The Role of Scarcity Communications in Retailing on Consumer Behavior and Psychological Wellbeing

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Abstract: - People are exposed to information and communications of scarcity almost on a daily basis. It can be scarcity induced as a marketing technique to increase consumers' interest in purchasing a product or a service that comes in limited availability, but it can also be scarcity caused by other macro-level factors, such as natural impediments, political sanctions, or economic recession. In any of these cases, scarcity can lead to consumers' anger, disappointment, and even physical aggression. Hence, understanding the effect of scarcity of communications on consumers' psychological well-being remains an important gap in communications and marketing literature. This study uses experimental methods to investigate the relationship between scarcity communications, as opposed to surplus—that we use as a control condition—can significantly affect consumers' psychological well-being it. Findings from the experiment are important in providing insights to not only marketing and communications academics but also policymakers and marketing practitioners.

Key-Words: - Communications, Online Experiment, Psychological Well-being, Scarcity, Consumer Behavior, Retailing.

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1 Introduction

Scarcity is a phenomenon widely used in marketing, [1], [2], [3], but it can have mixed effects on consumers [1]. While it can be used as a marketing technique to attract consumers' interest in the product or service, [4], [5], [6], [7], [8], it can also lead to consumer anger if they do not get hold of the product or service that is suddenly scarce, [1].

Scarcity is known in the marketing literature as the lack of products and services for the consumer [1]. The scarcity in the market can be threefold: 1) scarcity rooted in the consumer (cost of living crisis - financial scarcity); 2a) planned supplier scarcity (e.g., limited production often for marketing purposes); 2b) unplanned supplier scarcity (lack of raw materials, as happened during the pandemic, and still occurs due to wars). These situations can cause psychological distress for consumers.

Marketers use scarcity messages often in the marketplace as they seem like an effective strategy to entice consumers into purchasing more. However, we believe that the reasons why consumers would be purchasing more could come with a psychological cost for them: lowered psychological well-being. For these reasons, it is essential to study the effect of scarcity on the consumer so that we can suggest to communication experts what measures marketing can take in the context of innovation in communication with consumers to reduce the effects of scarcity on their psychological well-being. This study aims to solve the conflict in the marketing literature regarding the use of scarcity as a marketing technique to attract more consumers as opposed to the negative effects of scarcity on consumers' psychological state. By doing so, this research aims to provide benefits for academics, policymakers, and businesses to influence communication styles in safeguarding the mental health and well-being of consumers and citizens. By doing so, the research has a direct impact on several working groups, including policymakers at the national level, media and marketing professionals (businesses and companies), who would benefit by being advised on the most effective ways to communicate the support they are offering to their customers in these uncertain and threatening times filled with product and service shortages, and academics in marketing, communications, and consumer psychology. Specifically, this research academics talks to concerning theoretical contributions to existing research on scarcity, marketing, and communication. This study aims to fill the gap that intersects three closely related fields: psychological well-being (psychology), marketing (digital communication, advertising, and consumer behavior), and public policy (crisis communication). While we show the effects in the context of retailing, the findings of this study would have great benefits in public policy making too, when it comes to scarcity of communications related to healthcare services, vaccinations, medicines, and so on, which could result to even greater detrimental effect on consumer psychological wellbeing.

2 Theoretical Background

2.1 The Concept of Scarcity

Scarcity has been defined by previous research as the discrepancy between the subjective perception of the resources that one has and those that one would have preferred to have [2], [3]. Similarly, past research defines scarcity as the difference between the present state of resources and a more desirable alternative [2], [3]. Scarcity can occur in different forms during the day, from time scarcity (e.g., one only has a few minutes to run errands), to product scarcity (e.g., a product is unavailable at the store), to financial scarcity (e.g., one does not have enough financial means to pursue a purchase), to finally macro-level scarcity (e.g., financial crisis worldwide). We refer to all these situations as resource scarcity.

