

## How Does Packaging Influence Consumer Behavior? A Multidisciplinary Bibliometric Study

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### Abstract

The objective of this research was to analyze the academic literature focusing on how product packaging influences consumer behavior through the use of a bibliometric study. To accomplish this, we analyzed 111 articles, published from 1982 to 2014, indexed in the Web of Science database maintained by Thomson Reuters (formerly the ISI Web of Knowledge). For the analysis, we used descriptive statistics, bibliometric analyses, and networks to explore characteristics of the articles that related to their authors, journals, evolution, keywords, and research topics. Published manuscripts had a network of dispersed ownership without a central author; most works were published in the United States. Although most of the articles were from the categories of Business & Economics and Food Science & Technology, there is a growing trend in the amount of research and its expansion into subject areas such as chemistry, nutrition, engineering, and more recently, environmental studies, behavioral science, and public policy. An article by Wansink (1996) was the most-cited out of the survey of 111 articles, as well as the most-cited reference for these items. We conclude that the study of packaging and its influence on consumer behavior is a multidisciplinary subject that is highly relevant to purchase decisions, conscious consumption, food preservation, health problems, contamination, storage and transport, obesity and smoking, and sustainability issues.

**Keywords:** packaging, multidisciplinary, bibliometric analysis, consumer behavior

### 1. Introduction

The literature review is an important step in the construction of scientific knowledge, suggesting gaps in the field and opportunities for new theories and empirical research. It may be conducted periodically in order to gather all information, indicators, trends, gaps, and biases within a given subject area (Troccoli, Gimenez, Reis, & Faria, 2011). Further, this process provides important information about how a specific area of knowledge is advancing (Vieira, 2003; Troccoli et al., 2011; Vieira, Alcantara, & Tonelli, 2014).

Considering the amount of available scientific information, the literature review analyzing specific academic research gained relevance in the academy (Booth, Colomb, & Williams, 2000; Botelho, Cunha, & Macedo, 2011; Conforto, Amaral, & Silva, 2011; Mariano, Cruz, & Gaitán, 2011). One of the advantages of the systematic literature review is that it allows other researchers to reproduce a study and obtain reliable results (Greenhalgh, 1997; Botelho et al., 2011; Conforto et al., 2011). Bibliometric analysis provides an especially valuable way to accomplish this.

Conceptually, “the bibliometric analysis is a process of quantitative analysis that assists in the exploration, organization and analysis of large amounts of historical data to help researchers to identify patterns that can influence the research decision-making process” (Barbosa & Reinert, 2014, p. 2). Bibliometric studies are quantitative systematic reviews that contribute to a broad view of the dynamics of scientific production in a particular area of knowledge or on defined topics (Ramos-Rodriguez & Ruiz-Navarro, 2004; Baumgartner, 2010; Ferreira, Pinto, & Sierra, 2013; Hassan, Haddawy, & Zhu, 2014). According to Cardoso, Pereira, and Guerreiro

(2007) this is a bibliometric study's main function. Moreover, this type of research can use network analysis (cocitations, coauthors, and others) to indicate the most influential authors and the relationships between authors, journals, and research topics.

An initial review of the literature revealed a lack of academic knowledge regarding how product packaging influences consumer behavior and, specifically, proved that few systematic analyses and bibliometric studies focus on this topic. As a result, this literature review aimed to analyze the academic research on the influence of packaging on consumer behavior, through the use of a bibliometric study. To achieve this goal, we employed the Web of Science database (formerly the ISI Web of Knowledge) maintained by Thomson Reuters.

This research is relevant because interest in understanding how packaging influences consumers' purchasing behavior seems to be a theme studied in various fields of knowledge. It is possible to find studies not only in management (Ackerman & Tellis, 2001) and marketing journals (Jain, 2012; Januszewska, Viaene, & Verbeke, 2000; Dubois, Rucker, & Galinsky, 2012), but also in journals in the fields of nutrition (Barreiro-Hurlé Gracia, & de-Magistris, 2010), psychology (Keller et al., 2012), engineering (Dabija & Pop, 2013), design (Selau & Vieira, 2011), and medicine (Cohen & Babey, 2012). The bibliometric study outlined here therefore focuses on many different disciplines—not restricting the *a priori* scope of the research.

Food packaging falls under the marketing studies focused on issues such as environmental concerns, current trends, and healthy eating habits. Thus, the packaging has not only the practical function of protecting the product, but it also has the fundamental function of disclosing the package's contents (Vieira et al., 2014). Generally, if a product does not support advertising, its packaging assumes this role and becomes its main communication channel. Accordingly, Mestriner (2005) pointed out that in most cases, the package comprises the product's only form of communication, and about 90% of the products sold in supermarkets contain advertising on their packaging. Packaging facilitates consumer understanding and is a product positioning strategy (Strehlau, 1996). Packaging also enables consumers to differentiate between products (Rundh, 2009; Garretson & Burton, 2005; Dabija & Pop, 2013).

Other areas of knowledge discuss packaging with regard to questions related to packaging materials; the ecological issues of sustainable packaging and its disposal; and the effects on obesity, food security, and more (Chandon & Wansink, 2010; Spink, Singh, & Singh, 2011; Melero, Diez, Rajkovic, Jaime, & Rovira, 2012; Cesare, Valero, Lucchi, Pasquali, & Manfreda, 2013; Vieira et al., 2014). In research conducted specifically on food consumer behavior, Vieira et al. (2014) found that food packaging strongly influences research studies on quality of life, sustainable food production, and healthy eating habits. The authors also pointed out that such studies appear not only in marketing research publications, but in science and health journals, as well. Thus, the issue of packaging is considered to be multidisciplinary and relevant to current research (Garretson & Burton, 2005; Jain, 2012; Januszewska et al., 2000; Dubois et al., 2012; Cohen & Babey, 2012).

The following briefly presents the theoretical basis of the study. Section 2 addresses the methodological procedures while the third section exposes the analyses and results. Finally, the conclusion highlights the study's research agenda, limitations, and final considerations.

## 2. Theoretical Basis

The objective of this study was to score studies examining the influence of packaging on consumer behavior. The initial research focused on consumer behavior with regard to food packaging.

Several studies have investigated the packaging attributes that attract consumers' attention (Underwood, Klein, & Burke, 2001; Garber, Burke, & Jones, 2000; Lucia, 2008; Carneiro, 2002). Packaging is a means of communication (Garber et al., 2000; Schoormans & Robben, 1997; Gordon, Ghilardi, Cooper, & Ghez, 1994; Homer & Gauntt, 1992), and packages are designed to draw attention to products within specific classes (Garber et al., 2000). Studies have indicated that a product's packaging encompasses 1) the physical aspect of the container, 2) the design, 3) the color, 4) the shape, 5) the labeling, and 6) the materials used (Ampuero & Vila, 2006; Orth & Malkewitz, 2008). In addition, some packages are so attractive that consumers use them for other purposes. For example, plastic packaging can be used to store leftovers in the refrigerator, other packages can be used to store utensils and organize closets (Lee & Lye, 2003; Rundh, 2009).

A study by Chandon and Wansink (2010) found that messages and themes on product packaging reach more consumers than advertising and can differentiate a brand from its competitors. They also discovered that different types of packaging affect how consumers perceive products (Chandon & Wansink, 2010). These authors conducted a literature review in marketing, nutrition, psychology, economics, and related disciplines to investigate the relationship between marketing activity, food intake, and obesity, with particular emphasis on the

effects on overeating. Their results found that packaging is one motivation for food consumption (Chandon & Wansink, 2010). In other words, the packaging can actually whet a person's appetite and cause a person to overeat, therefore leading to obesity.

