, some studies show that companies do not use the full potential of new digital tools and are consequently not benefiting from the opportunities they offer (Taiminen & Karjaluoto, 2015).

Despite the clear recognition of the opportunities offered by the internet in internationalization processes and the positive indicators of the importance of digital channels in B2B companies, there are still some barriers at the business level that need further study and that require academic research in this context.

# 3. Methodology

This study adopted a qualitative methodology, through in-depth interviews with 15 managers of Portuguese B2B companies who had international experience or intended to expand internationally. The methodology was considered the most appropriate, meeting the defined objectives. In addition, it has been found that this methodology has been used in studies on similar topics conducted in other countries (e.g., Taiminen & Karjaluoto, 2015).

For this purpose, non-probabilistic convenience sampling was used. However, it was ensured that the sample was diversified with regard to the company's B2B business sector, size expressed by the number of employees and seniority in the Portuguese market (from startups to companies established in the market for several decades). Regarding the profile of the interviewees, they held management positions in companies (e.g., General Manager, Marketing Director, Sales Director, International Sales Director) and had significant professional experience. Table 1 presents the characterization of the sample.

These interviews were conducted face-to-face during October and November 2018 and recorded in audio format with the informed consent of the participants. Subsequently, the interviews were transcribed in full and the data were qualitatively analyzed based on content analysis.

*Table 1 – Sample characterization*

| Enterprise | Sector B2B | Company Seniority (years old) | Number of collaborators | Internationalization | Digital Presence |
|---|---|---|---|---|---|
| E#1 | Metalworking | 25-49 | >100 | 27 years old | Website only |
| E#2 | Mould production | 6-24 | > 100 | 16 years | Website & Facebook |
| E#3 | Industrial Automation | < 5 | < 10 | Since the beginning | Website & Facebook |
| E#4 | Mirrors | 25-49 | 50-100 | 24 years old | Website & Facebook |
| E#5 | Lighting Products | < 5 | 50-100 | 1 year | Website, LinkedIn & Facebook |
| E#6 | Research & Development | < 5 | < 10 | In preparation | Website & Blog |
| E#7 | Tube Transformation | 25-49 | >100 | Since the beginning | Site, Blog, Facebook, LinkedIn, Twitter, Instagram & Pinterest |
| E#8 | Cleaning products | 25-49 | <10 | In preparation | Website & Facebook |
| E#9 | Computer science | 6-24 | >100 | 10 years | Website only |
| E#10 | Technology Products/Services | 6-24 | 10 to 50 | In preparation | Site, Facebook & LinkedIn |
| E#11 | Lighting Products | < 5 | 50-100 | Since the beginning | Website, Facebook & Instagram |
| E#12 | Ceramic products | 25-49 | > 100 | Since the beginning | Website only |
| E#13 | Ceramic products | 6-24 | >100 | Since the beginning | Website, Facebook, Youtube & Instagram |
| E#14 | Assembly and painting services | 6-24 | 50-100 | 7 years | Website only |
| E#15 | Fish Processing | >50 | >100 | In preparation | Site, Facebook, LinkedIn & Instagram |

*Source: Own elaboration, 2023*

Concerning the characterization of the sample in terms of international presence, as previously mentioned, most B2B companies that participated in this study operate in international markets, with five companies having an international presence since the beginning of their activity (E#3, E#7, E#11, E#12 and E#13), and four companies are still in the preparation phase of the internationalization process (E#6, E#8, E#10 and E#15). Regarding the digital presence, four of the fifteen companies have only the institutional website and do not have any presence on social networks (E#1, E#9, E#12 and E#14). The most common social networking platform used by participants is Facebook (used by 10 companies), followed equally by LinkedIn and Instagram (each used by 4 companies).

# 4. Results

This section presents the results obtained from the thematic analysis of the interviews' content and is subdivided into two main subtopics: (i) perceptions regarding the digital presence of B2B companies, (ii) the effectiveness of digital marketing in their internationalization strategies.

## *4.1. Insights into the digital presence of B2B companies*

As previously identified, four of the companies that participated in this study stand out for the fact that they are digitally present and have only the institutional website, namely because they consider that social networks are only suitable for B2C companies.

Still, this opinion was also shared by managers of companies with some presence on social networks, who considered that this type of presence was not an asset for B2B businesses:

> *"We have social networks even though we don't give them much importance. (...) Social networks are aimed at the final audience (...) and we don't target [that audience]."* (E#4)

In some cases, perceptions of social media have been particularly negative. For example, the respondent from Company 14 considered that these are, in general, dangerous for brands, as they quickly disseminate any negative feedback, which can seriously affect their reputation:

> *"I believe that a company's presence on a social network does not offer any advantages, it brings disadvantages, (...) Bad news, to say the least, in seconds you can tear down a brand, you know? In seconds he can knock down a mark."* (E#14)

However, the vast majority of the companies participating in this study have a presence on social media, especially Facebook. For these companies, it is unthinkable that digital channels should not be used in the daily life of the company:

> *"It's crucial, there's no other possibility, nowadays the dynamics of the old salesperson who walks with the folder from house to house or client to client has ceased to exist, the first research and 90% of the work is on the internet, .... For example, those in the purchasing department that's what they do. They are locked in an office researching on the internet and contacting various suppliers worldwide, just like we demand from our promoters, you have the whole world to explore, we also demand that from purchases, we have the whole world to explore."* (E#7)

These results are in line with the literature, which recognizes that digital marketing is essential for the development of their businesses (e.g., Chong et al., 2016; Jean & Kim, 2020; Lee & Falahat, 2019; Watson et al., 2018). However, only a few participants identify the potential of social networks to establish closer relationships with target audiences (Puspaningrum, 2020), confirming that investment in these strategies depends on the prior identification of the platforms used by target audiences (Torres, 2012).

## *4.2. Effectiveness of digital marketing in internationalization strategies*

The main form of internationalization used by the participants' companies was exports and direct investment.

Some participants considered that the internet does not offer any benefit for the internationalization strategy (e.g., E#9), and several assumed that they have doubts about the advantages of digital marketing for the internationalization of companies (e.g., E#1, E#10). However, several participants considered that having a website and presence in social media marketing fosters and enhances internationalization, both by traffic to the website (E#6) and by facilitating contact with current and potential customers (E#5).

Indeed, the main advantages of digital marketing for internationalization, as highlighted by the participating companies, are related to the speed and ease of contact with external partners (suppliers and/or customers), as illustrated in the following statement:

> *"Because it allows you to get in touch with companies in an easier way, whether it's by Skype interview, videoconferences, or information sending, exchanging information. It is one of the ways that can make business easier*." (E#5)

Other participants added that digital tools are key to attracting new international customers and retaining current ones:

> *"The website is obviously one of the biggest tools we have to be able to keep in touch with our customers, attract new customers... It's the first impression for someone who is out and has no way to contact us, it's key."* (E#11)

Other opinions also highlight the ability to leverage internationalization processes and minimize barriers:

> *"There are many international customers who have met us through the website. That's going to power everything up. If we have information such as who we work with, highlighting that you will be working more and more internationally, the more likely international companies are to contact you."* (E#12)

These results are in agreement with Taiminen and Karjaluoto (2015) and Angelos et al. (2017) who highlight the positive impacts of the competitiveness and performance of companies provided by digital channels, facilitating contact with new and existing customers. The results indicate that such advantages are also evident in contexts of internationalization. However, as also pointed out by the literature, some resistance to the adoption of digital channels is evident (Angelos et al., 2017), and it is possible to infer that many Portuguese SMEs are not taking advantage of the full potential of digital tools, as suggested by Taiminen and Karjaluoto (2015), namely because they do not understand their adaptability to the B2B context, which limits their adoption and investment in these strategies.

## 4. Conclusion

This article explores a topic that is still little considered in the academic literature, as it analyzes the use of digital marketing to promote internationalization in the B2B context and the attitudes and difficulties faced by companies that neglect digital marketing when approaching global markets.

The results show that some participants are skeptical about the effectiveness of digital marketing in the B2B context, but most recognize the role of digital channels in attracting international customers, facilitating relationship management and justifying new investments.

From this study, it is possible to highlight two types of implications for management. For B2B companies that intend to develop internationalization channels, it is recommended to study both the preferences of their current and potential customers regarding digital communication channels, as well as extra care to identify which sources of digital information and the platforms usually used by them to collect information and increase their knowledge about potential suppliers and alternatives of products and services. In this way, it will be possible to identify which digital marketing platforms and tools can make sense to approach the target audiences. For professionals and companies in consulting, communication, and other services related to the use of digital channels, it is recommended that they clearly communicate the benefits of digital channels for B2B companies, namely in internationalization processes.

The insights of B2B managers provide empirical evidence, which can inspire other managers and offer relevant suggestions for future research. With information and concrete examples of performance and results obtained through digital channels, it will be possible to address the fears and skepticism of those responsible for B2B companies regarding digital marketing strategies for their business sectors.

Even though it is a convenience sample, not representative of Portuguese companies, the results of this study allowed us to obtain interesting clues that can help entrepreneurs who intend to explore the potential of digital marketing to expand their business to international markets, and provide other researchers interested in the subject with possible topics that could be the target of further research.

As more empirical studies on digital marketing strategies for B2B companies are essential, it is urgent to address issues related to their effectiveness, namely in attracting leads, the impact of digital communication, including, through social networks, the B2B purchase decision process, and the effects of interaction with B2B customers on their satisfaction and loyalty.

## Acknowledgements

This work was financially supported by the Research Unit on Governance, Competitiveness and Public Policies (UIDB/04058/2020) + (UIDP/04058/2020), funded by national funds through FCT - Fundação para a Ciência e a Tecnologia. This article was presented and included in the proceedings of ICIEMC - International Conference on Innovation and Entrepreneurship in Marketing and Consumer Behaviour.

## References

Alrawi, K. (2007). The internet and international marketing. *Competitiveness Review: An International Business Journal*, 17(4), 222-233.

Angelos, J., Davis, P., & Gaylard, M. (2017). Make music, not noise: Achieve connected growth with ecosystem orchestration. *Accenture*. Retrieved from https://www.accenture.com/_acnmedia/PDF-60/Accenture-Strategy-B2B-Customer-Experience-PoV.pdf

Bell, J., & Loane, S. (2010). 'New-wave'global firms: Web 2.0 and SME internationalisation. *Journal of Marketing Management*, 26(3-4), 213-229.

Bell, J., Deans, K., Ibbotson, P., & Sinkovics, R. (2001). Towards the “internetalization” of international marketing education.

*Marketing Education Review*, *11*(3), 69-79.
Berthon, P. R., Pitt, L. F., Plangger, K., & Shapiro, D. (2012). Marketing meets Web 2.0, social media, and creative consumers: Implications for international marketing strategy. *Business Horizons*, 55(3), 261-271.
Bianchi, C., & Mathews, S. (2016). Internet marketing and export market growth in Chile. *Journal of Business Research*, 69(2), 426-434.
Boermans, M. A., & Roelfsema, H. (2016). Small firm internationalization, innovation, and growth. *International Economics and Economic Policy*, 13(2), 283-296.
Burakovs′kyj, I., & Voloshyn, A. (2021). Theoretical approaches of SME internationalization. *Journal of Applied Management and Investments*, 10(1), 1-9.
Buttriss, G., & Wilkinson, I. (2003). Towards a process Model of Internetalisation: Becoming an e Business. Paper presented at the *19th Annual IMP Conference*, Lugano, Switzerland.
Chong, W. K., Bian, D., & Zhang, N. (2016). E-marketing services and e-marketing performance: the roles of innovation, knowledge complexity and environmental turbulence in influencing the relationship. *Journal of Marketing Management*, *32*(1-2), 149-178.
Cuervo-Cazurra, A., Narula, R., & Un, C. A. (2015). Internationalization motives: Sell more, buy better, upgrade and escape. *The Multinational Business Review*, 23(1), 25-35.
Eriksson, K., Johanson, J., Majkgård, A., & Sharma, D. D. (2015). Experiential knowledge and cost in the internationalization process. In *Knowledge, Networks and Power* (pp. 41-63). Palgrave Macmillan: London.
Etemad, H., Wilkinson, I., & Dana, L. P. (2010). Internetization as the necessary condition for internationalization in the newly emerging economy. *Journal of International Entrepreneurship*, 8(4), 319-342.
Fortes, N., Pereira, J. H., & da Costa, J. F. (2016). The adoption of cloud computing services by Portuguese companies: the impact of marketing efforts. *RISTI - Iberian Journal of Information Systems and Technologies*, 18, 33-49.
Gao, G. Y., Murray, J. Y., Kotabe, M., & Lu, J. (2010). A "strategy tripod" perspective on export behaviors: Evidence from domestic and foreign firms based in an emerging economy. *Journal of International Business Studies*, 41(3), 377-396.
Hervé, A., Schmitt, C., & Baldegger, R. (2021). Internationalization and digitalization: Applying digital technologies to the internationalization process of small and medium-sized enterprises. *Technology Innovation Management Review*, 10(7), 28-40.
Hervé, A., Schmitt, C., & Baldegger, R. 2020. Digitalization, Entrepreneurial Orientation and Internationalization of Micro-Small- and Medium-Sized Enterprises. *Technology Innovation Management Review*, 10(4), 5-17.
Iankova, S., Davies, I., Archer-Brown, C., Marder, B., & Yau, A. (2019). A comparison of social media marketing between B2B, B2C and mixed business models. *Industrial Marketing Management*, *81*, 169-179.
Järvinen, J., Tollinen, A., Karjaluoto, H., & Jayawardhena, C. (2012). Digital and social media marketing usage in B2B industrial section. *Marketing Management Journal*, 22(2), 102-117.
Jean, R. & Kim, D. (2020). Internet and SMEs' internationalization: The role of platform and website. *Journal of International Management,* 26(1), 1-14.
Johanson, J., & Vahlne, J.-E. (1990). The mechanism of internationalisation. *International Marketing Review*, 7(4), 11-24.
Kim, D. (2020). Internet and SMEs' internationalization: The role of platform and website. *Journal of International Management*, 26(1), 100690.
Lal, K. (2004). E-business and export behavior: evidence from Indian firms. *World Development*, 32(3), 505-517.
Lee, Y. Y., & Falahat, M. (2019). The Impact of Digitalization and Resources on Gaining Competitive Advantage in International Markets: Mediating Role of Marketing, Innovation and Learning Capabilities. *Technology Innovation Management Review*, *9*(11), 26-38.
Lee, Y. Y., Falahat, M., & Sia, B. K. (2019). Impact of Digitalization on the Speed of Internationalization. *International Business Research*, 12(4), 1-11.
Limani, Y., & Broja, Z. B. (2020). The Impact of Digital Technologies on Business Internationalization Process. *UB T International Conference.* 429, 80-90.
Mathews, S. W., & Healy, M. J. (2007). The Internet and information capability reduces perceived risk of internationalisation: An Australian SME perspective. *International Journal of Organisational Behaviour*, 12(1), 71-87.
Moon, B.-J., & Jain, S. C. (2007). Determinants and Outcomes of Internet Marketing Activities of Exporting Firms. *Journal of Global Marketing*, 20(4), 55-71. doi:10.1300/J042v20n04_05
Mostafa, R. H. A., Wheeler, C., & Jones, M. V. (2005). Entrepreneurial orientation, commitment to the Internet and export performance in small and medium sized exporting firms. *Journal of International Entrepreneurship*, 3(4), 291-302. doi:10.1007/s10843-006-7857-9
Muntinga, D. G., Moorman, M., & Smit, E. G. (2011). Introducing COBRAs: Exploring motivations for brand-related social media use. *International Journal of advertising*, *30*(1), 13-46.
Nurfarida, I. N., Mukhlis, I., & Danardana Murwani, F. (2022). The internationalization of SMEs: Motives and barriers. *International Journal of Current Science Research and Review*, 5(5), 1749-1756.

Ojala, A., Evers, N., & Rialp, A. (2018). Extending The International New Venture Phenomenon To Digital Platform providers: A longitudinal case study. *Journal of World Business*, 53(5), 725-739.

Pezderka, N., & Sinkovics, R. R. (2011). A conceptualization of e-risk perceptions and implications for small firm active online internationalization. *International Business Review*, 20(4), 409-422.

Puspaningrum, A. (2020). Social Media Marketing and Brand Loyalty: The Role of Brand Trust. *Journal of Asian Finance, Economics and Business*, 7(12), 951–958.

Ramonienė, L., Šukevičiūtė, L., & Škudienė, V. (2015). Internationalization enabled by internetization: E-marketing approach. *Organizations Management: Systematic Research*, 74, 85.

Salo, J. (2017). Social media research in the industrial marketing field: Review of literature and future research directions. *Industrial Marketing Management*, 66, 115-129.

Sinkovics, N., Sinkovics, R. R., & "Bryan" Jean, R.-J. (2013). The internet as an alternative path to internationalization? *International Marketing Review*, 30(2), 130-155.

Taiminen, H. M., & Karjaluoto, H. (2015). The usage of digital marketing channels in SMEs. *Journal of Small Business and Enterprise Development*, 22(4), 633-651.

Teixeira, S., Martins, J., Branco, F., Gonçalves, R., Au-Yong-Oliveira, M., & Moreira, F. (2018). A theoretical analysis of digital marketing adoption by startups. In: Mejia J., Muñoz M., Rocha Á., Quiñonez Y., Calvo-Manzano J. (eds) *Trends and Applications in Software Engineering*. CIMPS 2017. Advances in Intelligent Systems and Computing, vol 688. Springer, Cham.

Torres, C. (2012). Digital marketing: how to influence the consumer in the virtual environment. *GV Executive,* 11*, 58–61.*

Vieira, V. A., De Almeida, M. I. S., Agnihotri, R., & Arunachalam, S. (2019). In pursuit of an effective B2B digital marketing strategy in an emerging market. *Journal of the Academy of Marketing Science*, 47(6), 1085-1108.

Watson Iv, G. F., Weaven, S., Perkins, H., Sardana, D., & Palmatier, R. W. (2018). International market entry strategies: Relational, digital, and hybrid approaches. *Journal of International Marketing*, *26*(1), 30-60.

Yamin, M., & Sinkovics, R. R. (2006). Online internationalisation, psychic distance reduction and the virtuality trap. *International Business Review*, 15(4), 339–360.

International Journal of Marketing, Innovation and Strategy

2024, 2(1): 25-36
10.34624/ijmis.v2i01.35055
ISSN: 2975-9226

# The consumer behaviour applied to luxury furniture and decor:

## An analysis of the Portuguese scenario

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**Abstract**

This article aims to analyze the receptivity and motivations of Portuguese consumers for the acquisition of luxury furniture and decoration. Based on a literature review and the adoption of a positivist paradigm, data were collected through the application of an online questionnaire survey between November 2021 and January 2022, to a non-probabilistic convenience sample using the snowball technique, applied to the Portuguese population. The final sample consisted of 402 individuals over the 18-years old of Portuguese nationality. The collected data were quantitatively analyzed using the IBM SPSS Statistics software (version 28.0.0.0). During the analysis were used descriptive and inferential statistical techniques. A total of 11 hypotheses were tested in the conceptual model. The inferential analysis showed a statistically significant correlation to support a total of 8 of the 11 hypotheses formulated in the research model. The results highlight the impact and importance that luxury brands have on consumer emotions, transmitting happiness, authenticity, and sophistication, translating into the consumer's desire to be associated with them. In summary, sensations play a central role in the entire process of buying luxury goods and establishing a relationship between consumers and luxury brands. The main limitation of this study was the sample approach used, that do not allow a generalization to the Portuguese population. For future research, it is recommended to expand this study to other countries, encompassing an international approach.

**Keywords:** consumer behaviour; consumer decision-making process; luxury; luxury goods; luxury brands.

**To cite this article:**

Pé d'Arca, G. S. T. & Filipe, S. (2024). The consumer behaviour applied to luxury furniture and decor: An analysis of the Portuguese scenario. *International Journal of Marketing Innovation and Strategy,* Vol. 2, No. 1, 25-36. doi:/10.34624/ijmis.v2i01.35055.

**Received**: December 19, 2023; **Accepted**: May 27, 2024; **Published**: June 5, 2024

# 1. Introduction

The demand for luxury goods has been gradually increasing, as consumers can enjoy higher incomes and more consumption opportunities due to the conditions of the modern era (Husic & Cicic, 2009). Luxury has shifted from a negative notion, harming public virtue, to an essential promotion of consumption.

In recent years, the concept of luxury has expanded from materialism to time and passion, becoming more accessible. As consumers satisfy their feelings of pleasure and gratification through luxury goods, they also enhance their allure to consumers (Yeoman, 2011). It is noteworthy that luxury goods are no longer exclusively available to the wealthiest social classes, which previously held a significant part of their monopoly. This is due to the introduction of luxury goods for the middle and upper-middle classes (Savitha and Sathyanarayan, 2014, as cited in Bilge, 2015), fueling the growth of the luxury sector (Kapferer & Laurent, 2016; Paul, 2019).

Focusing on luxury furniture and decoration, these consist of movable pieces showcasing the best of elite quality and design associated with a particular period. Often crafted in metal, glass, and wood, they add aesthetic value to environments such as residences, hotels, offices, and other interior or exterior areas. Luxury furniture contributes to a luxurious lifestyle and includes elegant, sumptuous, and indulgent elements (Allied Market Research, 2022; Mordor Intelligence, 2021).

It is important to identify and understand everything that consumers value and seek when purchasing luxury goods, with a particular focus on luxury furniture and decoration. In this context, this study has two research objectives: (1) to analyze the factors influencing the consumer purchasing behavior of luxury furniture and decoration; (2) to examine the entire process of consumer interaction with luxury brands.

This article is structured into five sections, beginning with the present introduction. The second section provides a literature review on the topic, and the third section describes the methodology. The fourth section is dedicated to presenting the results, and the article culminates in the fifth section with the discussion and conclusion.

# 2. Literature Review

## *2.1. The concepts: Luxury and luxury goods*

Luxury is an extremely challenging concept to define and has various interpretations (Vigneron & Johnson, 1999; Yeoman, 2011). The meaning of luxury varies across time and space. What may be considered luxurious to one person could be deemed commonplace to another (Nwankwo et al., 2014), depending on the individual's experiences and needs (Wiedmann et al., 2007). According to Vigneron and Johnson (1999), luxury refers to the highest level of prestigious brands, encompassing various physical and psychological values.

Bilge (2015) notes that consumer goods are commonly divided into three classes: luxury goods, inferior goods, and necessities. Necessities include goods that individuals with lower incomes allocate the majority of their expenses to, such as food and housing. Inferior goods are products consumed less as income levels rise, making way for luxury goods. Beyond their monetary value, luxury goods can also be associated with factors such as experience, originality, and status when viewed from different perspectives (Yeoman, 2011).

Kapferer and Bastien (2009) emphasize that one of the fundamental functions of luxury is to recreate social structure, namely social stratification. Luxury goods can bring additional benefits as symbols of a social stratum. Thus, even though not essential products for consumers, their high prices serve the function of filtering social classes and are accepted by them. In addition to the social function, pleasure and a sense of pride are integral aspects of luxury's personal dimension. Luxury cannot be considered merely as snobbery but rather as the consumption of luxury symbols. However, no luxury brand can rely solely on customer trust interested only in symbols, neglecting quality and other product characteristics. These customers can easily shift their choice from one luxury brand to another with similar recognition (Kapferer, 1997).

