

Impact of Cognitive Biases on online consumer and purchase behavior: A Generational Study.



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Abstract

The speedy improvement of e-Commerce and digitization of trade has transformed the rational decision-making model to judgmental decision-making model based on cognitive biases in the process of consumer decision-making. From the view of traditional micro-economics, a consumer is seen as a rational and info, systemically driven decision maker. However, with all the information that surrounds consumers, the time that they have to make a decision, and the ease of digitally persuading them, it seems logical that heuristics will be used to determine their buying decision. The name of this research is Cognitive Biases and Consumer Psychology in Online Purchase Decision Making, which studies about the influence of three cognitive biases, namely Anchoring, Scarcity and Social Proof on consumer behaviour. The biases predict a single behavioural outcome (Purchase Decision) which is measured as a composite of a wallet-buy item and a seven-day behavioural likelihood item. This paradigm is not similar to the psychology literature, which is prevalent and in which bias literature reviews only one bias and/or pure self-reported purchase intent is analyzed. This study aims to rank the primacy of prediction, that is, which of the three biases (anchoring, scarcity or social proof) better predicts the purchase decision, as well as whether or not such effects are different across generations, and which of them are the Millennials and Generation Z. The environment used is a mock e-commerce system where participants are exposed to various bias-inducing cues (e.g., high versus low price anchors, scarcity (limited time offers, limited stock), and social proof (Reviews/Popularity)). Also for the sake of greater explanatory power the study takes into account the modulating factors of gender, shopping experience and device type. The study examines by behavioral economics, consumer psychology and digital real-time metrics, how some theoretically valid and practically usable indications for some ethically questionable aspects of generation digital marketing and heavy reliance on persuasion in the digital commerce environment can be obtained.

The experiment was conducted with $N = 258$ Pakistani consumers (Generation Z and Millennials) randomly assigned to one of four conditions: Anchoring, Scarcity, Social Proof, or Control. A one-way ANOVA revealed a significant overall effect of bias condition on purchase decision ($F(3, 254) = 7.96, p < 0.001, \eta^2 = 0.086$). Scarcity emerged as the strongest predictor (Cohen's $d = +0.49$, medium positive effect vs. Control), followed by Anchoring ($d = +0.27$, small positive), while Social Proof produced a negative effect relative to Control ($d = -0.39$). A two-way ANOVA showed no significant condition-by-generation interaction ($p = 0.944$), indicating that the bias rankings were consistent across both generational cohorts. These findings provide an empirical hierarchy of cognitive bias effectiveness in the Pakistani e-commerce context and offer evidence-based guidance for ethical digital marketing strategy.

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Acronyms and Abbreviations

ANOVA	Analysis of Variance
CTA	Call to Action
CTR	Click-Through Rate
E-WOM	Electronic Word of Mouth
FOMO	Fear of Missing Out
Gen Z	Generation Z (born approximately 1997–2012)
MBA	Masters of Business Administration
OLS	Ordinary Least Squares
PKR	Pakistani Rupee
RQ	Research Question
SD	Standard Deviation
SMI	Social Media Influencer
S–O–R	Stimulus–Organism–Response
SPSS	Statistical Package for the Social Sciences
UGC	User-Generated Content
URL	Uniform Resource Locator