Spink et al. (2011) examined whether consumers can assimilate and correctly understand the information on a product container. They pointed out, for example, that a warning of DANGER on the label may change consumer behavior and cause a person not to purchase the product. They found that packaging influences buying decisions, may possibly lead to information being interpreted incorrectly, and could have an impact on sales (Spink et al., 2011).

An attention-deserving study by Chandon and Wansink (2012) analyzed food marketing practices to determine how they may affect calorie consumption and how food product companies can achieve their business goals of helping people to have healthier diets. Chandon and Wansink (2012) cited packaging as a tool that can be used to influence health habits. They also emphasized that a package's design and messaging can affect a balanced diet.

Thus, understanding how food packaging influences buying behavior is a topic particularly studied in the marketing and the consumer-driven food industries. However, as the work of Chandon and Wansink (2010) and Vieira et al. (2014) highlights, journals from other areas, such as health, psychology, and economics, also debate these topics.

### 3. Research Method

According to Francisco (2011, p. 281), "there are several forms of evaluation of scientific and measuring information flows." Standing out as models are bibliometrics, scientometrics, informetrics, and webometrics. According to Spinak (1996), bibliometrics uses quantitative techniques to analyze academic production and usually focuses on citation analysis, keywords, and periodicals (Vanti, 2002; Francisco, 2011). In this sense, this research is a bibliometric analysis.

To collect the items, we used a scientific information database of major importance to the academic community, namely, the Web of Science (formerly the ISI Web of Knowledge), with more than 12,000 journals available (Web of Science, 2014). Several bibliometric reviews used this site as a basis for data collection, for example, Lyles and Salk (2006), Harzing and Wal (2008), and Ferreira et al. (2013). According to Luor, Lu, Yu, and Chang (2014), the Web of Science provides tools for analyzing quotations and references, allowing for bibliometric analyses. This database connects publications and researchers through quotes and indices covering all disciplines (Luor et al., 2014).

The present study adopted the following research procedures: We searched by "packaging" in the title field and by "consumer behavior" in the topic field in all languages, categories, and years (Frame 1). Thus, the initial search found a total of 112 articles, which were cited in the database 1,358 times and had an h-index of 20.

Table 1. Search filters

Title: (packaging) AND Topic: (consumer behavior)
Document Types = (Article)
Overtime = Every year [1982 (first article found) - 2014]
Journal = All journals.
Categories = All the categories.
Language = All languages.

After tabulating the data into a spreadsheet, one article was deleted because it was indexed twice. The studies discussed below were indexed in the research fields of "science of technology" and "social sciences." It is worth noting that this research focused on the use of expressions in English language publications for this were terms used in English in the search for articles in periodicals bases.

Data were managed with the aid of EndNote® software and NVivo 10®, and networks were generated by CiteSpace software (Chen, 2004). CiteSpace is a free application that allows the analysis of academic production through networks and identifies trends; publication growth; thematic clusters; collaboration between countries and authors; and cocitation references and periodicals (Chen, 2004). The networks were used to view the publications field and its main trends.

#### 4. Results and Discussion

The publications started with two items in 1982, achieving greater frequency per year until 2012, which had 19 articles. In 2013, the number of articles dropped to 16; in 2014 and until the time of this study (August 2014), 11 articles were published. The number of publications grew significantly, despite variations. This growth not only occurred in marketing, but also extended to areas such as environmental science and health.

With regard to coauthors, of the 111 documents analyzed, 89 works were produced by the 4 authors (80.18%), with a maximum number of nine authors per article (only two articles). Figure 1 shows the growth in the number of publications over the years and the amount of work by the authors.

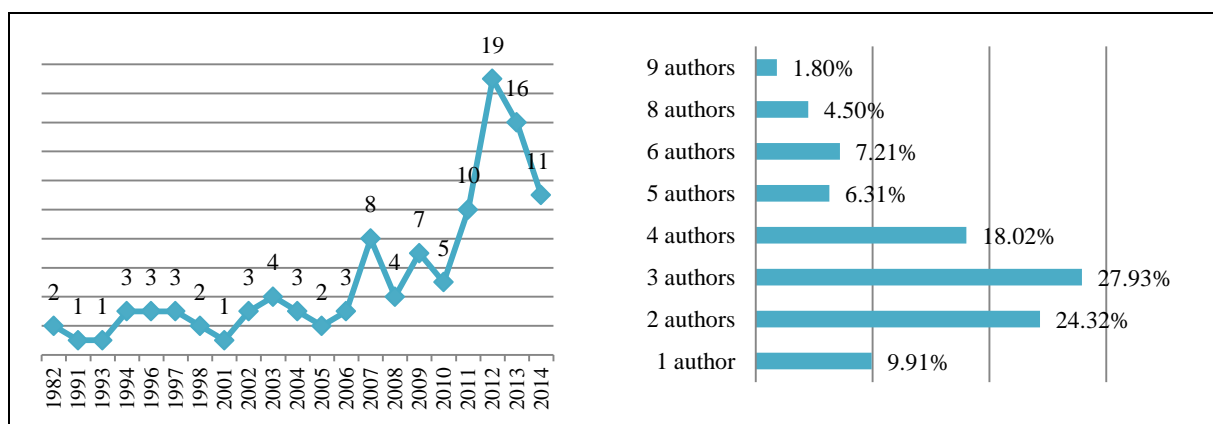


Figure 1. Number of articles per year and authors per article (number of articles per year and authors per article)

The articles published in 1982 included “The joint influence of brand, package size, and price on consumer decision behavior” (Fowler, 1982) in the *Journal of Psychology* (two quotes) and “Storage behavior of a low-cost food supplement in flexible consumer packages” (Kumar & Anandaswamy, 1982) from the *Journal of Food Science and Technology* (three citations). Fowler (1982) investigated the influence of the brand (national or private label), the package size (small, medium, or large), and the price of the product (0%, 15%, or 30% discount) in the purchase decision. Fowler (1982) showed that consumers prefer national brands regardless of the size of the container and avoid private-label brands in large containers, even with greater discounts, due to the perceived risk. The article by Kumar and Anandaswamy (1982), published in the *Journal of Food Science and Technology*, focused on the role of packaging in food storage.

Sanjay K. Dhar of the University of Chicago, who authored or coauthored three articles in *Business & Economics* (Frame 2), contributed the most articles out of the 111. His works were cited 63 times in the Web of Science database.

Table 2. Author that more published

Author	Article	Year	Citation
Bronnenberg, BJ.; Dhar, SK.; Dube, J	<i>Consumer packaged goods in the United States: National brands, local branding</i>	2007	23
Dhar, SK; Morrison, DG; Raju, JS	<i>The effect of package coupons on brand choice: An epilogue on profits</i>	1996	18
Raju, JS; Dhar, SK; Morrison, DG	<i>The effect of package coupons on brand choice</i>	1994	22

In his first article, Bronnenberg, Dhar, and Dube (2007) analyzed various geographic patterns and their influence on the performance of national brands and argued that the geographical origin of data reported by consumer product packaging can be used as a marketing strategy, bringing long-term results. In the second study, Dhar, Morrison, and Raju (1996) found that promotional coupons inserted on the outside of product packages have an impact on profits and stimulate consumers to buy again—or at least to purchase the product once. They found that the same is not true for coupons inserted inside the package. Finally, the third article by Raju, Dhar, and Morrison (1994) proposed a model to study the effects of promotional coupons in the process of brand choice. They pointed out that placing coupons on the outside of packaging and marketing instant win games bring more results (Raju et al., 1994).

