

PARTICULARITIES OF THE SCARCITY APPEAL: A PROPOSAL FOR RESEARCH AVENUES

MARCELO CARVALHO

ESCOLA PAULISTA DE POLÍTICA, ECONOMIA E NEGÓCIOS - UNIVERSIDADE FEDERAL DE SÃO PAULO - EPPEN/UNIFESP

EVANDRO LUIZ LOPES

ESCOLA SUPERIOR DE PROPAGANDA E MARKETING (ESPM)

SAMARA DE CARVALHO PEDRO

FACULDADE DE ECONOMIA, ADMINISTRAÇÃO E CONTABILIDADE DA UNIVERSIDADE DE SÃO PAULO - FEA

DIEGO NOGUEIRA RAFAEL

ESCOLA SUPERIOR DE PROPAGANDA E MARKETING (ESPM)

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Abstract

Purpose - This article aims to identify the main studies on scarcity appeal in the 21st century. The intention is to build a clear vision to help understand the main mechanisms utilized and consumer responses.

Design/methodology/approach - We conducted a systematic literature review based on the central research question: What are the main studies on scarcity appeal? We observed that consumers react by identifying the causes and possible occurrences of scarcity, making choices in favor of scarce goods under particular circumstances.

Findings - In theoretical terms, this systematic review offers insight into the literature that calls for scarcity, highlighting consumers' perceptions of this practice. In managerial terms, we emphasize that, for effective action, there is a need to evaluate both the product and the type of scarcity appeal to be used.

Originality/value - The study helps to provide a better understanding of the effects of scarcity appeal on the consumer.

Keywords: scarcity appeal; systematic literature review; purchase intention; influence.

1 Introduction

Consumers are influenced by how a problem is structured and respond accordingly. This process, widely used in advertising to persuade consumers in their decision making, is known as the framing effect (Kahneman and Tversky, 1979). Using the framing effect, one of the ways used to boost sales is to appeal to the scarcity condition.

Scarcity, seen as an isolated factor, does not influence consumer preference (Castro et al., 2013). It is the expectation of a future shortage of a certain product that creates a stimulus for the consumer (Mukherjee and Lee, 2016). This expectation of scarcity is manipulated with appeals, such as, "today only" or "last items" and enhances consumer expectations of future unavailability of an item (Oruc, 2015).

Many theories have served as a basis in the efforts to understand consumer behavior with regard to scarcity appeal. The Commodity Theory (Brock, 1968) offers an explanation for the effects caused. This theory addressed the psychological effects of unavailability, indicating that a commodity becomes more valuable when it is not available. Unavailability increases consumers' desire, as well as the value of the goods (Lynn and Bogert, 1996). Thus, a limited number of suppliers, as well as the wait and extra effort made by the consumer, can make a product more attractive (Gupta and Gentry 2016).

Cialdini (2009) corroborated Brock's postulation and, although it does not offer a definition for scarcity, it establishes it as one of the six principles of persuasion, emphasizing that things that are difficult to obtain are usually considered more valuable and can serve as shortcuts to validate high quality. Cialdini (2009) also furthers Brock's (1968) perceptions that scarcity can function as a heuristic cue, conferring greater value to scarce goods. Consumers may believe that, due to scarcity, there will be a tendency for prices to increase (Lynn and Bogert, 1996). When the availability of an item is limited, consumers tend to interpret this opportunity as more valuable

(Cialdini, 2009). Consumers' expectations about the future availability of an item can be changed with the use of scarcity appeal (Oruc, 2015).

Although scarcity appeal has been extensively studied since the 1960s (Brock, 1968; Lynn and Bogert, 1996; Aggarwal and Vaidyanathan, 2003; Cialdini, 2009; Gupta and Gentry 2016), the multiple and complex relationships that permeate the theme necessitate new research. For example, when we look at the theoretical contributions used in research on the call for scarcity, we find several theoretical approaches, such as social influence and the need for cognitive closure (Jung and Kellaris, 2004), first and third person effect (Eisend, 2008) and excitement (Zhu and Ratner, 2015).

In view of the widespread use of scarcity appeal by marketers and the complexity of consumers' responses and reactions to this practice, the purpose of this article is to identify the main studies on scarcity appeal in the 21st century, building a clear vision that helps illustrate the main mechanisms used and consumers' responses to the appeal. To this end, we conducted a systematic literature review of articles identified in two reputable databases, Web of Science and Scopus, using the key term "scarcity appeal". We also examined ten journals from the field of Marketing with the highest Impact Factor index (SCImago Journal Ranking - SJR) and the Journal of the Association for Consumer Research, which in October 2020 published an issue with an emphasis on scarcity. Through a systematic literature review, it is possible to systematically locate and classify the available information on a given topic (Davis et al., 2014).

A preliminary analysis of the current state of the literature on scarcity appeal reveals that researchers have studied the strategy in a fragmented way. We did not locate any work that sought to analyze it in an integrative way to identify the underlying processes (mediators), potentiating variables or mitigating variables (moderators) of its effects on consumer behavior. We also found no study that indicated the main theories that supported the analysis of the scarcity appeal phenomenon. These are the gaps that this study aimed to mitigate.

This article contributes, in a theoretical way, consolidating the findings of previous studies on scarcity appeal, thus facilitating its conceptual understanding and its effects on consumer behavior. In managerial terms, this study enables retail managers and marketing professionals to gain a better understanding of the behavior of consumers with regard to scarcity appeal, thus guiding their marketing actions in the retail environment. The work is divided into four sections following this introduction: (2) a brief bibliographic review, presenting the conceptualization of scarcity appeal and its typification; (3) the methodology used in this research; (4) an analysis and discussion of the findings; and (5) final considerations, limitations, and suggestions for future research.

2 Brief concept of scarcity

Daily consumers make decisions without performing a more detailed analysis. To guide their decisions, they use mental shortcuts and heuristics in a behavior pattern named by Cialdini (2009) as "click, whirr". A decision based on heuristics can result in non-assertive choices (Tversky and Kahneman 1974) since the data analysis is superficial (Cialdini, 2009).

The use of persuasion is part of the main marketing actions used to explore this consumer characteristic (Griskevicius et al., 2009). Persuasion can be understood as a form of human communication that aims to influence the decisions and actions of another person (Simons et al., 2001). Cialdini (2009) established six principles of persuasion: reciprocity (when the persuader offers something, generates a feeling of debt in the persuadee, coercing them to offer something in return); commitment and consistency (leading the persuadee to make decisions according to their system of beliefs and values); social proof (deciding based on other people's opinions or actions); sympathy (people are more easily influenced by those they like); authority (holders of authority have greater persuasive potential), and scarcity (something limited, rare, is considered important by people). Merchants use resources, such as scarcity concepts, to boost their sales.

Scarcity can be divided into two types: real (when resources are actually constrained) or manipulated (when, as a result of manipulation, the idea of scarce is transmitted) (Schins, 2014). Scarcity alone does not affect consumer preference. The perception that consumers formulate about the causes and possible occurrences of scarcity is what stimulates individuals to make choices in favor of scarce goods (Mukherjee and Lee, 2016). When scarcity is communicated with an appeal, through messages such as, “only while supplies last” or “limited edition”, it produces a change in consumer expectations about the future availability of an item (Oruc, 2015).

