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FROM SOCIAL NORMS TO PURCHASE DECISION: A STUDY ON THE EFFECTIVENESS OF DIGITAL NUDGING

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ABSTRACT

Although marketing and behavioral science literature has examined cognitive biases and their impact on consumer behavior, few studies have analyzed the specific role of digital nudging based on the social norm bias in purchase decisions. This bias, which drives individuals to align their behavior with socially approved or majority-held practices, may be particularly effective in digital environments where social signals are pervasive. This study explores the direct and indirect relationships between this type of digital nudge, personal perception, and purchase decision. An online survey of 153 respondents was analyzed with SPSS to test the hypotheses. Results confirm a direct positive effect of digital nudging on both personal perception and purchase decision, and a positive effect of personal perception on purchase decision. However, the mediating role of personal perception was not supported. These findings provide theoretical contributions to understanding online decision-making and managerial insights for optimizing digital marketing strategies.

KEYWORDS: Digital nudge, social norm bias, personal perception, purchase decision, behavioral marketing.

JEL CLASSIFICATION : D91, M31, D87, C83.

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1. INTRODUCTION

The rapid growth of digital technologies has profoundly reshaped consumer behavior, particularly in online shopping contexts. As e-commerce platforms and social networks expand globally, they provide marketers with new opportunities to influence purchase decisions.

While developed economies have long adopted advanced personalization and persuasion strategies, emerging markets are now rapidly integrating similar practices. Among these, digital nudging—defined as the subtle integration of behavioral economics principles into online interface design—has become an effective lever to guide consumer choices while preserving decision freedom (Thaler & Sunstein, 2008). Yet, the psychological mechanisms driving its effectiveness in emerging markets remain underexplored.

Cognitive biases play a central role in digital environments, such as the zero-price effect, anchoring, and social or scarcity cues. Indicators like purchase counts, reviews, or popularity rankings act as social proof, strengthening trust and reducing uncertainty (Cialdini & Goldstein, 2004). However, it is unclear whether these effects are universal or moderated by consumers' personal perception.

This study addresses this gap by examining the direct and indirect effects of digital nudges, grounded in cognitive bias theory (Tversky & Kahneman, 1974) and the Theory of Planned Behavior (Ajzen, 1991), on online purchase decisions. Specifically, it investigates whether exposure to social proof signals influences consumer decision-making, contributing both theoretical insights and managerial recommendations.

2. LITERATURE REVIEW

2.1. THEORETICAL FOUNDATIONS

Research in behavioral economics and cognitive psychology has challenged the classical model of the perfectly rational decision-maker. Since the foundational work of Herbert Simon (1980) on bounded rationality, it has become evident that individuals make decisions based on constrained cognitive resources, in contexts often uncertain or complex. These limitations open the way to the influence of non-strictly rational factors, such as cognitive biases and emotions.

In this regard, Kahneman (2011), in his dual-system theory of thinking, distinguishes between System 1—fast, intuitive, and automatic—and System 2—slow, analytical, and conscious. While System 2 can lead to reasoned decisions, System 1 dominates most daily choices, particularly when individuals are subject to information overload or time constraints. In this framework, emotions play a central role as they influence the perception and selection of information, and may guide judgment even before analytical reasoning intervenes (Loewenstein & Lerner, 2003).

These cognitive limitations manifest through the emergence of cognitive biases, i.e., systematic patterns of deviation from rational reasoning (Tversky & Kahneman, 1974). Among them, the anchoring effect, the framing effect, the confirmation bias, and the social norm bias strongly influence consumer decisions (Cialdini & Goldstein, 2004; Sunstein, 2014). These biases constitute the conceptual foundation of nudge theory formulated by Thaler and Sunstein (2008), which refers to subtle interventions in choice architecture designed to guide behaviors predictably while preserving freedom of choice.

With the digital transformation of social and commercial interactions, nudging has found a natural extension in digital environments. Digital nudging is defined as the integration of nudge principles into the design of digital interfaces, in order to subtly guide user decisions (Weinmann, Schneider & Vom Brocke, 2016; Meske & Potthoff, 2017). Johnson et al. (2012) show that every interface element—be it the order of options, their visual presentation, the use of colors, or contextual messages—can influence the final choice. Designing a digital nudge follows a structured process that begins with a precise definition of the targeted behavioral objective. It then requires a deep understanding of users to identify the most relevant cognitive biases and

heuristics to mobilize. On this basis, the intervention is designed using frameworks such as Mindspace or choice architecture, before being tested and optimized with tools such as A/B testing and real-time personalization.

