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Creating a sensory Experience: A study of how sensory stimuli affect employee perception and behaviour

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Abstract. Sensory marketing is an approach that uses sensory stimuli to influence consumers' perceptions and behavior. The principles of sensory marketing can be applied in the field of human resources to understand the decision-making processes within organizations, namely the use of visual stimuli, such as colors, shapes, and images, which can influence employees' perception of the organization and its culture. For instance, the use of bright colors in the workplace can create a vibrant and energetic environment, whereas muted colors can create a calm and serene atmosphere. The use of audio stimuli, such as music and sounds, can influence employees' moods and productivity. For instance, playing upbeat music in the workplace can increase employees' energy levels, while playing calming sounds can reduce stress levels. The use of scent can influence employees' perception of the organization and its products or services. For instance, the use of pleasant scents in the workplace, such as lavender or peppermint, can create a calming and relaxing atmosphere. The use of tactile stimuli, such as textures and surfaces, can influence employees' perception of the organization and its products or

services. For instance, the use of soft and comfortable seating can create a welcoming and inviting atmosphere. By applying the principles of sensory marketing in human resources, organizations can create an environment that supports their employees' decision-making processes. A positive sensory experience can enhance employees' mood and productivity, resulting in better decision-making and overall organizational success. Additionally, understanding how employees respond to sensory stimuli can help organizations tailor their communication and marketing efforts to effectively engage and motivate their workforce.

Keywords: Sensory Stimuli, Organizational Culture, Employee Perception, Employee Behaviour, Human Resources Management.

1. Introduction

The purpose of this paper is to perform a bibliometric review of the literature on sensory stimuli and employee perception and behaviour, through a comprehensive and critical analysis of the existing research and contributions. The authors looked at metrics such as author name, year of publication, abstract, and keywords to understand if and how a positive sensory experience can enhance employees' performance, productivity, and overall relationship with work and the organization.

In past years, the role of senses and how those affect and change an individual's perception, judgment, and decision-making has been discussed by various fields of study, such as marketing, followed by psychology, and more recently, human resource management [1, 2, 3]. Sensory marketing is understood as a type of marketing that is able to engage its consumers' senses and alters their perception, judgment, and overall behaviour (towards the product, service, or brand) [4, 5, 6].

When this concept is applied to the field of human resources management, it is intended for a learning, responsive and diverse organization made up but hardworking, talented, loyal, and motivated employees [7]. That synergy will then develop agents of change that are creative, responsible, and global thinkers [8] and contribute to a competitive, innovative, successful, and sustainable environment (well-being focused) and culture in the organization [9]. Employees that are engaged in their work and with their organization demonstrate higher levels of job satisfaction [10], are energetic, creative, enthusiastic, and will do everything possible in order to make sure that the organization that they are a part of succeeds [11, 12]. It's a true connection toward their work and its outcomes, empowered by a sense of meaningfulness and purpose [13, 14]. Due to the importance but scarcity of this profile, the fields of marketing, psychology, and human resources united efforts in hopes of studying and contributing towards this gap.

2. Methods

2.1. Data sources and search strategy

A systematic search of relevant academic databases was initially conducted to identify articles related to sensory marketing, human resource management, employee perception, and behaviour within communities of practice. Since initial results from the different databases were quite discrepant from each other, the authors decided to focus on a single database (Scopus) chosen based on an initial screening of the articles. The search strategy used a different combination of keywords related to the research question (please refer to Table 1). There was no time limit imposed since results were not numerous (articles until the present date, which was 31st March 2023), but limits were set regarding language (only published in English), subject areas (social sciences and business), and type of documents (only published articles).

Table 1. Search criteria and results.