Dubois et al. (2001) and Nueno and Quelch (1998) identified six characteristics of luxury goods: (1) a guarantee of high quality; (2) expensive price; (3) scarcity and uniqueness; (4) timelessness; (5) brand heritage and its history; (6) superfluous goods. On the other hand, Heine (2012) describes the characteristics of luxury goods based on price, quality, aesthetics, rarity, uniqueness, and symbolism.

Regarding the categorization of luxury goods, this is done in different ways depending on their unique characteristics. Allérès (1997) proposed a division of luxury goods into three categories: (1) accessible luxury goods, where the luxury item is available to most consumers due to its affordable price; (2) intermediate luxury goods, where this type of item cannot be acquired and is not accessible to consumers with a limited budget, being only available to certain consumers; (3) unavailable luxury goods, including items that can only be acquired by elite consumers due to their special production conditions and high prices. Silverstein and Fiske's (2008) proposal also relied on three categories of luxury goods: (1) new luxury goods; (2) old luxury goods; (3) common luxury goods.

Siying (2014) schematized the comparison and facilitated the distinction between these three types of luxury goods through a comparison of price, quality, availability, appeal, and market segment (Table 1).

*Table 1 – The three categories of Luxury Goods by Siying*

| Characteristics | New luxury goods | Old luxury goods | Common luxury goods |
|---|---|---|---|
| Price | Exorbitant | Premium | Low price |
| Quality | Mass scale manufacturing production | Handmade | Industrial mass production |
| Availability | Affordable | Private/exclusive | Dominant |
| Appeal | Attractive | Irrelevant | Moderate |
| Market segment | Consumers motivated by the luxury | Elites | Loyal consumers |

*Source: (Siying, 2014)*

According to Siying (2014), new luxury goods are characterized by an exorbitant price, large-scale manual production, accessibility, attractiveness, and their market segment consists of luxury-driven consumers.

## *2.2. Luxury brands*

Within the context of luxury brands, there is still no widely accepted definition among researchers (Ko et al., 2019). The difficulty in formulating a precise and universally accepted definition may be attributed to the subjective nature of luxury, subject to various interpretations over time (Cristini et al., 2017; Mortelmans, 2005). In their study, Miller & Mills (2012, p.1471) noted that previous research is characterized by "a lack of clarity regarding a definition, operationalization, and measurement of brand luxury." This observation aligns with earlier calls for a more precise definition of luxury goods marketing (Berthon et al., 2009).

Ko et al. (2019) proposed that a luxury brand is a branded product or service that, from the consumer's perspective: 1) has high quality; 2) provides authentic value through desired, functional, or emotional benefits; 3) has a prestigious image in the market, based on qualities such as craftsmanship, workmanship, or service quality; 4) is capable of charging a premium price, and 5) is able to inspire a deep connection with the consumer. However, it is important to note that the practice of premium pricing or superior quality, although increasing the likelihood of a brand being considered of luxury, it´s not the synonym of it. At least, the consumers need to perceive it as one.

Cristini et al. (2017) emphasize excellence, creativity, and exclusivity as key variables in identifying a luxury brand. A brand embodying high levels of these conditions attains the pinnacle of luxury. However, the traditional view linking luxury to these characteristics is fading, and it is increasingly rare for a brand to be perceived as luxurious without embodying all three features (Jackson & Shaw, 2009; Okonkwo, 2016). According to Pereira (2020), a brand with high excellence and exclusivity but low creativity is unlikely to be perceived as luxury.

Hudders and Pandelaere (2012) propose that luxury brands associate with uniqueness, superior quality, aesthetically pleasing design, rarity, and high cost. Consumers predominantly acquire luxury brands for symbolic reasons, reflecting their individual or social goals (Wilcox et al., 2009). Luxury brand consumption is largely determined by social function attitudes, where consumers express individuality and social status through luxury brands (Wilcox et al., 2009). Both Western and Eastern cultures see luxury brands as a means to portray individuality and/or social status (Nueno & Quelch, 1998; Vigneron & Johnson, 2004).

## *2.3. Attitudes and Perceptions of Luxury Consumers*

Consumer attitudes, feelings, and perceptions towards luxury are among the factors shaping the luxury concept. Purchasing behaviors, brand loyalty, and satisfaction with the brand are strongly influenced by how consumers view luxury, the goods they consider luxurious, their relationship with luxury, and their perceptions of luxury (Bilge, 2015).

According to Husic and Cicic (2009), consumers of all social classes perceive luxury as a status symbol. However, Dubois et al. (2005) divided consumers into different groups based on their attitudes toward luxury. Also, Han et al. (2010) categorized consumers based on their preference for ostentatious or non-ostentatious goods and consumption motivations.

In an initial approach to luxury value, Babin et al. (1994) identified two distinct dimensions of luxury value: hedonic value and utilitarian value. Berthon et al. (2009) suggested capturing the total dimensionality of relationships between people, products, and brands to understand luxury value, conceptualized with three dimensions: symbolic, experiential, and functional. Smith and Colgate (2007), based on the three basic consumer needs—symbolic, experiential, and functional—proposed by Park et al. (1986), identified four typologies of value, including symbolic/expressive, experiential/hedonic, functional/instrumental, and cost/sacrifice. Tynan et al. (2010) further expanded the Smith and Colgate (2007) framework by adding rational value.

However, in a study by Alan et al. (2016), focused on the impact of luxury value dimensions on the reacquisition intention of luxury brands, the authors emphasized the lack of total consensus in the literature regarding the dimensions constituting luxury value. They also noted that Shukla et al. (2015) agreed that symbolic value, experiential value, and functional value are the three fundamental dimensions of luxury value.

According to Zhang and Zhao (2019), luxury consists of three important components: a series of unique characteristics such as good quality, high price, majestic materials, and a complex production process; experiential meanings, such as fantasies,

feelings, and fun that individuals can experience and enjoy; and symbolic meanings, such as high recognition and good reputation, as well as symbols of wealth, identity, and social status (Li et al., 2013; Zhang & Kim, 2013; Zhang & Cude, 2018). The identification and systematization of luxury value dimensions have been developed for decades (Zhang & Zhao, 2019).

## *2.4. Hypothesis and Conceptual Model*

Considering that consumer behavior is the process of selecting, purchasing, and consuming products and services to satisfy consumer needs and desires (Kotler & Armstrong, 2018; Ramya & SA, 2016), and the functional value of the product encompasses utility derived from perceived quality, expected product performance, and perceived expected costs (Smith & Colgate, 2007; Sweeney & Soutar, 2001; Wiedmann et al., 2009; Zhang & Zhao, 2019). It is crucial to create brand elements, i.e., characteristics that identify and distinguish it from the competition (Kotler & Armstrong, 2018). Additionally, concern for the environment and sustainability is a topic of growing importance for consumers and society (Chen et al., 2021; Wijekoon & Sabri, 2021).

As mentioned earlier, consumers do not just buy a luxury brand because there are certain motivations that lead them to buy the brand and be satisfied with the purchase. Various factors influence a consumer's motivation to buy a luxury product (Srinivasan et al., 2014). Based on the literature review, eleven hypotheses were formulated and are explicitly stated in Table 2.

*Table 2 – Hypotheses*

| | |
|---|---|
| **H1** | Sensations influence the Product Functional Value. |
| **H2** | Sensations are related with Environment and Sustainability. |
| **H3** | Sensations are related with Brand Elements. |
| **H4** | Sensations influence the Buying Behaviour. |
| **H5** | Product Functional Value influence the Buying Behaviour. |
| **H6** | The Environment and Sustainability are related with the Buying Behaviour. |
| **H7** | The Brand Elements influence the Buying Behaviour. |
| **H8** | Sensations influence the Relationship with Luxury Brands. |
| **H9** | Product Functional Value influence the Relationship with Luxury Brands. |
| **H10** | The Buying Behaviour influence the Relationship with Luxury Brands. |
| **H11** | The Brand Elements are related with Luxury Brands´ Relationship. |

*Source: Elaborated by the author*

The conceptual model is represented in Figure 1. To achieve the previously established research objectives, a positivist paradigm was adopted, and a quantitative study was conducted.

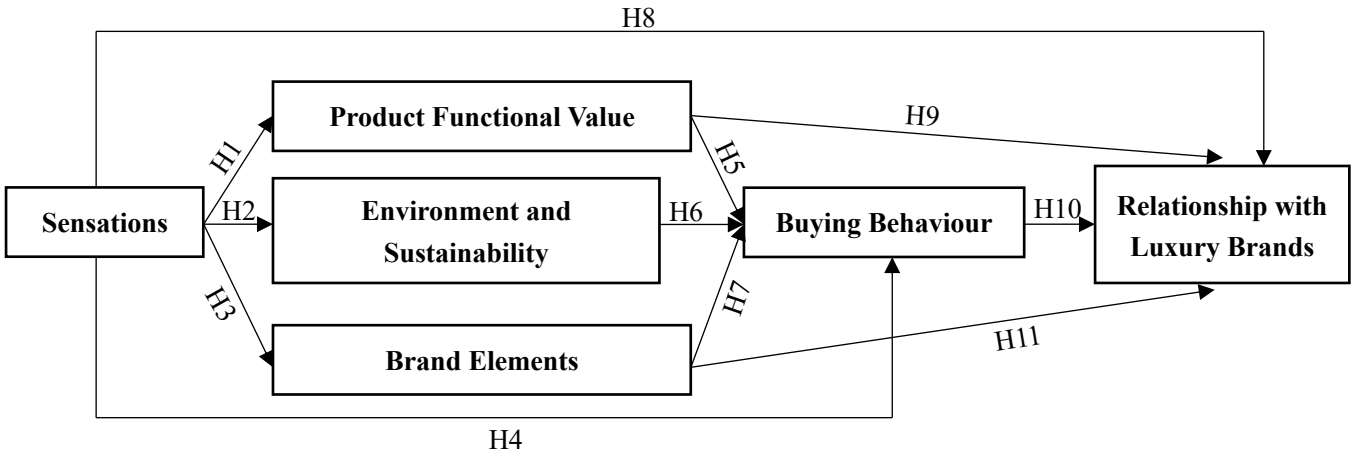



*Figure 1 – Conceptual Model*

*Source: Elaborated by the author*

# 3. Methodology

The study's target population was the entire adult population residing in Portugal. For data collection, a questionnaire survey was applied online to a non-probabilistic convenience sample using the "snowball" technique. Despite being aware of the disadvantages of non-probabilistic sampling, such as not being representative of the study population, it was deemed the most appropriate.

For the questionnaire's operationalization and data collection, the online questionnaire platform FormsUA was used. For the feasibility and adequacy of the questionnaire, it had the consent and approval of the Data Protection Officer (GDPR) of UA.

The questionnaire was available online from November 3, 2021, to January 10, 2022. It consisted of a total of 15 questions divided into four sections: the first section contained 5 questions regarding the socio-demographic characteristics of the participants; the second section referred to 8 questions related to the consumer's contact with luxury brands; the third and fourth sections consisted of 2 questions each, respectively, about the consumer's relationship with luxury goods and the attributes valued in luxury furniture and decoration. Previously validated scales by other authors were used. The questionnaire and the respective scales used are included in the Appendix.

In data analysis, descriptive and inferential statistical techniques were used with the IBM SPSS Statistics software (version 28.0.0.0). The questionnaire received a total of 553 responses, but after monitoring, only 402 valid responses were considered.

# 4. Results

## *4.1. Sample sociodemographic characterization*

The questionnaire obtained a total of 553 responses, but after monitoring, 402 valid responses were considered.

Out of the total 402 respondents, 268 were female (66.7%) and 134 were male (33.3%). Regarding age groups, the sample proved to be diverse (minimum age: 18 years; maximum age: 81 years), with a greater concentration in the three younger age groups: 18-24 years (N=104, 25.9%), 25-34 years (N=67, 16.7%), and 35-44 years (N=93, 23.1%).

In terms of education, almost 80% of the sample had higher education (N=308, 76.6%), with 73.4% (N=295) holding at least a bachelor's degree, and 38.3% (N=154) having postgraduate qualifications or higher. Regarding socioeconomic status, the majority claimed to be in a middle position (N=215, 53.5%; X = 5.81); about one-third (N=132, 32.8%) stated they were in a high or very high socioeconomic position, while only 13.6% (N=53) considered themselves to have a low or very low socioeconomic status.

Regarding the professional situation, about half of the sample consisted of employed individuals (N=198, 49.3%), with a significant portion being students and working students (N=155, 38.5%).

## *4.2. Consumers´ attitudes regarding luxury goods characterization*

The participants were questioned regarding the frequency with which they followed luxury brands: more than half of the sample (N=203, 50.5%) responded that they did not follow, or only rarely followed; 18.1% (N=73) stated that they followed luxury brands frequently or very frequently.

Concerning the frequency of acquiring luxury products, the obtained values highlighted that the acquisition of luxury products is not a common practice, with 73.1% (N=294) of the sample responding that they rarely or very rarely acquired luxury products; 21.4% (N=86) stated that they did so regularly, and only 5.4% (N=22) responded that they frequently acquired luxury products.

At the time of purchasing luxury products, the preferred method of acquisition is the brand's physical store (N=162, 40.3%), followed by outlets (N=114, 28.4%). The brand's online store (N=59, 14.6%) and multi-brand stores (N=49, 12.2%) represent other alternatives to consider. The opinions of friends/acquaintances do not play a decisive role in the purchase of luxury products (41.1%, N=165); for 29.4% (N=118), it is indifferent, and only 29.6% (N=119) considered the opinion of friends/acquaintances relevant. Regarding the willingness to pay high prices for products from famous brands, only 14.9% (N=60) of the sample showed receptiveness to this possibility.

About the influence of brand notoriety on the perceived quality of the product, 49% (N=197) of the participants agreed that brand notoriety influences the perceived quality of the product; 23.4% (N=94) were indifferent, and 27.7% (N=111) disagreed with the statement.

Regarding their willingness to invest more in environmentally friendly products, 74.6% (N=300) of the participants stated that they were receptive to this possibility; 19.9% (N=80) were indifferent, and only 5.5% (N=22) were not receptive. In prioritizing the purchase of environmentally friendly products, 57.5% (N=231) said they prioritize the purchase of environmentally friendly products; 30.1% (N=121) were indifferent, and 12.4% (N=50) said they do not prioritize the purchase of environmentally friendly products.

Analyzing the sensations obtained with luxury brands, on a 5-point Likert scale, happiness (X=3.97), authenticity (X=3.68), and sophistication (X=3.43) were the main sensations elicited. Prestige (X=2.95), rarity (X=2.91), and preciousness (X=2.85)

were also felt, albeit with less intensity. Finally, status (X=2.47) was a sensation that the majority of the sample (N=321, 79.9%) did not associate with the purchase of luxury furniture and/or decoration products.

Regarding the attributes valued in luxury furniture and decoration goods, the quality of materials (X=4.44) and product performance (X=4.42) were revealed to be the attributes given the greatest weight. The eternity (or durability) (X=4.34) of products and their appearance (X=3.97) were other attributes that played a relevant role. On the other hand, less importance was given to attributes that were not directly related to the product and its functioning: country of origin (X=2.78), brand name (X=2.62), and packaging (X=2.56).

## *4.3. Factorial analysis*

The principal components method was employed, and the results revealed that the factor analysis was appropriate. Firstly, based on the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) test value of 0.835. A value close to 1 indicates that correlation patterns are relatively compact, and factor analysis should yield distinct and reliable factors (Field, 2017). Significant correlation among variables was also confirmed, as indicated by the result of the Bartlett's test of sphericity: p-value = 0.000<0.05. A seven-component solution was presented as they had eigenvalues greater than 1 (Goretzko et al., 2019), explaining 66.67% of the total variance of the original variables.

Subsequently, each component underwent an internal consistency assessment using Cronbach's Alpha. It allows for evaluating the internal consistency or reliability of the component/factor and represents the proportion of variability in responses resulting from differences among respondents (Vaske et al., 2017). Some variables had to be removed, as their elimination would increase the Alpha value. For the interpretation and evaluation of the Cronbach's Alpha value, the following criteria were considered: between 0.6 and 0.7 – reasonable internal consistency; between 0.7 and 0.9 – good internal consistency; and values equal to or higher than 0.9 – very good internal consistency (Field, 2017; George & Mallery, 2020).

Considering the results of the factor analysis and the reliability of the scales, six dimensions were identified: Sensations (SEN); Product Functional Value (PFV); Relationship with Luxury Brands (RLB); Environment and Sustainability (ES); Brand Elements (BE); Buying Behavior (BB). Table 3 illustrates the dimensions and their respective items.

*Table 3 – Dimensions and items*

| Dimensions | Variables | Factor Loadings | Cronbach Alpha |
|---|---|---|---|
| Sensations (SEN) | SEN1 Preciosity | 0,714 | 0,847 |
| | SEN2 Authenticity | 0,667 | |
| | SEN3 Rarity | 0,757 | |
| | SEN4 Sophistication | 0,691 | |
| | SEN5 Prestige | 0,756 | |
| | SEN6 Happiness | 0,361 | |
| | SEN7 Status | 0,639 | |
| Product Functional Value (PFV) | PFV1 Materials Quality | 0,863 | 0,855 |
| | PFV2 Performance | 0,842 | |
| | PFV3 Durability | 0,798 | |
| Relationship with Luxury Brands (RLB) | RLB1 I follow luxury brands | 0,813 | 0,804 |
| | RLB2 I acquire luxury goods frequently | 0,864 | |
| Environment and Sustainability (ES) | ES1 I invest more money in goods that are eco-friendly | 0,844 | 0,825 |
| | ES2 I prefer the buy of eco-friendly goods. | 0,877 | |
| Brand Elements (BE) | BE1 Packaging | 0,737 | 0,653 |
| | BE2 Name | 0,602 | |
| | BE3 Country of origin | 0,716 | |
| Buying Behaviour (BB) | **BB1** I consider important the opinion of friends and family regarding luxury brands and goods. | 0,747 | 0,627 |
| | **BB2** I´m able to pay more for goods from luxury brands. | 0,488 | |
| | **BB3** The brand´s notoriety influence the goods´ perceived quality. | 0,731 | |

*Source: Elaborated by the author*

## *4.4. Hypothesis Tests and Regression Models*

In a first approach, the existence of correlation between the 6 dimensions was analyzed using the Pearson correlation coefficient (Table 4). The results show a moderate positive correlation between Sensations and Brand Elements (0.481), Sensations and Buying Behavior (0.454), Sensations and Relationship with Luxury Brands (0.411), as well as Buying Behavior and Relationship with Luxury Brands (0.412). The remaining correlations are weak or nonexistent. In a second phase, the eleven hypotheses formulated in the conceptual model were individually tested. Table 5 presents the results of the respective tests conducted at a significance level of 5%.

*Table 4 – Correlations between dimensions*

| | | RLB | SEN | BE | BB | ES | PFV |
|---|---|---|---|---|---|---|---|
| **Pearson Correlation** | RLB | 1,000 | ,411 | ,335 | ,412 | -,028 | ,074 |
| | SEN | ,411 | 1,000 | ,481 | ,454 | ,019 | ,354 |
| | BE | ,335 | ,481 | 1,000 | ,346 | ,171 | ,179 |
| | BB | ,412 | ,454 | ,346 | 1,000 | ,005 | ,171 |
| | ES | -,028 | ,019 | ,171 | ,005 | 1,000 | ,191 |
| | PFV | ,074 | ,354 | ,179 | ,171 | ,191 | 1,000 |
| **Sig. (1 extremity)** | RLB | . | <,001 | <,001 | <,001 | ,288 | 0,069 |
| | SEN | ,000 | . | ,000 | ,000 | ,349 | ,000 |
| | BE | ,000 | ,000 | . | ,000 | ,000 | ,000 |
| | BB | ,000 | ,000 | ,000 | . | ,458 | ,000 |
| | ES | ,288 | ,349 | ,000 | ,458 | . | ,000 |
| | PFV | ,069 | ,000 | ,000 | ,000 | ,000 | . |
| **N** | RLB | 402 | 402 | 402 | 402 | 402 | 402 |
| | SEN | 402 | 402 | 402 | 402 | 402 | 402 |
| | BE | 402 | 402 | 402 | 402 | 402 | 402 |
| | BB | 402 | 402 | 402 | 402 | 402 | 402 |
| | ES | 402 | 402 | 402 | 402 | 402 | 402 |
| | PFV | 402 | 402 | 402 | 402 | 402 | 402 |

*Source: Elaborated by the author*

Based on the test values obtained, there was statistically significant evidence to not reject eight out of eleven hypotheses. Only H2 and H6 were rejected, involving the Environment and Sustainability dimension, and H8 regarding the influence of the Product Functional Value on the Relationship with Luxury Brands.

*Table 5 – Hypothesis Tests*

| Hypothesis | Results |
|---|---|
| H1: Sensations influence the Product Functional Value. | Supported<br>p-value = 0,000<0,05 |
| H2: Sensations are related with Environment and Sustainability. | Rejected<br>p-value = 0,349>0,05 |
| H3: Sensations are related with Brand Elements. | Supported<br>p-value = 0,000<0,05 |
| H4: Sensations influence the Buying Behaviour. | Supported<br>p-value = 0,000<0,05 |
| H5: Product Functional Value influence the Buying Behaviour. | Supported<br>p-value = 0,000<0,05 |
| H6: The Environment and Sustainability are related with the Buying Behaviour. | Rejected<br>p-value = 0,458>0,05 |
| H7: The Brand Elements influence the Buying Behaviour. | Supported<br>p-value = 0,000<0,05 |
| H8: Sensations influence the Luxury Brands´ Relationship. | Supported<br>p-value = 0,000<0,05 |
| H9: Product Functional Value influence the Luxury Brands´ Relationship. | Rejected<br>p-value = 0,069>0,05 |
| H10: The Buying Behaviour influence the Luxury Brands´ Relationship. | Supported<br>p-value = 0,000<0,05 |
| H11: The Brand Elements are related with Luxury Brands´ Relationship. | Supported<br>p-value = 0,000<0,05 |

*Source: Elaborated by the author*

Next, multiple linear regression analysis was used to test the conceptual model using the Stepwise method. The first partial model tested had CCO as the dependent variable and SEN, VFP, ABS, and ELM as independent variables. The equation of the regression line is presented as follows:

$$BB = 1.112 + 0.375\ SEN + 0.163\ BE + error$$

Considering the equation and the test values for the different coefficients, it can be observed that these significantly differ from zero, indicating a significant regression. Two models were tested, with the two variables that met the entry criteria in the final equation (SEN and ELM). The other two variables did not meet the entry criteria (PFV and ES) and were not considered.

The multiple correlation value between the dependent variable and the independents (R=0.477) indicates a moderate positive correlation between them. The coefficient of determination (R squared) shows that about 23% (22.7%) of the variation in buying behavior is explained by SEN and BE. Even using the adjusted coefficient of determination (adjusted R squared), a more rigorous and realistic value, the variation practically does not change (22.4%) (George & Mallery, 2020). The standardized beta value (β) indicates that SEN is the variable with the greatest influence on CCO (β=0.375). Considering the test values (p), it can be concluded that BB significantly depends on SEN (p-value < 0.001) and BE (p-value = 0.001 < 0.05).