Scarcity can present itself in various forms in our everyday lives and in the marketplace. In this research, we rely on past research, and we focus on scarcity in the marketplace by distinguishing between planned supplier scarcity (e.g., limited-time editions and situations when the supply of a product is provided in limited quantity) and unplanned supplier scarcity (related to the shortage of first material, like it happened during the pandemic like it still happens due to wars, climate conditions, etc.). All these situations of scarcity can result in dangerous physical states of the consumer and can affect the psychological well-being of consumers [1].

2.2 Scarcity as A Marketing Tool and Effects on Consumer Behavior

Scarcity techniques have been used by marketers as common tools and past research has shown that these marketing strategies can lead to greater choice desirability, [4], [5], [6], [7], [8]. Past research defines such communications as conveyance of a company's deliberate choice to reduce the available amount of a product or service they offer to consumers, [9].

Reasons for using scarcity appeals as a marketing tool may be various: higher perceived quality and more favorable brand perceptions of the product that becomes scarce [5], bandwagon effects related to the product that is scarce because many others purchased it already [7], and greater ratings of the extent to which a scares product is perceived to be [8], [10]. Consumers may even satiate at a slower rate on a product that is made available for consumption only at limited times and quantities because consumers are focused on taking advantage of the possibility of having access on the product, rather than focusing on the quantity consumed, [10]. Similarly, consumers value coupons more and have a greater likelihood of redeeming them closer to the expiration date, when they perceive time scarcity, [5].

Scarcity appeals enhance consumers' sense of uniqueness and exclusivity when they manage to obtain a product or service initially marketed as scarce (i.e., limited edition; [11]). These positive effects between consumer attitudes and marketing scarcity appeals are more prominent and enhanced for conspicuous product categories, [11].

However, scarcity techniques can sometimes backfire. Specifically, past research suggests that product scarcity, when used as a marketing technique related to lack of availability of quantity or availability for a limited time, can lead to consumer anger and hence switching behavior [1], sadness, or even grief over the lost chance of acquiring the desired product. Past research suggests that scarcity appeals are dangerous to consumer satisfaction when they fail to acquire the product due to unavailability. Not being able to acquire the product can lead consumers to experience an increase in testosterone levels and aggression towards others, [12]. Additionally, scarcity appeals may be perceived as a restriction of consumers' independence, leading to additional negative reactions, harming consumer well-being, but also spilling over to their attitudes towards the brand, [1], [13].

2.3 Scarcity and Its Effects on Consumer Wellbeing

Scarcity can affect the physical wellbeing of consumers, coming to the extreme point of even jeopardizing their lives, [12]. This is evident when considering that scarcity causes a sense of competition over the achievement of what is scarce to the point of becoming aggressive toward other human beings, [12].

A further way in which scarcity has been linked to bringing risks to physical well-being is its connection to refusing something that was initially scarce when it becomes available again. For instance, research on vaccine acceptancy, [14] during COVID-19 has shown that interested people who were told that vaccines were unavailable for them—as was often the case at the early stages of its distribution—had a greater likelihood of giving up and refusing the vaccine when it became available. This would put them at great health risk originating from COVID-19, a reaction caused by the initial scarcity of vaccines.

Additionally, past research has connected financial scarcity to poorer health and dangerous human welfare [15], but also to greater taking risktaking and impulsivity, living life in the present rather than thinking about possible future benefits [16], and with a greater likelihood of reproducing at an earlier age rather than more mature ones, [17].

Scarcity can affect the cognitive abilities of consumers, impeding their skills in also unrelated activities, [18]. Moreover, scarcity can affect information processing and how individuals construe information. Past research is more granular on the relationship between scarcity and information processing: Specifically, those with temporary resource scarcity (e.g., limited mobility skills) perceive a loss of control over the situation and hence focus more on a concrete level of information, and those with permanent resource scarcity have better abilities at coping with the situation and hence focus more on an abstract level of information, [3]. [19], explains what happens to the brain of the individuals when exposed to scarcity as a physical agitation where a thoughtful analysis of the situation becomes less available.

To summarize, [19] suggests that cues of scarcity result in a limitation of the ability to process information, leading to a switch in information processing towards a more heuristic one, [19]. In line with previous findings that suggest a connection between scarcity and hindered cognitive skills, resource scarcity has been found to lower individuals' task-completion judgments, [20]. This is evidence of the negative effects of scarcity cues on individual psychological well-being, hence, also on consumers' well-being.