Search criteria	Results
(TITLE-ABS-KEY (sensory AND marketing) AND TITLE-ABS-KEY (sensory AND stimuli) AND TITLE-ABS-KEY (decision AND making))	19
(TITLE-ABS-KEY (sensory AND marketing) AND TITLE-ABS-KEY (sensory AND stimuli) AND TITLE-ABS-KEY (human AND resources))	1
TITLE-ABS-KEY (sensory AND marketing) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English"))	433
(TITLE-ABS-KEY (sensory AND experience) AND TITLE-ABS-KEY (employee)) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English"))	11
(TITLE-ABS-KEY (marketing) AND TITLE-ABS-KEY (employee AND engagement)) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English"))	136
(TITLE-ABS-KEY (sensorial) AND TITLE-ABS-KEY (employee AND engagement))	1
(TITLE-ABS-KEY (marketing) AND TITLE-ABS-KEY (employee AND perception) AND TITLE-ABS-KEY (organizational AND culture)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English"))	15
(TITLE-ABS-KEY (marketing) AND TITLE-ABS-KEY (employee AND motivation)) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English"))	172

2.2. Study selection

The search results were screened independently by three reviewers (the authors) to identify articles that met the inclusion criteria. Articles were catalogued as “according to criteria”, “discordant with criteria and “in doubt”. After a comparison of results, among the three reviewers, and a discussion of discrepancies the final database resulted in 768 articles. There was mainly a consensus regarding 85% of the articles, allowing for a discussion regarding the remaining 15%.

Inclusion criteria were articles that focused on sensory marketing, sensory stimuli, decision-making, human resources, employee perception, employee engagement, employee motivation, and organizational culture. Exclusion criteria would be articles that did not meet the focus of the research question, such as articles whose main concern was only on environmental sustainability or economic sustainability.

2.3. Data extraction and analysis

Data were extracted from the database on the selected articles using a pre-defined data extraction form (provided by the SCOPUS database while exporting the data). The researchers decided to include, amongst others: the author(s) name(s), year of publication, abstract, and keywords. Data was exported in BibText and CSV formats to allow for a deeper analysis. The extracted data were analysed using the bibliometric software of R-Program (bibliometrics package).

3. Results and Discussion

Using the bibliometric software data was explored (Table 2) according to the following criteria: a summary of the results obtained, annual production over time, most prominent authors, journals where research was published, and keywords importance, amongst others.

Table 2. Summary of Data Collection.

Data Collected	Results
Timespan	1983-2023
Sources	311
Documents	768
Annual Growth Rate (%)	8.69
Authors	1875
Authors of single-authored documents	122

Data Collected	Results
International Co-Authorship (%)	27.08
Co-Authors per Document	2,76
Author's Keywords (DE)	2396
References	46831
Document Average Age	7.34
Average citations per document	33.55

Based on the analysis of the database of collected articles, the first paper written in this field that met the criteria was published in 1983 giving us a time span of 40 years of research, nevertheless, annual production was quite incipient during many years (Figure 1) flourishing in the year 2006 (15 articles), surpassing it even more in the years of 2010 and 2011 (reaching 20 and 31 articles published, respectively) reaching a vertiginous peak in 2020 (96 articles). Is still early in 2023 to understand if this momentum will increase, maintain or even decline. Most relevant sources (Figure 2) identified the Journal Psychology and Marketing (28 articles) as the most prominent Journal, closely followed by the Journal British Food Journal (27 articles) and the Journal of Business Research (26 articles).