Opportunities appear to be most valuable when their availability is limited (Cialdini, 2006). Such an effect is evidenced when the consumer considers the product attractive (Van Herper et al., 2009). People may want some scarce products because they believe that these products will increase in price over time (Lynn and Bogert, 1996). The scarcity principle is not restricted to products as it also applies to services and information, with limited access to a message making individuals want it more (Cialdini, 2009). The effect produced by scarcity varies depending on the consumer’s perception of the expectation of scarcity.

Expectation of scarcity can be defined as the consumer’s perception that a certain product will be scarce. This can arise from perceptions of high demand from other consumers, such as times of high consumption, such as Christmas, or from a restricted supply from the company, such as limited-edition products. These expectations moderate the effectiveness of scarcity features in advertising (Mukherjee and Lee, 2016). The constant renewal of products in fast fashion stores, such as Zara, HandM, and Forever 21, creates an atmosphere that makes consumers feel a sense of urgency to purchase. Therefore, fearing that they will lose these products to others, consumers attempt to achieve a feeling of security by holding onto several products, even though they are not sure that they will buy them (Gupta and Gentry, 2016).

The effect produced by scarcity varies depending on consumer perception. When consumers feel anxious or fearful, they are less likely to be persuaded by scarcity appeals (Dunn, and Hoegg, 2014). In post-purchase evaluation, scarcity can mitigate feelings of regret in the post-purchase period, as consumers can more easily justify their purchase. Children show greater adherence to these stimuli, and as they age, the basic scarcity bias is reduced as a function of cognitive development (Mittone et al., 2005).

Fundamentally, scarcity does not affect consumer preference. The consumer’s perception of the causes and possible occurrences of scarcity is what encourages individuals to make choices in favor of scarce goods (Mukherjee and Lee, 2016). When the consumer believes that scarcity is the result of accidental forces (delivery failure), its effects are not felt (Parker and Lehmann, 2011).

3 Method

The systematic literature review is a method that provides an answer to a specific research question, identifying relevant studies that make up the body of work on the research theme (Moher et al., 2015). It also contributes to the development of the research field, highlighting gaps and inconsistencies in published studies (Mallett et al., 2012).

Following the indications of Tranfield, Denyer, and Smart (2003), five stages were established for the development of this systematic review: a) definition of the research theme; b) selection of the database; c) identification of terms and keywords; d) Selection of relevant articles; and e) data analysis.

The main goal of this systematic literature review was to identify theoretical advances in the literature on scarcity appeal in consumer relationships. Having defined the research theme, the next step was to select the databases for the study. To search for articles, two databases were selected, Web of Science and Scopus. The choice was made due to the prestige and prominence that the databases have within the academic community. Ten journals from the field of Marketing with the highest Impact Factor index (SCImago Journal Ranking - SJR) were also selected, as well as the

Journal of the Association for Consumer Research, which in October 2020 published an issue with an emphasis on scarcity, as shown in Table 1.

Table 1.
Main Journals

Journal	Impact Factor	Articles Found
Journal of Marketing	11.799	1
Journal of the Academy of Marketing Science	7.194	1
Journal of Marketing Research	5.984	3
Marketing Science	5.643	0
Journal of Consumer Research	5.428	4
Journal of Retailing	3.915	2
Journal of International Marketing	4.575	1
Journal of Interactive Marketing	3.355	0
International Journal of Research in Marketing	3.352	1
Journal of Business Research	3.128	0

Source: the authors (2024)

After defining the databases, we selected the search terms and the time frame of the search. The key term used was “scarcity appeal,” for the period between 2001 and 2023. We considered only academic articles (excluding articles from non-peer-reviewed journals, books, theses, dissertations, and other types of publications). This process resulted in 53 articles that form the conceptual basis of scarcity appeal for this study (Table 2).

The articles in this sample were published in prominent journals, and thus serve as an indication of the relevance of the theme. The journals with the highest number of publications for this sample were observed: Journal of Advertising (6), Psychology and Marketing (6), Journal of the Association for Consumer Research (5), Journal of Consumer Research (4), Journal of Marketing Research (3) and Journal of Retailing (2).

The multiplicity of background theories is demonstrative of the complexity of the theme. The authors also used different ways of operationalizing their studies. There is an extensive possibility of underlying aspects, which can influence the effects felt by the regard to a scarcity appeal. Although some aspects have been studied extensively and robust literature has been produced, the theme remains far from being exhausted.

4 Analysis and discussion of results

Based on the 53 selected articles, we conducted textual and similarity analyses (using Iramuteq software), the identifying the main theories associated with the studies, and the main empirical methods used in the analyzed research.

4.1 Textual and similarity analysis

For the textual statistical analysis, performed using Iramuteq software (Camargo and Justo, 2013), we created a matrix with the abstracts of the sample articles. We found that the 53 articles have, in their abstracts, 824 forms with 3,855 distinct textual occurrences, with 392 of these occurrences appearing only once. The next analysis performed was the word cloud (Figure 1). This

analysis allows graphic representation according to the frequency of word occurrence (Camargo and Justo, 2013). The higher the frequency, the larger and more centralized the representation of the word will be.

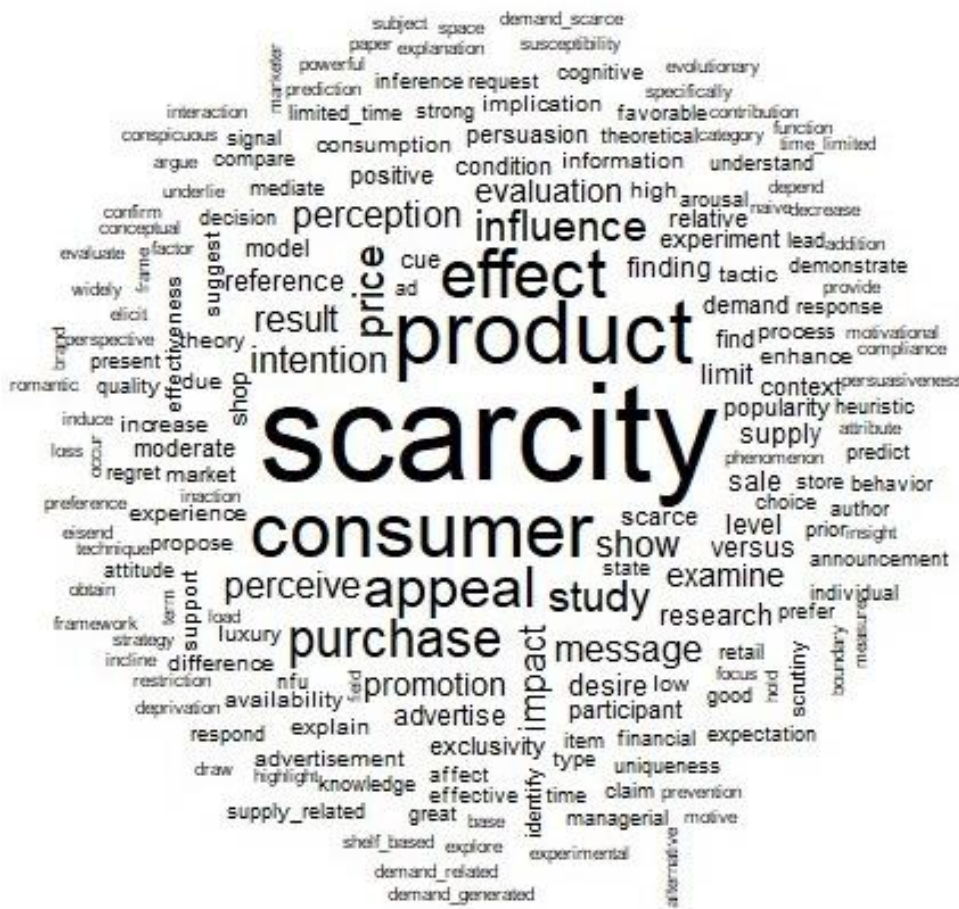


Figure 1. Word Cloud
Source: The authors with the use of the software Iramuteq

The 10 most frequently used words in this sample were: scarcity (102), product (63), consumer (55), effect (47), appeal (35), purchase (33), study (25), influence (24), price (24), and show (21).