As previously mentioned in previous sections of this theoretical background chapter, scarcity does not always have a positive effect on consumers' wellbeing. Literature would mostly agree on the detrimental effects of financial scarcity on consumer wellbeing, leading to stress, greater perceived threat less self-control, and distress, but it is more divided when it comes to the effects of marketing-related scarcity cues on consumers' wellbeing. Specifically, in this section, we focus on summarizing the literature on scarcity and its effects on consumer well-being, when the source of scarcity is individual-related (i.e., financial scarcity), at the marketing-related level (i.e., scarcity appeals as a marketing tool), and at the macroenvironment level (i.e., scarcity induced by force majeure disrupting the supply of products and services).

2.3.1 Financial Scarcity

Past research has found that financial scarcity is related to enhanced levels of stress and distress in everyday life, [3]. These findings extend to situations of product scarcity: [13] suggests that being exposed to stock-outs (hence, product scarcity) can lead to a disruption of consumers' goal pursuit and negative emotional reactions. In turn, scarcity appeals may be perceived as a restriction of consumers' independence, leading to additional negative reactions, harming consumer well-being, but also spilling over to their attitudes towards the brand, [1], [13].

2.3.2 Marketing Scarcity Appeals

Additionally, past research has found that scarcity cues can affect the emotions of consumers in other worrying ways: from consumer anger towards the brand that is promoting a product as scarce [1], to consumer aggression that goes beyond the product itself [12], to mind-numbing arousal [19], and hindered self-confidence and task-completion judgments, [20]. Additionally, past research suggests that when consumers cannot obtain a scarce product, they could potentially feel hopeless, with hope decreasing as the product becomes more scarce, [21].

It seems from current literature on scarcity cues and consumer reactions to them that what sets the direction of emotional reactions in positive versus negative ways is mostly the outcome of the hunt for the scarce product. Specifically, a failed purchase of a product or service due to time or quantity scarcity seems to generally lead to negative emotions and jeopardizes consumer psychological well-being, [1]. Based on previous research, we suggest that while scarcity can have positive effects on companies, as it induces consumers to purchase more, it causes deterioration of their psychological well-being. Hence, we predict scarcity cues to worsen consumers' psychological well-being.

3 Methodology

3.1 Aim of the Study

The aim of this study is to show the main effect between scarcity announcements and consumer well-being. For this, we employed an experiment with a between-subject design that manipulates scarcity, as compared to no scarcity, and measures consumer well-being following it. The advantage of using an experimental design is that we can rely on this methodology to establish causality. Specifically, here, the experiment is designed to test a causal relationship between scarcity cues, as opposed to a control condition, in a retail context and the psychological well-being of consumers exposed to it.

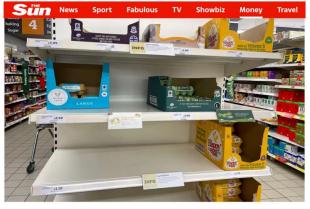
3.2 Participants

We conducted the experiment with 200 participants from the United Kingdom (59.6% were females, 37.9% were males, and the rest either reported "other" or did not prefer to disclose their gender; min age = 18, max age = 75, M = 40.79, SD = 13.83), who we recruited through the Prolific platform in return for monetary compensation for their time and efforts.

3.3 Methods and Design

Upon agreeing to the consent form, participants were randomly exposed to either the treatment condition (i.e., product scarcity stimulus, Figure 1) or the control condition (i.e., product surplus stimulus, Figure 2).