Among the levers mobilized in digital nudges, the social norm bias holds a central place. It relies on individuals' tendency to adopt behaviors or opinions perceived as majority-held or socially approved (Cialdini & Goldstein, 2004). In digital environments, this bias materializes through the highlighting of elements such as customer reviews, average ratings, recent purchase counters, or popularity mentions ("Already purchased by 100 people" or "90% of buyers liked this item"). These signals serve as social proof, strengthening trust and reducing uncertainty at the time of decision-making (Schultz et al., 2007; Goldstein et al., 2008).

In online commerce, consumer behavior results from an interaction between cognition, emotions, and the digital context (Bennett, 1995). Cognitive attitude refers to the set of beliefs, evaluations, and rational judgments an individual develops about a product or service (Kotler & Dubois, 2001). When influenced by a digital nudge based on social norms, this attitude may be modified directly, by fostering an immediate purchase decision, or indirectly, by improving the consumer's personal perception (Ajzen, 1991; Van der Heijden & Kosters, 2015). Thus, understanding psychological mechanisms and behavioral dynamics in digital environments is essential for designing effective and ethical marketing strategies.

2.2. CONCEPTUAL FRAMEWORK

This research is based on the theory of cognitive biases (Tversky & Kahneman, 1974; Kahneman, 2011), behavioral economics (Thaler & Sunstein, 2008), and the Theory of Planned Behavior (Ajzen, 1991) to analyze the influence of digital nudging on online purchase decisions.

In the proposed model, the digital nudge based on the social norm bias represents the independent variable. This bias draws on individuals' tendency to conform to behaviors perceived as majority-held or socially approved. The integration of social signals into digital interfaces is assumed to influence purchase decisions directly (dependent variable) but also indirectly by enhancing personal perception (mediating variable), that is, the subjective evaluation that an individual makes of the product or offer.

The model assumes that digital nudging can guide decisions by activating automatic judgment mechanisms related to Kahneman's System 1, while also strengthening personal perception which, in line with the Theory of Planned Behavior, increases purchase intention and likelihood. This conceptual framework situates the study within the continuity of research combining behavioral sciences and digital marketing, while offering an analytical structure to measure the relative impact of direct and mediated effects of digital nudging based on social norms in an online shopping context.

2.3. HYPOTHESES DEVELOPMENT

On social networks or e-commerce platforms, the dissemination of information indicating that a product is popular or approved by other consumers can strengthen trust and generate increased interest (Schultz et al., 2007; Goldstein et al., 2008). Thus, it is expected that this type of nudge positively influences personal perception. Hence the first hypothesis:

- **H1**: Digital nudging based on the social norm bias has a positive effect on personal perception.

Personal perception corresponds to the subjective evaluation a consumer makes of a product or purchase situation. According to the Theory of Planned Behavior (Ajzen, 1991), a positive perception increases the

intention to act and therefore the probability of purchase. Favorable perceptions thus lead to stronger engagement in purchase behavior (Fishbein & Ajzen, 2010). Hence the second hypothesis:

- **H2**: Personal perception has a positive effect on purchase decision.

Beyond its indirect effect via personal perception, digital nudging based on the social norm bias can also directly influence purchase decisions. Social signals integrated into navigation interfaces or during the shopping journey act as cognitive shortcuts encouraging purchase without in-depth analysis (Thaler & Sunstein, 2008; Weinmann et al., 2016). Hence the third hypothesis:

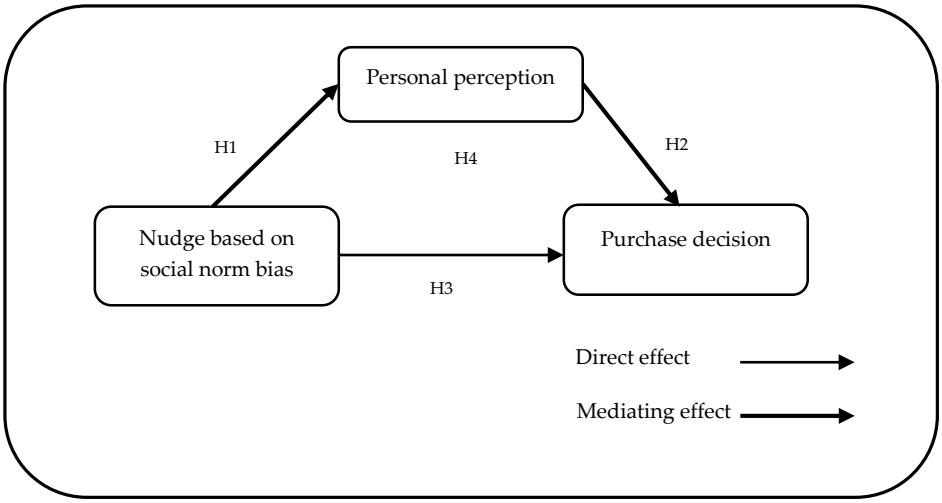
- **H3**: Digital nudging based on the social norm bias has a direct positive effect on purchase decision.

Finally, the impact of digital nudging may also occur through the enhancement of personal perception, by reinforcing perceived value, reducing uncertainty, and increasing trust. Hence the fourth hypothesis:

- **H4**: Personal perception mediates the relationship between digital nudging based on the social norm bias and purchase decision.

Figure 1 illustrates the direct and indirect relationships between digital nudging based on social norms, personal perception, and purchase decision, highlighting the mediating role of the latter.

Figure 1: Conceputal model



Source: Carried out by the authors

3. METHODOLOGY

3.1. STUDY CONTEXT

This research analyzes the impact of digital nudging based on the social norm bias on purchase decision, considering the mediating role of personal perception. Social networks represent an ideal environment to test this type of nudge, as they massively disseminate social signals (likes, shares, reviews) influencing purchasing behavior.

3.2. DATA COLLECTION

The data were collected through an online questionnaire distributed on Facebook, Instagram, and LinkedIn. A total of 153 valid responses were obtained. The sample was selected using convenience sampling,

including anyone willing to participate, provided they had previously interacted with commercial content or made an online purchase.

3.3. MEASUREMENT INSTRUMENT

The questionnaire, built from the literature on digital nudges and decision-making, used a 5-point Likert scale (1 = "Strongly disagree," 5 = "Strongly agree") (Allene & Seaman, 2007).

- Digital nudging based on social norm bias: The items for this variable reflect the influence exerted by social signals in online shopping environments. They measure the consumer's tendency to be more motivated to purchase when observing that friends, followers, or a large number of others have already bought the product. Other consumers' recommendations, the presence of numerous positive reviews, and explicit messages such as "X people have already purchased this product" are signals incorporated into the items, designed to capture trust and guide decision-making. These elements are based on the social norm bias described by Cialdini & Goldstein (2004), according to which individuals tend to conform to behaviors perceived as majority-held or approved.
- Purchase decision: The items associated with purchase decision assess the consumer's propensity to act after being exposed to these social signals. They reflect the transition from intention to action, for example when a product is perceived as popular, enjoys many positive reviews, or has been explicitly approved by other consumers. They also capture the speed with which a consumer may decide, as well as the direct impact of others' opinions on the final choice.
- Personal perception: The items linked to personal perception measure the consumer's confidence in their own choices, even when influenced by social information. They include the ability to maintain control over purchase decisions, the feeling of competence in selecting products, and the conviction that choices made genuinely meet their needs. This variable plays a mediating role, since strengthening perception may increase purchase probability while preserving a sense of autonomy in the decision-making process.

3.4. DATA ANALYSIS

Data analysis was performed using IBM SPSS Statistics, recognized as a reference tool for statistical analysis in social sciences (Levesque, 2007; Ong & Puteh, 2017). Initially developed by Nie, Bent, and Hull in 1968 at Stanford University and later acquired by IBM in 2009 (McCormick et al., 2016), SPSS stands out for its user-friendliness, cross-platform compatibility (Windows, macOS, Linux), and advanced features. It enables the management of large datasets with multiple variables, the performance of descriptive and inferential analyses, the modeling of linear or non-linear relationships, and the production of clear graphical visualizations (Wagner, 2019; IBM, 2020). Its intuitive interface makes it accessible to researchers without programming skills, while ensuring methodological rigor and clarity in presenting results (Arkkelin, 2014; Aljandali, 2016).

The results of this research may be generalized to other digital consumption contexts or help explain more specifically how social norm signals influence purchasing behavior (Muijs, 2010; Babbie, 2020; Niño-Zarazúa, 2012).