The present study found a low incidence of coauthorship in the 111 articles studied, indicating that little scientific cooperation existed among the authors in these fields. This might have resulted from the diversity of the selected articles with regard to their areas of study and the small amount of interdisciplinary research. Another point concerned the Web of Science's categories containing published articles. Most of the articles were classified under Business & Economics (35 articles) and Food Science & Technology (29 articles). The items were also present in various categories involving the social sciences, the sciences, and health, especially engineering, psychology, chemistry, agriculture, ecology, and nutrition.

Table 3. Web of science areas

Areas	Frequency	Percentage
Business & Economics	35	24,14%
Food Science & Technology	29	20,00%
Engineering	13	8,97%
Environmental Sciences & Ecology	8	5,52%
Psychology	7	4,83%
Agriculture	5	3,45%
Chemistry	5	3,45%
Public, Environmental & Occupational Health	5	3,45%
Nutrition & Dietetics	4	2,76%
Entomology	3	2,07%
<b>Total (top 10 areas)</b>	<b>114</b>	<b>78,62%</b>
Other areas	31	21,38%
<b>Total</b>	<b>145*</b>	<b>100,00%</b>

Note. \* The article can be placed in more than one category, so the 111 articles were placed 145 times.

Of importance is the fact that the relationship between packaging and consumer behavior is a multidisciplinary subject. Figure 2, extracted from CiteSpace software, provides the Web of Science categories by time zone (following the year that coverage began for each subject area, as well as their respective volume of publications/circulation size) containing publications on packaging and consumer behavior. It is noteworthy that despite being a topic widely discussed by marketing in the business context, an early work was found in the psychology category (Fowler, 1982). Further, the categories expanded into agriculture, chemistry, entomology, nutrition, engineering, and more recently, environmental studies, behavioral science, and public policy. A deepening of the debate in this matter is valuable, for it explores new possibilities for research in a multidisciplinary way.

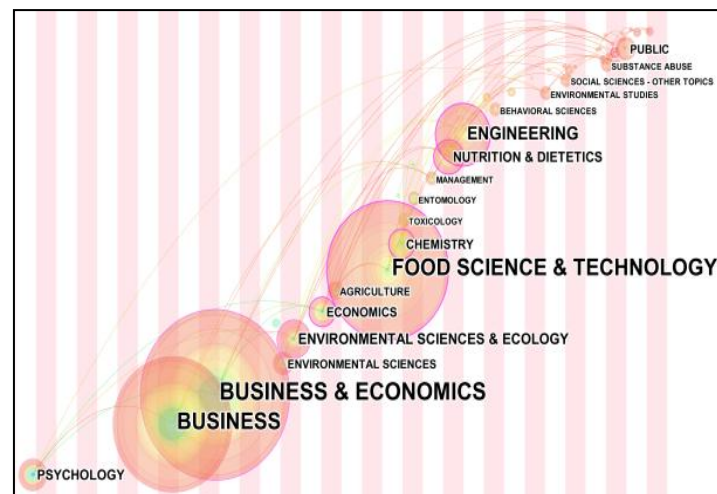


Figure 2. Web of science categories - time zone

Table 2 presents the 10 most-cited articles from the 111 surveyed (the number of citations listed in the Web of Science). These articles addressed a variety of topics, such as package size, minimally processed (packaged) products, ecological consumption, nutritional information, health information, and design. Most came from marketing journals, but there were also articles related to chemistry, public policy, and psychology. The *Journal of Marketing* and *Food Quality and Preference*, both with a single publication, cited the work of Wansink (1996) 181 times and cited an article by Ragaert, Verbeke, Devlieghere, and Debevere (2004) 111 times. Although these journals contained the most-cited studies, the *Journal of Public Policy & Marketing* published the most in the top 10, with three works: Szykman, Bloom, and Levy (1997), Keller et al. (1997), and Schwegker and Cornwell (1991), which add up to a total of 190 citations.

It is worth noting that the *Journal of Public Policy & Marketing* publishes research discussing the relationship between marketing and the public interest and is a source for understanding important current issues related to marketing and public policy. This indicates that studies focusing on packaging and labels and their effects on society have contributed to this overall body of work.

Table 4. 10 most cited articles

Title	Authors	Journal	Year	Citation
Can package size accelerate usage volume?	Wansink, B.	Journal of Marketing	1996	181
Consumer perception and choice of minimally processed vegetables and packaged fruits	Ragaert, P.; et al	Food Quality and Preference	2004	111
An examination of ecologically concerned consumers and their intention to purchase ecologically packaged products	Schwegker, C. H; Cornwell, T. B.	Journal of Public Policy & Marketing	1991	83
The effects of nutrition package claims, nutrition facts panels, and motivation to process nutrition information on consumer product evaluations	Keller, S.B.; et al	Journal of Public Policy & Marketing	1997	68
Consumer attitudes and risks associated with packaged foods having advisory labeling regarding the presence of peanuts	Hefle, S. L.; et al	Journal of Allergy and Clinical Immunology	2007	60
A study on the migration of organic pollutants from recycled paperboard packaging materials to solid food matrices	Triantafyllou, V. I.; Akrida-Demertzi, K.; Demertzis, P. G.	Food Chemistry	2007	59
Consumer and market drivers of the trial probability of new consumer packaged goods	Steenkamp, J. B. E. M.; Gielens, K.	Journal of Consumer Research	2003	59
How do front and back package labels influence beliefs about health claims?	Wansink, B.	Journal of Consumer Affairs	2003	48
The effect of new package design on product attention, categorization and evaluation	Schoormans, J. P. L; Robben, H. S. J.	Journal of Economic Psychology	1997	42
A proposed model of the use of package claims and nutrition labels	Szykman, L. R.; Bloom, P. N.; Levy, A. S.	Journal of Public Policy & Marketing	1997	39

In Table 2 above, note the work “Can package size accelerate usage volume?” (Wansink, 1996) with 181 citations and “Consumer perception and choice of minimally processed vegetables and packaged fruits” (Ragaert et al., 2004) with 111 citations. According to Wansink (1996), packaging influences consumer behavior long after a purchase because the largest food packages encourage consumers to consume more food and contribute to obesity. Ragaert et al. (2004), in turn, pointed out that sales of packaged, fresh-cut fruits and vegetables are growing rapidly thanks to their image of convenience and healthfulness. The researchers identified convenience and speed of preparation as the most important motivations for purchasing minimally processed vegetables.

Wansink's article (1996) in the *Journal of Marketing* is important because it was the most-cited reference out of the 111 analyzed articles, as shown in the cocitation network (Figure 3). Other authors featured in the network were Silayoi (Silayoi & Speece, 2007), with 12 citations published in the *European Journal of Marketing*, and Raghubir (Raghubir & Krishna, 1999), with nine citations published in the *Journal of Marketing*.

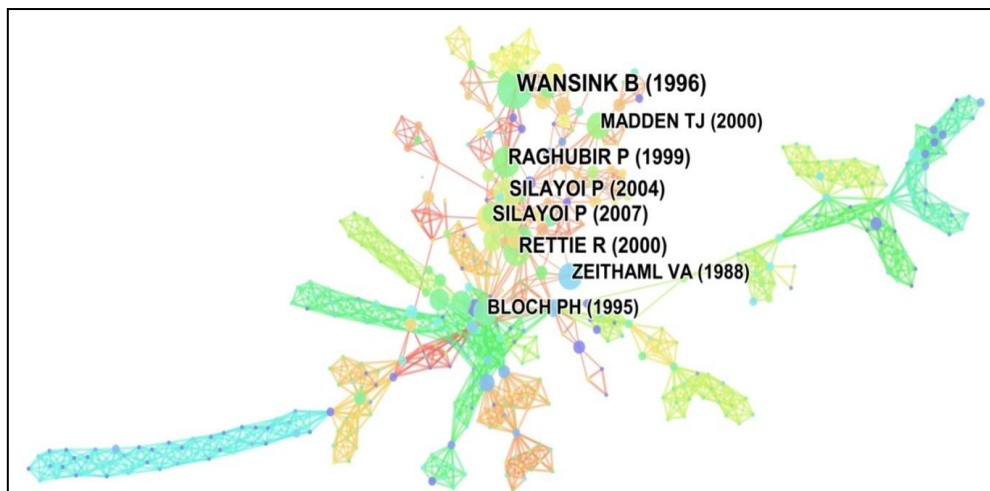


Figure 3. Authors more used in 111 articles

Further, to understand the dynamics of the field, a network of references cited was generated. It was noted that the network did not provide a central reference and presented several sets of nodes not connected to the rest of the network. Yet again, Wansink (1996) was the most-cited reference - the proximity to the result of that network is not presented in this article.