Specifically, participants in the treatment condition saw this news:



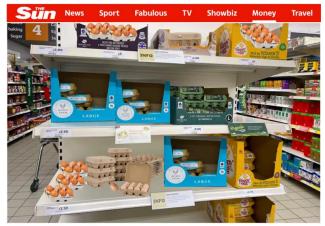
Money > News Money

EMPTY SHELVES

Egg shortages hit supermarkets as Sainsbury's runs low and Lidl rations boxes

Fig. 1: Treatment condition stimuli

Differently from those in the treatment condition, who were exposed to a situation of scarcity as a lack of products, participants in the control condition were exposed to a normal stock situation, not recalling scarcity cues. Hence, participants in the control condition were exposed to this news:



Money > News Money

FULL SHELVES Egg supply in increase in supermarkets as Sainsbury's runs in surplus and Lidl adds boxes

Fig. 2: Control condition stimuli

As a manipulation check, participants rated the following statement "Eggs in the supermarket shelves according to this news are:" 1 = Definitely in surplus in quantity to 7 = Definitely in scarcity in quantity.

Finally, to measure consumer well-being, we asked participants to rate the way in which they felt at the moment from 1 = Positively to 7 = Negatively (M = 3.56, SD = 1.39) and to rate their psychological well-being at the moment from 1 = Positively to 7 = Negatively (M = 3.89, SD = 1.09). Finally, participants reported their age and gender, and they were thanked and debriefed as follows:

"Thank you for your participation. The news has been modified for research purposes: investigating the effects of scarcity on consumer well-being. Clicking the final button will finalize this study."

3.4 Results and Discussion

As a manipulation check, we conducted a One-way ANOVA. The One-way ANOVA has been previously used to assess differences across conditions in the context of scarcity when using experimental methods, [1]. The basis of the Oneway ANOVA is to assess whether the average of the scores of the dependent variable is different among groups in the experimental setting. Hence, in our case, the One-way ANOVA would assess whether the average of the reported consumer well-being is different between the treatment condition (i.e., scarcity) and the control condition (i.e., no scarcity). The results of the One-way ANOVA suggest a significant difference between the 2 conditions when it comes to the perceived scarcity of products in the supermarket (F(1, 197) = 363.6, p < .01). Specifically, participants in the scarcity condition perceived the eggs in the shelves of the supermarket as being more scarce (M = 6.42, SE = 1.04) in quantity as opposed to those in the control condition (M = 2.38, SE = 0.18).

We then focused on testing the role of product scarcity on consumer well-being. We tested our prediction regarding the main effect of scarcity of products on consumer wellbeing using STATA 18, where the independent variable was product availability (coded as 1 for scarce and 0 for surplus), the dependent variable was consumer and wellbeing. The results of the One-way ANOVA suggest a significant difference between the 2 conditions when it comes to the reported consumer well-being (F(1, 197) = 132.9, p < .01). Specifically, participants in the scarcity condition reported lower scores of consumer wellbeing (M = 2.68, SE = 0.11) as opposed to those in the control condition (M =4.44, SE = 0.11). We show the pairwise comparison of consumer wellbeing between the scarcity and control in Figure 3.

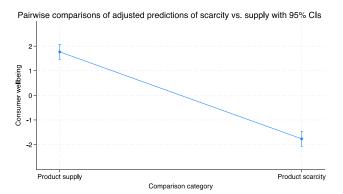


Fig. 3: Effect of product scarcity on consumer wellbeing (variable 1)

Results replicate when we control for age and gender.

For robustness, we repeated the analyses also for an additional dependent variable that proxied consumer wellbeing. The results of the One-way ANOVA suggest a significant difference between the 2 conditions when it comes to the reported consumer well-being (F(1, 197) = 23.84, p < .01). Specifically, participants in the scarcity condition reported lower scores of consumer wellbeing (M = 3.53, SE = 0.11) as opposed to those in the control condition (M = 4.25, SE = 0.09). Again, we show the pairwise comparison of consumer wellbeing between the scarcity and control in Figure 4.

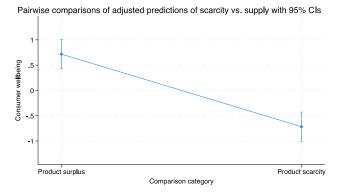


Fig. 4: Effect of product scarcity on consumer wellbeing (variable 2)

Overall, the results support our prediction. Consumers' wellbeing evaluation and reporting is more negative when they are exposed to product scarcity stimulus, as opposed to product surplus on the supermarket shelves. This study provides causal evidence of the relationship between the variables that constitute the effect of scarcity on consumer psychological wellbeing.