SPSS analyses included Cronbach's alpha to assess the internal consistency of scales (Cronbach, 1951), Pearson's correlation test to check validity, as well as descriptive analyses to summarize sample characteristics and item approval levels. Linear regressions (Field, 2013) were also conducted to examine

relationships between variables, supplemented by mediation tests using the bootstrapping method proposed by Preacher & Hayes (2008), allowing precise estimation of indirect effects and their significance.

This methodological choice, combining descriptive analyses, psychometric verification, and regression modeling with mediation testing, guarantees the robustness of statistical inferences and strengthens internal validity. By adopting procedures consistent with methodological standards in social sciences, this study ensures the scientific credibility of its conclusions and facilitates comparison with similar research (Rahman & Muktadir, 2021).

4. RESULTS

4.1. SOCIODEMOGRAPHIC PROFILE AND PURCHASING BEHAVIOR OF RESPONDENTS

The sample of this study is composed of 153 participants, of whom 52.9% are male and 47.1% female. The most represented age group is 18 to 25 years (51%).
Regarding educational level, the majority of respondents hold a master's degree (50.3%).
Concerning purchasing habits, 24.8% reported shopping online several times a month, 22.9% once a month, 20.3% several times a week, 19.6% a few times a year, 7.2% once a year or less, and 5.2% once a week.
Finally, product use is mainly personal (77.8%), followed by professional use (14.4%), gifts (7.2%), and, more rarely, resale (0.7%).

4.2. MEASUREMENT MODEL EVALUATION

Before examining relationships between variables, we assessed the reliability and validity of the measurement instruments used in the questionnaire. The analysis was conducted with SPSS, verifying internal consistency and validity for each scale. Reliability was measured by Cronbach's alpha coefficient. As shown in Table 1, all values exceed the recommended threshold of 0.70 (Nunnally & Bernstein, 1994), ranging from 0.837 to 0.861, confirming excellent internal consistency.

Table 1: Cronbach's alpha coefficient for each construct

Construct	Number of items	Cronbach's alpha
Digital nudge based on social norm bias	5	0.846
Purchase decision	5	0.861
Personal perception	5	0.837

Source: SPSS output.

Additionally, construct validity was assessed using Pearson correlation coefficient, measuring the strength and significance of the relationship between each item and its respective dimension. As shown in Table 2, all correlations are positive, high (≥ 0.729), and statistically significant at the 1% level ($p < 0.01$).

These results confirm that each item substantially contributes to measuring its construct, thereby supporting convergent validity.

Table 2: Pearson correlation (internal validity)

Variable	Item No.	Item Statement	Pearson Correlation	Sig. (two-tailed)
Digital nudge based on social norm bias	1	I am more motivated to buy a product if my friends or followers have already done so.	0.739**	0.000
	2	I am more inclined to purchase a product when I see that many others have already bought it.	0.759**	0.000
	3	Seeing that other consumers recommend a product encourages me to buy it.	0.841**	0.000
	4	I trust products more when they have received many positive reviews.	0.805**	0.000

	5	Messages such as "X people have already purchased this product" influence my purchase decisions.	0.798**	0.000
Purchase decision	1	I sometimes buy a product online immediately after seeing that it is popular.	0.831**	0.000
	2	I am willing to complete a purchase after reading other consumers' reviews.	0.742**	0.000
	3	I decide quickly to buy a product online if I see that it is appreciated by others.	0.853**	0.000
	4	Other buyers' opinions directly influence my purchase decision.	0.769**	0.000
	5	I am often convinced to buy an online product thanks to social evaluations.	0.827**	0.000
Personal perception	1	I believe I am capable of making good choices when shopping online.	0.819**	0.000
	2	I rely on my own judgment, even if others make a different choice.	0.729**	0.000
	3	I feel that I maintain control over my purchase decisions, even online.	0.783**	0.000
	4	I feel confident when making a purchase decision, even if it is influenced by social information.	0.740**	0.000
	5	I am convinced that the products I choose truly meet my needs.	0.835**	0.000

(All items significant at $p < 0.01$, $r \geq 0.729$; omitted for brevity).