The journals that published most of the 111 articles included: *Packaging Technology and Science* (six articles - 5.41%); *Food Quality and Preference*, the *Journal of Public Policy & Marketing*, and *Marketing Science* (four articles - 3.60% each); and *Appetite*, the *Journal of Consumer Research*, and the *Journal of Marketing* (three articles - 2.70% each). In addition, 64 journals (57.66% of the journals) published only one article. Among the 111 articles, the *Journal of Public Policy & Marketing* was cited the most (204 citations), followed by the *Journal of Marketing* (187 citations), *Food Quality and Preference* (115 citations), and the *Journal of Consumer Research* (89 citations). The journals that were not among the most cited included the *Journal of Allergy and Clinical Immunology* (60 citations), *Food Chemistry* (59 citations), *Appetite* (55 citations), and the *Journal of Economic Psychology* (42 citations).

This study emphasizes that the remaining most-cited journals within the 111 articles surveyed were related to the field of marketing, especially the *Journal of Consumer Research* (48 citations), the *Journal of Marketing* (43 citations), and the *Journal of Marketing Research* (42 citations). In the area of nutrition, *Appetite* (20 citations), an international journal specializing in behavioral nutrition and cultural, sensory, and physiological influences on choosing and ingesting food and drink, stood out. Figure 4 below highlights some of these journals.

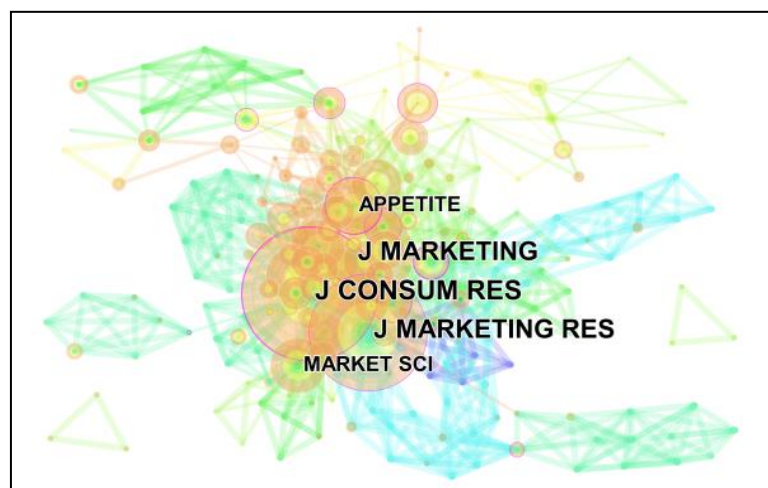


Figure 4. Journals most frequently cited by 111 articles studied



Figure 5 shows the countries that have collaborated to produce academic literature, for example, the coauthorship networks between the United States and the Netherlands, Germany, Canada, China, Mexico, and others. Brazil has not produced an item with a coauthor from another country, even with eight authors. The figure shows that the United States had a network connected to eight other countries. An author from Switzerland, who published with authors from Portugal, Norway, and the United States, formed another network that stood out.

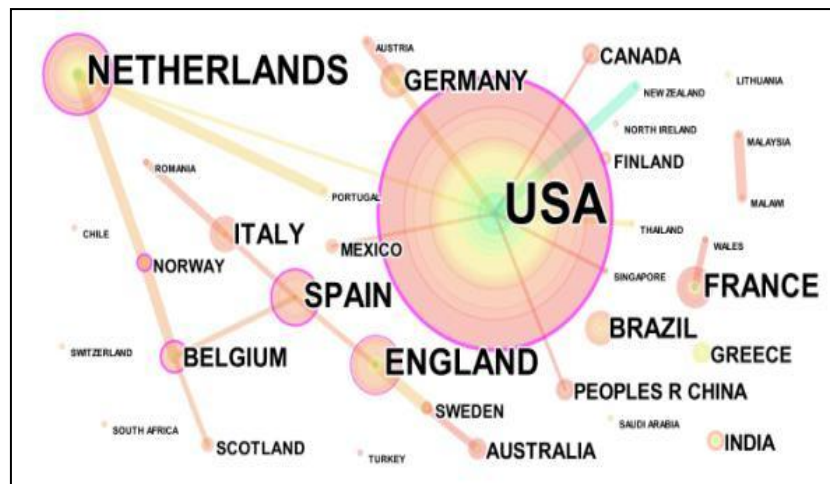


Figure 5. Network between countries

To this end, we sought to examine the relationships between the institutions involved in the development of research. In general, as can be seen in Figure 6, little cooperation took place between the institutions. Only the University of California called attention by having collaborated with three other teaching and research institutions.



Figure 6. Network between institutions

Figure 7 shows the network of keywords contained in the pool of 111 articles analyzed. “Behavior,” “packaging,” “information,” “choice,” and “consumer” occurred most frequently. As this network demonstrates, the keywords reveal the field to be multidisciplinary. Although most of them related to marketing appeared elsewhere as “health,” “volume,” and “migration,” on a smaller scale, they are related to articles in the areas of nutrition, environment, and engineering.

The words “design,” “perception,” “preference,” and “attitudes” were mainly explained by the number of works that dealt with how packaging design influences the attitudes, the purchasing intent, and the behavior of consumers—especially in the field of marketing study.



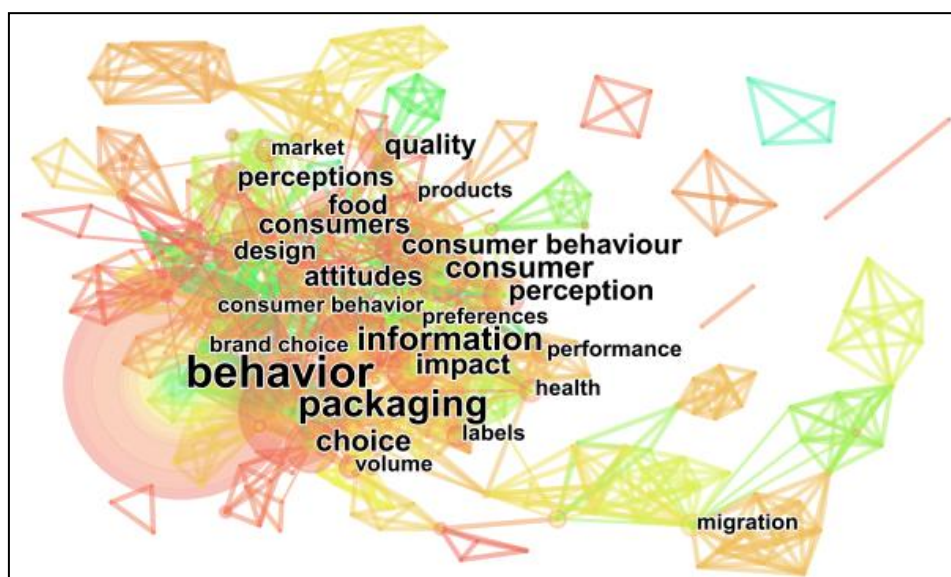


Figure 7. Network keywords

Finally, Figure 8 demonstrates the word clusters generated by indexing the articles of the network authors. Based upon limitations, only 20 clusters were generated, each being associated with an article. As discussed below, this reveals the field to be multidisciplinary and relates the importance of packaging to several specific themes.