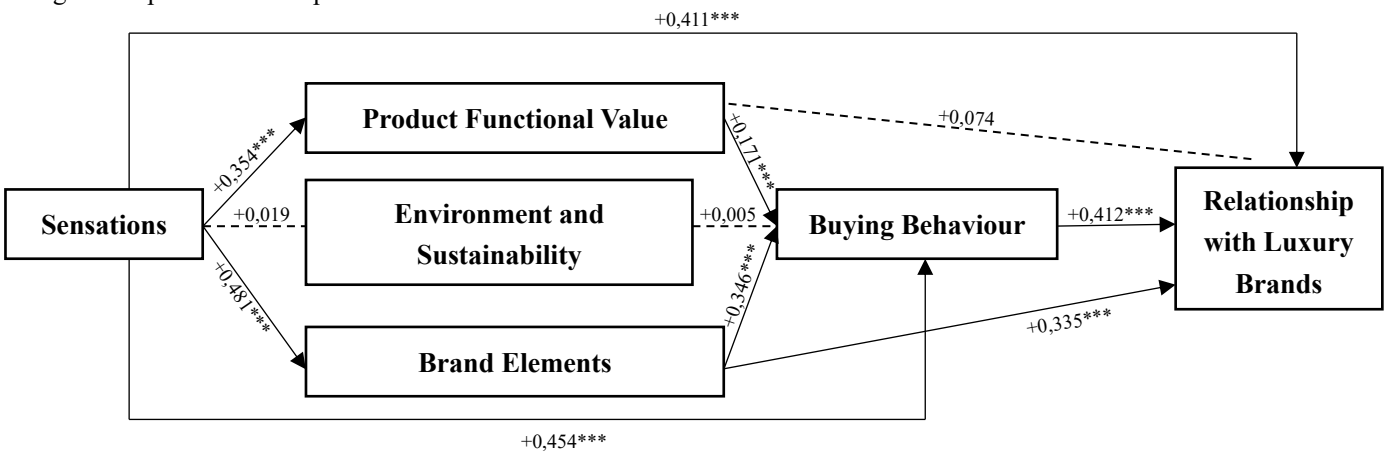
Moving to the second partial model, it sought to test the influence of the variables SEN, PFV, BE, and BB on LBR. The equation of the regression line is:

$$LBR = 0.130 + 0.296\ BB + 0.256\ SEN + 0.149\ BE + error$$

Observing the equation and the test values obtained for each coefficient, it is noted that the coefficients significantly differ from zero, indicating a significant regression. Three models were tested with the three variables that met the entry criteria in the final equation (BB, SEN, and BE). The variable PFV did not meet the entry criteria and was not considered in the model.

The multiple correlation value between the dependent variable and the independents (R=0.497) indicates a moderate positive correlation. The coefficient of determination (R squared) shows that about 25% of the variation in LBR is explained by BB, SEN, and BE. The standardized beta value (β) indicates that BB is the variable with the greatest influence on LBR (β=0.263), followed by SEN (β = 0.227) and BE (β = 0.135). Considering the test values (p), it can be concluded that LBR significantly depends on BB (p-value < 0.001), SEN (p-value < 0.001), and BE (p-value = 0.008 < 0.05).

Figure 2 represents the empirical model.




**Observation**: Straight line: Supported hypothesis. Dotted line – Rejected hypothesis. The value that appears in each line it´s regarding the correlation between dimensions. *** p-value <0,001. Confidence level: 99,99%.

*Figure 2 – Empirical Model*

*Source: Elaborated by the author*

In summary, the statistical results show that the Sensations dimension significantly, positively moderately influences the Product Functional Value (H2) and Brand Elements (H3). There is a weak positive influence of the Product Functional Value on Buying Behavior (H5) and Brand Elements on Buying Behavior (H7), and a moderate positive influence of Sensations on Buying Behavior (H4). Regarding the Relationship with Luxury Brands, it is weakly positively influenced by Brand Elements (H11) and moderately influenced by Sensations (H8) and Buying Behavior (H10). Observing the model, it is evident that the strongest correlation occurs between Sensations and Brand Elements.

## 5. Discussion and Conclusion

This study aimed to identify and understand what consumers value and seek when purchasing luxury goods, with a particular focus on luxury furniture and decoration items. It had two research objectives: (1) to analyze the factors influencing the consumer's buying behavior of luxury furniture and decoration items, (2) to analyze the complete process of consumer interaction with luxury brands.

The results lead to the conclusion that the consumer's buying behavior is primarily influenced by Sensations and Brand Elements, which are also cumulatively influenced by sensations. Thus, the purchase of luxury furniture and decoration items is marked by a highly emotional component, with sensations such as happiness, authenticity, and sophistication present, directly and indirectly impacting buying behavior, the latter through the influence of Brand Elements. Buying behavior is also influenced by the Product Functional Value, meaning that consumers place great importance on product-related attributes such as durability, performance, material quality, and appearance, rather than focusing solely on the brand. A significant number of respondents value sustainability and environmental concern, being willing to make higher investments in products created with these considerations, although this dimension did not significantly impact consumer purchasing behavior.

The results also indicate that the process of establishing consumer relationships with luxury brands is primarily influenced by their buying behavior and sensations, and to a moderate extent by brand elements. Once again, sensations play a central role throughout the process. Therefore, marketing and luxury brand managers, especially in the luxury furniture and decoration industry, should focus on creating memorable and strong sensations in consumers, as these are the main motivators for buying and building relationships with luxury brands.

This study has some limitations, notably the non-probabilistic convenience sampling technique, which prevents the results from being generalized to all Portuguese consumers. As a suggestion for future research, it is recommended to replicate the study with a representative sample of Portuguese consumers and propose that the study be replicated in other countries for an international context. Additionally, it would be relevant to incorporate more dimensions in the study and use other statistical techniques for data analysis, including structural equation modeling.

## Acknowledgements

This article was presented and included in the proceedings of ICIEMC - International Conference on Innovation and Entrepreneurship in Marketing and Consumer Behaviour.

## References

Babin, B. J., Darden, W. R., & Griffin, M. (1994). Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value. *Journal of Consumer Research*, 20(4), 644–656.

Berthon, P., Pitt, L., Parent, M., & Berthon, J.-P. (2009). Aesthetics and Ephemerality: Observing and Preserving the Luxury Brand. *California Management Review*, 52(1), 45–66.

Bilge, H. A. (2015). Luxury Consumption: Literature Review. *Khazar Journal of Humanities and Social Sciences*, 18(1), 35–55.

Chen, S., Qiu, H., Xiao, H., He, W., Mou, J., & Siponen, M. (2021). Consumption behavior of eco-friendly products and applications of ICT innovation. *Journal of Cleaner Production*, 287, 1–17.

Cristini, H., Kauppinen-Räisänen, H., Barthod-Prothade, M., & Woodside, A. (2017). Toward a general theory of luxury: Advancing from workbench definitions and theoretical transformations. *Journal of Business Research*, 70, 101–107.

Dubois, B., Czellar, S., & Laurent, G. (2005). Consumer Segments Based on Attitudes Toward Luxury: Empirical Evidence from Twenty Countries. *Marketing Letters*, 16(2), 115–128.

Dubois, B., Laurent, G., & Czellar, S. (2001). *Consumer rapport to luxury: Analyzing complex and ambivalent attitudes*. HEC Research Papers Series, 736.

Field, A. (2017). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). SAGE Publications, Inc.

George, D., & Mallery, P. (2020). *IBM SPSS Statistics 26 Step by Step: A Simple Guide and Reference* (16th ed.). Routledge/Taylor & Francis Group.

Goretzko, D., Pham, T. T. H., & Bühner, M. (2019). Exploratory factor analysis: Current use, methodological developments and recommendations for good practice. *Current Psychology*, 40(2), 3510–3521.

Han, H., Hsu, L. T. J., Lee, J. S., & Sheu, C. (2011). Are lodging customers ready to go green? An examination of attitudes, demographics, and eco-friendly intentions. *International Journal of Hospitality Management*, 30(2), 345–355.

Han, Y. J., Nunes, J. C., & Drèze, X. (2010). Signaling status with luxury goods: The role of brand prominence. *Journal of Marketing*, 74(4), 15–30.

Heine, K. (2012). *The Identity of Luxury Brands.* PhD Thesis. University of Berlin.

Hudders, L., & Pandelaere, M. (2012). The Silver Lining of Materialism: The Impact of Luxury Consumption on Subjective Well-Being. *Journal of Happiness Studies*, 13(3), 411–437.

Husic, M., & Cicic, M. (2009). Luxury consumption factors. *Journal of Fashion Marketing and Management*, 13(2), 231–245.
Instituto do Luxo. (2021, May 14). *Tendências para o mercado Home* Decor. Instituto Do Luxo.
Jackson, T., & Shaw, D. (2009). *Mastering fashion marketing* (1st ed.). Palgrave Macmillan.
Kapferer, J.-N. (1997). Managing luxury brands. *Journal of Brand Management*, 4(4), 251–259.
Kapferer, J.-N., & Bastien, V. (2009). *The Luxury Strategy: Break the Rules of Marketing to Build Luxury Brands* (1st ed.). Kogan Page.
Kapferer, J.-N., & Laurent, G. (2016). Where do consumers think luxury begins? A study of perceived minimum price for 21 luxury goods in 7 countries. *Journal of Business Research*, 69(1), 332–340.
Kim, A. J., & Ko, E. (2010). Impacts of luxury fashion brand's social media marketing on customer relationship and purchase intention. *Journal of Global Fashion Marketing*, 1(3), 164–171.
Kim, M., Kim, S., & Lee, Y. (2010). The effect of distribution channel diversification of foreign luxury fashion brands on consumers' brand value and loyalty in the Korean market. *Journal of Retailing and Consumer Services*, 17(4), 286–293.
Ko, E., Costello, J. P., & Taylor, C. R. (2019). What is a luxury brand? A new definition and review of the literature. *Journal of Business Research*, 99, 405–413.
Kotler, P. Armstrong, G., Saunders, J., Wong, V. (2018). *Principles of Marketing*, 17th Edition. Harlow, United Kingdom: Pearson Education Limited.
Nueno, J. L., & Quelch, J. A. (1998). The mass marketing of luxury. *Business Horizons*, 41(6), 61.
Nwankwo, S., Hamelin, N., & Khaled, M. (2014). Consumer values, motivation and purchase intention for luxury goods. *Journal of Retailing and Consumer Services*, 21(5), 735–744.
Okonkwo, U. (2016). *Luxury Fashion Branding: Trends, Tactics, Techniques* (4th ed.). Palgrave Macmillan.
Park, C. W., Jaworski, B. J., & MacInnis, D. J. (1986). Strategic Brand Concept-Image Management. *Journal of Marketing*, 50(4), 135–145.
Paul, J. (2019). Masstige model and measure for brand management. *European Management Journal*, 37(3), 299–312.
Pereira, M. A. V. (2020). *O autoconceito e o consumo de roupa e acessórios de marcas de luxo*. Master Thesis. Universidade de Lisboa.
Ramya, N., & SA, M. A. (2016). Factors affecting consumer buying behavior. *International Journal of Applied Research*, 2(10), 76–80.
Shukla, P., Singh, J., & Banerjee, M. (2015). They are not all same: variations in Asian consumers' value perceptions of luxury brands. *Marketing Letters*, 26(3), 265–278.
Silverstein, M. J., & Fiske, N. (2008). *Trading Up: Why Consumers Want New Luxury Goods and How Companies Create Them* (3rd ed.). Portfolio.
Siying, Y. (2014). *Marketing Strategy of Chinese Domestic Luxury Brand - Case Company: Kweichow Moutai*. Thesis in Business Economics and Tourism. Vaasa University of Applied Sciences.
Smith, J. B., & Colgate, M. (2007). Customer Value Creation: A Practical Framework. *Journal of Marketing Theory and Practice*, 15(1), 7–23.
Som, A., & Blanckaert, C. (2015). *The Road to Luxury* (1st ed.). Wiley.
Srinivasan, R., Srivastava, R. K., & Bhanot, S. (2014). Influence of Ethnicity on Uniqueness & Snob Value in Purchase Behavior of Luxury Brands. *Journal of Research in Marketing*, 2(3), 172–186.
Sweeney, J. C., & Soutar, G. N. (2001). Customer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77, 203–220.
Tynan, C., McKechnie, S., & Chhuon, C. (2010). Co-creating value for luxury brands. *Journal of Business Research*, 63(11), 1156–1163.
Vaske, J. J., Beaman, J., & Sponarski, C. C. (2017). Rethinking Internal Consistency in Cronbach's Alpha. *Leisure Sciences*, 39(2), 163–173.
Vigneron, F., & Johnson, L. W. (1999). A Review and a Conceptual Framework of Prestige-Seeking Consumer Behavior. *Academy of Marketing Science Review*, 1, 1–15.
Vigneron, F., & Johnson, L. W. (2004). Measuring perceptions of brand luxury. *Journal of Brand Management*, 11(6), 484–506.
Wiedmann, K. P., Hennigs, N., & Siebels, A. (2007). Measuring consumers' luxury value perception: a cross-cultural framework. *Academy of Marketing Science Review*, 7(7), 333–361.
Wijekoon, R., & Sabri, M. F. (2021). Determinants that influence green product purchase intention and behavior: A literature review and guiding framework. *Sustainability*, 13 (11), 6219.
Wilcox, K., Kim, H. M., & Sen, S. (2009). Why Do Consumers Buy Counterfeit Luxury Brands? *Journal of Marketing Research*, 46(2), 247–259.
Yeoman, I. (2011). The changing behaviours of luxury consumption. *Journal of Revenue and Pricing Management*, 10(1), 47–50.
Zhang, B., & Kim, J. H. (2013). Luxury fashion consumption in China: Factors affecting attitude and purchase intent. *Journal of Retailing and Consumer Services*, 20(1), 68–79.

Zhang, L., & Cude, B. J. (2018). Chinese Consumers' Purchase Intentions for Luxury Clothing: A Comparison between Luxury Consumers and Non-Luxury Consumers. *Journal of International Consumer Marketing*, 30(5), 336–349.
Zhang, L., & Zhao, H. (2019). Personal value vs. luxury value: What are Chinese luxury consumers shopping for when buying luxury fashion goods? *Journal of Retailing and Consumer Services*, 51, 62–71.

# Appendix – Survey

The following questionnaire its being developed under a Master Thesis regarding the Master´s Degree in Marketing at the Higher Institute for Accountancy and Administration of Aveiro University. Its aim is to analyze the consumer´s receptiveness to luxury goods, focusing on furniture and decoration. This survey obliges to the GRDP, therefore is confidential and anonymous. The collected data will serve solely for research and academical purposes. The duration should not exceed 5 minutes.

| Section | Questions | Answer scenarios | Theorical basis |
|---|---|---|---|
| **Sociodemographic Characteristics** | 1. Gender? | Female \| Male \| Prefer not to say.<br>(multiple answer question, nominal type) | General questions to obtain sociodemographic data about the sample. |
| | 2. Age? | Brief numerical question | |
| | 3. Educational level: | 1. Primary School \| 2. Middle School (until 9th grade) \| 3. High School \| 4. Associate degree / Community College \| 5. Bachelor's degree \| 6. Master's degree or higher<br>(Pergunta escalar, ordinal) | |
| | 4. Considering your socioeconomical level, where you consider to be in the scale? | 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10<br>(1 = very low / 10 = very high) (scale question, ordinal) | |
| | 5. What is your professional situation at the moment? | Employed by someone – Self-employed – Student-employee – Unemployed – Retired (multiple answer question, nominal) | |
| **The contact with luxury products and brands** | 6. Its frequent for you to follow famous brands? | 1 = Very rarely \| 2 = Rarely \| 3 = Sometimes \| 4 = Frequently \| 5 = Very frequently<br>(5-point likert scale question) | (Dabbous & Barakat, 2020) |
| | 7. How often you usually acquire luxury products? | 1 = Very rarely \| 2 = Rarely \| 3 = Sometimes \| 4 = Frequently \| 5 = Very frequently<br>(5-point likert scale question) | (B. Zhang & Kim, 2013) |
| | 8. Usually, how do you acquire luxury products? | On-site brand Store(s) – Online brand store(s) – multi-brands shops – Outlets – Social media marketplaces<br>(Multiple answer question, nominal) | (Dauriz et al., 2014) |
| | 9. I consider important the opinion of knew-ones and friends, regarding luxury brands and products. | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | (Dogan-Sudas et al., 2019) |
| | 10. I´m receptive to pay higher prices for famous brands´ products. | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | (Tai & Tam, 1997) |
| | 11. The brand awareness influences the product´s quality perceived. | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 12. I´m able to invest more in eco-friendly products. | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 13. Usually, I prioritize the buying of eco-friendly products. | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| **The consumer-luxury goods relationship** | **When acquiring luxury goods, in terms of furniture and decoration, classify, between 1 to 5, the sensations that come to your mind.** | | |
| | 14. Preciosity | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | (Becker et al., 2018; L. Zhang & Zhao, 2019) |
| | 15. Authenticity | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 16. Rarity | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 17. Sophistication | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 18. Prestige | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |

| Section | Questions | Answer scenarios | Theorical basis |
|---|---|---|---|
| | 19. Happiness | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 20. Status | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| **Luxury furniture and decoration attributes** | **When you are buying luxury furniture and decoration, classify between 1 to 5, the attributes that you give the most priority.** | | |
| | 21. Appearance | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | (Sweeney & Soutar, 2001; R. Zhang, 2019) |
| | 22. Materials quality | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 23. Performance | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 24. Eternity (or durability) | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 25. Packaging | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 26. Brand´s name | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |
| | 27. Country of Origin | 1 = I totally disagree \| 2 = I disagree \| 3 = Neutral \| 4 = I agree \| 5 = I totally disagree<br>(scale question, 5-point likert scale) | |

International Journal of Marketing, Innovation and Strategy

2024, 2(1): 37-45
10.34624/ijmis.v2i01.37903
ISSN: 2975-9226

# Understanding AI's Role in Shaping Consumer Choices

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## Abstract

The rapid evolution of artificial intelligence (AI) has substantially transformed marketing and the way consumers make decisions. This study investigates the impact of transparency and perceived control on the acceptance of personalized recommendations made by AI systems. The research was conducted with 81 participants through online questionnaires collected between March and April 2024. The structural model used analyzed the relationships between transparency, perceived control, perception of AI, and consumers' purchasing decisions. The results reveal that transparency and perceived control act as critical mediators in the relationship between the perception of AI and acceptance of personalized recommendations, influencing consumer trust as well as their concerns about privacy and ethics in the use of data. The findings highlight that clear communication about how AI operates and offers recommendations can increase the perception of transparency, giving consumers a deeper understanding of the processes involved. At the same time, giving users more control over personalized preferences can lead to greater engagement and trust in AI-generated recommendations. Thus, companies looking to deploy personalized recommendation systems should focus on developing strategies that emphasize transparency and offer significant control to the user. The findings indicate that such approaches can significantly contribute to increasing the acceptance of personalized recommendations while addressing ethical and privacy concerns in the use of data.

**Keywords:** Intelligence; Transparency; Perceived Control; Digital Marketing; Consumer Decision.

## To cite this article:

Amorim, L. (2024). Understanding AI's Role in Shaping Consumer Choices. *International Journal of Marketing Innovation and Strategy,* 2(1): 37-45.. doi.org/10.34624/ijmis.v2i01.37903.

**Received**: November 8, 2024; **Accepted**: November 14, 2024; **Published**: November 14, 2024

# 1. Introduction

The rapid evolution of artificial intelligence has significantly transformed the field of marketing and the way consumers make decisions. Current literature highlights an important gap: the limited understanding of the role of transparency and perceived control in the impact of artificial intelligence (AI) on consumer decision-making. This points to the need to explore transparency and control mechanisms, given that transparency, is recognized as a critical factor in establishing trust between consumers and AI systems. Despite this importance, there is a lack of clarity on how transparency and perceived control directly influence consumers' perception of personalized recommendations made by AI.

This identified gap leads to the following research questions (RQ) that could significantly contribute to the academic discourse on the relationship between transparency and perceived control of AI tools and the consumer's purchasing decision:

*RQ1: How does perceived transparency influence the acceptance of personalized recommendations by AI?*
*RQ2: How do different levels of perceived control impact consumer decision-making when interacting with AI systems?*

To answer these research questions, our study objective aims to investigate how transparency and perceived control of AI tools act as mediators in the relationship between the perception of AI and the consumer's purchasing decision.

By addressing these questions, this study aims to offer valuable insights for practitioners and researchers, contributing to a deeper understanding of the role of transparency and perceived control in consumers' interaction with AI systems in marketing. This objective allows us to: i) analyze the influence of perceived transparency on consumer trust in AI systems; ii) assess how different levels of control affect the acceptance of personalized recommendations; iii) investigate how transparency and control mediate the relationship between consumers' perceptions and concerns about AI and their purchasing decisions.

To carry out this study, we used questionnaire surveys, where it was possible to obtain 81 participants over two months, from March to April 2024. The results obtained made it possible to test the structural model and carry out a path analysis that confirmed the hypotheses under study, as well as proving that the data fit the model.

This article consists of six main sections. After this introduction, the second section is dedicated to the literature review, which summarizes contributions on artificial intelligence in digital marketing, consumer perceptions and experiences, consumer decisions and their impact on purchasing decisions, transparency and control perceived by consumers, and consumer concerns about AI personalization. Subsequently, the third section presents the methodology of this study, the fourth section consists of the results obtained and the fifth section presents the discussion. The article ends with a conclusion, the main limitations, suggestions for future research, and practical and theoretical implications.

# 2. Literature Review

## *2.1. The double face of artificial intelligence in marketing: advanced personalization and privacy*

The growing implementation of artificial intelligence (AI) in marketing has profoundly transformed business practices and interactions between companies and consumers. AI's ability to analyze large volumes of data allows for more precise and personalized communication, adjusting marketing strategies to consumers' individual needs in real-time (Liu et al., 2021). This level of personalization has shown the potential to significantly improve the consumer experience, increasing satisfaction and brand loyalty (Zhang & Qi, 2019).

However, this growing reliance on AI also raises significant concerns, especially concerning privacy and the ethical use of data. AI's ability to collect, store, and process personal information has highlighted the need for stricter regulations to protect consumers (Lavelle-Hill et al., 2020). Consumer expectations regarding transparency and control over their data are becoming increasingly demanding, forcing companies to adapt their policies and practices to fulfill these requirements (Kumar et al., 2019). In addition, the impact of AI on consumer purchasing behavior is remarkable, especially about impulse purchases. AI can identify behavioral and emotional patterns that predict when a consumer is more inclined to make an unplanned purchase (Wang et al., 2022). This knowledge allows companies to optimize their marketing strategies to present products at the most opportune moment, increasing impulse sales.