4 General Discussion and Conclusions

4.1 Theoretical Contributions

Theoretically, this research contributes to research in marketing, communications, and research in public policy-making. We contribute to research in marketing and consumer psychology by solving a dispute in the marketing and psychology literature regarding the role of scarcity on individuals and consumers.

We add to the literature in marketing that supports that scarcity has detrimental effects on consumers' psychological state, [1], [3], [12], [13]. In line with previous research, but building on it, we find that scarcity messages and communications, as opposed to surplus, can cause psychological distress in consumers, jeopardizing their psychological wellbeing.

In an experimental study, we contribute to previous literature by showing that scarcity situations or perceptions can affect consumers' psychological well-being. Specifically, we know from past literature that scarcity affects the behavior and psychology of consumers by:

- 1. Making them more aggressive to get their hands on the products that are scarce, [12]
- 2. Making them angry at the brand and leaning towards switching to other brands if they cannot obtain the scarce product immediately, [1]
- 3. Making them more interested in purchasing products that are scarce as opposed to abundant and giving more positive ratings to products that are perceived as scarce, [8], [10]
- 4. Valuing more positively products that are scarce as opposed to abundant and preferring greater choice desirability, [4], [5], [6], [7], [8]
- 5. Perceiving a sense of uniqueness and a sense of exclusivity when they manage to obtain a product advertised as scarce or limited edition, [11]

To this list of previous findings on the effects of scarcity on consumer behavior and consumer psychology, we contribute by showing that scarcity perceptions or salience of scarcity in the store can lead to decreased consumer psychological wellbeing. We are confident that our findings significantly contribute to the field of research in marketing, communications, and consumer psychology and behavior.

Given the rapidly increasing interest and research on the topic of scarcity and its effects on consumers, [22], [23], [24], [25], [26], we invite future researchers to continue investigating this topic and to address some limitations of this research. This research falls short of generalizing findings across different cultures, providing insights only on one sample, at the moment. Moreover, we fall short of providing evidence that the results can replicate beyond the context that we have used in this experiment. Hence, we invite future research to replicate these findings using a different sample that goes beyond our cultural characteristics and that is used as stimuli for other product categories. For instance, it would be extremely beneficial to investigate the relationship between scarcity of communications in the context of medical products such as painkillers or antibiotics. Finally, future research could add to the findings of this study by including qualitative measures (e.g., participant indepth interviews) to enrich the understanding of psychological responses. We believe that further research on this topic would provide social, but also, economic benefits to the field.

4.2 Practical Implication

From a managerial standpoint, our research highlights the potential downsides of scarcity

promotions, despite their strong appeal in driving sales. We suggest that one reason why consumers may show increased interest in purchasing products or services that are limited in availability could be because of their triggered psychological state—i.e., worse psychological well-being—which could lead to greater interest in having what is offered. While this could have a winning effect on companies, individuals' wellbeing is endangered and should not be exploited by businesses for their interests. Hence, managers should carefully assess the need for scarcity cues before using them widely in their communications.

5 Conclusions

In conclusion, this study advises branding practitioners to use scarcity appeals judiciously, as they can lead to consumer deteriorated psychological well-being. To prevent such adverse reactions, the study recommends that branding practitioners focus on scarcity promotions based on time limitations rather than quantity limitations, thereby reducing the likelihood of customer dissatisfaction.

While we provide causal evidence for this relationship, we acknowledge some limitations. This study focuses on a sample coming from the UK, so future research could try and generalize findings using other samples. Moreover, while we provide causal evidence with an experiment, longitudinal survey data or purchase data during communications of scarcity could provide a more complete picture of the relationship between these two variables.

With this work, we provide contributions not only to the literature on scarcity and consumer psychology but also to practitioners. We assess and empirically demonstrate the detrimental effects that scarcity of communications can have on consumers' psychological well-being. Hence, while messages of scarcity may indeed lead to greater purchases, they may come at the cost of consumers' well-being. We call for the attention of practitioners on the exploitation of scarcity messages in the future.

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Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution, with the first author taking the lead and handling the organization and management of the research.

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Conflict of Interest

No conflict of interest to declare.

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