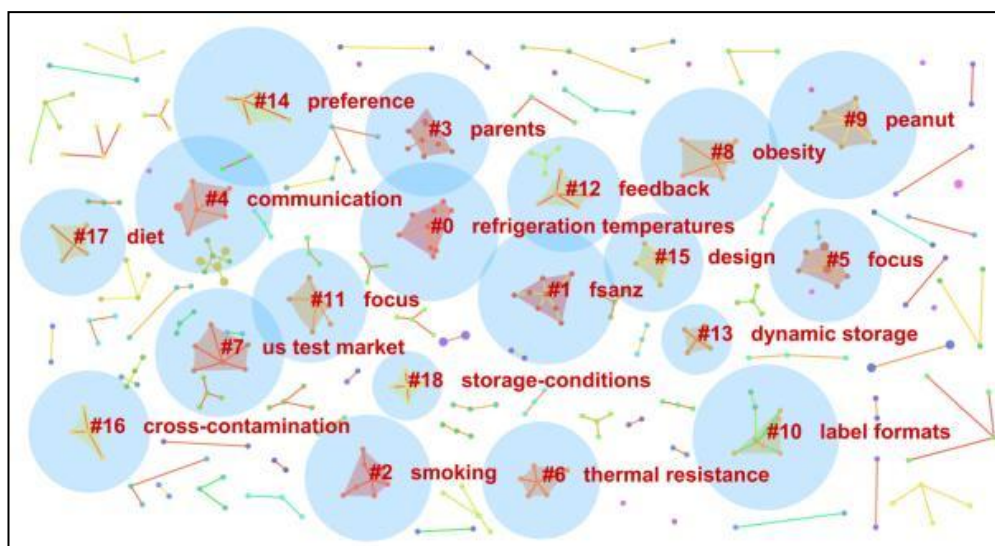


Figure 8. Cluster of indexed words

Figure 8 demonstrates that three groups aimed to analyze nutritional information. In the cluster “diet”, Lwin et al. (2013) explored the effects of package labelling that identifies the health risks of consuming certain foods and indicated that nutrition labels have little effect on people who eat wantonly. And in the cluster “FSANZ”, an article by Williams et al. (2003) aimed to describe the use of nutrition information on packaging and measured how this information followed regulatory standards. In “label formats”, Keller et al. (1997) examined the effects of nutritional assessments and nutritional information (e.g., “99% fat free”, “low calorie”) contained on packaging and the consumer motivation to heed nutrition information.

In the group “refrigeration temperatures”, Finazzi et al. (2011) examined the effects of harmful bacteria on humans with regard to cheese packaging, providing information for the producers of the product and similar cheeses about the length of shelf life. In “obesity”, Roberto et al. (2012) pointed out that although numerous

nutritional labeling systems exist, it is unclear whether they influence consumer behavior. They evaluated the impact of providing information on the amount of calories and the size of the package on obesity.

As Figure 8 shows, “focus” appeared in two groups, revealing that both used certain techniques and focus groups aimed to provide detailed information about attitudes, beliefs, behaviors, and consumer concepts about the package; however, they used different products as objects of study – *cachaça* – the type of rum (Carneiro, Minim, Chaves, Silva, & Regazzi, 2010) and guava packaged (Dantas et al., 2011).

In the cluster “communication”, Thrasher et al. (2012) found that the warning labels on cigarette packages worked most effectively at getting a message across. In the group called “tuxedo”, Zacher et al. (2014) also discussed the issue of information and warnings on cigarette packages. In the cluster “U.S. taste market”, cigarettes again became an object of study. Liu et al. (2014) analyzed consumers’ perception of traditional and new products and concluded that cigarette packaging significantly affects consumer perception and behavior. Thus, standard information on cigarette packaging, such as shape, size, and images, must be a part of comprehensive tobacco control.

The clusters “cross-contamination” and “storage dynamic” used beef as a study object. In one study, the researchers developed packaging to provide a modified atmosphere, controlling freezing using a bacteria found in raw chicken (Melero et al., 2012). Additionally, Cesare et al. (2013) published an article in a journal that provides essential information for those involved in food security and storage processes. The authors investigated the microbial behavior and concentration of *L. monocytogenes* in ten lots of loin chops allocated to four different types of containers, thus conducting packaging research to reveal contamination problems and making such research, again, multidisciplinary.

Additionally, both groups contained information on packaging products that can cause allergies. In the cluster “parents”, Barnett et al. (2011) examined how adults who are allergic to peanuts use packaging to assess risk when deciding whether to buy certain products. The authors found that most respondents use information on the front of the package for guidance but make little use of nutritional information on the back of the package. In the “peanut” cluster, Hefle et al. (2007) sought to identify whether consumers with food allergies pay attention to package warnings informing them of a possible allergy-causing product; they found consumers increasingly ignore the formal information on the back of the label but take warnings into account when they are located on the front of the packaging. Accordingly, the results of Barnett et al. (2011) and Hefle et al. (2007) were close. The “feedback” (Courtemanche et al., 2014), “preference” (Victoor et al., 2014), and “thermal resistance” (Li et al., 2013) clusters were not directly related to the scope of this research—common limitations when searches are performed in databases.

In the cluster “design”, an article by Sirkett, Hicks, Singh, Mullineux, and Medland (2007) appeared in a journal that covers mechanical engineering activities associated with the projects and operations of production process equipment. The researchers developed a machine model to simulate the behavior of a folding carton during transport. And in “storage conditions”, Parras-Rosa, Vega-Zamora, Torres-Ruiz, Murgado-Armenteros, and Gutiérrez-Salcedo (2013) indicated that packaging plays a key role in preserving the properties of olive oil, facilitates marketing communication, and creates value for consumers. The authors analyzed commercial olive oil labels, investigating the positioning of different packages and exploring different attributes that, in the opinion of consumers, must be present on bottles of olive oil. As the studies discussed show, it became evident that packaging is studied in various areas of knowledge and using different approaches. Still, most of the research can be found in food marketing and consumer behavior with regard to food.

## 5. Conclusions

The objective of this research was to analyze the academic literature focusing on how product packaging influences consumer behavior, using a bibliometric study. To accomplish this, we analyzed 111 articles published from 1982 to 2014 and indexed in the Web of Science database maintained by Thomson Reuters (formerly the ISI Web of Knowledge). Using descriptive statistics, bibliometric analyses, and CiteSpace software, we sought to explore the characteristics of these articles relating to the authors, journals, evolution, keywords, and research topics.

This article provides dynamic knowledge of the field of research on the subject in question and examines the scope of academic production using a broader view. It systematizes scientific production on packaging beyond any specific marketing field and may serve as a reference for future work by facilitating further reviews of the literature. In addition, the article points out recurring themes in relevant journals and represents an important contribution to both management studies and the social sciences, that is, from the point of view of how packaging decisions and labels affect society.