On the other hand, AI also has the potential to positively influence more conscious and ethical purchasing behavior. For example, AI systems can highlight fair trade or ecologically sustainable products, encouraging consumers to make choices that are in line with their personal values and social concerns (De Pelsmacker & Janssens, 2007). Thus, AI not only facilitates more efficient commercial transactions but can also contribute to greater social awareness and responsibility among consumers and companies (Oke et al., 2023). The following hypothesis is therefore proposed:

**H 1: Consumers' perceptions and experiences lead them to develop concerns about AI personalization.**

AI in marketing is therefore reshaping interactions between companies and consumers in complex and multifaceted ways. While

it offers significant improvements in personalization and marketing effectiveness, it also raises ethical questions and privacy challenges that cannot be ignored (Davenport et al., 2020). Companies wishing to take advantage of AI must therefore consider these factors carefully and ethically, ensuring that the technology is used in a way that respects and enriches the consumer experience (Du & Xie, 2021). In this sense, we formulate the following hypothesis:

**H 1.1: Concerns about AI personalization mediate the relationship between consumers' concerns and experiences and their consumption decisions.**

### *2.2. Consumer decision-making influenced by ai transparency and perceived control*

Consumer decision-making is intrinsically linked to their perceptions and experiences. Previous studies (Kim et al., 2021; Korsunova et al., 2023; Maggioni et al., 2019; Qin et al., 2021; Zhang & Doucette, 2019) highlight that factors such as safety, convenience, well-being, and ease of use shape the consumer experience and, consequently, influence their choices. These perceptions, mediated by sensory and emotional experience, determine patterns of behavior in the purchase of products and services, highlighting the importance of an in-depth understanding of consumer needs and desires to guide effective marketing and product development strategies. The following hypothesis is therefore proposed:

**H 2: Consumers' perceptions and experiences drive their decision-making.**

The growing integration of AI in marketing makes it crucial to understand how these technologies shape consumer perception and experience. Transparency in AI systems is essential to establishing trust. Clarity about how recommendations are made and the presentation of understandable information about decision-making processes improves consumer trust in these systems, leading to greater acceptance of suggestions provided by AI (Li et al., 2019).

Transparency also influences the consumer's perception of fairness, who becomes more receptive to decisions when they perceive that AI acts fairly (Simonson & Sela, 2011).

Consumers' perceived control over interactions with AI systems is also crucial, as the ability to adjust and modify the recommendations provided by AI results in more positive experiences (Yan et al., 2017). For example, the ability to customize search filters or recommendation preferences increases consumer engagement with the technology.

Positive consumer perceptions and experiences of AI depend largely on the degree of transparency and control provided. AI systems that enable personalization and provide clear information on decision-making create a more satisfying experience for the consumer (Ferreira, Rei, and Moreira). In this sense, AI can help consumers achieve their goals, but only when they perceive that the technology is aligned with their objectives and offers direct control over their decisions (Gollwitzer & Sheeran, 2009). In this sense, we formulate the following hypotheses:

**H 3: Consumer perceptions and experiences are directly related to transparency and perceived control over tools and AI.**
**H 3.1: Transparency and perceived control over tools and AI mediate the relationship between consumer perceptions and experiences and consumer decision-making.**
**H 4: Transparency and perceived control over tools and AI are directly related to concerns about AI personalization.**

Figure 1 shows the causal relationships between the previously presented research hypotheses.

## 3. Method

To fill the existing gap in the literature, which consists in the limited understanding of the role of transparency and perceived control in the impact of artificial intelligence (AI) on consumer decision-making, this study addresses research questions that can significantly enrich the academic discourse on the relationship between transparency, perceived control, and consumer purchasing decision. The research questions (RQs) are as follows:

*RQ1: How does perceived transparency influence the acceptance of personalized recommendations by AI?*
*RQ2: How do different levels of perceived control impact consumer decision-making when interacting with AI systems?*

By answering these questions, this study seeks to provide valuable insights for both practitioners and researchers, contributing to a deeper understanding of the role of transparency and perceived control in the interaction between consumers and AI systems in marketing.

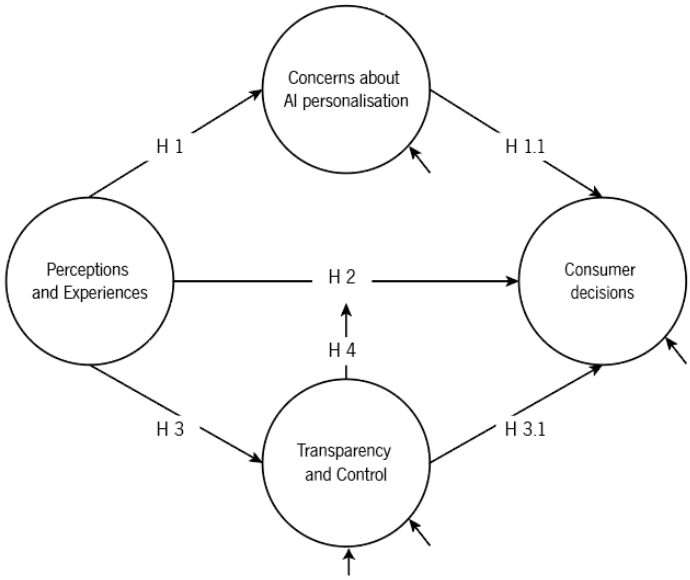



Figure 1 - Proposed Structural Model

*Source: Author*

The main objective of this research is to understand how transparency and perceived control of AI tools influence the relationship between consumers' perception of AI and their purchasing decisions. To achieve this objective, the following specific points have been defined: i) analyze the effect of perceived transparency on consumer trust in AI systems; ii) evaluate how different levels of perceived control affect the acceptance of personalized recommendations; iii) investigate how transparency and perceived control act as mediators between consumers' perceptions and concerns about AI and their purchasing decisions.

To gain these insights, the research was conducted online, using a non-probability convenience sample, over two months, from March to April 2024.

Initially, participants were asked to give their informed consent, which detailed various aspects of the research project including its objectives and the confidentiality safeguards in place. They were then asked to respond to several questionnaires concerning different aspects of digital marketing and artificial intelligence. These questionnaires covered topics such as general perceptions of AI, consumer experiences, the impact of these technologies on purchasing decisions, and specific concerns and expectations felt by consumers. The survey concluded with a socio-demographic questionnaire that collected personal information from the participants. This thorough methodology was designed to collect significant insights into current consumer attitudes towards AI and digital marketing.

## *3.1. Sample characteristics*

The sample has 81 participants, 39 (48.1%) men, and 42 (51.9%) women. The age of the participants is between 35 and 67 years, with an average age of 51.36 years (SD= 7.95%), all are of Portuguese nationality.

This study was characterized by the regional and academic heterogeneity of its participants, as illustrated in Table 1. Data analysis revealed a preponderance of respondents from the Centre region, making up 63% of the sample, followed by a substantial representation from the North with 24.7%. The metropolitan areas of Lisbon, the Alentejo, and the Algarve showed more modest participation, each contributing less than 10% of the participants.

Furthermore, the educational profile of the respondents proved to be remarkably inclined towards advanced stages of academic training, with an overwhelming majority of 67.9% holding a doctorate. Master's degree holders accounted for 17.3%, while participants with post-doctoral training accounted for 7.4%. Undergraduate and postgraduate training levels had a minimal presence in the sample.

## *3.2. Instruments*

Table 2 provides a comprehensive overview of consumer perceptions and experiences concerning the personalization promoted by Artificial Intelligence (AI) in online marketing.

*Table 1 – Distribution of participants per region*

| Region | Number of participants |
|---|---|
| North | 20 (24.7%) |
| Center | 51 (63%) |
| Lisbon Metropolitan Area | 8 (9.9%) |
| Alentejo | 1 (1.2%) |
| Algarve | 1 (1.2%) |
| Undergraduate | 4 (4.9%) |
| Postgraduate | 1 (1.2%) |
| Masters | 14 (17.3%) |
| Doctorate | 55 (67.9%) |
| Post-Doctorate | 6 (7.4%) |
| Aggregation | 1 (1.2%) |

*Source: Author*

*Table 2 – Consumer perceptions of AI personalization in online marketing*

| | M | SD |
|---|---|---|
| **Perceptions and Experiences** (α = .79) | | |
| AI significantly improves the relevance of the adverts I see online. | 3.14 | .787 |
| Personalized shopping experiences created by AI make my online browsing more efficient. | 3.11 | .873 |
| My negative experiences with personalized marketing by AI have been minimal or non-existent. | 3.01 | .783 |
| **Consumer Decisions** (α = .58) | | |
| I value personalized product/service recommendations made by AI systems. | 2.80 | .993 |
| Personalized AI recommendations often influence my online purchasing decisions. | 2.27 | 1.08 |
| I prefer direct interactions with humans to AI-automated interactions during the purchase process. | 1.77 | .978 |
| **Transparency and Control (**α=.68) | | |
| I would like to have more control over how my data is used for personalization by AI. | 4.51 | .654 |
| Transparency from companies about the use of AI in marketing is fundamental to my trust. | 4.40 | .736 |
| **Concerns about AI Personalisation (**α=0.70) | | |
| Excessive personalization by AI in marketing makes me feel uncomfortable. (inverted) | 4.14 | .833 |
| Adverts that seem to 'know too much' about my personal interests cause concern. (inverted) | 4.21 | .832 |

*Source: Author*

To assess perceptions and consumer experiences, a three-dimensional scale was developed (e.g., 'AI significantly improves the relevance of the adverts I see online."). This scale showed an acceptable level of internal consistency with a Cronbach's alpha of .79, which is in line with the parameters established by Gliem & Gliem (2003). Participants showed a moderately positive perception of the relevance of personalized ads and the efficiency of shopping experiences promoted by AI, with averages of 3.14 and 3.11 respectively. In addition, consumers reported minimal or no negative experiences with personalized marketing (M = 3.01). However, the relatively high standard deviations suggest considerable variation in individual perceptions.

About the evaluation of consumer decisions and their impact on purchasing decisions, another three-dimensional scale was developed (e.g., 'I value personalized product/service recommendations made by AI systems.'), where it registered an internal consistency index considered poor (α=.58). This dimension revealed that although consumers value personalized recommendations (M=2.80), their influence on purchasing decisions is still limited (M=2.27). Furthermore, consumers prefer direct interactions with humans over automated interactions by AI during the purchasing process (M=1.77).

Regarding transparency and control perceived by consumers, a two-dimensional scale was created (e.g., 'I would like to have more control over how my data is used for personalization by AI.'). This scale obtained a questionable internal consistency index (α=.68). The dimension showed strong consumer concerns about transparency and control in the use of their data for personalization. The average of 4.51 for 'desire for greater control over data' and 4.40 for 'transparency fundamental to trust' indicates that consumers want greater participation and understanding of how their data is used.

Finally, to probe consumers' concerns about AI personalization, a two-dimensional scale was established (e.g., 'Excessive personalization by AI in marketing makes me feel uncomfortable.'), which showed an acceptable internal consistency index (α=0.70). Consumers showed significant discomfort with excessive personalization, expressing concerns about ads that seem to know too much about their personal interests (M=4.21) and discomfort with excessive personalization (M=4.14).

All the scales were answered on a Likert-type response scale, ranging from 1 (totally disagree) to 5 (totally agree), thus enabling a quantitative ranking of the respondents' attitudes and perceptions.

# 4. Results

Statistical analyses were performed using the Statistical Package for the Social Science (IBM SPSS), version 29.0, and the Analysis of Moment Structures (AMOS), version 29.0.

Table 3 shows the correlations between the variables analyzed, as well as the internal consistency indices of the structural model variables for the total sample (n=81). The magnitude of the correlations shows the presence of moderate (.30 < r < .50) and strong (r > .50) relationships (Cohen, 1988) between the variables, with no signs of multicollinearity. In addition, most of the correlations are statistically significant (p < .10), meeting the assumption of linearity.

*Table 3 – Correlations between study variables*

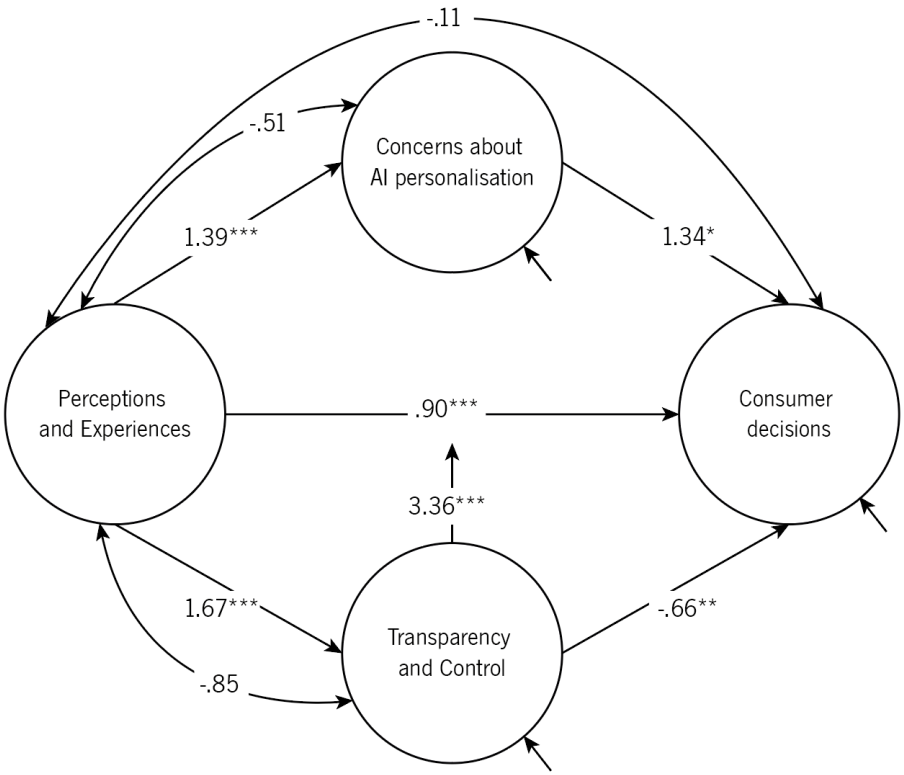
| | Perceptions and Experiences | Consumer Decisions | Transparency and Control |
|---|---|---|---|
| Perceptions and Experiences | . | . | . |
| Consumer Decisions | .510*** | . | . |
| Transparency and Control | .072 | -.185* | . |
| Concerns about AI Personalisation | . 124 | -373*** | .529*** |

*Source: Author*

Path analysis was carried out to assess the suitability of the structural model to the data and check whether the hypotheses previously formulated were confirmed, thus validating the existence of the proposed relationships between the constructs.

The final structural model showed a very good CFI value (≥.95; for the present sample 1), a very good GFI value (≥.95; for the present sample 1), an unacceptable RMSEA value (.05>RMSEA<.10; for the present sample .35) and an AIC value of 20.00.

Figure 2 shows the standardized estimates between the constructs of the final structural model. These estimates were evaluated and normalized to provide an accurate and academically rigorous representation of the relationships between these key components.




Note: * p < 0.10; ** p < 0.05; *** p < 0.01.

Figure 2 - Final Structural Model

*Source: Author*

Based on these findings, all the initially proposed hypotheses can be validated.

# 5. Discussion

The coefficient of 1.39 (***), indicating a strong positive relationship between ‘Perceptions and Experiences’ and ‘Concerns about AI Personalisation’, suggests that consumer perceptions and experiences play a crucial role in shaping concerns about AI personalization. However, the direct relationship between perceptions/experiences and concerns can vary considerably between different consumer segments. Younger consumers, for example, may be more accustomed to personalization systems and therefore less concerned about privacy compared to older consumers (Liu et al., 2021). The sample used in the study is predominantly made up of highly educated individuals, possibly biasing the results towards a more critical view.

A coefficient of 0.90 (***) reveals a direct relationship between consumers' perceptions/experiences and their purchasing decisions. Zhang & Qi (2019) and Zhang & Doucette (2019) also suggest that positive perceptions of AI influence favourable decisions, improving the consumer experience. However, the positive influence can be mediated by other factors not considered in the model, such as brand trust or previous experiences with online shopping, as consumer perceptions can be affected by previous experiences with personalized recommendations (Kim et al., 2021). The ‘Consumer Decisions’ variable is assessed using a scale with a relatively low internal consistency index ($\alpha = .58$), suggesting that it may not capture the full complexity of the decision-making process.

With a coefficient of 1.67 (***), there is a strong link between consumer perceptions and the importance of transparency and control over data. This confirms the studies by Kumar et al. (2019) and Lavelle-Hill et al. (2020), which emphasize the growing consumer demand for transparency in AI personalization processes. However, transparency and control are complex concepts. How each consumer understands and values them can differ substantially, especially between those who are familiar with AI systems (Lavelle-Hill et al., 2020). In addition, Yan et al. (2017) points out that the types of control (active/passive) can significantly influence consumer perception, limiting understanding of the mediating effect between perceptions and decisions.

The significant relationship between transparency/control and concerns about AI personalization ($\beta$=.3.36***) is consistent with previous research. Simonson & Sela (2011) reinforce that consumers who perceive a lack of transparency tend to have greater concerns about personalization. However, the simplified approach to the concept of transparency does not consider the different forms of communication (visual, textual, etc.) and how these impact consumers' understanding of AI personalization (Du & Xie, 2021). Furthermore, there is a lack of information on how different levels of transparency and control (e.g. full, partial) affect consumer concerns.

The relationship between transparency/control and consumption decisions ($\beta$= -0.66**) suggests that greater transparency can reduce impulsive consumption decisions, as indicated by Maggioni et al. (2019). However, this relationship may be more complex than shown, as excessive transparency can overwhelm consumers with irrelevant information, making the decision-making process more difficult (Kim et al., 2021; Davenport et al., 2020). The negative relationship may depend heavily on the cultural context, which is not explored in this study. Yan et al. (2017) points out that consumers' perceptions of control can vary significantly between different cultures, influencing how transparency and control impact their decisions.

The positive influence ($\beta$=.1.34*) between concerns and decisions suggests that even concerns about AI do not necessarily prevent purchasing decisions. Consumers who have concerns about AI can still be influenced in their purchasing decisions, confirming the findings of Wang et al. (2022). However, concerns can lead to compensatory behaviors, such as actively seeking less invasive alternatives (Oke et al., 2023). The sample may not be representative of all consumer segments, and the effects of concerns may differ between different demographic groups.

The indirect influence of perceptions/experiences on consumption decisions through concerns is significant. However, it is unclear whether this indirect influence is consistent across different levels of AI perception, suggesting a possible moderation by familiarity with the technology (Lavelle-Hill et al., 2020). Mediation through transparency and control indicates that positive perceptions lead to better decisions when mediated by trust in AI systems. However, the lack of consideration of types of control (active/passive) limits understanding of the mediating effect (Yan et al., 2017). Davenport et al. (2020) highlights the need for a better understanding of the nuances between different levels of transparency and control to obtain a more complete view of consumer behavior in the context of AI.

# 4. Conclusion

The main findings show that the perception of transparency generates trust and significantly increases consumer acceptance of AI recommendations. Similarly, perceived control, through customizable filters and preferences, allows consumers to personalize recommendations, having a positive impact on their decision-making. Ultimately, it highlights the importance of designing AI systems that prioritize transparency and allow users to take control, promoting trust and a deeper connection with consumers.

The article achieves its aim through the structural model and hypotheses tested which confirm the importance of transparency and control in promoting trust and acceptance, leading to actionable strategies for marketers. The research enriches the understanding of both practitioners and academics by revealing the key drivers of consumer behavior when interacting with AI in marketing.

In response to the first research question, it was found that consumers are more likely to accept personalized recommendations

when companies clearly explain how AI generates them and maintain fair practices. Transparency positively influences consumers' perception of fairness, making them more receptive to personalized AI suggestions. In addition, perceived control plays a significant role. When users can adjust recommendations and customize search filters, it fosters a sense of control over their interactions with AI. This increases their acceptance of and engagement with personalized recommendations. Transparency and control thus act as mediators between AI perceptions and purchasing decisions.

In response to the second question: How do different levels of perceived control impact consumer decision-making when interacting with AI systems?, the research concluded that consumer decision-making is significantly affected by perceived control, which is related to their ability to personalize or modify recommendations. Transparency in AI recommendations create trust, leading to greater acceptance. Consumers are more likely to interact positively with AI systems that enable personalization and control since they align with their goals. The results suggest that transparency and perceived control act as modifiers in shaping consumer perceptions, concerns, and decisions. Greater perceived control can improve consumer acceptance of AI recommendations, thus affecting purchasing behavior.

This study has some limitations that should be acknowledged. The relatively small and homogeneous sample of 81 participants limits the generalizability of its findings to wider populations. Future research could involve larger and more diverse samples to increase external validity. In addition, the cross-sectional design used in this study captured data at a single point in time, which limits insight into the impact of transparency and control on consumer acceptance of AI over time. Longitudinal studies would be valuable to provide deeper insights into this dynamic. In addition, reliance on self-reported measures can lead to social desirability bias, which could distort the results. Future studies could address this issue by supplementing surveys with behavioral data to obtain more objective information.

Theoretically, this study contributes to the field by advancing trust theory and highlighting how transparency and control are critical factors influencing consumer trust in AI systems. It also contributes to the understanding of consumer decision-making models, particularly in how transparency and perceived control mediate the acceptance of AI recommendations. Furthermore, the study enriches the literature on ethical AI by highlighting the importance of fairness, transparency, and control in the development of consumer-centric recommender systems.

In practice, marketers should consider designing AI systems with transparency and control features, such as providing customizable explanations and filters, to increase consumer acceptance.

By offering greater control, marketers can give consumers the chance to personalize their recommendations, increasing engagement and satisfaction. Furthermore, implementing transparent practices can help companies comply with data privacy regulations and align with consumer expectations regarding the ethical use of AI.

In summary, this study allows us to increase our understanding of the significant roles of transparency and perceived control in shaping consumer interactions with AI systems for personalized recommendations.

## Acknowledgements

The authors would like to express their deepest gratitude to all the participants who responded to the questionnaire. This article was presented and included in the proceedings of ICIEMC - International Conference on Innovation and Entrepreneurship in Marketing and Consumer Behaviour.