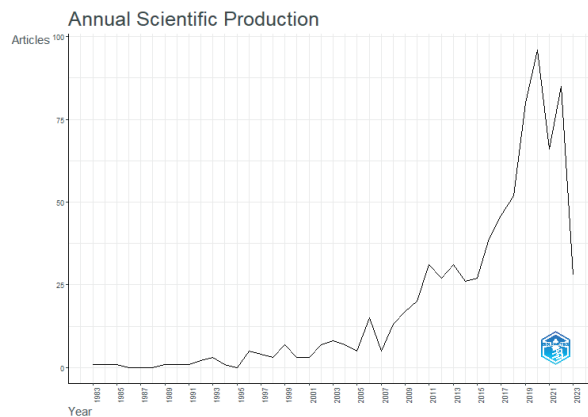


Figure 1. Annual Scientific Production

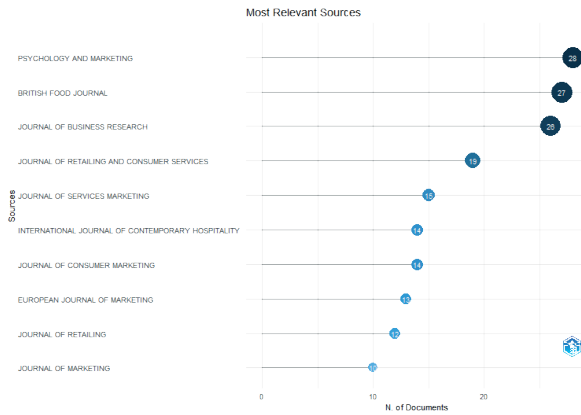


Figure 2. Most Relevant Sources

The importance of these sources can also be observed in Figure 3 (Sources Production over Time) with a clear distinction between these top 3 relevant sources and the rest of mentioned journals, as other journals contribute 10 to 19 articles.

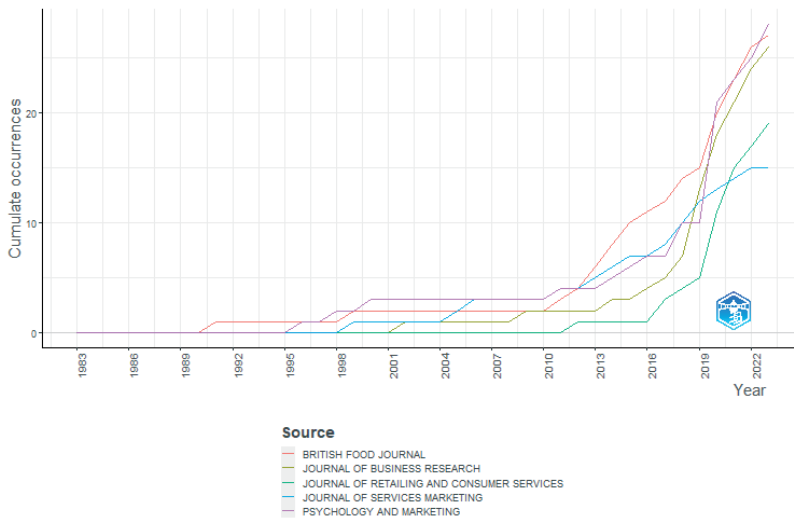


Figure 3. Sources' Production over Time.

Comparing the two sources we can see that the scope of Psychology and Marketing is interdisciplinary and thus broader, being more attractive for publication related to sensory marketing and stimuli perception. As for the British Food Journal, although the similar focus on interdisciplinarity, this journal focuses on food-related research, thus being a lot more restricted and focused. As for the most relevant authors in the field (Figure 4), there are two authors that stand out, Biswas, D. (with 10 articles in total) and Krishna, A. (with 8 articles in total).

An interesting observation is that although both authors are the most relevant in the field, they started publishing in very different years since Biswas, D. started in 2014 (up to nowadays) and Krishna, A. started in 1999 (up to 2019) (Figure 5).