The published articles have a dispersed authorship network. Most of the articles can be found in the database categories of Business & Economics and Food Science & Technology, yet the amount of research is growing and expanding into subject areas such as chemistry, nutrition, engineering, and more recently, environmental studies, behavioral science, and public policy. The Wansink (1996) article, “Can package size accelerate usage volume?” was the most-cited article out of all 111 articles studied, as well as the most-cited reference for these items. We conclude that product packaging and its influence on consumer behavior appears as a multidisciplinary subject, relevant in different areas of knowledge. Further, packaging is highly relevant to purchase decisions, conscious consumption, food preservation, innovation in warehousing processes, health problems such as allergies, storage and transport, contamination, uncontrolled intake and obesity, smoking, and sustainable production—in short, packaging influences consumer behavior in various ways.

The research encountered some scientific limitations. Although the Web of Science contains more than 12,000 journals, other databases are available that could provide a better view of this field of study. Besides expanding the literature review to other databases, future research could be conducted aimed at national publications. Empirical research could analyze the influence of packaging on consumer behavior on specific issues addressed in this study.

Given the above, one can see that a considerable amount of information points to the importance of packaging in various areas of academic knowledge, and that it is a multidisciplinary research theme with various economic and social impacts.

## References

- Ackerman, D., & Tellis, G. (2001). Can culture affect prices? A cross-cultural study of shopping and retail prices. *Journal of Retailing*, 77(1), 57-82. [http://dx.doi.org/10.1016/S0022-4359\(00\)00046-4](http://dx.doi.org/10.1016/S0022-4359(00)00046-4)
- Ampuero, O., & Vila, N. (2006). Consumer perceptions of product packaging. *Journal of Consumer Marketing*, 23(2), 100-112. <http://dx.doi.org/10.1108/07363760610655032>
- Barbosa, J. S. K., & Reinert, M. (2014). *Open Innovation: Uma Análise Bibliométrica do Período de 2003 a 2013*. XXXVIII Encontro da ANPAD, Anais Rio de Janeiro/RJ, setembro.
- Barnett, J., Leftwich, J., Muncer, K., Grimshaw, K., Shepherd, R., Raats, M. M., ... & Lucas, J. S. (2011). How do peanut and nut-allergic consumers use information on the packaging to avoid allergens? *Allergy*, 66(7), 969-978. <http://dx.doi.org/10.1111/j.1398-9995.2011.02563.x>
- Barreiro-Hurlé J., Gracia, A., & de-Magistris, T. (2010). Does nutrition information on food products lead to healthier food choices? *Food Policy*, 35(3), 221-229. <http://dx.doi.org/10.1016/j.foodpol.2009.12.006>
- Baumgartner, H. (2010). Bibliometric reflections on the history of consumer research. *Journal of Consumer Psychology*, 20(3), 233-238. <http://dx.doi.org/10.1016/j.jcps.2010.06.002>
- Booth, W. C., Colomb, G. G., & Williams, J. M. (2000). *A arte da pesquisa*. São Paulo: Martins Fontes.
- Botelho, L. L. R., Cunha, C. C. D. A., & Macedo, M. (2011). O método da revisão integrativa nos estudos organizacionais. *Gestão e Sociedade*, 5(11), 121-36.
- Bronnenberg, B. J., Dhar, S. K., & Dubé J. P. (2007). Consumer packaged goods in the United States: National brands, local branding. *Journal of Marketing Research*, 44(1), 4-13. <http://dx.doi.org/10.1509/jmkr.44.1.4>
- Cardoso, R. L., Pereira, C. A., & Guerreiro, R. (2007). Perfil das pesquisas em contabilidade de custos apresentadas no EnANPAD no período de 1998 a 2003. *Revista de Administração Contemporânea*, 11(3), 177-198. <http://dx.doi.org/10.1590/S1415-65522007000300009>
- Carneiro, J. D. D. S., Minim, V. P. R., Chaves, J. B. P., Silva, C. H. O., & Regazzi, A. J. (2010). Consumers' opinion and views on packaging and labels of cachaça. *Food Science and Technology (Campinas)*, 30(3), 669-673. <http://dx.doi.org/10.1590/s0101-20612010000300016>
- Carneiro, J. D. S. (2002). Impacto da embalagem de óleo de soja na intenção de compra do consumidor via conjoint analysis. *Impacto da embalagem de óleo de soja na intenção de compra do consumidor via conjoint analysis*. Dissertação (Mestrado em Ciência e Tecnologia de Alimentos), Universidade Federal de Viçosa, Viçosa.
- Cesare, A., Valero, A., Lucchi, A., Pasquali, F., & Manfreda, G. (2013). Modeling growth kinetics of *Listeria monocytogenes* in pork cuts from packaging to fork under different storage practices. *Food Control*, 34(1), 198-207.
- Chandon, P., & Wansink, B. (2010). Is food marketing making us fat? A multi-disciplinary review. *Foundations*

- and Trends in Marketing, 5(3), 113-196. <http://dx.doi.org/10.1561/17000000016>
- Chandon, P., & Wansink, B. (2012). Does food marketing need to make us fat? A review and solutions. *Nutrition Reviews*, 70(10), 571-593. <http://dx.doi.org/10.1111/j.1753-4887.2012.00518.x>
- Chen, C. (2004). Searching for intellectual turning points: Progressive knowledge domain visualization. *Proceedings of the National Academy of Sciences*, 101(suppl 1), 5303-5310. <http://dx.doi.org/10.1073/pnas.0307513100>
- Cohen, D. A., & Babey, S. H. (2012). Contextual influences on eating behaviours: Heuristic processing and dietary choices. *Obesity Reviews*, 13(9), 766-779. <http://dx.doi.org/10.1111/j.1467-789X.2012.01001.x>
- Conforto, E. C., Amaral, D. C., & Silva, S. L. D. (2011). *Roteiro para revisão bibliográfica sistemática: Aplicação no desenvolvimento de produtos e gerenciamento de projetos*. In 8º Congresso Brasileiro de Gestão do Desenvolvimento de Produtos-CBGDP-Porto Alegre.
- Courtemanche, A., Sheldon, J., Sherman, J., Schroeder, S., Bell, A., & House, R. (2014). Assessing the effects of a staff training package on the treatment integrity of an intervention for self-injurious behavior. *Journal of Developmental and Physical Disabilities*, 26(4), 371-389. <http://dx.doi.org/10.1007/s10882-014-9372-6>
- Dabija, D. C., & Pop, C. M. (2013). Green marketing-factor of competitiveness in retailing. *Environmental Engineering and Management Journal*, 12(2), 393-400.
- Dantas, M. I. S., Nakajima, V., Rosa, D. D., Andrade, F. O., Canzian, C., & Martino, H. S. D. (2011). Guava Jam packaging determinant attributes in consumer buying decision. *Food Science and Technology (Campinas)*, 31(3), 567-570.
- Dhar, S. K., Morrison, D. G., & Raju, J. S. (1996). The effect of package coupons on brand choice: An epilogue on profits. *Marketing Science*, 15(2), 192-203. <http://dx.doi.org/10.1287/mksc.15.2.192>
- Dubois, D., Rucker, D. D., & Galinsky, A. D. (2012). Super size me: Product size as a signal of status. *Journal of Consumer Research*, 38(6), 1047-1062. <http://dx.doi.org/10.1086/661890>
- Ferreira, M. P., Pinto, C. F., & Serra, F. R. (2013). The transaction costs theory in international business research: A bibliometric study over three decades. *Scientometrics*, 98(3), 1899-1922. <http://dx.doi.org/10.1007/s11192-013-1172-8>
- Finazzi, G., Daminelli, P., Serraino, A., Pizzamiglio, V., Riu, R., Giacometti, F., ... & Boni, P. (2011). Behaviour of *Listeria monocytogenes* in packaged water buffalo mozzarella cheese. *Letters in Applied Microbiology*, 53(3), 364-370. <http://dx.doi.org/10.1111/j.1472-765X.2011.03118.x>
- Fowler, R. L. (1982). The joint influence of brand, package size, and price on consumer decision behavior. *The Journal of Psychology*, 111(2), 263-268. <http://dx.doi.org/10.1080/00223980.1982.9915366>
- Francisco, E. D. R. (2011). RAE-eletrônica: Exploration of archive in the light of bibliometrics, geoanalysis and social network. *Revista de Administração de Empresas*, 51(3), 280-306. <http://dx.doi.org/10.1590/S0034-75902011000300008>
- Garber, L. L., Burke, R. R., & Jones, J. M. (2000). The role of package color in consumer purchase consideration and choice. *Report-Marketing Science Institute Cambridge Massachusetts*.
- Garretson, J. A., & Burton, S. (2005). The role of spokescharacters as advertisement and package cues in integrated marketing communications. *Journal of Marketing*, 69(4), 118-132. <http://dx.doi.org/10.1509/jmkg.2005.69.4.118>
- Gordon, J., Ghilardi, M. F., Cooper, S. E., & Ghez, C. (1994). Accuracy of planar reaching movements. *Experimental Brain Research*, 99(1), 112-130. <http://dx.doi.org/10.1007/BF00241416>
- Greenhalgh, T. (1997). How to read a paper: Papers that summarise other papers (systematic reviews and meta-analyses). *British Medical Journal*, 315(7109), 672-675. <http://dx.doi.org/10.1136/bmj.315.7109.672>
- Harzing, A. W., & Van Der Wal, R. (2008). A Google Scholar h-index for journals: An alternative metric to measure journal impact in economics and business. *Journal of the American Society for Information Science and Technology*, 60(1), 41-46. <http://dx.doi.org/10.1002/asi.20953>
- Hassan, S. U., Haddawy, P., & Zhu, J. (2014). A bibliometric study of the world's research activity in sustainable development and its sub-areas using scientific literature. *Scientometrics*, 99(2), 549-579. <http://dx.doi.org/10.1007/s11192-013-1193-3>
- Hefle, S. L., Furlong, T. J., Niemann, L., Lemon-Mule, H., Sicherer, S., & Taylor, S. L. (2007). Consumer attitudes