The co-word analysis was performed next. The purpose of this analysis is to identify conceptual structure based on the co-occurrence of words in titles, keywords, and abstracts (Callon, Courtial, Turner, and Bauin, 1983). The analysis is based on the premise that the more often a word co-occurs in a text, the greater the relationship between the text and the concept behind this word. In Figure 2, it is possible to observe the most used words by the main authors of the sample in the abstracts (middle column) and to identify the collaborative flow of the authors for the construction of the main keywords (right column).

Most authors paid special attention to issues of scarcity of products and their effects on consumers. Alternatively, few investigated the associations of scarcity with price and outcome in effective purchasing behavior.

It is worth noting that, in the analyzed period, there is little reference to advertising, which is one of the most frequently used ways by managers to appeal to scarcity. Furthermore, what is not noticeable in Figure 2 is the focus on perceived quality analysis, time pressure, and excess demand. These variables, to some extent neglected in the studies in question, may be indicative of gaps for new research agendas.

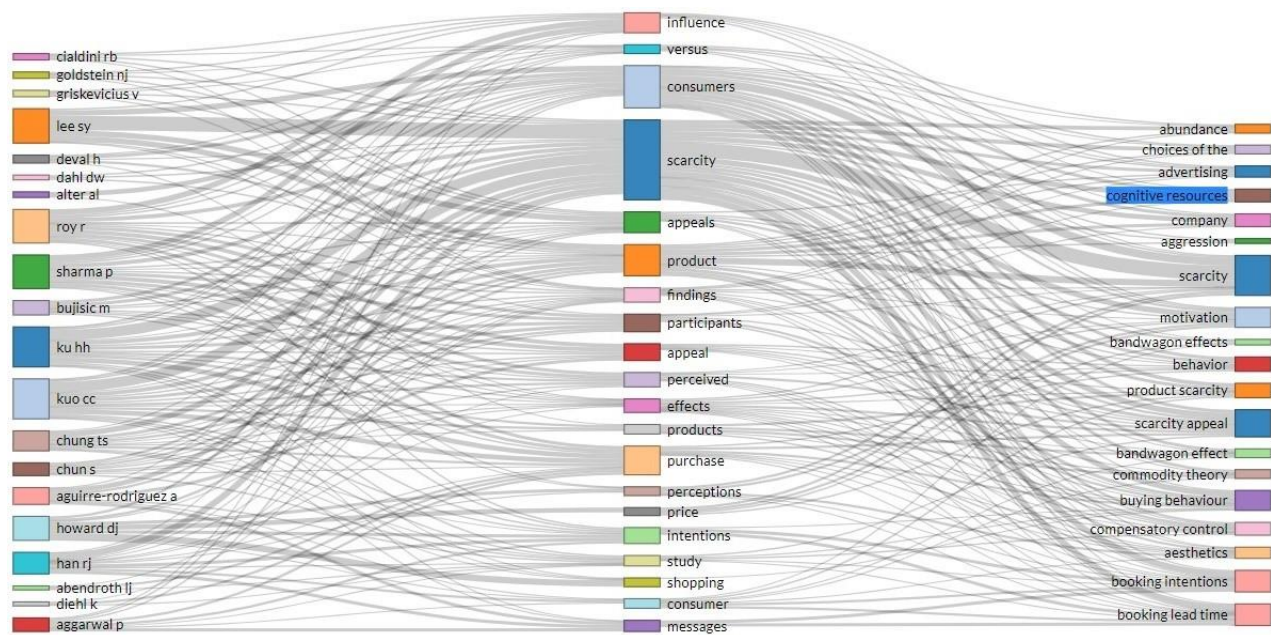


Figure 2. Co-word analysis
Source: The authors with the use of Bibliometrix software (Aria and Cuccurullo, 2017).

Based on the textual and similarity analysis, it was possible to identify three relevant aspects related to the studies conducted in the analyzed period: the understanding of scarcity appeal; the types (typification) of appeal addressed by the authors; and the main theoretical lenses used to analyze the phenomenon.

4.2 Main methodology adopted

When analyzing the methodology adopted in the sample articles, we noted the universal use of the quantitative approach, which, according to Creswell (2010), allows objective theories to be tested, and the relationship between variables to be observed. As for the investigation strategy, 50 articles (94.3%) used the experiment. Thus, it is possible to corroborate the relevance of experimental research, especially in Marketing studies.

Of the 50 articles that reported experiments (average of 2.54 experimental trials per paper; $n=127$), only 6 were field studies (12%), the others being conducted in the laboratory and with the participation of undergraduate students. While student samples may be adequate, a possible future study agenda should be to conduct field studies with consumers.

Most authors conducted the data analysis using regressive techniques (regressions or PROCESS) as a way to check the effects of mediating and moderating variables on the relationship between scarcity and the dependent variables.

Finally, even though the articles analyzed were published in high-impact periodicals, most of the studies ($n=92$; 72.4%) gauged the effect of scarcity on attitudinal variables. There is likely to be a high correlation between stated attitudes and behaviors. However, many variables may result in behaviors deviating from participants' stated attitudes. Table 2 presents the analyzed studies, their main theoretical bases, the main findings, and the suggestions for future studies indicated by the authors.

Table 2. Summary of the main publications on the call for scarcity in the period from 2001 to 2023.

Article	Theoretical basis	Main results	
Brannon & Brock (2001) – J. of Consumer Psychology	Commodity Theory (Brock, 1968) Heuristic responses (Cialdini, 1993).	The strength of the argument plus the high time constraint has greater significance on the compliance of responses.	Incorporating such as ability a
Aggarwal & Vaidyanathan (2003) – J. of Consumer Behaviour	Time pressure (Inman & McAlister, 1994); Semantic suggestions (Grewal, Marmorstein, & Sharma, 1996).	Promotions limited by time (short duration) increase and speed up purchasing decisions.	Relation and tim
Jung & Kellaris (2004) – Psychology and Marketing	Social influence (Cialdini, 1993); Cultural variation (Hall, 1976); Prevention of uncertainties (Hofstede, 1980); Need for Cognitive Closure (Kruglanski, 1989).	Consumers with a high need for cognitive closure demonstrate greater effect of the scarcity appeal. Shortages appeals are most felt when consumers have low familiarity with the product.	Aspects between Adherence familiar
Abendroth & Diehl (2006) - J. of Consumer Research	Regret Theory (Sugden, 1982); Limited purchase opportunities (Inman & McAlister 1994).	In limited offers: Short term - greater regret for not buying. Medium term - increase in regret in hedonic purchases.	Utility as job o
Howard & Kerin (2006) – J. of Marketing	Elaboration probability model (Petty & Cacioppo, 1986). Heuristic-systematic model (Chaiken, 1980, 1987).	Reference prices and time restriction information affect highly engaged consumers. Price reduction and sales announcement influence consumers with low involvement.	Observation to nego product
Howard, Shu & Kerin (2007) – Social Influence	Persuasion (McGuire, 1978; Cialdini, 2001)	Scarcity appeal and reference prices are used to facilitate the processing and persuasion of retail display ads.	Observation the sim variable
Suri, Kholi & Monroe (2007) – J. of the Academy of Marketing Science	Dual heuristic-systematic processing (Chaiken, 1980)	Low motivation- cognitive development increased with scarcity. High motivation- scarcity increased heuristic processing.	Can the affect th
Eisend (2008) – J. of Advertising	First and third person effect (Davison, 1983; 1996)	The difference in the influence perceived in itself and in third parties mediates the relationship between scarcity and perception of value and purchase intention.	Test per as mode
Gierl, Plantsch & Schweidler (2008) – International Review of Retail, Distribution and Consumer Research	Conspicuous consumption goods (Belk, 1988; Lynn, 1992). Need for uniqueness - NFU (Fromkin & Snyder, 1980); Status symbols (Blumberg 1973)	No global effect (positive or negative) of scarcity on the desirability of products was identified. The type of scarcity information and product category determines the strength and the sign of the scarcity effect.	Understand generat Conduct Test con for cog desire f