## References

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences. In Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Routledge. https://doi.org/10.4324/9780203771587

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. Journal of the Academy of Marketing Science, 48(1), 24–42. https://doi.org/10.1007/S11747-019-00696-0/FIGURES/2

De Pelsmacker, P., & Janssens, W. (2007). A model for fair trade buying behavior: The role of perceived quantity and quality of information and product-specific attitudes. Journal of Business Ethics, 75(4), 361–380. https://doi.org/10.1007/S10551-006-9259-2/TABLES/3

Du, S., & Xie, C. (2021). Paradoxes of artificial intelligence in consumer markets: Ethical challenges and opportunities. Journal of Business Research, 129, 961–974. https://doi.org/10.1016/J.JBUSRES.2020.08.024

Gliem, J. A., & Gliem, R. R. (2003). Calculating, Interpreting, And Reporting Cronbach's Alpha Reliability Coefficient For Likert-type scales. Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education. https://hdl.handle.net/1805/344

Gollwitzer, P. M., & Sheeran, P. (2009). Self-regulation of consumer decision making and behavior: The role of implementation intentions. Journal of Consumer Psychology, 19(4), 593–607. https://doi.org/10.1016/J.JCPS.2009.08.004

Kim, M., Kim, J. H., Park, M., & Yoo, J. (2021). The roles of sensory perceptions and mental imagery in consumer decision-making. Journal of Retailing and Consumer Services, 61, 102517. https://doi.org/10.1016/J.JRETCONSER.2021.102517

Korsunova, A., Heiskanen, E., & Vainio, A. (2023). Consumer decision-making on repair in a circular economy: A process model based on experiences among young adults and stakeholders in Finland. Journal of Cleaner Production, 405, 137052. https://doi.org/10.1016/J.JCLEPRO.2023.137052

Kumar, V., Hundal, B. S., & Kaur, K. (2019). Factors affecting consumer buying behavior of solar water pumping system. Smart and Sustainable Built Environment, 8(4), 351–364. https://doi.org/10.1108/SASBE-10-2018-0052/FULL/XML

Lavelle-Hill, R., Goulding, J., Smith, G., Clarke, D. D., & Bibby, P. A. (2020). Psychological and demographic predictors of plastic bag consumption in transaction data. Journal of Environmental Psychology, 72, 101473. https://doi.org/10.1016/J.JENVP.2020.101473

Li, Y. J., Haws, K. L., & Griskevicius, V. (2019). Parenting Motivation and Consumer Decision-Making. Journal of Consumer Research, 45(5), 1117–1137. https://doi.org/10.1093/JCR/UCY038

Liu, C., Zheng, Y., & Cao, D. (2021). Similarity Effect and Purchase Behavior of Organic Food Under the Mediating Role of Perceived Values in the Context of COVID-19. Frontiers in Psychology, 12, 628342. https://doi.org/10.3389/FPSYG.2021.628342/BIBTEX

Maggioni, I., Sands, S., Kachouie, R., & Tsarenko, Y. (2019). Shopping for well-being: The role of consumer decision-making styles. Journal of Business Research, 105, 21–32. https://doi.org/10.1016/J.JBUSRES.2019.07.040

Oke, A., McKenzie, K., Osobajo, O., & Lawani, A. (2023). Effects of millennials willingness to pay on buying behaviour at ethical and socially responsible restaurants: Serial mediation analysis. International Journal of Hospitality Management, 113, 103507. https://doi.org/10.1016/J.IJHM.2023.103507

Qin, H., Peak, D. A., & Prybutok, V. (2021). A virtual market in your pocket: How does mobile augmented reality (MAR) influence consumer decision making? Journal of Retailing and Consumer Services, 58, 102337. https://doi.org/10.1016/J.JRETCONSER.2020.102337

Simonson, I., & Sela, A. (2011). On the heritability of consumer decision making: An exploratory approach for studying genetic effects on judgment and choice. Journal of Consumer Research, 37(6), 951–966. https://doi.org/10.1086/657022/2/M_37-6-951-FG1.JPEG

Wang, Y., Pan, J., Xu, Y., Luo, J., & Wu, Y. (2022). The Determinants of Impulsive Buying Behavior in Electronic Commerce. Sustainability 2022, Vol. 14, Page 7500, 14(12), 7500. https://doi.org/10.3390/SU14127500

Yan, J., Tian, K., Heravi, S., & Morgan, P. (2017). The vices and virtues of consumption choices: price promotion and consumer decision making. Marketing Letters, 28(3), 461–475. https://doi.org/10.1007/S11002-017-9421-X/TABLES/4

Zhang, Y., & Doucette, W. R. (2019). Consumer decision making for using comprehensive medication review services. Journal of the American Pharmacists Association, 59(2), 168-177.e5. https://doi.org/10.1016/j.japh.2018.11.003

Zhang, Y., & Qi, S. (2019). User Experience Study: The Service Expectation of Hotel Guests to the Utilization of AI-Based Service Robot in Full-Service Hotels. Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 11588 LNCS, 350–366. https://doi.org/10.1007/978-3-030-22335-9_24/FIGURES/7

International Journal of Marketing, Innovation and Strategy

2024, 2(1): 46-64
10.34624/ijmis.v2i01.33718
ISSN: 2975-9226

# Game-based Learning in Higher Education: Where Do We Stand?

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## Abstract

In the last decade, game-based learning has been increasingly used in higher education (HE) across various disciplines, from language studies to engineering and medical fields. Scholars have examined key success factors, facilitators, and challenges of game-based learning integration (GBL) in higher education. While some literature reviews exist, they primarily address issues like cultural differences or technological impact without offering a comprehensive synthesis. This study addresses this gap through a systematic literature review of articles from the ISI Web of Science Current Contents database, spanning from 1998 to 2020. The study's final sample of 288 articles underwent two levels of analysis: a bibliometric analysis to highlight significant publications and authors, followed by a content analysis to identify primary research questions, methodologies, and suggested future directions for advancing game-based learning research. Our findings provide an integrated overview of game-based learning's role in higher education, offering a framework for future studies to build on existing insights and address ongoing challenges in applying game-based learning effectively in various educational settings.

**Keywords:** Game-based Learning; serious games; gamification; higher education

## To cite this article:

Saur-Amaral, I.; Aragonez, T. & Gouveia, M. (2024). Game-based Learning in Higher Education: Where Do We Stand?. *International Journal of Marketing Innovation and Strategy,* Vol. 1, No. 2, pp. 46-64. doi.org/10.34624/ijmis.v2i01.33718.

**Received**: September 30, 2023; **Accepted**: October 31, 2024; **Published**: October 31, 2024

# 1. Introduction

The prevalence of digital technologies has driven the development of innovative teaching strategies aimed at engaging and motivating students in higher education. Interactive learning environments allow the incorporation of game elements that have demonstrated to capture student attention, motivate towards goals and promote competition, effective teamwork and communication. Game-based learning (GBL) systems and gamification incorporate game mechanics, e.g., points, competition, and collaboration—into educational frameworks to stimulate engagement, enhance student motivation, and foster teamwork and communication skills (Subhash and Cudney, 2018).

Their application spans various fields, ranging from language acquisition to technical disciplines like engineering, healthcare, and business, making them versatile instruments for diverse educational contexts, as they increase student engagement and support diverse learning styles. Also, incorporating game mechanics can enhance learning outcomes by facilitating goal-oriented behaviors and promoting an enjoyable, competitive learning environment. Additionally, mobile-based GBL strategies have gained prominence for providing flexibility and convenience, enabling learning outside traditional classroom settings and adapting to the habits of digital-native students (Subhash and Cudney, 2018; Troussas et al., 2020).

Key studies have highlighted distinct concepts within GBL, including gamification, serious games, and game-based learning, each offering unique applications and outcomes. Gamification integrates game-like elements within non-game contexts, as illustrated by Brady and Andersen (2019), while serious games focus on educational content delivered through a gaming interface. The potential of these approaches is vast, yet there is a notable absence of a unified theoretical framework that consolidates the findings across different contexts and methodologies, leading to inconsistent outcomes and interpretations.

To fill the identified gap, this research generates knowledge through the integration of published research in journals, Web of Science, more specifically in ISI Current Contents, in the Social & Behavioral Sciences Database between 1998 and 2020.

The paper is organised into three sections. The first one is the current introduction. The second one is the methodology chapter, in which we incorporate the relevant aspects for the systematic literature review. The third section presents the results obtained from the systematic literature review, namely descriptive statistics on the relevant sample, as well as the main authors, years of publication and main journals, in section 3.1., and the results of the content analysis and literature maps with the main schools of thought identified and the main thematic areas of study, in section 3.2. In the fourth and last section, we present the critical discussion and also indicate future research directions.

# 2. Methodology

A systematic review is a comprehensive research methodology that involves both quantitative, bibliographic analysis and qualitative, thematic analysis (Saur-Amaral, Reis Soares, & Proenca, 2018). To develop our research, we followed a three-step approach (Saur-Amaral et al., 2013): a) *Planning:* development of the review protocol; b) *Research:* implementation of the review protocol by three independent researchers; c) *Reporting:* analysis of the results and development of literature maps.

In our study, we have followed established conventions by concentrating solely on peer-reviewed academic journal articles in English. This selective approach serves to uphold the quality of the literature considered while also ensuring that our sample remains manageable for in-depth analysis.

We searched for “gamification”, “game-based learning” and “serious games” combined with “higher education” in Topic, in three separate searches on ISI Current Contents, Social & Behavioral Sciences Database, using as filter the period between 1998 and 2020.

After the search, the data was exported to Endnote 20, and a first selection of valid results was obtained (998 articles). Then, all results were read and all papers that did not relate with the topic of the systematic search were eliminated.

A total of 288 results remained after this step. Next, a qualitative analysis was developed using NVivo on the results imported from Endnote.

# 3. Results

We present our results as follows. First, we present the bibliometric analysis, where the yearly distribution of papers, as well as top authors and journals are shown. Second and last, we present the results of the content analysis, which reveals key topics studied by the authors.

## *3.1. Bibliometric analysis*

Regarding paper distribution per year (see Figure 1), there has been a flat tendency between 1998 and 2004, with only one publication per year and a slow increase of publications between 2005 and 2014. An ascendant trend in the number of publications happened from 2015 onwards. This reveals an increasing interest in the topic.

A similar tendency is observed when coming to the number of journals that published papers on GBL over the years (see Figure 2). In 2020, the number of journals that published papers on GBL was 27.

Regarding scientific journals that were most representative in terms of the number of publications in the analysed period (see Table 1), we find Computers & Education, Sustainability, British Journal of Educational Technology, Educational Technology & Society and Computers in Human Behavior. Considering that Sustainability is an eclectic journal with an encompassing editorial policy, we may conclude there is a predominance of education technology-oriented journals.

In the first years analyzed, there was no specialization in the papers published. Only from 2015, the GBL started to appear more in the technology and education-oriented journals. The Top 5 journals represent 37% of all publications.

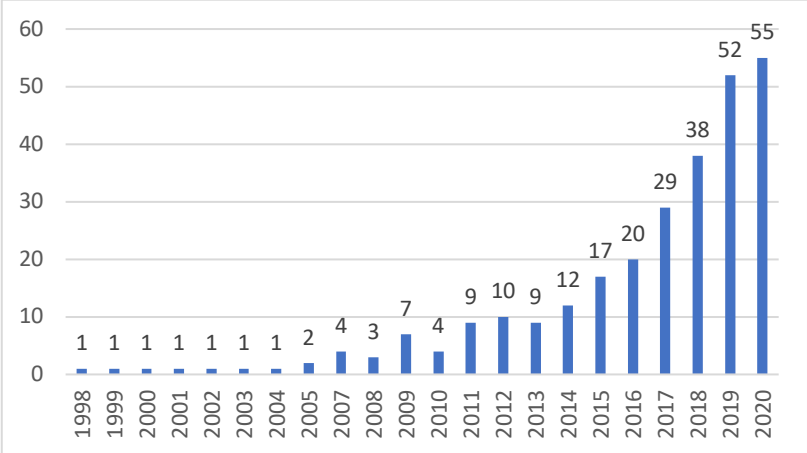


*Figure 1 - Number of GBL papers distributed per Publication Year (1998 to 2020)*

*Source: Own elaboration*

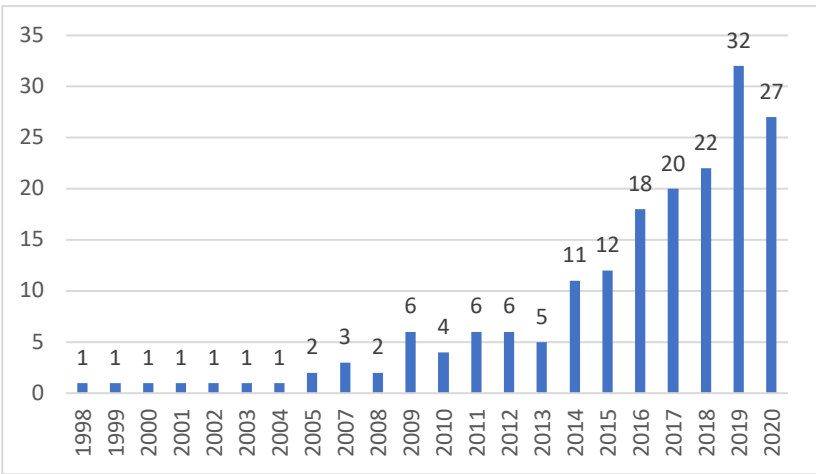


*Figure 2 - Number of Journals that published GBL papers per Publication Year (1998 to 2020)*

*Source: Own elaboration*

*Table 1 – Top five journals per number of GBL papers published (1998 to 2020)*

| Journal | Percentage of total papers published |
|---|---|
| Computers & Education | 14% |
| Sustainability | 9% |
| British Journal of Educational Technology | 5% |
| Educational Technology & Society | 4% |
| Computers in Human Behavior | 4% |

*Source: Own elaboration*

Regarding top authors, considering the period covered by our search (1998-2020) we may conclude that there is no dominant author (see Figure 3). The author that published most GBL papers is Hwang (5 papers), followed by Perez-Lopez, Zaman, Mora-Gonzalez, O'Leary, van Roy, Whitton, Connolly and Delgado-Fernandez (each with 3 papers).

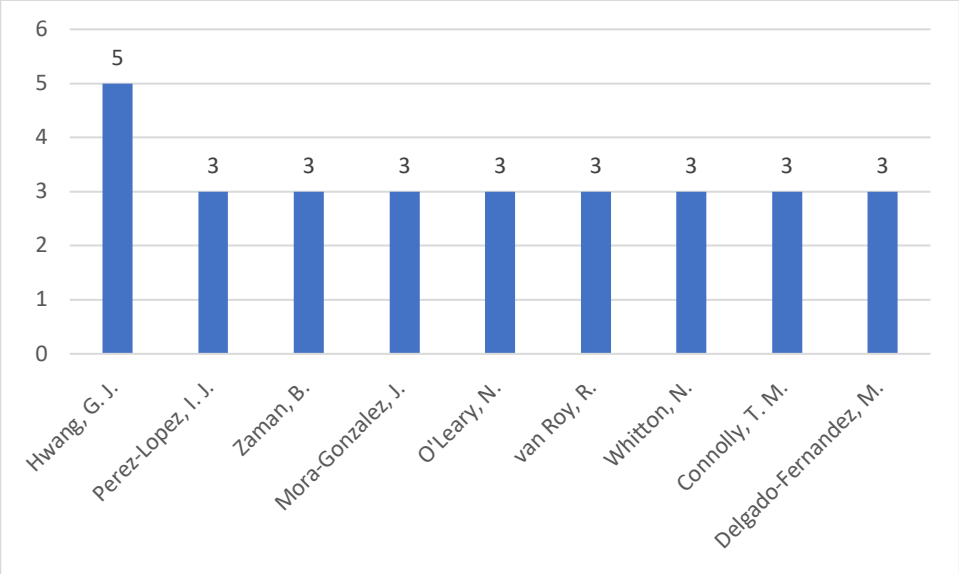


*Figure 3 - Top authors that published GBL papers (1998 to 2020)*

*Source: Own elaboration*

The bibliometric analysis reveals an increasing interest of the academic community in studying game-based learning and there are specific journals that publish more GBL papers as part of their editorial policy (emphasis on Computers & Education). However, there are still no dominant authors and there seems to be space for groups of researchers to focus on this topic as a medium-long term research strategy.

## 4. Content analysis

The qualitative analysis was performed in NVivo 12, based on the content analysis of the abstracts of the sample. As it may be observed in Figure 4, the most frequent words were linked to gaming, learning, students and educators, and it is worth observing that learning, students and teachers (educators) all appear related in the overall analysis of the GBL sample.

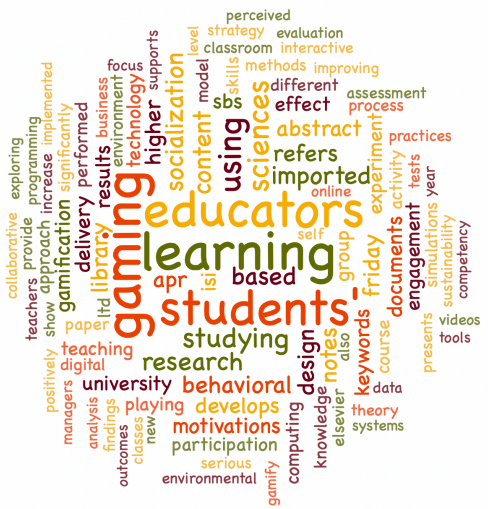


*Figure 4 - Word Frequency Query in NVivo - GBL papers (1998 to 2020)*

*Source: Own elaboration*

Gaming appears in most of the papers, as it would be expected due to the search equations used to obtain the sample, but the remaining three words are also very frequent in the papers, as illustrated in Figure 5.

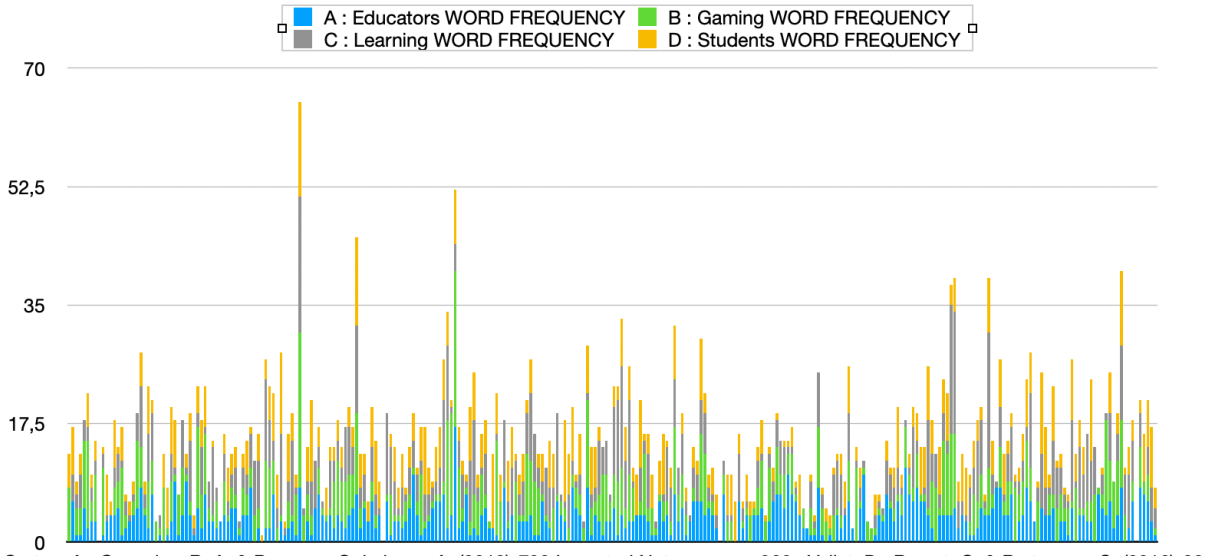


*Figure 5 - Presence of most frequent words in the abstracts - GBL papers (1998 to 2020)*

*Source: Own elaboration*

In terms of concepts, three major approaches are used by the scholars: gamification, game-based learning and serious games. Gamification, defined as "*one type of active learning approach that incentivizes student participation by incorporating gaming elements into the learning experience*" (Brady and Andersen, 2019) is the most frequently used approach (see Figure 6).

Authors focus on GBL using three different perspectives. They use existing games and apply them in HE context, at different levels (undergraduates, postgraduates or executive training), they create games and test them in HE context or they use the concept of gameful design (See Figure 7). Applying existing games is the most used focus.

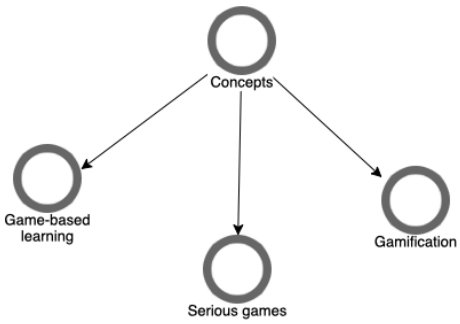


*Figure 6 - Concepts (NVivo Map view)*

*Source: Own elaboration*

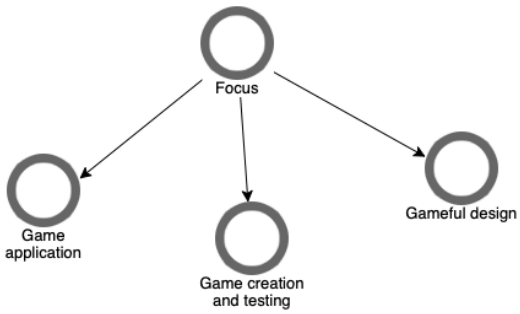


*Figure 7 - GBL focus (NVivo Map view)*

*Source: Own elaboration*

In terms of choice of application medium, most authors choose digital games, frequently associated to students "digital native" generation. A common used tool is Kahoot!, one of "the most popular game-based learning platforms, with 70 million monthly active unique users" (Wang and Tahir, 2020).

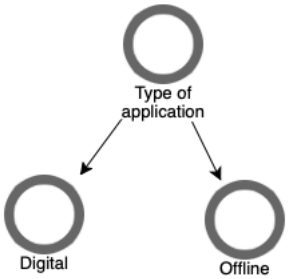


*Figure 8 - Type of application medium (NVivo Map view)*

*Source: Own elaboration*

Regarding the geographical context, authors study GBL in different countries. United Kingdom is the most frequently chosen context, followed by United States, Netherlands, Italy, Spain and France (see Figure 9). In some papers, combined studies are performed, e.g. (Capatina et al., 2018) where simulation tool called Simbound is tested at three European universities in Grenoble (France), Milan (Italy) and Galati (Romania).

Some areas of study in HE are more frequently used as object of studying GBL, as seen in Figure 10. Management / Business is the most used in the sample, both for "soft-skills" (e.g. conflict management in (Bruno et al., 2018)) and for more technical endeavors (e.g. project portfolio in (Barbosa and Rodrigues, 2020) or operations management in (Brandon-Jones et al., 2012)). In medicine and nursing, GBL was used for diagnosis (e.g. (Agudelo-Londono et al., 2019) or capacity to work under pressure (e.g. (Gomez-Urquiza et al., 2019)). Engineering, computer science and maths were other frequently used areas.

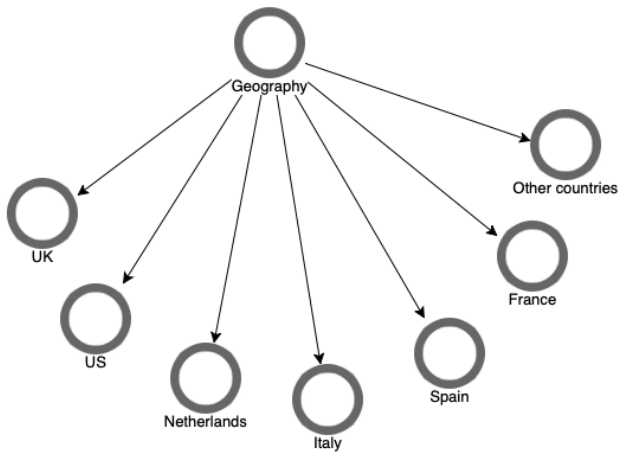


*Figure 9 - Geographical context (NVivo Map view)*

*Source: Own elaboration*

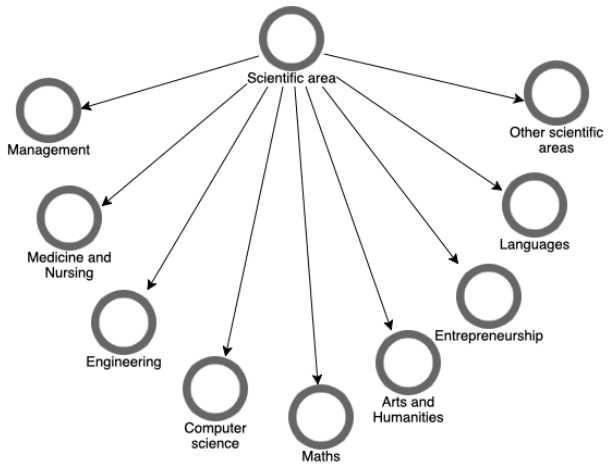


*Figure 10 - Scientific areas (NVivo Map view)*

*Source: Own elaboration*

Finally, regarding methodologies (see Figure 11), authors used as the most frequent method the survey, either alone, or in combination with experiments. Qualitative studies were also frequent and used to understand the reaction of the students to newly created or existing games.