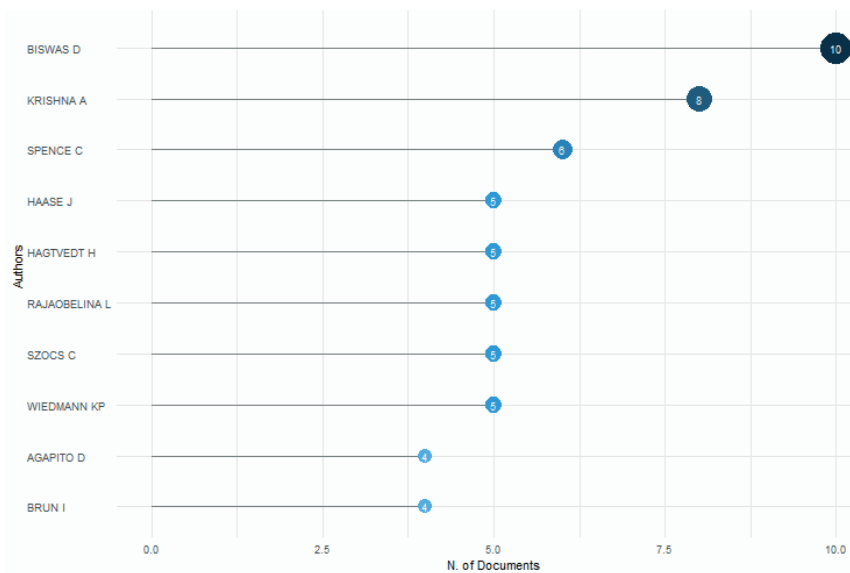


Figure 4. Most Relevant Authors

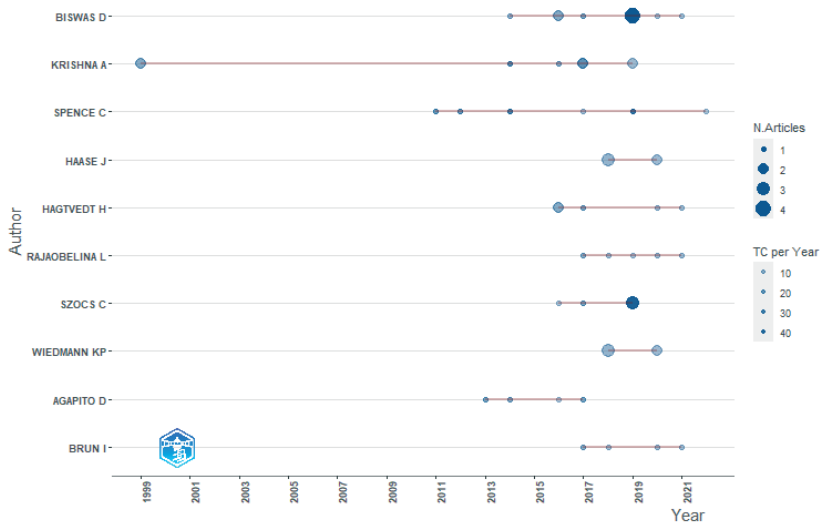


Figure 5. Authors' Production over Time

In order to understand the contribution towards knowledge produced by these important researchers, the authors have looked at a first glance, at the titles of the articles and the Journals where they were published (Table 3).

Table 3. Works from the most prominent researchers in the field.

Author	Year	Title	Journal
Biswas, D.	2021	Effects of sequential sensory cues on food taste perception: cross-modal interplay between visual and olfactory stimuli	Journal of consumer psychology
Biswas, D.	2020	Designed to s(m)ell: when scented advertising induces proximity and enhances appeal	Journal of marketing research
Biswas, D.	2019	Extending the boundaries of sensory marketing and examining the sixth sensory system: effects of vestibular sensations for sitting versus standing postures on food taste perception	Journal of consumer research
Biswas, D.	2019	Short- and long-term effects of nonconsciously processed ambient scents in a servicescape: findings from two field experiments	Journal of service research
Biswas, D.	2019	The smell of healthy choices: cross-modal sensory compensation effects of ambient scent on food purchases	Journal of marketing research