Article	Theoretical basis	Main results	Suggest
van Herpen, Pieters & Zeelenberg (2009) - J. of Consumer Psychology	Singularity theory (Fromkin, 1970; Snyder, 1992). Bandwagon effect (Leibenstein, 1950; Corneo & Jeanne, 1997)	Relative scarcity due to excess demand generates a bandwagon effect. The bandwagon effect is reversed when the consumer evaluates the possibility of other consumers in the locality. When many have purchased a product, consumers can infer that it must be of good quality.	Examining levels of
Griskevicius, Goldstein, Mortensen, Sundie, Cialdini, & Kenrick (2009) – J. of Marketing Research	Heuristic (Cialdini, 2001); Arousal (Pham, 1996; Petty & Wegener, 1998); Affection (Schwarz 2002); Evolutionary perspective (Cosmides & Tooby 2000; Keltner, Haidt & Shiota 2006)	Specific emotions must motivate people to think and act in a manner consistent with the underlying function of improving the fitness of each emotion. Fear caused scarcity calls, usually persuasive, to fail. The same scarcity appeals were more effective with romantic content. The romantic content caused social appeals to fail, while fear proved effective. An evolutionary model was used to deepen these findings.	Expanding observi multiple
Gierl & Huettl (2010) - International J. of Research in Marketing	Conspicuous consumption (Trigg, 2001)	The effect of scarcity on consumer attitudes towards conspicuous consumer goods is moderated by the type of scarcity. Supply shortages are most effective. If the product is scarce due to limited supply, the product rating is improved.	Test wh results. reputati informa
Aggarwal, Jun, & Hun (2011) - J. of Advertising	Scarcity for time and quantity (Cialdini, 2008); Competition among consumers (Worchel, Lee & Adewole, 1975); Concept and brand (Milberg & Lawson, 1991)	Different types of scarcity messages have different effects on purchase intentions. Shortages by quantity had the greatest effect. Competition between consumers mediates the relationship between scarcity messages and purchase intentions. Brand concept moderates the relationship between scarcity messages and purchase intentions.	Extend messag relation
Parker & Lehmann (2011) – J. of Retailing	Quality and popularity inference (Cialdini 1993; Caminal & Vives, 1996)	The preference for more scarce alternatives was (i) totally mediated by the inferences of popularity and (ii) partially mediated by the inferences of quality. Shelf-based scarcity affects choice when explicit clues indicate that the alternatives are of equal quality, when real brands are used. The effect of shelf-based scarcity is weakened when explicit suggestions about relative popularity or relative quality suggest that the scarcer alternative is less popular or of inferior quality. There was a reversal of the effect on food products, suggesting that the inferences drawn from shelf shortages may vary by product category.	Analyz Assess between
Ku, Kuo, & Kuo (2012) – Psychology and Marketing	Regulatory focus theory (Higgins, 1997)	With regulatory guidance focused on prevention, the purchase intention increased when the scarcity was generated by demand. The scarcity of supply proved to be more effective for consumers oriented to promotion.	Examining attribut
Sharma & Alter (2012) - J. of Consumer Research	Subjective well-being (Diener 1984); Financial deprivation (Karlsson et al. 2004)	Financial deprivation has increased consumer attention and preference for scarce stimuli. However, when consumers attributed their deprivation experience to an irrelevant source, or believed that this shortage resulted from the purchases of many other consumers, the effect was canceled. Consumers prefer scarce goods because these goods compensate for feelings of relative financial deprivation.	Test wh prefer s to dema

Article	Theoretical basis	Main results	Sugges
Aguirre-Rodriguez (2013) - J. of Advertising	Knowledge about persuasion (Friestad & Wright, 1994). Specificity of messages (Ogilvy, 1983)	Consumers tend to perceive advertising messages using the scarcity-of-offer appeal as more truthful. They consider that marketers have no control over offers that appeal to demand shortages, and that this presumption suggests persuasive intent.	Research of mes demand
Deval, Mantel, Kardes & Posavac (2013) - J. of Consumer Research	Lay Theories (Furnham, 1988)	The prime effect in the consumer context activates “Lay Theories” that start to guide consumers’ beliefs about market phenomena and product perceptions. If “Lay Theories” are congruent with the strategy used, it enhances the expected effect.	Test th distract
Ku, Kuo, Yang & Chang (2013) - European J. of Marketing	Hedonic and utilitarian products (Rossiter et al., 1991); Public/private consumption/ (Graeff, 1996); Self-monitoring (Slama & Celuch, 1995)	The effectiveness of scarcity is increased when the product has a hedonic nature. The persuasive impact of demand shortages is greatest for a product that offers utilitarian satisfaction. Consumers’ shopping intentions are influenced by how others will evaluate their decision and their propensity for self-monitoring.	Extend modera
Shen (2013) - J. of Marketing Communications	Reinforcement of motivation (Brannon & Brock, 2001); Heuristic clues (Cialdini, 1985); Congruence of information (Maheswaran & Chaiken 1991)	The scarcity function as a heuristic clue was moderated by the congruence of the information.	Observ by quar
Lee, Oh, & Jung (2014) – Social Behavior and Personality	Cognitive resources (Shiv & Fedorikhin, 1999); company reputation (Ferris, Blass, Douglas, Kolodinsky & Treadway, 2003)	In a condition of high cognitive load, consumers resort to heuristic cues, and the brand’s reputation has no effect on reputation. In contrast, under low cognitive load, consumers infer about the appeal, and the brand’s reputation has significance.	Observ familiar evaluati
Roy & Sharma (2015) - J. of Advertising	Need for uniqueness - NFU (Fromkin & Snyder, 1980); Messages Framing (Rothman & Salovey, 1997)	High NFU consumers prefer scarcity appeal under loss framing. Consumers with low NFU prefer a shortage of demand / supply.	How con new scen
Zhu & Ratner (2015) - J. of Marketing Research	Arousal (Berlyne, 1969)	The general perception of scarcity induces excitement, which leads to greater choices for the most preferred option. The scarcity salience effect on choices is mediated by the level of arousal and moderated by an induced arousal state reported by consumers. Scarcity serves as an antecedent of excitement.	Test wh relation
Mukherjee & Lee, (2016) - J. of Advertising	Scarcity expectation (Diehl & Poynor 2010) Cognitive load (Shiv & Fedorikhin, 1999)	Scarcity appeal increases the evaluation of the product when the expectation of scarcity is high. The expectation of scarcity has its moderating effect stimulated by the activation of the knowledge of persuasion, and by the inference of falsehood. Cognitive load is a limiting condition when evaluating the product.	Replica to time