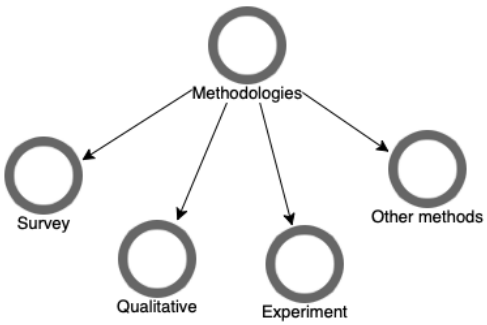


*Figure 11 - Methodologies (NVivo Map view)*

*Source: Own elaboration*

The results from the papers vary, and it is possible to identify papers focusing on different student profiles and different teacher profiles, as well, as well as a set of motivational factors for students and teachers to engage in GBL and a set of facilitating factors to promote the success of GBL implementation in HE.

# 5. Conclusions

Our paper was focused on a systematic literature review aiming to review and integrate the contributions regarding game-based learning in HE. Our results indicate that there has been an increasing interest in the topic in the last years, and that there are already some journals publishing an important number of papers related to GBL. Emphasis falls on Computer & Education, who published 14% of all papers from our sample. However, no author or research group has emerged as a prominent leader, indicating that GBL remains a relatively open field for new contributions and collaborative research initiatives.

Our analysis highlights several takeaways. GBL applications are mainly focused on digital and interactive platforms, leveraging students' familiarity with digital tools and their affinity for technology-driven experiences. This aligns with studies emphasizing the importance of digital natives' adaptability to mobile and web-based learning platforms. However, most studies concentrate on evaluating existing games and identifying success factors and facilitators of learning, rather than developing new games tailored to specific educational objectives.

Different methodologies have been employed in GBL research, involving surveys and experimental designs that aim to capture immediate learning outcomes or motivational shifts, indicating a possible tendency to start the consolidation of this field. Future research directions may focus on the application of existing games and the usage of quantitative methods to further allow the development of GBL academic knowledge considering different cultural and disciplinary contexts.

# Acknowledgements

This work was financially supported by /04058/2020 and UIDP/04058/2020), funded by national funds through FCT - Fundação para a Ciência e a Tecnologia, and by NECE-UBI, Research Centre for Business Sciences, funded by FCT – Fundação para a Ciência e a Tecnologia, IP, project UIDB/04630/2020. This article was presented and included in the proceedings of ICIEMC - International Conference on Innovation and Entrepreneurship in Marketing and Consumer Behaviour.

# References

Agudelo-Londono, S., Gorbanev, I., Delgadillo, V., Munoz, O., Cortes, A., Gonzalez, R. A. & Pomares-Quimbaya, A. 2019. Development and Evaluation of a Serious Game for Teaching ICD-10 Diagnosis Coding to Medical Students. *Games for Health Journal,* 8**,** 349-356.

Barbosa, M. W. & Rodrigues, C. D. 2020. Project Portfolio Management teaching: Contributions of a gamified approach. *International Journal of Management Education,* 18**,** 388-388.

Brady, S. C. & Andersen, E. C. 2019. An escape-room inspired game for genetics review. *Journal of Biological Education***,** NIL_1-NIL_12.

Brandon-Jones, A., Piercy, N. & Slack, N. 2012. Bringing teaching to life Exploring innovative approaches to operations management education. *International Journal of Operations & Production Management,* 32**,** 1369-1374.

Bruno, A., Dell'Aversana, G. & Guidetti, G. 2018. Developing Organizational Competences for Conflict Management: The Use of the Prisoner's Dilemma in Higher Education. *Frontiers in Psychology,* 9**,** 376-376.

Capatina, A., Bleoju, G., Rancati, E. & Hoareau, E. 2018. Tracking precursors of learning analytics over serious game team performance ranking. *Behaviour & Information Technology,* 37**,** 1008-1020.

Gomez-Urquiza, J. L., Gomez-Salgado, J., Albendin-Garcia, L., Correa-Rodriguez, M., Gonzalez-Jimenez, E. & Canadas-De la Fuente, G. A. 2019. The impact on nursing students' opinions and motivation of using a "Nursing Escape Room" as a teaching game: A descriptive study. *Nurse Education Today,* 72**,** 73-76.

Saur-Amaral, I., Ferreira, P. & Conde, R. 2013. Linking Past and Future Research in Tourism Management through the Lens of Marketing and Consumption: A Systematic Literature Review. *Tourism Management Studies***,** 35-40.

Saur-Amaral, I., Reis Soares, R., & Proenca, J. (2018). Business model innovation: towards a conceptual framework. *Tourism & Management Studies*, pp. 80-93.

Subhash, S. & Cudney, E. A. 2018. Gamified learning in higher education: A systematic review of the literature. *Computers in Human Behavior,* 87**,** 192-206.

Troussas, C., Krouska, A. & Sgouropoulou, C. 2020. Collaboration and fuzzy-modeled personalization for mobile game based learning in higher education. *Computers & Education,* 144**,** 3698-3698.

Wang, A. I. & Tahir, R. 2020. The effect of using Kahoot! for learning - A literature review. *Computers & Education,* 149**,** 3818-3818.

## Appendix - list of references used for the analysis


Abenza-Cano, L., Leiva-Arcas, A., Vaquero-Cristobal, R., Garcia-Roca, J. A., Merono, L. & Sanchez-Pato, A. 2020. Effect of Coronavirus Disease 2019 (COVID-19) on Elite Spanish Student-Athletes' Perception of the Dual Career. *Frontiers in Psychology,* 11**,** 20042-20042.

Agoritsas, T., Iserman, E., Hobson, N., Cohen, N., Cohen, A., Roshanov, P. S., Perez, M., Cotoi, C., Parrish, R., Pullenayegum, E., Wilczynski, N. L., Iorio, A. & Haynes, R. B. 2014. Increasing the quantity and quality of searching for current best evidence to answer clinical questions: protocol and intervention design of the MacPLUS FS Factorial Randomized Controlled Trials. *Implementation Science,* 9**,** 125-125.

Agudelo-Londono, S., Gorbanev, I., Delgadillo, V., Munoz, O., Cortes, A., Gonzalez, R. A. & Pomares-Quimbaya, A. 2019. Development and Evaluation of a Serious Game for Teaching ICD-10 Diagnosis Coding to Medical Students. *Games for Health Journal,* 8**,** 349-356.

Aguiar-Castillo, L., Hernandez-Lopez, L., De Saa-Perez, P. & Perez-Jimenez, R. 2020. Gamification as a motivation strategy for higher education students in tourism face-to-face learning. *Journal of Hospitality Leisure Sport & Tourism Education,* 27**,** 267-267.

Aguilar, S. J., Holman, C. & Fishman, B. J. 2018. Game-Inspired Design: Empirical Evidence in Support of Gameful Learning Environments. *Games and Culture,* 13**,** 44-70.

Ak, O. & Kutlu, B. 2017. Comparing 2D and 3D game-based learning environments in terms of learning gains and student perceptions. *British Journal of Educational Technology,* 48**,** 129-144.

Alonso-Diaz, L., Yuste-Tosina, R. & Mendo-Lazaro, S. 2019. Adults video gaming: Key competences for a globalised society. *Computers & Education,* 141**,** 3616-3616.

Ameerbakhsh, O., Maharaj, S., Hussain, A. & McAdam, B. 2019. A comparison of two methods of using a serious game for teaching marine ecology in a university setting. *International Journal of Human-Computer Studies,* 127**,** 181-189.

Antonaci, A., Dagnino, F. M., Ott, M., Bellotti, F., Berta, R., De Gloria, A., Lavagnino, E., Romero, M., Usart, M. & Mayer, I. 2015. A gamified collaborative course in entrepreneurship: Focus on objectives and tools. *Computers in Human Behavior,* 51**,** 1276-1283.

Arango-Lopez, J., Valdivieso, C. C. C., Collazos, C. A., Vela, F. L. G. & Moreira, F. 2019. CREANDO: Tool for creating pervasive games to increase the learning motivation in higher education students. *Telematics and Informatics,* 38**,** 62-73.

Armisen, A. & Majchrzak, A. 2015. Tapping the innovative business potential of innovation contests. *Business Horizons,* 58**,** 389-399.

Arnab, S., Brown, K., Clarke, S., Dunwell, I., Lim, T., Suttie, N., Louchart, S., Hendrix, M. & de Freitas, S. 2013. The development approach of a pedagogically-driven serious game to support Relationship and Sex Education (RSE) within a classroom setting. *Computers & Education,* 69**,** 15-30.

Auvinen, T., Hakulinen, L. & Malmi, L. 2015. Increasing Students' Awareness of Their Behavior in Online Learning Environments with Visualizations and Achievement Badges. *Ieee Transactions on Learning Technologies,* 8**,** 261-273.

Azhari, N. N., Manaf, R. A., Ng, S. W., Bajunid, S., Gobil, A. R. M., Saad, W. Z. & Nordin, S. A. 2019. Gamification, a Successful Method to Foster Leptospirosis Knowledge among University Students: A Pilot Study. *International Journal of Environmental Research and Public Health,* 16**,** 2108-2108.

Barbosa, M. W. & Rodrigues, C. D. 2020. Project Portfolio Management teaching: Contributions of a gamified approach. *International Journal of Management Education,* 18**,** 388-388.

Barr, M. 2017. Video games can develop graduate skills in higher education students: A randomised trial. *Computers & Education,* 113**,** 86-97.

Barr, M. 2018. Student attitudes to games-based skills development: Learning from video games in higher education. *Computers in Human Behavior,* 80**,** 283-294.

Bartos, A. E. & Ives, S. 2019. "Learning the rules of the game': emotional labor and the gendered academic subject in the United States. *Gender Place and Culture,* 26**,** 778-794.

Basal, A. & Kaynak, N. E. 2020. Perceptions of pre-service English teachers towards the use of digital badges. *Innovations in Education and Teaching International,* 57**,** 148-162.

Bass, K. M., Dahl, I. H. & Panahandeh, S. 2016. Designing the Game: How a Project-Based Media Production Program Approaches STEAM Career Readiness for Underrepresented Young Adults. *Journal of Science Education and Technology,* 25**,** 1009-1024.

Bayeck, R. Y. 2020. Exploring video games and learning in South Africa: An integrative review. *Etr&D-Educational Technology Research and Development,* 68**,** 2775-2795.

Bekebrede, G., Warmelink, H. J. G. & Mayer, I. S. 2011. Reviewing the need for gaming in education to accommodate the net generation. *Computers & Education,* 57**,** 1521-1529.

Benjamin, S. & Kline, C. 2019. How to yes-and: Using improvisational games to improv(e) communication, listening, and collaboration techniques in tourism and hospitality education. *Journal of Hospitality Leisure Sport & Tourism Education,* 24**,** 130-142.

Beranic, T. & Hericko, M. 2019. Introducing ERP Concepts to IT Students Using an Experiential Learning Approach with an Emphasis on Reflection. *Sustainability,* 11**,** 4992-4992.

Bertram, L. 2020. Digital Learning Games for Mathematics and Computer Science Education: The Need for Preregistered RCTs, Standardized Methodology, and Advanced Technology. *Frontiers in Psychology,* 11**,** 2127-2127.

Bidler, M., Zimmermann, J., Schumann, J. H. & Widjaja, T. 2020. Increasing Consumers' Willingness to Engage in Data Disclosure Processes through Relevance-Illustrating Game Elements. *Journal of Retailing,* 96**,** 507-523.

Blanco, H. 2002. Training for strategic decision-making post 9-11. *Journal of Biolaw & Business,* 5**,** 60-65.

Bluemink, J., Hamalainen, R., Manninen, T. & Jarvela, S. 2010. Group-level analysis on multiplayer game collaboration: how do the individuals shape the group interaction? *Interactive Learning Environments,* 18**,** 365-383.

Boldbaatar, N. & Sendurur, E. 2019. Developing Educational 3D Games With StarLogo: The Role of Backwards Fading in the Transfer of Programming Experience. *Journal of Educational Computing Research,* 57**,** 1468-1494.

Bolliger, D. U., Mills, D., White, J. & Kohyama, M. 2015. Japanese Students' Perceptions of Digital Game Use for English-Language Learning in Higher Education. *Journal of Educational Computing Research,* 53**,** 384-408.

Bond, M., Buntins, K., Bedenlier, S., Zawacki-Richter, O. & Kerres, M. 2020. Mapping research in student engagement and educational technology in higher education: a systematic evidence map. *International Journal of Educational Technology in Higher Education,* 17**,** 2-2.

Bonnechere, B., Van Vooren, M., Jansen, B., Van Sint, J. S., Rahmoun, M. & Fourtassi, M. 2017. Patients' Acceptance of the Use of Serious Games in Physical Rehabilitation in Morocco. *Games for Health Journal,* 6**,** 290-294.

Bontchev, B., Vassileva, D., Aleksieva-Petrova, A. & Petrov, M. 2018. Playing styles based on experiential learning theory. *Computers in Human Behavior,* 85**,** 319-328.

Bores-Garcia, D., Hortiguela-Alcal, D., Gonzalez-Calvo, G. & Barba-Martin, R. 2020. Peer Assessment in Physical Education: A Systematic Review of the Last Five Years. *Sustainability,* 12**,** 9233-9233.

Bouchrika, I., Harrati, N., Wanick, V. & Wills, G. 2019. Exploring the impact of gamification on student engagement and involvement with e-learning systems. *Interactive Learning Environments***,** NIL_1-NIL_14.

Bound, J., Hershbein, B. & Long, B. T. 2009. Playing the Admissions Game: Student Reactions to Increasing College Competition. *Journal of Economic Perspectives,* 23**,** 119-146.

Boyd, C. A., Warren, J. & Glendon, M. A. 2016. GAMING THE SYSTEM: DEVELOPING AN EDUCATIONAL GAME FOR SECURING PRINCIPLES OF ARTERIAL BLOOD GASES. *Journal of Professional Nursing,* 32**,** S37-S41.

Brady, S. C. & Andersen, E. C. 2019. An escape-room inspired game for genetics review. *Journal of Biological Education***,** NIL_1-NIL_12.

Braghirolli, L. F., Ribeiro, J. L. D., Weise, A. D. & Pizzolato, M. 2016. Benefits of educational games as an introductory activity in industrial engineering education. *Computers in Human Behavior,* 58**,** 315-324.

Brandon-Jones, A., Piercy, N. & Slack, N. 2012. Bringing teaching to life Exploring innovative approaches to operations management education. *International Journal of Operations & Production Management,* 32**,** 1369-1374.

Bridgstock, R. 2016. Educating for digital futures: what the learning strategies of digital media professionals can teach higher education. *Innovations in Education and Teaching International,* 53**,** 306-315.

Brom, C., Starkova, T., Bromova, E. & Dechterenko, F. 2019. Gamifying a Simulation: Do a Game Goal, Choice, Points, and Praise Enhance Learning? *Journal of Educational Computing Research,* 57**,** 1575-1613.

Brull, S. & Finlayson, S. 2016. Importance of Gamification in Increasing Learning. *Journal of Continuing Education in Nursing,* 47**,** 372-375.

Bruno, A., Dell'Aversana, G. & Guidetti, G. 2018. Developing Organizational Competences for Conflict Management: The Use of the Prisoner's Dilemma in Higher Education. *Frontiers in Psychology,* 9**,** 376-376.

Buckley, C. 2015. Conceptualising plagiarism: using Lego to construct students' understanding of authorship and citation. *Teaching in Higher Education,* 20**,** 352-358.

Cakir, N. A., Gass, A., Foster, A. & Lee, F. J. 2017. Development of a game-design workshop girls' interest towards computing through exploration to promote young identity. *Computers & Education,* 108**,** 115-130.

Calabor, M. S., Mora, A. & Moya, S. 2018. Acquisition of competencies with serious games in the accounting field: an empirical analysis. *Revista De Contabilidad-Spanish Accounting Review,* 21**,** 38-47.

Calvert, S. L., Rideout, V. J., Woolard, J. L., Barr, R. F. & Strouse, G. A. 2005. Age, ethnicity, and socioeconomic patterns in early computer use - A national survey. *American Behavioral Scientist,* 48**,** 590-607.

Calvo-Ferrer, J. R. 2020. Exploring digital nativeness as a predictor of digital game-based L2 vocabulary acquisition. *Interactive Learning Environments,* 28**,** 902-914.

Campillo-Ferrer, J. M., Miralles-Martinez, P. & Sanchez-Ibanez, R. 2020. Gamification in Higher Education: Impact on Student Motivation and the Acquisition of Social and Civic Key Competencies. *Sustainability,* 12**,** 4822-4822.

Campos, N., Nogal, M., Caliz, C. & Juan, A. G. A. 2020. Simulation-based education involving online and on-campus models in different European universities. *International Journal of Educational Technology in Higher Education,* 17**,** 8-8.

Capatina, A., Bleoju, G., Rancati, E. & Hoareau, E. 2018. Tracking precursors of learning analytics over serious game team performance ranking. *Behaviour & Information Technology,* 37**,** 1008-1020.

Carenys, J., Moya, S. & Perramon, J. 2017. Is it worth it to consider videogames in accounting education? A comparison of a simulation and a videogame in attributes, motivation and learning outcomes. *Revista De Contabilidad-Spanish Accounting Review,* 20**,** 118-130.

Carra, G., Crocamo, C., Bartoli, F., Carretta, D., Schivalocchi, A., Bebbington, P. E. & Clerici, M. 2016. Impact of a Mobile E-Health Intervention on Binge Drinking in Young People: The Digital-Alcohol Risk Alertness Notifying Network for Adolescents and Young Adults Project. *Journal of Adolescent Health,* 58**,** 520-526.

Chang, C. C., Liang, C., Chou, P. N. & Lin, G. Y. 2017. Is game-based learning better in flow experience and various types of cognitive load than non-game-based learning? Perspective from multimedia and media richness. *Computers in Human Behavior,* 71**,** 218-227.

Chang, C. S., Chung, C. H. & Chang, J. A. 2020. Influence of problem-based learning games on effective computer programming learning in higher education. *Etr&D-Educational Technology Research and Development,* 68**,** 2615-2634.

Charles, D., Charles, T., McNeill, M., Bustard, D. & Black, M. 2011. Game-based feedback for educational multi-user virtual environments. *British Journal of Educational Technology,* 42**,** 638-654.

Chen, C. H. & Yeh, H. C. 2019. Effects of integrating a questioning strategy with game-based learning on students' language learning performances in flipped classrooms. *Technology Pedagogy and Education,* 28**,** 347-361.

Chen, T. L., Hsiao, T. C., Kang, T. C., Wu, T. Y. & Chen, C. C. 2020. Learning Programming Language in Higher Education for Sustainable Development: Point-Earning Bidding Method. *Sustainability,* 12**,** 4489-4489.

Chiao, H. M., Chen, Y. L. & Huang, W. H. 2018. Examining the usability of an online virtual tour-guiding platform for cultural tourism education. *Journal of Hospitality Leisure Sport & Tourism Education,* 23**,** 29-38.

Cho, M. H. & Castaneda, D. A. 2019. Motivational and affective engagement in learning Spanish with a mobile application. *System,* 81**,** 90-99.

Chu, H. C., Chen, J. M. & Tsai, C. L. 2017. Effects of an online formative peer-tutoring approach on students' learning behaviors, performance and cognitive load in mathematics. *Interactive Learning Environments,* 25**,** 203-219.

Chung-Shing, C., Yat-Hang, C. & Agnes, F. T. H. 2020. The effectiveness of online scenario game for ecotourism education from knowledge-attitude-usability dimensions. *Journal of Hospitality Leisure Sport & Tourism Education,* 27**,** 264-264.

Coleman, T. E. & Money, A. G. 2020. Student-centred digital game-based learning: a conceptual framework and survey of the state of the art. *Higher Education,* 79**,** 415-457.

Costa, L. V., Veloso, A. I., Loizou, M. & Arnab, S. 2018. Games for active ageing, well-being and quality of life: a pilot study. *Behaviour & Information Technology,* 37**,** 842-854.

Cozine, K. 2015. Thinking Interestingly: The Use of Game Play to Enhance Learning and Facilitate Critical Thinking Within a Homeland Security Curriculum. *British Journal of Educational Studies,* 63**,** 367-385.

Cutumisu, M. & Schwartz, D. L. 2018. The impact of critical feedback choice on students' revision, performance, learning, and memory. *Computers in Human Behavior,* 78**,** 351-367.

Das, S. 2012. On two metaphors for pedagogy and creativity in the digital era: liquid and solid learning. *Innovations in Education and Teaching International,* 49**,** 183-193.

Davis, J. S. 2019. IQA: Qualitative research to discover how and why students learn from economic games. *International Review of Economics Education,* 31**,** 160-160.

de Freitas, S. I., Morgan, J. & Gibson, D. 2015. Will MOOCs transform learning and teaching in higher education? Engagement and course retention in online learning provision. *British Journal of Educational Technology,* 46**,** 455-471.

de la Torre, R. & Berbegal-Mirabent, J. 2020. Using game-based principles to empower students in non-STEM academic programmes. *Innovations in Education and Teaching International,* 57**,** 511-520.

Diamond, S., Middleton, A. & Mather, R. 2011. A cross-faculty simulation model for authentic learning. *Innovations in Education and Teaching International,* 48**,** 25-35.

Dickey, M. D. 2011. World of Warcraft and the impact of game culture and play in an undergraduate game design course. *Computers & Education,* 56**,** 200-209.

Dominguez, A., Saenz-de-Navarrete, J., de-Marcos, L., Fernandez-Sanz, L., Pages, C. & Martinez-Herraiz, J. J. 2013. Gamifying learning experiences: Practical implications and outcomes. *Computers & Education,* 63**,** 380-392.

Donald, I., Meyer, K. A., Brengman, J., Gillespie, S. H. & Bowness, R. 2017. Project Sanitarium: playing tuberculosis to its end game. *Journal of Computing in Higher Education,* 29**,** 599-617.

Dondi, C. & Moretti, M. 2007. A methodological proposal for learning games selection and quality assessment. *British Journal of Educational Technology,* 38**,** 502-512.

Ebner, M. & Holzinger, A. 2007. Successful implementation of user-centered game based learning in higher education: An example from civil engineering. *Computers & Education,* 49**,** 873-890.