Source: SPSS output

4.3. DESCRIPTIVE ANALYSIS OF VARIABLES

Descriptive statistics (means, standard deviations, and approval levels) for each variable are presented in Table 3. Mean values range between 3.19 and 4.17, indicating a generally high level of approval for personal perception, digital nudging based on social norms, and purchase decision.
Personal perception records the highest mean (4.02), followed by purchase decision (3.52) and digital nudging based on social norms (3.47). Standard deviations, between 0.776 and 0.953, indicate moderate dispersion of responses.

These findings suggest that participants exhibit a positive perception of messages based on social norms and are generally receptive to this type of stimulus in online shopping contexts. Personal perception, with the highest average, reflects strong adherence and favorable interpretation of the stimuli presented. Purchase decision, although slightly lower, still demonstrates a significant propensity to finalize purchases under these influences.

Table 3: Arithmetic means and standard deviations of constructs

Variable	Mean	Standard deviation	Approval level
Digital nudge (social norm bias)	3.47	0.882	High
Purchase decision	3.52	0.953	Strong
Personal perception	4.02	0.776	High

Source : SPSS output.

4.4. HYPOTHESES TESTING

To test the hypotheses, regression analysis and t-value comparisons with significance thresholds were applied. In line with methodological recommendations (Student, 1908), a hypothesis is confirmed if the t-value exceeds 1.96 at the 5% significance level.

Explanatory power percentages are derived from the determination coefficients (R^2) obtained during regression analyses. Results are presented in Table 4.

Table 4: Overall results of hypotheses testing

Hypothesis	Relationship tested	Coefficient (β)	t-value	Result
H1	Digital nudge → Purchase decision	0.529	9.49	Confirmed
H2	Digital nudge → Personal perception	0.572	10.33	Confirmed
H3	Personal perception → Purchase decision	0.474	9.21	Confirmed
H4	Digital nudge → Personal perception → Purchase decision	0.271	1.12	Not confirmed

Source : SPSS output.

The results show that three of the four hypotheses formulated in this research are confirmed.

- **H1** confirms that digital nudging based on social norm bias has a direct positive effect on purchase decision ($\beta = 0.529$ / $t = 9.49$ / $p < 0.01$).
- **H2** shows that digital nudging positively influences personal perception ($\beta = 0.572$ / $t = 10.33$ / $p < 0.01$).
- **H3** validates the positive link between personal perception and purchase decision ($\beta = 0.474$ / $t = 9.21$ / $p < 0.01$).
- **H4**, which assessed the mediating effect of personal perception, is not confirmed ($\beta = 0.271$ / $t = 1.12$ / $p > 0.05$).

Although direct links are significant, the mediating role of personal perception is not observed, suggesting that other variables may explain the effect of digital nudging on purchase decision.

5. DISCUSSION AND IMPLICATIONS

5.1. THEORETICAL IMPLICATIONS

This research highlights the direct relationships between digital nudging based on the social norm bias, personal perception, and purchase decision. Results confirm that digital nudging significantly influences purchase decision (H1) and personal perception (H2), and that personal perception, in turn, impacts purchase decision (H3). However, H4 regarding the mediating effect of personal perception was not supported, indicating that the influence of digital nudging on purchase decision is primarily direct.

This study enriches the literature on digital nudging and cognitive biases by specifically examining the role of the social norm bias in online purchase decision-making. Unlike some previous research suggesting that the effect of social nudges mainly operates through attitudinal or cognitive variables, our findings reveal a more direct impact. This suggests that in certain digital environments, simply highlighting social proof may suffice to influence decision-making without requiring prior transformation of personal perception.

5.2. MANAGERIAL IMPLICATIONS

For digital marketers and interface designers, these results confirm that nudges based on the social norm bias represent an effective lever to stimulate online purchase decisions. E-commerce platforms and social networks can optimize the visibility of social proof (purchase counts, positive reviews, friends' recommendations) directly on product pages. However, the absence of a mediating effect of personal perception suggests that this type of nudge may be particularly suited to low-involvement or impulsive shopping contexts, rather than situations requiring in-depth evaluation.

5.3. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. First, the sample and its specific context (social network users) limit the generalization of results to other shopping environments or product types. Second, the measures rely on

self-reported data, potentially subject to social desirability bias. Third, the absence of confirmation of the mediating effect of personal perception could be due to the direct and emotional nature of the social norm bias. Future studies could examine whether this effect emerges in more reflective purchase contexts or for products with higher perceived value.

Finally, longitudinal or experimental studies would allow for more precise identification of the conditions under which personal perception plays an intermediate role between social nudges and purchase decision.

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