Article	Theoretical basis	Main results	Sugges
Sevilla & Townsend (2016) - J. of Marketing Research	Space allocation (Smith & Burns, 1996; Pracejus, Olsen & O'Guinn, 2006)	Increasing the display space to product ratio improves sales and consumers' perceptions of the product's experience (taste). Perceptions of store prestige and product aesthetics mediate the relationship. The store brand moderates the store's prestige effect.	Test v (mirror)
Sharma & Roy (2016) - J. of Advertising	The effect of the first and third person (Davison 1983)	Replica and extension of Eisend (2008). The scarcity appeal has a direct influence on the perception of value. The impact of the perceived value on the perceived influence on others is stronger than the perceived influence on oneself.	Test o scarcity
Soni & Koshi (2016) - Vikalpa	Need for Uniqueness (Fromkin, 1970; Snyder, 1992)	Consumers with a high NFU have a greater intention to purchase without the appeal of scarcity than consumers with a low NFU. Shortages may influence purchase intent, but not attitude towards a product.	Replicate
Wu & Lee (2016) – J. of Retailing	Need for Uniqueness (Snyder & Fromkin, 1977) Perception of consumption risk (Tian, Bearden & Hunter, 2001)	Signs of scarcity, such as “limited edition”, are most effective when consumers buy products for themselves, and popularity tips such as “best seller” are given. In a purchase for oneself, the exclusivity of the product is the main factor. As a gift, the perceived consumption risk (concern to please) is the driving force behind the purchase, and popularity mitigates this concern. The price level moderates the relationship for self / other.	Observe Observe the rela versus p
Kristofferson, McFerran, Morales, & Dahl (2016) - J. of Consumer Research	Aggressive behavior (Wood, McInnes & Norton, 2011)	Aggressive reactions to scarcity can occur not only for survival resources, but also for luxury goods in resource-rich environments. Exposure to shortages by quantity can lead to increased aggression among consumers. The competitive threat mediates the relationship.	Test th tempor Examini aggress
Kim (2018) - Psychology and Marketing	Desire for exclusivity (Amaldoss & Jain, 2005) - Power (Magee & Galinsky, 2008) - Luxury experiences (Sharma & Alter, 2012)	The desire for exclusivity plays a systematic role in evaluating luxury experiences. The state of power of the consumer moderates the effect of the desire for exclusivity in relation to luxury experiences.	Observe relation partial r
Lee, Ryu & Chun (2018) – Social Behavior and Personality	Personal Control (Kay et al., 2008)	Scarcity is a mechanism that compensates for the loss of control, stimulates urgency, represents distinction, and generates a means to obtain resource	Test dif
Lee, Chae & Kim (2018) – J. of Distribution Science	Persuasion (Cialdini, 2001)	The product curation type moderates consumer response to scarcity, and as a consequence the scarcity effect on product evaluation. In consumer-centric curated messages, scarcity had a positive effect on product evaluation. On the other hand, in a marketer-centric curated message, the effect of the scarcity message on product evaluation was diluted	Adjust consum

Article	Theoretical basis	Main results	Suggest
Song, Noone & Han (2019) - International J. of Hospitality Management	Resource Matching Theory (Banerjee and Dholakia, 2008)	The scarcity message type influences differently consumers' perceptions of the credibility of these messaging and this relationship is moderated by booking lead-time.	Test of respons familiar
Givi & Olivola (2020) – J. of the Association for Consumer Research	Hope (Baumgartner et al. 2008)	Consumers' probability ordering preferences are influenced by their contemplation of future resource scarcity.	Observ preferen valence
Hansla & Johansson (2020) – J. of the Association for Consumer Research	Socioeconomic background (Griskevicius et al. 2011)	Socioeconomic background is an important factor in spending after losses or gains. Loss triggers actual savings for the past rich and risky purchases for the past poor.	Test whe and the scenario
Huang et al., (2020) – Annals of Tourism Research	Inhibition Theory of Power (Galinsky et al., 2003)	Consumers with a high sense of power showed a higher purchase intention with the demand-framed (vs. supply-framed) scarcity appeal, compared to consumers with a low sense of power.	Explore influenc
Ince, Schneider & LeBoeuf (2020) – J. of the Association for Consumer Research	Similarity and social closeness (Maglio, Trope & Liberman 2013)	Low probability events are similar to scarce items and their perceived value is related to their probability of occurrence. Decreasing the link between scarcity and value moderates the effect of probability of occurrence on the value of the perceived outcome	Test the
Lee-Yoon, Donnelly & Whillans (2020) – J. of the Association for Consumer Research	Psychological differences between money and time (Zauberman & Lynch, 2005).	The recipients of gifts intending to save money experience more negative emotions and demonstrate a lower status position than recipients of gifts intending to save time	Observ experie
Salerno & Escoe (2020) – J. of the Association for Consumer Research	Regulate resource scarcity (Cannon et al., 2019)	Resource scarcity increases the value of pride, both in terms of its persuasiveness as an emotion and in the motivation to experience the emotion itself.	Test ot scarcit
Kim et al. (2020) – International J. of Advertising	Social exclusion (Johnson e Grier, 2011) – Perceived value (Zeithaml, 1988)	Socially included consumers have more positive perceptions of a limited-time offer with a short expiration date. On the other hand, consumers who feel socially excluded prefer an offer for an extended period. Perceived value is a mediator of this effect.	Examini choice scarcit
Ange, Gerrath & Liu (2021) - Psychology and Marketing	Referral programs (Verlegh et al., 2013; Gershon et al., 2020) - Thinking style and relationship norms (Markus & Kitayama, 1991; Nisbett et al., 2001)	Referral reward programs design can nullify the negative link between incentive and WOM effectiveness. Holistic thinkers react more positively to scarcity appeals, when compared to analytic thinkers.	Test ad that are
Biraglia, Usrey & Ulqinaku (2021) - Psychology and Marketing	Reactance (Brehm & Brehm, 2013) - Anger (Folkes et al., 1987)	Consumers who are unable to obtain a limited product may experience greater levels of anger associated with the brand, increasing the likelihood of seeking out competing products.	Investig Testing brand lo
Ha (2021) - Cogent Business & Management	Need for uniqueness - NFU (Fromkin & Snyder, 1980) - Reactance (Brehm, 1966) - Commodity Theories (Brock, 1968)	Scarcity, uniqueness and self-expression are characteristics that affect the purchase intentions of limited-edition shoes of young generation consumers in Vietnam.	Test find