Ellahi, A., Zaka, B. & Sultan, F. 2017. A Study of Supplementing Conventional Business Education Digital Games. *Educational Technology & Society,* 20**,** 195-206.

Emblen-Perry, K. 2018. Enhancing student engagement in business sustainability through games. *International Journal of Sustainability in Higher Education,* 19**,** 858-876.

Esteban, F. D. D., Torralbo, J. A. L., Casas, D. L. & Garcia, M. C. B. 2020. Web gamification with problem simulators for teaching engineering. *Journal of Computing in Higher Education,* 32**,** NIL_135-NIL_161.

Fabricatore, C. & Lopez, M. X. 2014. Complexity-based learning and teaching: a case study in higher education. *Innovations in Education and Teaching International,* 51**,** 618-630.

Fejes, A., Johansson, K. & Dahlgren, M. A. 2005. Learning to play the seminar game: students' initial encounters with a basic working form in higher education. *Teaching in Higher Education,* 10**,** 29-41.

Felszeghy, S., Pasonen-Seppanen, S., Koskela, A., Nieminen, P., Harkonen, K., Paldanius, K. M. A., Gabbouj, S., Ketola, K., Hiltunen, M., Lundin, M., Haapaniemi, T., Sointu, E., Bauman, E. B., Gilbert, G. E., Morton, D. & Mahonen, A. 2019. Using online game-based platforms to improve student performance and engagement in histology teaching. *Bmc Medical Education,* 19**,** 273-273.

Fernandez, P. & Ceacero-Moreno, M. 2021. Study of the Training of Environmentalists through Gamification as A University Course. *Sustainability,* 13**,** 2323-2323.

Ferriz-Valero, A., Osterlie, O., Martinez, S. G. & Garcia-Jaen, M. 2020. Gamification in Physical Education: Evaluation of Impact on Motivation and Academic Performance within Higher Education. *International Journal of Environmental Research and Public Health,* 17**,** 4465-4465.

Florenthal, B. 2019. Young consumers' motivational drivers of brand engagement behavior on social media sites A synthesized U&G and TAM framework. *Journal of Research in Interactive Marketing,* 13**,** 351-391.

Fossl, T., Ebner, M., Schon, S. & Holzinger, A. 2016. A Field Study of a Video Supported Seamless-Learning-Setting with Elementary Learners. *Educational Technology & Society,* 19**,** 321-336.

Franciosi, S. J. 2017. The Effect of Computer Game-Based Learning on FL Vocabulary Transferability. *Educational Technology & Society,* 20**,** 123-133.

Fu, E., Gao, Q. F., Wei, C. Q., Chen, Q. Y. & Liu, Y. J. 2021. Understanding student simultaneous smartphone use in learning settings: A conceptual framework. *Journal of Computer Assisted Learning,* 37**,** 91-108.

Garcia-Penalvo, F. J. & Mendes, A. J. 2018. Exploring the computational thinking effects in pre-university education. *Computers in Human Behavior,* 80**,** 407-411.

Garnett, T. & Button, D. 2018. The use of digital badges by undergraduate nursing students: A three-year study. *Nurse Education in Practice,* 32**,** 1-8.

Gibson, V. & Douglas, M. 2013. Criticality: The experience of developing an interactive educational tool based on board games. *Nurse Education Today,* 33**,** 1612-1616.

Gil-Domenech, D. & Berbegal-Mirabent, J. 2019. Stimulating students' engagement in mathematics courses in non-STEM academic programmes: A game-based learning. *Innovations in Education and Teaching International,* 56**,** 57-65.

Gomez-Galan, J., Vazquez-Cano, E., de la Rosa, A. L. & Lopez-Meneses, E. 2020. Socio-Educational Impact of Augmented Reality (AR) in Sustainable Learning Ecologies: A Semantic Modeling Approach. *Sustainability,* 12**,** 9116-9116.

Gomez-Ruiz, M. L., Morales-Yago, F. J. & de Lazaro-Torres, M. L. 2021. Outdoor Education, the Enhancement and Sustainability of Cultural Heritage: Medieval Madrid. *Sustainability,* 13**,** 1106-1106.

Gomez-Urquiza, J. L., Gomez-Salgado, J., Albendin-Garcia, L., Correa-Rodriguez, M., Gonzalez-Jimenez, E. & Canadas-De la Fuente, G. A. 2019. The impact on nursing students' opinions and motivation of using a "Nursing Escape Room" as a teaching game: A descriptive study. *Nurse Education Today,* 72**,** 73-76.

Gomis-Porqueras, P. & Rodrigues-Neto, J. A. 2018. Teaching technologies, attendance, learning and the optimal level of access to online materials. *Economic Modelling,* 73**,** 329-342.

Gonzalez-Dominguez, J., Sanchez-Barroso, G., Zamora-Polo, F. & Garcia-Sanz-Calcedo, J. 2020. Application of Circular Economy Techniques for Design and Development of Products through Collaborative Project-Based Learning for Industrial Engineer Teaching. *Sustainability,* 12**,** 4368-4368.

Gonzalez-Marcos, A., Alba-Elias, F. & Ordieres-Mere, J. 2016. An analytical method for measuring competence in project management. *British Journal of Educational Technology,* 47**,** 1324-1339.

Gonzalez-Tablas, A. I., de Fuentes, J. M., Hernandez-Ardieta, J. L. & Ramos, B. 2013. Leveraging Quiz-based Multiple-prize Web Tournaments for Reinforcing Routine Mathematical Skills. *Educational Technology & Society,* 16**,** 28-43.

Gordon, S. & Thomas, I. 2018. 'The learning sticks': reflections on a case study of role-playing for sustainability. *Environmental Education Research,* 24**,** 172-190.

Grivokostopoulou, F., Kovas, K. & Perikos, I. 2019. Examining the Impact of a Gamified Entrepreneurship Education Framework in Higher Education. *Sustainability,* 11**,** 5623-5623.

Guillen-Nieto, V. & Aleson-Carbonell, M. 2012. Serious games and learning effectiveness: The case of It's a Deal! *Computers & Education,* 58**,** 435-448.

Hainey, T., Connolly, T., Stansfield, M. & Boyle, E. 2011. The differences in motivations of online game players and offline game players: A combined analysis of three studies at higher education level. *Computers & Education,* 57**,** 2197-2211.

Hainey, T., Westera, W., Connolly, T. M., Boyle, L., Baxter, G., Beeby, R. B. & Soflano, M. 2013. Students' attitudes toward playing games and using games in education: Comparing Scotland and the Netherlands. *Computers & Education,* 69**,** 474-484.

Hannig, A., Kuth, N., Ozman, M., Jonas, S. & Spreckelsen, C. 2012. eMedOffice: A web-based collaborative serious game for teaching optimal design of a medical practice. *Bmc Medical Education,* 12**,** 104-104.

Hemmi, A., Narumi-Munro, F., Alexander, W., Parker, H. & Yamauchi, Y. 2014. Co-evolution of mobile language learning: Going global with games consoles in higher education. *British Journal of Educational Technology,* 45**,** 356-366.

Herbert, I. P., Rothwell, A. T., Glover, J. L. & Lambert, S. A. 2020. Graduate employability, employment prospects and work-readiness in the changing field of professional work. *International Journal of Management Education,* 18**,** 378-378.

Hernandez-Lara, A. B. & Serradell-Lopez, E. 2018. Student interactions in online discussion forums: their perception on learning with business simulation games. *Behaviour & Information Technology,* 37**,** 419-429.

Hernandez-Lara, A. B., Serradell-Lopez, E. & Fito-Bertran, A. 2019. Students' perception of the impact of competences on learning: An analysis with business simulations. *Computers in Human Behavior,* 101**,** 311-319.

Herrera, R. F., Sanz, M. A., Montalban-Domingo, L., Garcia-Segura, T. & Pellicer, E. 2019. Impact of Game-Based Learning on Understanding Lean Construction Principles. *Sustainability,* 11**,** 5294-5294.

Hew, K. F., Huang, B., Chu, K. W. S. & Chiu, D. K. W. 2016. Engaging Asian students through game mechanics: Findings from two experiment studies. *Computers & Education,* 92-93**,** 221-236.

Holbrey, C. E. 2020. Kahoot! Using a game-based approach to blended learning to support effective learning environments and student engagement in traditional lecture theatres. *Technology Pedagogy and Education,* 29**,** 191-202.

Holdsworth, N. 2021. Disrupting monopoly: homelessness, gamification and learned resourcefulness. *Ride-the Journal of Applied Theatre and Performance,* 26**,** 38-52.

Holton, M. 2015. Learning the rules of the "student game': transforming the "student habitus' through im mobility. *Environment and Planning a-Economy and Space,* 47**,** 2373-2388.

Hou, H. T. & Li, M. C. 2014. Evaluating multiple aspects of a digital educational problem-solving-based adventure game. *Computers in Human Behavior,* 30**,** 29-38.

Hsu, C. Y., Chiou, G. L. & Tsai, M. J. 2019. Visual behavior and self-efficacy of game playing: an eye movement analysis. *Interactive Learning Environments,* 27**,** 942-952.

Hsu, Y. C., Ho, H. N. J., Tsai, C. C., Hwang, G. J., Chu, H. C., Wang, C. Y. & Chen, N. S. 2012. Research Trends in Technology-based Learning from 2000 to 2009: A content Analysis of Publications in Selected Journals. *Educational Technology & Society,* 15**,** 354-370.

Huang, B. Y. & Hew, K. F. 2018. Implementing a theory-driven gamification model in higher education flipped courses: Effects on out-of-class activity completion and quality of artifacts. *Computers & Education,* 125**,** 254-272.

Huang, B. Y., Hew, K. F. & Lo, C. K. 2019. Investigating the effects of gamification-enhanced flipped learning on undergraduate students' behavioral and cognitive engagement. *Interactive Learning Environments,* 27**,** 1106-1126.

Huang, W. D., Johnson, T. E. & Han, S. H. C. 2013a. Impact of online instructional game features on college students' perceived motivational support and cognitive investment: A structural equation modeling study. *Internet and Higher Education,* 17**,** 58-68.

Huang, W. H. D., Hood, D. W. & Yoo, S. J. 2013b. Gender divide and acceptance of collaborative Web 2.0 applications for learning in higher education. *Internet and Higher Education,* 16**,** 57-65.

Hung, H. T. 2017. Clickers in the flipped classroom: bring your own device (BYOD) to promote student learning. *Interactive Learning Environments,* 25**,** 983-995.

Hung, H. T., Yang, J. C., Hwang, G. J., Chu, H. C. & Wang, C. C. 2018. A scoping review of research on digital game-based language learning. *Computers & Education,* 126**,** 89-104.

Hwang, G. J., Hung, C. M. & Chen, N. S. 2014. Improving learning achievements, motivations and problem-solving skills through a peer assessment-based game development approach. *Etr&D-Educational Technology Research and Development,* 62**,** 129-145.

Ibrahim, K. 2019. Foreign language practice in simulation video games: An analysis of game-based FL use dynamics. *Foreign Language Annals,* 52**,** 335-357.

Jagger, S., Siala, H. & Sloan, D. 2016. It's All in the Game: A 3D Learning Model for Business Ethics. *Journal of Business Ethics,* 137**,** 383-403.

Janet, J. & Miles, M. 2009. ARTEMIS: Reinvigorating History and Theory in Art and Design Education. *International Journal of Art & Design Education,* 28**,** 52-60.

Jarmon, L., Traphagan, T., Mayrath, M. & Trivedi, A. 2009. Virtual world teaching, experiential learning, and assessment: An interdisciplinary communication course in Second Life. *Computers & Education,* 53**,** 169-182.

Jimenez-Rodriguez, D., Garcia, T. B. & Luque, V. A. 2020. Perception of nursing students about the implementation of GREENS (c) methodology in nursing studies. *Nurse Education Today,* 92**,** 4495-4495.

Jouan, J., De Graeuwe, M., Carof, M., Baccar, R., Bareille, N., Bastian, S., Brogna, D., Burgio, G., Couvreur, S., Cupial, M., Dumont, B., Jacquot, A. L., Magagnoli, S., Makulska, J., Marechal, K., Peres, G., Ridier, A., Salou, T., Tombarkiewicz, B., Sgolastra, F. & Godinot, O. 2020. Learning Interdisciplinarity and Systems Approaches in Agroecology: Experience with the Serious Game SEGAE. *Sustainability,* 12**,** 4351-4351.

Kaneko, K., Saito, Y., Nohara, Y., Kudo, E. & Yamada, M. 2018. Does Physical Activity Enhance Learning Performance?: Learning Effectiveness of Game-based Experiential Learning for University Library Instruction. *Journal of Academic Librarianship,* 44**,** 569-581.

Kay, R., Benzimra, D. & Li, J. 2017. Exploring Factors That Influence Technology-Based Distractions in Bring Your Own Device Classrooms. *Journal of Educational Computing Research,* 55**,** 974-995.

Kay, R. H. & Lauricella, S. 2011. GENDER DIFFERENCES IN THE USE OF LAPTOPS IN HIGHER EDUCATION: A FORMATIVE ANALYSIS. *Journal of Educational Computing Research,* 44**,** 361-380.

Kennedy-Clark, S. & Thompson, K. 2011. What Do Students Learn When Collaboratively Using A Computer Game in the Study of Historical Disease Epidemics, and Why? *Games and Culture,* 6**,** 513-537.

Kevern, J. & Webb, C. 2004. Mature women's experiences of preregistration nurse education. *Journal of Advanced Nursing,* 45**,** 297-306.

Keys, E., Luctkar-Flude, M., Tyerman, J., Sears, K. & Woo, K. 2020. Developing a Virtual Simulation Game for Nursing Resuscitation Education. *Clinical Simulation in Nursing,* 39**,** 51-54.

Khatri, P., Raina, K., Wilson, C. & Kickmeier-Rust, M. 2020. Towards mapping competencies through learning analytics: real-time competency assessment for career direction through interactive simulation. *Assessment & Evaluation in Higher Education,* 45**,** 875-887.

Kirk, S. 2019. Creating Analog and Digital Games for Reference Training Overview and Examples. *Reference & User Services Quarterly,* 58**,** 215-218.

Kron, F. W., Gjerde, C. L., Sen, A. & Fetters, M. D. 2010. Medical student attitudes toward video games and related new media technologies in medical education. *Bmc Medical Education,* 10**,** 50-50.

Kuhn, J. W. 1998. Emotion as well as reason: Getting students beyond "interpersonal accountability". *Journal of Business Ethics,* 17**,** 295-308.

Kyewski, E. & Kramer, N. C. 2018. To gamify or not to gamify? An experimental field study of the influence of badges on motivation, activity, and performance in an online learning course. *Computers & Education,* 118**,** 25-37.

Labus, A., Despotovic-Zrakic, M., Radenkovic, B., Bogdanovic, Z. & Radenkovic, M. 2015. Enhancing formal e-learning with edutainment on social networks. *Journal of Computer Assisted Learning,* 31**,** 592-605.

Lalicic, L. & Weber-Sabil, J. 2020. Stakeholder engagement in sustainable tourism planning through serious gaming. *Tourism Geographies,* 23**,** 185-205.

Lameras, P., Arnab, S., Dunwell, I., Stewart, C., Clarke, S. & Petridis, P. 2017. Essential features of serious games design in higher education: Linking learning attributes to game mechanics. *British Journal of Educational Technology,* 48**,** 972-994.

Lareau, A., Evans, S. A. & Yee, A. 2016. The Rules of the Game and the Uncertain Transmission of Advantage: Middle-class Parents' Search for an Urban Kindergarten. *Sociology of Education,* 89**,** 279-299.

Liao, Y. W., Huang, Y. M. & Wang, Y. S. 2015. Factors Affecting Students' Continued Usage Intention Toward Business Simulation Games: An Empirical Study. *Journal of Educational Computing Research,* 53**,** 260-283.

Lin, C. J., Hwang, G. J., Fu, Q. K. & Cao, Y. H. 2020. Facilitating EFL students' English grammar learning performance and behaviors: A contextual gaming approach. *Computers & Education,* 152**,** 3876-3876.

Lin, C. J., Hwang, G. J., Fu, Q. K. & Chen, J. F. 2018. A Flipped Contextual Game-Based Learning Approach to Enhancing EFL Students' English Business Writing Performance and Reflective Behaviors. *Educational Technology & Society,* 21**,** 117-131.

Liu, T. F. & Lipowski, M. 2021. Sports Gamification: Evaluation of Its Impact on Learning Motivation and Performance in Higher Education. *International Journal of Environmental Research and Public Health,* 18**,** 1267-1267.

Lu, Y. L. & Lien, C. J. 2020. Are They Learning or Playing? Students' Perception Traits and Their Learning Self-Efficacy in a Game-Based Learning Environment. *Journal of Educational Computing Research,* 57**,** 1879-1909.

Luttikhuizen, P. C. 2018. Teaching evolution using a card game: negative frequency-dependent selection. *Journal of Biological Education,* 52**,** 122-129.

Macfarlane, B. & Tomlinson, M. 2017. Critiques of Student Engagement. *Higher Education Policy,* 30**,** 5-21.

Mahmud, S. N. D., Husnin, H. & Soh, T. M. T. 2020. Teaching Presence in Online Gamified Education for Sustainability Learning. *Sustainability,* 12**,** 3801-3801.

Manuel, P. C. V., Jose, P. C. I., Manuel, F. M., Ivan, M. O. & Baltasar, F. M. 2019. Simplifying the Creation of Adventure Serious Games with Educational-Oriented Features. *Educational Technology & Society,* 22**,** 32-46.

Manzano-Leon, A., Camacho-Lazarraga, P., Guerrero-Puerta, M. A., Guerrero-Puerta, L., Alias, A., Aguilar-Parra, J. M. & Trigueros, R. 2021. Development and Validation of a Questionnaire on Motivation for Cooperative Playful Learning Strategies. *International Journal of Environmental Research and Public Health,* 18**,** 960-960.

Marquez-Hernandez, V. V., Garrido-Molina, J. M., Gutierrez-Puertas, L., Garcia-Viola, A., Aguilera-Manrique, G. & Granados-Gamez, G. 2019. How to measure gamification experiences in nursing? Adaptation and validation of the Gameful Experience Scale GAMEX. *Nurse Education Today,* 81**,** 34-38.

Martens, M., Rinnert, G. C. & Andersen, C. 2018. Child-Centered Design: Developing an Inclusive Letter Writing App. *Frontiers in Psychology,* 9**,** 2277-2277.

Marti-Parreno, J., Galbis-Cordova, A. & Curras-Perez, R. 2021. Teachers' beliefs about gamification and competencies development: A concept mapping approach. *Innovations in Education and Teaching International,* 58**,** 84-94.

Marti-Parreno, J., Galbis-Cordova, A. & Miguel-Romero, M. J. 2018. Students' attitude towards the use of educational video games to develop competencies. *Computers in Human Behavior,* 81**,** 366-377.

Martin, F., Dennen, V. P. & Bonk, C. J. 2020. A synthesis of systematic review research on emerging learning environments and technologies. *Etr&D-Educational Technology Research and Development,* 68**,** 1613-1633.

Martinez-Cerda, J. F., Torrent-Sellens, J. & Gonzalez-Gonzalez, I. 2018. Promoting collaborative skills in online university: comparing effects of games, mixed reality, social media, and other tools for ICT-supported pedagogical practices. *Behaviour & Information Technology,* 37**,** 1055-1071.

Mathrani, A., Christian, S. & Ponder-Sutton, A. 2016. PlayIT: Game Based Learning Approach for Teaching Programming Concepts. *Educational Technology & Society,* 19**,** 5-17.

Mayer, I., Bekebrede, G., Harteveld, C., Warmelink, H., Zhou, Q. Q., van Ruijven, T., Lo, J. L., Kortmann, R. & Wenzler, I. 2014. The research and evaluation of serious games: Toward a comprehensive methodology. *British Journal of Educational Technology,* 45**,** 502-527.

McConville, J. R., Rauch, S., Helgegren, I. & Kain, J. H. 2017. Using role-playing games to broaden engineering education. *International Journal of Sustainability in Higher Education,* 18**,** 594-607.

McGregor, K. K., Marshall, B. A., Julian, S. K. & Oleson, J. 2019. Learning While Playing: A Randomized Trial of Serious Games as a Tool for Word Mastery. *Language Speech and Hearing Services in Schools,* 50**,** 596-608.

McKay, L. & Monk, S. 2017. Early career academics learning the game in Whackademia. *Higher Education Research & Development,* 36**,** 1251-1263.

Mei, B. & Yang, S. X. 2019. Nurturing Environmental Education at the Tertiary Education Level in China: Can Mobile Augmented Reality and Gamification Help? *Sustainability,* 11**,** 4292-4292.

Mera, C., Ruiz, G., Aguilar, M., Aragon, E., Delgado, C., Menacho, I., Marchena, E., Sedeno, M. G. & Navarro, J. I. 2019. Coming Together: R&D and Children's Entertainment Company in Designing APPs for Learning Early Math. *Frontiers in Psychology,* 9**,** 2751-2751.

Mercer, T. G., Kythreotis, A. P., Robinson, Z. P., Stolte, T., George, S. M. & Haywood, S. K. 2017. The use of educational game design and play in higher education to influence sustainable behaviour. *International Journal of Sustainability in Higher Education,* 18**,** 359-384.

Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W. & Davis, T. J. 2014. Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education,* 70**,** 29-40.

Michaelson, R., Helliar, C., Power, D. & Sinclair, D. 2001. Evaluating FINESSE: a case-study in group-based CAL. *Computers & Education,* 37**,** 67-80.

Miguel, N. P., Lage, J. C. & Galindez, A. M. 2020. Assessment of the Development of Professional Skills in University Students: Sustainability and Serious Games. *Sustainability,* 12**,** 1014-1014.

Milenkovic, I., Sosevic, U., Simic, D., Minovic, M. & Milovanovic, M. 2019. Improving student engagement in a biometric classroom: the contribution of gamification. *Universal Access in the Information Society,* 18**,** 523-532.

Moncrief, W. C., Marshall, G. W. & Rudd, J. M. 2015. Social media and related technology: Drivers of change in managing the contemporary sales force. *Business Horizons,* 58**,** 45-55.

Mora, A., Riera, D., Gonzalez, C. & Arnedo-Moreno, J. 2017. Gamification: a systematic review of design frameworks. *Journal of Computing in Higher Education,* 29**,** 516-548.

Mora-Gonzalez, J., Perez-Lopez, I. J. & Delgado-Fernandez, M. 2019. The "$in TIME" Gamification Project: Using a Mobile App to Improve Cardiorespiratory Fitness Levels of College Students. *Games for Health Journal***,** 2020-2020.

Mora-Gonzalez, J., Perez-Lopez, I. J. & Delgado-Fernandez, M. 2020a. The "$in TIME" Gamification Project: Using a Mobile App to Improve Cardiorespiratory Fitness Levels of College Students. *Games for Health Journal,* 9**,** 37-44.

Mora-Gonzalez, J., Perez-Lopez, I. J., Esteban-Cornejo, I. & Delgado-Fernandez, M. 2020b. A Gamification-Based Intervention Program that Encourages Physical Activity Improves Cardiorespiratory Fitness of College Students: 'The Matrix rEFvolution Program'. *International Journal of Environmental Research and Public Health,* 17**,** 877-877.