- and risks associated with packaged foods having advisory labeling regarding the presence of peanuts. *Journal of Allergy and Clinical Immunology*, 120(1), 171-176. <http://dx.doi.org/10.1016/j.jaci.2007.04.013>
- Homer, P. M., & Gauntt, S. G. (1992). The role of imagery in the processing of visual and verbal package information. *Journal of Mental Imagery*, 16(Fall/Winter), 123-144.
- Jain, S. (2012). Marketing of vice goods: A strategic analysis of the package size decision. *Marketing Science*, 31(1), 36-51. <http://dx.doi.org/10.1287/mksc.1110.0657>
- Januszewska, R., Viaene, J., & Verbeke, W. (2000). Market segmentation for chocolate in Belgium and Poland. *Journal of Euromarketing*, 9(3), 1-26. [http://dx.doi.org/10.1300/J037v09n03\\_01](http://dx.doi.org/10.1300/J037v09n03_01)
- Keller, K. L., Kuilema, L. G., Lee, N., Yoon, J., Mascaro, B., Combes, A. L., Deutsch B., Sorte K., & Halford J.C. (2012). The impact of food branding on children's eating behavior and obesity. *Physiology & behavior*, 106(3), 379-386. <http://dx.doi.org/10.1016/j.physbeh.2012.03.011>
- Keller, S. B., Landry, M., Olson, J., Velliquette, A. M., Burton, S., & Andrews, J. C. (1997). The effects of nutrition package claims, nutrition facts panels, and motivation to process nutrition information on consumer product evaluations. *Journal of Public Policy & Marketing*, 16(2), 256-269.
- Kumar, K. R., & Anandaswamy, B. (1982). Storage behaviour of a low cost food supplement in flexible consumer packages. *Journal of Food Science and Technology*, 19 (2). 81-83.
- Lee, S. G., & Lye, S. W. (2003). Design for manual packaging. *International Journal of Physical Distribution & Logistics Management*, 33(2), 163-189. <http://dx.doi.org/10.1108/09600030310469162>
- Li, W., Chen, H., Han, J., Xue, K., Wong, F., Shiu, I., Cheng, G., & Wu, J. (2013). Effects of Copper Plating Thickness of Ni/Fe Alloy Leadframe on Thermo-Mechanical and Die Cracking Behaviors of Small Outline Transistor (SOT) Packages. *Components, Packaging and Manufacturing Technology, IEEE Transactions on*, 3(10), 1713-1719. <http://dx.doi.org/10.1109/TCPMT.2013.2261438>
- Liu, S. T., Nemeth, J. M., Klein, E. G., Ferketich, A. K., Kwan, M. P., & Wewers, M. E. (2014). Adolescent and adult perceptions of traditional and novel smokeless tobacco products and packaging in rural Ohio. *Tobacco Control*, 23(3), 209-214. <http://dx.doi.org/10.1136/tobaccocontrol-2012-050470>
- Lucia, S. M. D. (2008). *Métodos estatísticos para avaliação da influência de características não sensoriais na aceitação, intenção de compra e escolha do consumidor*. Doctoral dissertation, Tese de Doutorado em Ciência e Tecnologia de Alimentos, Universidade Federal de Viçosa, Viçosa-MG.
- Luor, T., Lu, H. P., Yu, H., & Chang, K. (2014). Trends in and contributions to entrepreneurship research: A broad review of literature from 1996 to June 2012. *Scientometrics*, 99(2), 353-369. <http://dx.doi.org/10.1007/s11192-013-1203-5>
- Lwin, M. O., Morrin, M., Tang, S. W., Low, J. Y., Nguyen, T., & Lee, W. X. (2013). See the seal? Understanding restrained eaters' responses to nutritional messages on food packaging. *Health Communication*, 29(8), 745-761. <http://dx.doi.org/10.1080/10410236.2013.789131>
- Lyles, M. A., & Salk, J. E. (2006). Knowledge acquisition from foreign parents in international joint ventures: An empirical examination in the Hungarian context. *Journal of International Business Studies*, 38(1), 3-18. <http://dx.doi.org/10.1057/palgrave.jibs.8400243>
- Mariano, A. M., Cruz, R. G., & Gaitan, J. A. (2011). *Meta-análises como instrumento de pesquisa: Uma revisão sistemática da bibliografia aplicada ao estudo das alianças estratégicas internacionais*. In Congresso Internacional de Administração-Inovação Colaborativa e Competitividade, Ponta Grossa. Anais do ADMPG 2011. Ponta Grossa: Estúdio texto.
- Melero, B., Diez, A. M., Rajkovic, A., Jaime, I., & Rovira, J. (2012). Behaviour of non-stressed and stressed *Listeria monocytogenes* and *Campylobacter jejuni* cells on fresh chicken burger meat packaged under modified atmosphere and inoculated with protective culture. *International Journal of Food Microbiology*, 158(2), 107-112. <http://dx.doi.org/10.1016/j.ijfoodmicro.2012.07.003>
- Mestriner, F. (2005). *Design de embalagem: Curso avançado*. Pearson Prentice Hall.
- Orth, U. R., & Malkewitz, K. (2008). Holistic package design and consumer brand impressions. *Journal of Marketing*, 72(3), 64-81. <http://dx.doi.org/10.1509/jmkg.72.3.64>
- Parras-Rosa, M., Vega-Zamora, M., Torres-Ruiz, F. J., Murgado-Armenteros, E. M., & Gutiérrez-Salcedo, M. (2013). Positioning of packaging in the market for extra virgin olive oil: An exploratory study.