Article	Theoretical basis	Main results	Sugges
Lee & Jung (2021) – Social Behavior and Personality	Inconvenience (Sinha et al., 1999) - Reactance (Brehm, 1966)	The dispositional reactance is a moderator of the effect of time scarcity on product evaluation. Consumers consider that the lack of time causes inconvenience, directly proportional to the degree to which they feel that their freedom has been restricted.	Investig of the ti
Li, Xu & Huang (2021) – J. of Retailing and Consumer Services	Product configuration (Nath Sanyal & Datta, 2011)	Product configuration plays a moderating role on the supply limitation strategy. However, the effect can only be observed on products with superior configuration, under conditions of very limited offers. For lower configuration products, there was no significant effect for limited supply.	Examini products
Xu, Jin & Fu (2021) – Sustainable Production and Consumption	Sustainable products (Luchs et al., 2010) – Popularity appeals (Wu & Lee, 2016)	Faced of scarcity appeal, the consumer infers lower quality to a sustainable product and evaluates it more negatively. The consumers' competitive orientation mediates the effect of a scarcity appeal on sustainable products	The fin with mo
Deshpande et al. (2022) - Marketing Intelligence & Planning	Impulse buying (Beatty and Ferrell, 1998) - Self-regulation theories (Vohs and Faber, 2007) – Humor (Dinh and Mai, 2015)	Humor appeal increase impulse buying in vice products through anticipation of enjoyment. Scarcity appeals increase IB in virtue products through perception of uniqueness. Perception of uniqueness mediates the positive relationship between scarcity and impulse buying.	The fin
Kordrostami, Liu-Thompkins & Rahmani (2022) – Marketing Letters	Persuasion knowledge (Friestad & Wight, 1994) - Heuristic-systematic model of information processing (Chaiken, 1980)	A supply-related scarcity appeal may influence consumers toward more heuristic processing, but to consider the valence of available online reviews and purchasing decisions for a product, only when there is consistency between the scarcity appeal message and the volume of evaluations.	Testing scarcity
Wang et al. (2022) – Frontiers in Psychology	Need for uniqueness - NFU (Fromkin & Snyder, 1980) - Perceived uniqueness (Farwell and Wohlwend-Lloyd, 1998)	The scarcity appeal due to supply results in the perception of products greater exclusivity than in scarcity appeal due to demand. The perception of exclusivity influences purchase intention, directly and positively with the consumer's need for uniqueness	Investig aspects
Wakefield, Raghbir & Inman (2023) – J. of Service Research	Price promotions (Shaddy and Lee, 2020) – News Order Preference (Abraham Tesser & Sydney Rosen, 1975)	The use of the bad notices/good notices sequence proved to be more appropriate in relation to news order preference; consumers felt more in control of the situation and, consequently, less manipulated.	Investig seller c reward
Khoso, Tafani & Shabir (2023) – J. of International Marketing	Culture (Hofstede, 2001) - Self-construal (Markus and Kitayama 1991) - Need for uniqueness - NFU (Fromkin & Snyder, 1980) - Social influence (Cohen and Golden 1972)	Culture moderates the scarcity appeal: greater effectiveness of demand-based (vs. supply-based) scarcity appeals has been observed in Eastern (vs. Western) culture. Susceptibility to normative influence favored greater effectiveness of demand-based scarcity appeals, while the Need for Uniqueness favored greater effectiveness of supply-based scarcity appeals.	Test res
Chen, Yeh & Lin (2023) - Chinese Management Studies	Regret Theory (Loomes & Sugden, 1982) – Regulatory Focus (Higgins, 1997) -	The unit scarcity generated the greater purchase intention than the option scarcity under the close giver–recipient relationship	Expand respons in buyin
Arango, Chaudhury & Septianto (2023) - Psychology and Marketing	Social norms (Perkins & Berkowitz, 1986) – Perceived risk (Li et al., 2020) - Perceptions of unnaturalness (Rozin et al., 2012)	Scarcity appeals that are demand-based are an effective strategy for promoting cultured meat because of their negative influence on perceptions of risk. Social proof mitigated consumers' concerns about the product and reduced their perceptions of risk.	Test res

Source: the authors (2024)

4.3 Scarcity Appeal

First, the main indication of these studies is that scarcity appeal increases the consumer's purchase intention (Aggarwal and Vaidyanathan, 2003; Howard and Kerin, 2006; Sevilla and Townsend, 2016). However, even this statement has exceptions. Consumers with a low need for cognitive closure, as well as high familiarity with the product, have less effective responses to scarcity appeal (Jung and Kellaris, 2004). The feeling of fear makes scarcity appeal lose its effectiveness (Griskevicius et al. 2009).

Scarcity serves as a heuristic clue for consumers (Cialdini, 2009). The scarcity function as a heuristic cue is moderated by information congruence (Shen, 2013). Low motivation consumers increase cognitive processing, decreasing the heuristic track (Suri et al., 2007). Cognitive load has a limit condition for product analysis (Mukherjee and Lee, 2016) and in a condition of low cognitive load, consumers' inferences of scarcity appeal are affected and they do not use heuristic cues (Lee et al., 2014).

The type of scarcity appeal used has a specific effect on the consumer. Appeal to scarcity due to excess demand indicates that the product is popular, which produces the bandwagon effect (van Herpen et al., 2009; Aggarwal et al., 2011; Wu and Lee, 2016). However, when the consumer evaluates the possibility of other consumers in the locality having the same product, the bandwagon effect is reversed (van Herpen et al., 2009). In the event of shelf-based scarcity, the bandwagon effect was interrupted when consumers assumed the risk of compromising the quality of food products (Parker and Lehmann, 2011).

Appealing to scarcity due to limited supply produces a feeling of exclusivity, better perception of quality of the product, and a greater attraction for consumption of a hedonic nature, mainly by consumers with a high need for uniqueness (Gierl and Huettl, 2010; Ku et al., 2013; Aguirre-Rodriguez, 2013; Roy and Sharma, 2015; Kim, 2018). Scarcity due to the limited supply of a product can stimulate the perception that this product is part of a limited edition, enhancing the perception of its value (Gierl and Huettl, 2010). It also results in a greater inference of popularity and product quality (Van Herpen et al., 2005). The combination of appeals to scarcity due to excess demand and limited supply heightens the incentives offered to consumers, with practices that highlight the use of impactful phrases, such as, "while our stocks last." Scarcity appeal proved to be inefficient when the consumer presents regulatory guidance focused on prevention (Ku et al., 2012). On the contrary, it was effective for hedonic consumption (Ku et al., 2013).

4.4 Types of Scarcity

Under conditions of manipulated scarcity, the appeals used influence consumer expectations about the future availability of an item (Oruc, 2015). When the consumer believes that scarcity is the result of accidental forces (delivery failure), its effects are not felt (Parker and Lehmann, 2011).

Scarcity can be communicated with or without the use of an appeal (Oruc, 2015). Shelf-based scarcity and fast fashion stores are examples of communication without the use of appeal. In shelf-based scarcity, there is the perception of temporary unavailability, characterized by a small amount of products and empty space on the shelf (Parker and Lehmann, 2011). However, empty space (low stock level) signals scarcity only when competitors have normal levels. When all products are low in stock, consumers can attribute this to a management problem (van Herpen et al., 2009). The product's popularity is the main attribution as a result of shelf-based scarcity (Parker and Lehmann, 2011). However, greater purchase intention only occurs for unknown brands, in addition to being able to generate fear of contamination, through the manipulation of the product by third parties (Castro et al., 2013).

In fast fashion stores, such as Zara, H&M, and Forever 21, the continuous renewal of products produces an environment that increases consumers' sense of urgency to purchase (Gupta

and Gentry, 2016). As fashion changes rapidly, consumers assume that a product will not be available in the store for a long time (Oruc, 2015).

When scarcity is communicated with an appeal, it shows the low probability of future availability, and thus, affects consumer expectations (Oruc, 2015). Therefore, scarcity appeal restricts the opportunity to access an offer (Schins, 2014). Table 3 details the types of scarcity and the most frequently used communication strategies.