Moreira, F., Pereira, C. S., Durao, N. & Ferreira, M. J. 2018. A comparative study about mobile learning in Iberian Peninsula Universities: Are professors ready? *Telematics and Informatics,* 35**,** 979-992.

Morley, C., Milon, M. & Mc Donnell, M. 2010. Developing Team Leadership Capabilities in Higher Education: a Gendered Point of View. *Nouvelles Questions Feministes,* 29**,** 18-+.

Morrell, B. L. M., Eukel, H. N. & Santurri, L. E. 2020. Soft skills and implications for future professional practice: Qualitative findings of a nursing education escape room. *Nurse Education Today,* 93**,** 4462-4462.

Mullor, D., Sayans-Jimenez, P., Cangas, A. J. & Navarro, N. 2019. Effect of a Serious Game (Stigma-Stop) on Reducing Stigma Among Psychology Students: A Controlled Study. *Cyberpsychology Behavior and Social Networking,* 22**,** 205-211.

Murillo-Zamorano, L. R., Sanchez, J. A. L. & Munoz, C. B. 2020. Gamified crowdsourcing in higher education: A theoretical framework and a case study. *Thinking Skills and Creativity,* 36**,** 645-645.

Naik, N. 2017. The use of GBL to teach mathematics in higher education. *Innovations in Education and Teaching International,* 54**,** 238-246.

Newbery, R., Lean, J. & Moizer, J. 2016. Evaluating the impact of serious games: the effect of gaming on entrepreneurial intent. *Information Technology & People,* 29**,** 733-749.

Newbery, R., Lean, J., Moizer, J. & Haddoud, M. 2018. Entrepreneurial identity formation during the initial entrepreneurial experience: The influence of simulation feedback and existing identity. *Journal of Business Research,* 85**,** 51-59.

Ney, M., Goncalves, C. & Balacheff, N. 2014. Design Heuristics for Authentic Simulation-Based Learning Games. *Ieee Transactions on Learning Technologies,* 7**,** 132-141.

Nguyen, N., Muilu, T., Dirin, A. & Alamaki, A. 2018. An interactive and augmented learning concept for orientation week in higher education. *International Journal of Educational Technology in Higher Education,* 15**,** 35-35.

Nousiainen, T., Kangas, M., Rikala, J. & Vesisenaho, M. 2018. Teacher competencies in game-based pedagogy. *Teaching and Teacher Education,* 74**,** 85-97.

O'Leary, N. 2014. Learning informally to use teaching games for understanding: The experiences of a recently qualified teacher. *European Physical Education Review,* 20**,** 367-384.

O'Leary, N. 2016. Learning informally to use the "full version' of teaching games for understanding. *European Physical Education Review,* 22**,** 3-22.

O'Leary, N., Longmore, C. & Medcalf, R. 2020. Factors influencing a physical education teacher's pedagogical games practices with pupils experiencing social, emotional and mental health issues. *European Physical Education Review,* 26**,** 305-321.

Okada, A., Kowalski, R. P. G., Kirner, C. & Torres, P. L. 2019. Factors influencing teachers' adoption of AR inquiry games to foster skills for Responsible Research and Innovation. *Interactive Learning Environments,* 27**,** 324-335.

Okumura, R. & Cai, D. 2009. Heterogeneous Individuals and the Optimal Level of Higher Education. *Finanzarchiv,* 65**,** 37-50.

Ortega-Arranz, A., Bote-Lorenzo, M. L., Asensio-Perez, J. I., Martinez-Mones, A., Gomez-Sanchez, E. & Dimitriadis, Y. 2019. To reward and beyond: Analyzing the effect of reward-based strategies in a MOOC. *Computers & Education,* 142**,** 3639-3639.

Ortmann, A. & Squire, R. 2000. A game-theoretic explanation of the administrative lattice in institutions of higher learning. *Journal of Economic Behavior & Organization,* 43**,** 377-391.

Oti, A. 2012. Learning with digital games: a practical guide to engaging students in higher education. *Learning Media and Technology,* 37**,** 328-330.

Ott, M. & Pozzi, F. 2012. Digital games as creativity enablers for children. *Behaviour & Information Technology,* 31**,** 1011-1019.

Ottis, R. 2014. Light Weight Tabletop Exercise for Cybersecurity Education. *Journal of Homeland Security and Emergency Management,* 11**,** 579-592.

Ozcelik, E., Cagiltay, N. E. & Ozcelik, N. S. 2013. The effect of uncertainty on learning in game-like environments. *Computers & Education,* 67**,** 12-20.

Pando-Garcia, J., Perianez-Canadillas, I. & Charterina, J. 2016. Business simulation games with and without supervision: An analysis based on the TAM model. *Journal of Business Research,* 69**,** 1731-1736.

Pannese, L. & Carlesi, M. 2007. Games and learning come together to maximise effectiveness: The challenge of bridging the gap. *British Journal of Educational Technology,* 38**,** 438-454.

Panskyi, T., Rowinska, Z. & Biedron, S. 2019. Out-of-school assistance in the teaching of visual creative programming in the game-based environment - Case study: Poland. *Thinking Skills and Creativity,* 34**,** 593-593.

Park, J., Kim, S., Kim, A. & Yi, M. Y. 2019. Learning to be better at the game: Performance vs. completion contingent reward for game-based learning. *Computers & Education,* 139**,** 1-15.

Parra-Gonzalez, M. E., Belmonte, J. L., Segura-Robles, A. & Cabrera, A. F. 2020. Active and Emerging Methodologies for Ubiquitous Education: Potentials of Flipped Learning and Gamification. *Sustainability,* 12**,** 602-602.

Pedersen, M. K., Skyum, B., Heck, R., Muller, R., Bason, M., Lieberoth, A. & Sherson, J. F. 2016. Virtual learning environment for interactive engagement with advanced quantum mechanics. *Physical Review Physics Education Research,* 12**,** 3102-3102.

Pertegal-Felices, M. L., Jimeno-Morenilla, A., Sanchez-Romero, J. L. & Mora-Mora, H. 2020. Comparison of the Effects of the Kahoot Tool on Teacher Training and Computer Engineering Students for Sustainable Education. *Sustainability,* 12**,** 4778-4778.

Pettit, R. K., McCoy, L., Kinney, M. & Schwartz, F. N. 2015. Student perceptions of gamified audience response system interactions in large group lectures and via lecture capture technology. *Bmc Medical Education,* 15**,** 92-92.

Pivec, M. 2011. Learning with Digital Games: A Practical Guide to Engaging Students In Higher Education. *International Review of Research in Open and Distance Learning,* 12**,** 206-208.

Poplin, A. 2012. Playful public participation in urban planning: A case study for online serious games. *Computers Environment and Urban Systems,* 36**,** 195-206.

Qiao, G. Q. 2018. The Significance of the Humanities and Liberal Arts in Higher Education. *European Review,* 26**,** 299-310.

Roberts, S. 2010. What Can Coach Education Programmes Learn from the Teachers? Model-Based Instruction in a UK National Governing Body Award Course. *International Journal of Sports Science & Coaching,* 5**,** 109-116.

Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I. & Pitt, L. 2015. Is it all a game? Understanding the principles of gamification. *Business Horizons,* 58**,** 411-420.

Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I. & Pitt, L. 2016. Game on: Engaging customers and employees through gamification. *Business Horizons,* 59**,** 29-36.

Rojas-Lopez, A., Rincon-Flores, E. G., Mena, J., Garcia-Penalvo, F. J. & Ramirez-Montoya, M. S. 2019. Engagement in the course of programming in higher education through the use of gamification. *Universal Access in the Information Society,* 18**,** 583-597.

Rose, J., Tikly, L. & Washbrook, L. 2019. 'Learning to play the game': How schools with below average attainment can support the decision-making processes for high-potential learners in applying for university. *British Educational Research Journal,* 45**,** 856-872.

Roskaft, E., Bjerke, T., Kaltenborn, B., Linnell, J. D. C. & Andersen, R. 2003. Patterns of self-reported fear towards large carnivores among the Norwegian public. *Evolution and Human Behavior,* 24**,** 184-198.

Rueckert, D., Pico, K., Kim, D. & Sanchez, X. C. 2020. Gamifying the foreign language classroom for brain-friendly learning. *Foreign Language Annals,* 53**,** 686-703.

Sailer, M. & Sailer, M. 2021. Gamification of in-class activities in flipped classroom lectures. *British Journal of Educational Technology,* 52**,** 75-90.

Saitua-Iribar, A., Corral-Lage, J. & Pena-Miguel, N. 2020. Improving Knowledge about the Sustainable Development Goals through a Collaborative Learning Methodology and Serious Game. *Sustainability,* 12**,** 6169-6169.

Sanchez, D. R., Langer, M. & Kaur, R. 2020. Gamification in the classroom: Examining the impact of gamified quizzes on student learning. *Computers & Education,* 144**,** 3666-3666.

Sanchez-Martin, J., Canada-Canada, F. & Davila-Acedo, M. A. 2017. Just a game? Gamifying a general science class at university Collaborative and competitive work implications. *Thinking Skills and Creativity,* 26**,** 51-59.

Sanchez-Mena, A., Marti-Parreno, J. & Aldas-Manzano, J. 2019a. Teachers' intention to use educational video games: The moderating role of gender and age. *Innovations in Education and Teaching International,* 56**,** 318-329.

Sanchez-Mena, A., Marti-Parreno, J. & Miquel-Romero, M. J. 2019b. Higher education instructors' intention to use educational video games: an fsQCA approach. *Etr&D-Educational Technology Research and Development,* 67**,** 1455-1478.

Sancho, P., Moreno-Ger, P., Fuentes-Fernandez, R. & Fernandez-Manjon, B. 2009. Adaptive Role Playing Games: An Immersive Approach for Problem Based Learning. *Educational Technology & Society,* 12**,** 110-124.

Sanina, A., Kutergina, E. & Balashov, A. 2020. The Co-Creative approach to digital simulation games in social science education. *Computers & Education,* 149**,** 3813-3813.

Santos-Villalba, M. J., Olivencia, J. J. L., Navas-Parejo, M. R. & Benitez-Marquez, M. D. 2020. Higher Education Students' Assessments towards Gamification and Sustainability: A Case Study. *Sustainability,* 12**,** 8513-8513.

Saur-Amaral, I., Ferreira, P. & Conde, R. 2013. Linking Past and Future Research in Tourism Management through the Lens of Marketing and Consumption: A Systematic Literature Review. *Tourism Management Studies***,** 35-40.

Schulz, D., van der Woud, A. & Westhof, J. 2020. The best indycaster project: Analysing and understanding meaningful YouTube content, dialogue and commitment as part of responsible management education. *International Journal of Management Education,* 18**,** 335-335.

Seidlein, A. H., Bettin, H., Franikowski, P. & Salloch, S. 2020. Gamified E-learning in medical terminology: the TERMInator tool. *Bmc Medical Education,* 20**,** 284-284.

Shernoff, D. J., Ryu, J. C., Ruzek, E., Coller, B. & Prantil, V. 2020. The Transportability of a Game-Based Learning Approach to Undergraduate Mechanical Engineering Education: Effects on Student Conceptual Understanding, Engagement, and Experience. *Sustainability,* 12**,** 6986-6986.

Siala, H., Kutsch, E. & Jagger, S. 2020. Cultural influences moderating learners' adoption of serious 3D games for managerial learning. *Information Technology & People,* 33**,** 424-455.

Siddiquah, A. & Salim, Z. 2017. The ICT Facilities, Skills, Usage, and the Problems Faced by the Students of Higher Education. *Eurasia Journal of Mathematics Science and Technology Education,* 13**,** 4987-4994.

Siewiorek, A., Saarinen, E., Lainema, T. & Lehtinen, E. 2012. Learning leadership skills in a simulated business environment. *Computers & Education,* 58**,** 121-135.

Smith, S. & Chan, S. 2017. Collaborative and Competitive Video Games for Teaching Computing in Higher Education. *Journal of Science Education and Technology,* 26**,** 438-457.

Soflano, M., Connolly, T. M. & Hainey, T. 2015a. An application of adaptive games-based learning based on learning style to teach SQL. *Computers & Education,* 86**,** 192-211.

Soflano, M., Connolly, T. M. & Hainey, T. 2015b. Learning style analysis in adaptive GBL application to teach SQL. *Computers & Education,* 86**,** 105-119.

Song, D. L., Shi, D. Q., Wang, R. S. & Xu, H. 2018. Splitting and Combining as a Gamification Method in Engaging Structured Knowledge Learning. *Sustainability,* 10**,** 800-800.

Song, D. L., Tavares, A., Pinto, S. & Xu, H. 2017. Setting Engineering Students Up for Success in the 21st Century: Integrating Gamification and Crowdsourcing into a CDIO-based Web Design. *Eurasia Journal of Mathematics Science and Technology Education,* 13**,** 3565-3585.

Stacey, G., Pollock, K. & Crawford, P. 2016. The rules of the game in graduate entry nursing: A longitudinal case study. *Nurse Education Today,* 36**,** 184-189.

Stansbury, J. A. 2017. Virtual Learning Environments in Social Psychology: Using The SIMs3 to Teach Self-Related Processes. *Teaching of Psychology,* 44**,** 124-133.

Stansbury, J. A. & Earnest, D. R. 2017. Meaningful Gamification in an Industrial/Organizational Psychology Course. *Teaching of Psychology,* 44**,** 38-45.

Su, C. H. & Cheng, T. W. 2019. A Sustainability Innovation Experiential Learning Model for Virtual Reality Chemistry Laboratory: An Empirical Study with PLS-SEM and IPMA. *Sustainability,* 11**,** 1027-1027.

Subhash, S. & Cudney, E. A. 2018. Gamified learning in higher education: A systematic review of the literature. *Computers in Human Behavior,* 87**,** 192-206.

Sukthankar, N. 1999. Cultural factors in mathematics education contributing to the shortage of women professionals in Papua New Guinea. *Educational Review,* 51**,** 173-181.

Sung, H. Y., Hwang, G. J., Wu, P. H. & Lin, D. Q. 2018. Facilitating deep-strategy behaviors and positive learning performances in science inquiry activities with a 3D experiential gaming approach. *Interactive Learning Environments,* 26**,** 1053-1073.

Takahashi, S. & Saito, E. 2011. Changing pedagogical styles: a case study of The Trading Game in a Japanese university. *Teaching in Higher Education,* 16**,** 401-412.

Tang, K. Y., Hsiao, C. H. & Su, Y. S. 2019. Networking for Educational Innovations: A Bibliometric Survey of International Publication Patterns. *Sustainability,* 11**,** 4608-4608.

Tao, Y. H., Cheng, C. J. & Sun, S. Y. 2009. What influences college students to continue using business simulation games? The Taiwan experience. *Computers & Education,* 53**,** 929-939.

Tao, Y. H., Cheng, C. J. & Sun, S. Y. 2012. Alignment of Teacher and Student Perceptions on the Continued use of Business Simulation Games. *Educational Technology & Society,* 15**,** 177-189.

Taylor, M. J., Pountney, D. C. & Baskett, M. 2008. Using animation to support the teaching of computer game development techniques. *Computers & Education,* 50**,** 1258-1268.

Tejedor, G., Segalas, J., Barron, A., Fernandez-Morilla, M., Fuertes, M. T., Ruiz-Morales, J., Gutierrez, I., Garcia-Gonzalez, E., Aramburuzabala, P. & Hernandez, A. 2019. Didactic Strategies to Promote Competencies in Sustainability. *Sustainability,* 11**,** 2086-2086.

Tilton, S. 2019. Winning Through Deception: A Pedagogical Case Study on Using Social Deception Games to Teach Small Group Communication Theory. *Sage Open,* 9**,** 34370-34370.

Tobar-Munoz, H., Carcamo, J. G., Solarte, H., Ventes, C. & Mesa, J. H. 2020. Videogames and Innovation: Fostering Innovators' Skills in Online-Learning Environments. *Sustainability,* 12**,** 9264-9264.

Topalli, D. & Cagiltay, N. E. 2018. Improving programming skills in engineering education through problem-based game projects with Scratch. *Computers & Education,* 120**,** 64-74.

Triantafyllakos, G., Palaigeorgiou, G. & Tsoukalas, I. A. 2011. Designing educational software with students through collaborative design games: The We!Design&Play framework. *Computers & Education,* 56**,** 227-242.

Troussas, C., Krouska, A. & Sgouropoulou, C. 2020. Collaboration and fuzzy-modeled personalization for mobile game based learning in higher education. *Computers & Education,* 144**,** 3698-3698.

Tsai, C. W. & Fan, Y. T. 2013. Research trends in game-based learning research in online learning environments: A review of studies published in SSCI-indexed journals from 2003 to 2012. *British Journal of Educational Technology,* 44**,** E115-E119.

Tsai, M. J., Huang, L. J., Hou, H. T., Hsu, C. Y. & Chiou, G. L. 2016. Visual behavior, flow and achievement in game-based learning. *Computers & Education,* 98**,** 115-129.

Tsay, C. H. H., Kofinas, A. & Luo, J. 2018. Enhancing student learning experience with technology-mediated gamification: An empirical study. *Computers & Education,* 121**,** 1-17.

Tsay, C. H. H., Kofinas, A. K., Trivedi, S. K. & Yang, Y. 2020. Overcoming the novelty effect in online gamified learning systems: An empirical evaluation of student engagement and performance. *Journal of Computer Assisted Learning,* 36**,** 128-146.

Tuzun, H. 2007. Blending video games with learning: Issues and challenges with classroom implementations in the Turkish context. *British Journal of Educational Technology,* 38**,** 465-477.

Urquidi-Martin, A. C., Tamarit-Aznar, C. & Sanchez-Garcia, J. 2019. Determinants of the Effectiveness of Using Renewable Resource Management-Based Simulations in the Development of Critical Thinking: An Application of the Experiential Learning Theory. *Sustainability,* 11**,** 5469-5469.

Vallat, D., Bayart, C. & Bertezene, S. 2016. Serious games in favour of knowledge management and double-loop learning? *Knowledge Management Research & Practice,* 14**,** 470-477.

van Roy, R., Deterding, S. & Zaman, B. 2019. Collecting Pokemon or receiving rewards? How people functionalise badges in gamified online learning environments in the wild. *International Journal of Human-Computer Studies,* 127**,** 62-80.

van Roy, R. & Zaman, B. 2018. Need-supporting gamification in education: An assessment of motivational effects over time. *Computers & Education,* 127**,** 283-297.

van Roy, R. & Zaman, B. 2019. Unravelling the ambivalent motivational power of gamification: A basic psychological needs perspective. *International Journal of Human-Computer Studies,* 127**,** 38-50.

van Seters, J. R., Ossevoort, M. A., Tramper, J. & Goedhart, M. J. 2012. The influence of student characteristics on the use of adaptive e-learning material. *Computers & Education,* 58**,** 942-952.

Veach, C. C. 2019. Breaking out to break through: re-imagining first-year orientations. *Reference Services Review,* 47**,** 556-569.

Verstege, S., Pijeira-Diaz, H. J., Noroozi, O., Biemans, H. & Diederen, J. 2019. Relations between students' perceived levels of self-regulation and their corresponding learning behavior and outcomes in a virtual experiment environment. *Computers in Human Behavior,* 100**,** 325-334.

Vizcaya-Moreno, M. F. & Perez-Canaveras, R. M. 2020. Social Media Used and Teaching Methods Preferred by Generation Z Students in the Nursing Clinical Learning Environment: A Cross-Sectional Research Study. *International Journal of Environmental Research and Public Health,* 17**,** 8267-8267.

Wall, J. & Ahmed, V. 2008. Use of a simulation game in delivering blended lifelong learning in the construction industry - Opportunities and Challenges. *Computers & Education,* 50**,** 1383-1393.

Wang, A. I. & Tahir, R. 2020. The effect of using Kahoot! for learning - A literature review. *Computers & Education,* 149**,** 3818-3818.

Wang, C. S., Li, Y. C. & Tzeng, Y. R. 2015. How to replicate the cognitive process in computer game-based learning units. *Information Technology & People,* 28**,** 327-343.

Warburton, S. 2009. Second Life in higher education: Assessing the potential for and the barriers to deploying virtual worlds in learning and teaching. *British Journal of Educational Technology,* 40**,** 414-426.

Warren, S. J., Dondinger, M. J., McLeod, J. & Bigenho, C. 2012. Opening The Door: An evaluation of the efficacy of a problem-based learning game. *Computers & Education,* 58**,** 397-412.

Westera, W., Nadolski, R. J., Hummel, H. G. K. & Wopereis, I. 2008. Serious games for higher education: a framework for reducing design complexity. *Journal of Computer Assisted Learning,* 24**,** 420-432.

Whitton, N., Jones, R., Wilson, S. & Whitton, P. 2014. Alternate reality games as learning environments for student induction. *Interactive Learning Environments,* 22**,** 243-252.

Whitton, N. & Langan, M. 2019. Fun and games in higher education: an analysis of UK student perspectives. *Teaching in Higher Education,* 24**,** 1000-1013.

Whitton, N. & Maclure, M. 2017. Video game discourses and implications for game-based education. *Discourse-Studies in the Cultural Politics of Education,* 38**,** 561-572.

Wilkinson, K., Dafoulas, G., Garelick, H. & Huyck, C. 2020. Are quiz-games an effective revision tool in Anatomical Sciences for Higher Education and what do students think of them? *British Journal of Educational Technology,* 51**,** 761-777.

Woo, J. C. 2014. Digital Game-Based Learning Supports Student Motivation, Cognitive Success, and Performance Outcomes. *Educational Technology & Society,* 17**,** 291-307.

Wu, Y. L. 2018. Gamification design: A comparison of four m-learning courses. *Innovations in Education and Teaching International,* 55**,** 470-478.

Yang, Y. T. C. 2015. Virtual CEOs: A blended approach to digital gaming for enhancing higher order thinking and academic achievement among vocational high school students. *Computers & Education,* 81**,** 281-295.

Yang, Z., Algesheimer, R. & Dholakia, U. 2017. When Ethical Transgressions of Customers Have Beneficial Long-Term Effects in Retailing: An Empirical Investigation. *Journal of Retailing,* 93**,** 420-439.

Yeung, S. K., So, W. M. W., Cheng, N. Y. I., Cheung, T. Y. & Chow, C. F. 2017. Comparing pedagogies for plastic waste management at university level. *International Journal of Sustainability in Higher Education,* 18**,** 1039-1059.

Yildirim, I. 2017. The effects of gamification-based teaching practices on student achievement and students' attitudes toward lessons. *Internet and Higher Education,* 33**,** 86-92.

Yukselturk, E., Altiok, S. & Baser, Z. 2018. Using Game-Based Learning with Kinect Technology in Foreign Language Education Course. *Educational Technology & Society,* 21**,** 159-173.

Zainuddin, Z. 2018. Students' learning performance and perceived motivation in gamified flipped-class instruction. *Computers & Education,* 126**,** 75-88.

Zhong, H. X., Chiu, P. S. & Lai, C. F. 2021. Effects of the Use of CDIO Engineering Design in a Flipped Programming Course on Flow Experience, Cognitive Load. *Sustainability,* 13**,** 1381-1381.

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