- Itea-Informacion Tecnica Economica Agraria*, 109(1), 107-123.
- Ragaert, P., Verbeke, W., Devlieghere, F., & Debevere, J. (2004). Consumer perception and choice of minimally processed vegetables and packaged fruits. *Food Quality and Preference*, 15(3), 259-270. [http://dx.doi.org/10.1016/s0950-3293\(03\)00066-1](http://dx.doi.org/10.1016/s0950-3293(03)00066-1)
- Raghubir, P., & Krishna, A. (1999). Vital Dimensions in Volume Perception: Can the Eye Fool the Stomach?. *Journal of Marketing Research*, 36(3), 313-326. <http://dx.doi.org/10.2307/3152079>
- Raju, J. S., Dhar, S. K., & Morrison, D. G. (1994). The effect of package coupons on brand choice. *Marketing Science*, 13(2), 145-164. <http://dx.doi.org/10.1287/mksc.13.2.145>
- Ramos-Rodríguez, A. R., & Ruiz-Navarro, J. (2004). Changes in the intellectual structure of strategic management research: A bibliometric study of the Strategic Management Journal, 1980-2000. *Strategic Management Journal*, 25(10), 981-1004. <http://dx.doi.org/10.1002/smj.397>
- Roberto, C. A., Shivaram, M., Martinez, O., Boles, C., Harris, J. L., & Brownell, K. D. (2012). The Smart Choices front-of-package nutrition label. Influence on perceptions and intake of cereal. *Appetite*, 58(2), 651-657. <http://dx.doi.org/10.1016/j.appet.2012.01.003>
- Rundh, B. (2009). Packaging design: Creating competitive advantage with product packaging. *British Food Journal*, 111(9), 988-1002. <http://dx.doi.org/10.1108/00070700910992880>
- Schoormans, J. P., & Robben, H. S. (1997). The effect of new package design on product attention, categorization and evaluation. *Journal of Economic Psychology*, 18(2), 271-287. [http://dx.doi.org/10.1016/s0167-4870\(97\)00008-1](http://dx.doi.org/10.1016/s0167-4870(97)00008-1)
- Schweper, Jr, C. H., & Cornwell, T. B. (1991). An examination of ecologically concerned consumers and their intention to purchase ecologically packaged products. *Journal of Public Policy & Marketing*, 10(2), 77-101.
- Selau, L. G., & Vieira, G. B. B. (2011). Organização de referências visuais na concepção de embalagens sustentáveis para hortifrutícolas. *Revista Imagem*, 11(1), 35-44.
- Silayoi, P., & Speece, M. (2007). The importance of packaging attributes: A conjoint analysis approach. *European Journal of Marketing*, 41(11/12), 1495-1517. <http://dx.doi.org/10.1108/03090560710821279>
- Sirkett, D. M., Hicks, B. J., Singh, B., Mullineux, G., & Medland, A. J. (2007). Role of simulation in predicting the effect of machine settings on process performance in the packaging industry. *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*, 221(4), 163-176. <http://dx.doi.org/10.1243/09544089jpme123>
- Spinak, E. (1996). *Diccionario enciclopédico de bibliometría, cienciometría e informetría*. Montevideo: Unesco.
- Spink, J., Singh, J., & Singh, S. P. (2011). Review of package warning labels and their effect on consumer behaviour with insights to future anticounterfeit strategy of label and communication systems. *Packaging Technology and Science*, 24(8), 469-484. <http://dx.doi.org/10.1002/pts.947>
- Steenkamp, J. B. E., & Gielens, K. (2003). Consumer and market drivers of the trial probability of new consumer packaged goods. *Journal of Consumer Research*, 30(3), 368-384. <http://dx.doi.org/10.1086/378615>
- Strehlau, V. I. (1996). *Um estudo sobre a embalagem como elemento na construção da imagem de marca de cerveja*. Doctoral dissertation, Tese de Doutorado em Administração, Fundação Getúlio Vargas, São Paulo.
- Szykman, L. R., Bloom, P. N., & Levy, A. S. (1997). A proposed model of the use of package claims and nutrition labels. *Journal of Public Policy & Marketing*, 16(2), 228-241.
- Thrasher, J. F., Arillo-Santillán, E., Villalobos, V., Pérez-Hernández, R., Hammond, D., Carter, J., ... & Regalado-Piñeda, J. (2012). Can pictorial warning labels on cigarette packages address smoking-related health disparities? Field experiments in Mexico to assess pictorial warning label content. *Cancer Causes & Control*, 23(1), 69-80. <http://dx.doi.org/10.1007/s10552-012-9899-8>
- Triantafyllou, V. I., Akrida-Demertzi, K., & Demertzis, P. G. (2007). A study on the migration of organic pollutants from recycled paperboard packaging materials to solid food matrices. *Food Chemistry*, 101(4), 1759-1768. <http://dx.doi.org/10.1016/j.foodchem.2006.02.023>
- Troccoli, I. R., Gimenez, K., Reis, P. N. C., & Faria, P. P. (2011). Comportamento do consumidor: Um estudo bibliométrico nos Enanpads 2007-09. *Revista Organizações em Contexto-Online*, 7(14), 165-189. <http://dx.doi.org/10.15603/1982-8756/roc.v7n14p165-189>
- Underwood, R. L., Klein, N. M., & Burke, R. R. (2001). Packaging communication: Attentional effects of product

- imagery. *Journal of Product & Brand Management*, 10(7), 403-422. <http://dx.doi.org/10.1108/10610420110410531>
- Vanti, N. A. P. (2002). Da bibliometria à webometria: Uma exploração conceitual dos mecanismos utilizados para medir o registro da informação e a difusão do conhecimento. *Ciência da Informação*, 31(2), 152-162. <http://dx.doi.org/10.1590/S0100-19652002000200016>
- Victoor, A., Hansen, J., Van Den Akker-Van Marle, M. E., Van Den Berg, B., Van Den Hout, W. B., & De Jong, J. D. (2014). Choosing your health insurance package: A method for measuring the public's preferences for changes in the national health insurance plan. *Health Policy*, 117(2), 257-265. <http://dx.doi.org/10.1016/j.healthpol.2014.04.017>
- Vieira, F. G. D. (2003). Narciso sem espelho: A publicação brasileira de marketing. *Revista de Administração de Empresas*, 43(1), 81-90.
- Vieira, K. C., Alcântara, V. C. & Tonelli, D. F. (2014). A Influência das Embalagens no Comportamento do Consumidor de Alimentos. *XVII SEMEAD*.
- Wansink, B. (1996). Can package size accelerate usage volume? *The Journal of Marketing*, 60(3), 1-14. <http://dx.doi.org/10.2307/1251838>
- Wansink, B. (2003). How do front and back package labels influence beliefs about health claims? *Journal of Consumer Affairs*, 37(2), 305-316. <http://dx.doi.org/10.1111/j.1745-6606.2003.tb00455.x>
- Web of Science. (2014). Retrieved from <http://wokinfo.com/>
- Williams, P. G., Yeatman, H., Zakrzewski, S., Aboozaid, B., Henshaw, S., Ingram, K., ... & Ghani, F. (2003). Nutrition and related claims used on packaged Australian foods-implications for regulation. *Asia Pacific Journal of Clinical Nutrition*, 12(2), 138-150.
- Zacher, M., Bayly, M., Brennan, E., Dono, J., Miller, C., Durkin, S., ... & Wakefield, M. (2014). Personal tobacco pack display before and after the introduction of plain packaging with larger pictorial health warnings in Australia: An observational study of outdoor café strips. *Addiction*, 109(4), 653-662. <http://dx.doi.org/10.1111/add.12466>

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