Table 3.
Types of scarcity and communication strategies

Types of scarcity	Communication strategies
Due to excess demand	<ul style="list-style-type: none"> • Disclosure of the volume sold (for example: 95% are already sold out); • Unfilled shelves.
Due to limited supply	<ul style="list-style-type: none"> • • Quantity limitation (for example: only 3 items per person); • Limited editions.
Due to the combination of the both	<ul style="list-style-type: none"> • • Communication about real or artificial scarcity (for example, while supplies last); • • Show implicit item availability information (for example: 3 items remaining).
Due to time restriction	<ul style="list-style-type: none"> • • Temporary product discount (for example: this week only, last days) Limited purchase option (for example: traveling stores, or those that are open for short periods, also known as “Pop Up Stores”).
Due to unintentional circumstances	<ul style="list-style-type: none"> • Poorly estimated demand; • Mismanagement

Source: adapted from Schins (2014)

The scarcity generated by demand positively influences attractiveness, and increases the likelihood of consumers buying products when they are in a store. It also results in an increase in inference of popularity and product quality (van Herpen et al., 2005). Scarcity due to the limited supply of a product can stimulate the perception that this product is part of a limited edition, increasing the perception of its value (Gierl and Huettl, 2010). The combination of an appeal to scarcity due to excess demand and limited supply increases the incentives offered to consumers, with practices that highlight the use of impactful phrases, such as, ‘while stocks last.’

4.5 Main associated theories

Commodity Theory, postulated by Brock (1968), offered an explanation for the effects of scarcity, indicating that the value of a commodity increases when it is not available. This theory is based on two main premises: scarcity enhances the value of a product; and the threat resulting from the growing demand for a product induces a desire to deny it to others (Brock, 1968). In 1992, with the article Liberalization of Commodity Theory, Brock expanded the concept to include personal traits and skills, elements of negative valence, and the mediating role of cognitive elaboration (Brock and Brannon, 1992).

Cialdini (2009) proposed that human beings respond to heuristics and automatic patterns of behavior, and that scarcity is one of the principles of persuasion. He also proposed that, with the scarcity appeal, consumers evaluate less available products/services as more valuable. In this situation, people experience a state of arousal, which negates cognitive processing. Scarcity serves

as an antecedent for arousal, produces more polarized assessments, and interferes with consumer choice (Zhu and Ratner, 2015).

Demand for products and services can occur due to factors that lie outside their perceived inherent qualities (non-functional demand). The reactions of other consumers can signal whether the interest of a specific consumer decreases or increases. The snobbish effect refers to an decrease in demand on the part of a consumer when he realizes that others consume or possess the same good (Leibenstein, 1950). This decrease in demand stems from the belief that the use of a product with a high snob value conveys a higher social status (Wu et al., 2015).

Another theory used to explain the effects of scarcity appeal is uniqueness theory. Postulated by Fromkin and Snyder (1980), it indicates that people try to establish and maintain a moderate sense of self-distinction, as extreme distinction can cause unpleasant feelings and social isolation. Thus, a scarce product can provide a feeling of exclusivity. For purchases of conspicuous goods, the use of scarcity due to supply is more effective, while for the purchase of non-conspicuous goods, using time-scarcity is more effective (Gierl et al., 2008). Consumers with a high need for exclusivity respond better to scarcity appeal using loss framing, while consumers with a low need for exclusivity prefer scarcity appeals on demand/supply (Roy and Sharma, 2015). However, new components emerge as influencers of decision making when assessing whether the purchase is a gift for someone else, or for the buyer himself.

The “third person effect” describes the discrepancy between perceptions of the effects of communication on others and on oneself. People underestimate the effect of communication on themselves or overestimate the effects of communication on others (Davison, 1983) The relationship between scarcity and the perception of value is mediated by the difference between the perceived influence on oneself and on others (Eisend, 2008). The perception of value has a greater effect under conditions of the perceived influence on others compared with oneself (Roy and Sharma, 2016). When the purchase is for the buyer himself, the perception of exclusivity is a determining factor, and “limited edition” scarcity manipulations are more effective, whereas when the purchase is a gift to another person, popularity increases perception of correct choice, and “bestselling” manipulations prove to be more effective (Wu and Lee, 2016).

Table 4 presents the main supporting theories that were used to analyze the different types of scarcity appeal.

**Table 4 –
Main theories and the types of scarcity appeal**

Scarcity Appeal Themes	Main Theory Associated	Author(s)
Overall	Commodity Theory	Brock (1968)
Overall	Persuasion	Cialdini (2009)
Scarcity by Excess Demand or Time Constraints	Critical Minimum Effort Theory	Leibenstein (1950)
Scarcity Due to Supply	Singularity Theory	Fromkin and Snyder (1980)
Scarcity by Excess Demand or Time Constraints	Third Person Effect	Davison (1983)

Source: the authors (2024)

5 Final considerations

The purpose of this article was to identify the main studies on scarcity appeal published in the 21st century, in order to gain a deeper understanding of consumers’ reactions to its practices. A systematic literature review was conducted with a sample of 53 articles selected from the Web of Science and Scopus databases, ten journals from the Marketing area with the highest Impact Factor

index (SCImago Journal Ranking - SJR and the Journal of the Association for Consumer Research, which in October 2020 published an issue with an emphasis on scarcity).

The Journal of Advertising was the journal with the largest number of publications in the sample (6), followed by the Journal of Consumer Research (4). All the articles were quantitative, and 35 of them used experimental research, thus corroborating the role of the experiment in marketing research. Through textual analysis, performed using Iramuteq software, it is possible to observe how frequently words occur in the abstracts. The main terms used were scarcity (102), product (63), and consumer (55). The co-word analysis indicated the most frequently used words by the main authors from the sample in the abstracts and identify the collaborative flow of the authors for the construction of the main keywords. The term scarcity in the central position, with the terms consumer, product, product, purchase, influence and intention playing prominent roles compared with the other terms. These graphic representations help to understand how important these terms are in the field of knowledge in question.

5.1 Theoretical implications

5.1.1 Synthesis of moderators and mediators

This review offered an insight into the literature on scarcity appeal, and contributes theoretically by highlighting consumers' perceptions of this practice. We highlighted that although greater purchase intention is the main indication of these studies, moderating and mediating aspects permeate the theme and influence the results. Some of these aspects were identified, such as heuristic cues, need for uniqueness, and Third-person effects.

We were able to identify, through this literature review, mediating and moderating variables of scarcity appeal. Perceived influence on oneself and third parties mediates the relationship between scarcity and perceived value and purchase intention. In purchases for one's own consumption, scarcity due to limited supply is more effective, whereas with regard to gifts for third parties, scarcity due to demand had a greater effect.

Perceived value also mediates the relationship between scarcity appeal and purchase intention. Competition between consumers mediates the relationship between scarcity messages and purchase intentions. The inference of popularity, quality, and falsehood also has a mediating effect on the preference for more scarce alternatives. The effect of scarcity on choices is mediated by the level of consumer arousal. Perceptions of store prestige and product aesthetics also have a mediating effect on relationships of scarcity.

The desire for exclusivity, excitement, and the expectation of future scarcity are among the moderating variables addressed in the sample. These variables have a positive moderating effect on scarcity appeal. The type of product, hedonic or utilitarian, as well as the brand, also have a moderating effect on scarcity appeal.