Author	Year	Title	Journal
Biswas, D.	2019	Sounds like a healthy retail atmospheric strategy: effects of ambient music and background noise on food sales	Journal of the academy of marketing science
Biswas, D.	2017	Shining light on atmospherics: how ambient light influences food choices	Journal of marketing research
Biswas, D.	2016	Tasting in 2d: implications of food shape, visual cues, and oral haptic sensory inputs	Marketing letters
Biswas, D.	2016	Healthy-left, unhealthy-right: can displaying healthy items to the left (versus right) of unhealthy items nudge healthier choices?	Journal of consumer research
Biswas, D.	2014	Making choices while smelling, tasting, and listening: the role of sensory (dis)similarity when sequentially sampling products	Journal of marketing
Krishna, A.	2019	The power of consumption-imagery in communicating retail-store deals	Journal of retailing
Krishna, A.	2019	A quiet disquiet: anxiety and risk avoidance due to nonconscious auditory priming	Journal of consumer research
Krishna, A.	2017	Does red bull give wings to vodka? Placebo effects of marketing labels on perceived intoxication and risky attitudes and behaviors	Journal of consumer psychology
Krishna, A.	2017	Sensory aspects of package design	Journal of retailing
Krishna, A.	2016	Computer interfaces and the “direct-touch” effect: can ipads increase the choice of hedonic food?	Journal of marketing research
Krishna, A.	2014	Sensory marketing, embodiment, and grounded cognition: a review and introduction	Journal of consumer psychology
Krishna, A.	1999	Vital dimensions in volume perception: can the eye fool the stomach?	Journal of marketing research
Krishna, A.	1999	Vital dimensions in volume perception: can the eye fool the stomach?	Journal of marketing research

It is interesting to note that none of the top authors were published in the Psychology and Marketing Journal or the British Food Journal (the two top journals identified according to overall numbers of publications).

A keyword analysis was also performed. The overall results are presented in Figure 6. From the word cloud, the spotlight is given to the words: “marketing” (64 results), “motivation” (18 results), and “consumption behavior” (16 results). The co-wording network (Figure 7) identifies the frequency of occurrence of certain words or phrases in the body of documents and visualizes the relationships between them. The co-occurrence matrix shows the number of times each pair of keywords appears together.

This matrix is then used to create the co-wording network, where each keyword is represented by a node and the edges between them represent the strength of their co-occurrence. Highly connected nodes are placed close to each other and less connected nodes are further apart. From the analysis of the co-wording network, it is possible to see three quite distinct areas of research (three clusters - blue, red, and green). The blue cluster is directed towards the consumer, the red cluster is focused on marketing, and lastly, the green cluster is focused on stimuli and senses. All clusters are linked by tenuous connections that represent the current gap in research in this field.



Figure 6. Word Cloud (Authors' keywords)

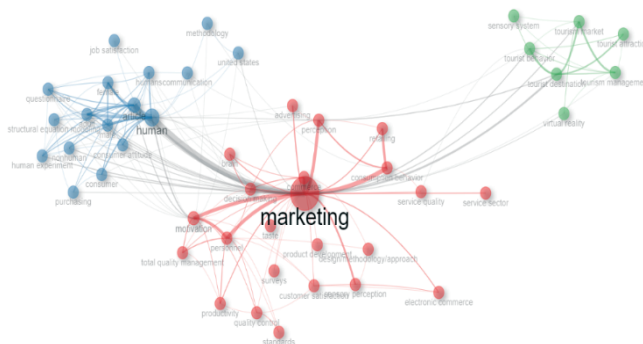


Figure 7. Co-wording Network

4. Conclusions

The purpose of this research was to conduct a bibliometric review that would clarify and elucidate the concept and principles of sensory marketing when applied to human resources thus contributing to a positive and productive organizational environment and employees' decision-making processes.

768 documents were collected and analysed from the SCOPUS Collection that ranged from the period 1983 to 2023. Results have shown that there was an increased interest in the topic, since, although the first article encompassing human sustainability appears in 1983, only in 2006 the production started to grow, increasing noticeably since then.

The most interesting results presented by this bibliometric review are related to the evolution and development of this field of study, namely, how it remains a focus in terms of scientific production and how it remains pertinent and needed in order for organizations and human resources professionals to achieve a better understanding of employees and how to provide a productive and healthy environment for them. Therefore, this research remains relevant for scholars, professionals, and companies. Hence, it proves to be useful in both a practical and theoretical setting. Additionally, there should be encouraged and developed a sense of collaboration between academics and practitioners to further explore and develop this study.

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