Another mediator that was observed is the need for cognitive closure. Consumers with a high need for cognitive closure demonstrate greater susceptibility to scarcity appeal. Familiarity with the product also moderates scarcity, so scarcity appeal is most effective when the consumer has a low level of familiarity with the product.

Figure 3 summarizes the main moderators and mediators of the effect of scarcity appeal on intention and purchase.

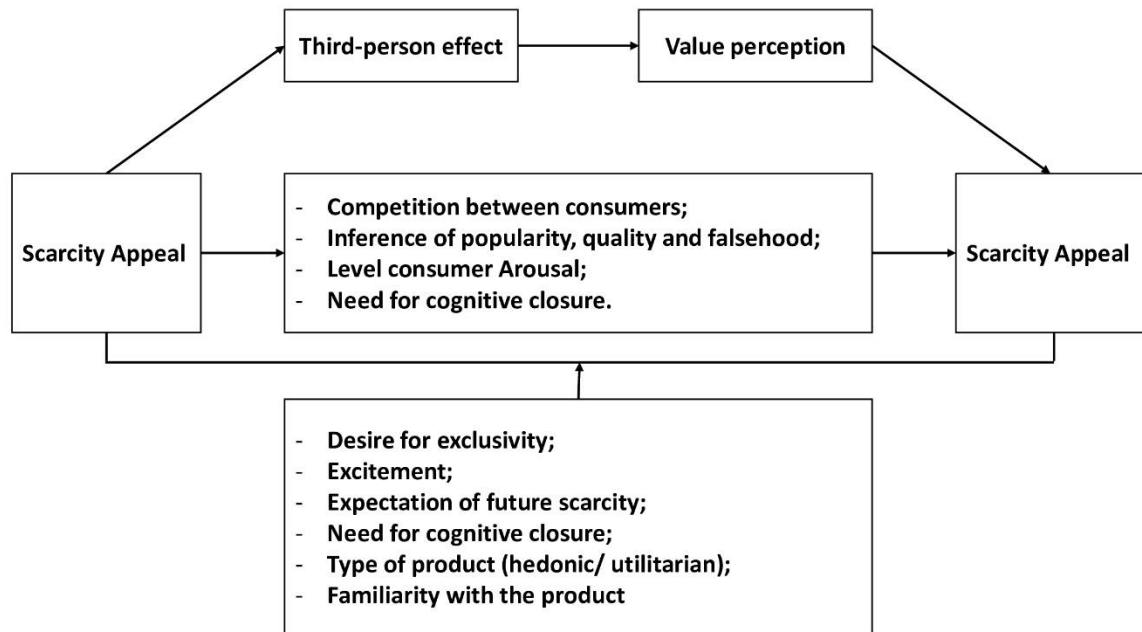


Figure 3. Main moderators and mediators of the process between scarcity and purchase intention

5.1.2 - Contributions to the development of theory

Scarcity, when evaluated in isolation, has little influence on consumer preference. Consumers are stimulated based on their perception of the causes and possible occurrences of scarcity, encouraging them to make choices in favor of scarce goods. Scarcity is an antecedent of arousal.

Scarcity appeal may or may not be communicated using an appeal. Fast fashion stores and shelf-based scarcity are examples of non-appealing communication. In fast fashion stores, such as Zara and H&M, the continuous renewal of products creates an environment in which consumers' sense of urgency to purchase is increased. As for shelf-based scarcity, the small amount of a certain product and empty spaces on the shelf serve as scarcity cues, especially when competitors have normal levels. When scarcity is manipulated with the use of appeal, consumer expectations about the future availability of the product change.

Scarcity appeal is usually typified as being due to excess demand, limited supply, a combination of both, time constraints, and accidental circumstances. Consumers respond differently to different types of scarcity.

Demand shortages positively influence attractiveness, increasing the likelihood of purchase and increasing the popularity and perceived quality of a product. Demand shortages also cause the bandwagon effect, and this effect is increased when the product is of a utilitarian nature and the purpose of the purchase is to give a gift to a third person.

An important contribution we achieved was the identification of few studies analyzing the implication of price management as an effect (or consequence) of scarcity appeal and the total absence of theories that can explain the reactions of consumers in these conditions, such as Pigou's (1920) theory on price discrimination.

Another relevant contribution is the identification of little analysis regarding the relationship between advertising and scarcity appeal. Even though the internal literature had already shown that this is one of the main ways for managers to manipulate scarcity appeal, during the period under study, no such research was conducted.

A third relevant theoretical contribution was revealed in this study: individual psychological factors tend to reduce the effect of scarcity appeal on consumption processes. Low levels of need of cognitive closure and preponderantly preventive regulatory orientations reduce the initial heuristic

effect. This point may contribute to the formulation of public policies that result in greater consumer protection.

The scarcity strategy of limited supply stimulates the feeling of exclusivity, increasing the perception of a product's value, especially in products of a hedonic nature. Scarce goods can also provide sensations that compensate for feelings of financial deprivation. However, quantity restriction can also stimulate aggressive behavior in consumers.

Scarcity due to time constraints increases and accelerates the purchase decision. When the consumer perceives that scarcity is the result of accidental forces, such as failure to deliver or operational problems in supplying a store, the effects are not significant. This is likely to result in an image of poor service quality, resulting in the postponement of the purchase or the replacement of the supplier. However, additional studies are required to this end.

5.2 Management implications

In order to obtain greater effectiveness with the use of scarcity, it is necessary to consider both the type of product and the type of scarcity to be communicated. In the case of utility products, the use of demand and demand shortages, such as "90% already" is more effective. In contrast, for hedonic products, the use of shortages on offer, such as "limited edition," prove to be the best option.

Shelf-based scarcity can attribute popularity to the product. However, it only signals scarcity when competitors have normal stock levels. In the case of food products, the bandwagon effect was interrupted when consumers assumed the risk of compromising product quality. Fear of contamination from over-manipulation is the main factor in reversing purchase intentions.

The space between products in the showcase or on the shelf also influences the perception of value by the consumer. When the space between products is wider, the consumer infers that the product has greater value. In an experiment carried out with chocolates (Sevilla and Townsend, 2016), consumers attributed a better flavor to the product when it was spaced more widely apart.

Although the use of time scarcity, such as "today only" or "last days", is more frequent, this practice is more likely to be perceived by the consumer as persuasive compared with quantity scarcity. Therefore, although it requires more complex planning, the use of quantity scarcity has a greater tendency to go unnoticed by consumers and thus can achieve better results for retailers.

5.3 Future research

Although it has received considerable attention from academics, the theme of scarcity appeal still has gaps to be explored. The multiplicity of reactions expressed by different consumers, as well as the innumerable particularities, reflect the complexity of the theme. For example, when consumers are anxious or afraid, they are less likely to be persuaded by scarcity appeal. Children show greater adherence to these stimuli, and, as they age, the basic scarcity bias is reduced, due to cognitive development. Thus, the underlying aspects that permeate the relationships that involve scarcity appeal may open up new avenues for research to bridge the gaps noted in this review. In particular, a better understanding of how consumer traits and feelings moderate or mediate the effects of various forms of scarcity is needed.

Most of the articles in this sample focused on studies of tangible products. More nuances may emerge with a shift to studies that focus on services, especially in the online context.

The analysis of price management and the role of advertising are also issues that need to be addressed by future studies. Finally, some methodological issues need to be addressed by future research. These include analyzing the outcome of scarcity appeal on behavioral variables and conducting experimental studies in real purchasing environments with the participation of consumers as a way to enhance the external validity of the causal studies that have been conducted.

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