Advances in Economics, Business and Management Research, volume 166
Proceedings of the 6th International Conference on Financial Innovation and Economic Development (ICFIED 2021)

The Impact of Non- Roundedness of Numbers on Goal-Oriented Consumption

Zhaoyuan Qian[1,*]

[1]*Capital University of Economics and Business, Beijing 100026, China*
[*]*Corresponding author. jakeqianzy@outlook.com*

ABSTRACT
This research explores the impact of roundedness and non-roundedness of numbers on consumption. In particular, this research proposes that roundedness of numbers could have an impact on consumers' motivation to buy goal-oriented products. With more than 200 response, results from two studies show that if a consumer perceives a product to be goal-oriented (e.g., videogame, diet food), they will be more inclined to buy the goods with a price of precise/non-rounded number (compare with round number). A non-rounded number (rounded number) may serve as a cue for achieving the target or the goal better. The findings of this research have several managerial and theoretical contributions.

Keywords: *Rounded numbers, non-rounded numbers, goal-oriented consumption*

1. INTRODUCTION

Recently marketers have been quite intrigued by how consumers process numbers. This fascination perhaps stems from the fact that numbers and the magnitude of numbers form the bedrock of most of our decisions. Decisions about how much to pay for one's dress, how many cookies to eat or how much storage does one need for one's smartphone – all have numbers in common. All these decisions involve a fundamental ability to process numbers. Not only this, prior research has also established that numerical claims are superior to equivalent verbal claims, especially when used by highly credible sources[1]. This further heightens the importance of numbers and how they are processed in day-to-day purchases.

Consider a consumer who visits an electronic store to buy an assortment of products related to a computer. Right from selecting a desktop to selecting the amount of gigabytes he needs for his computer storage, he might come across different numbers in the process (20 inches screen size, 8 GB memory, $1200 Price etc.). Now he has to process all these numbers while making this purchase. How does the interaction of so many rounded and non-rounded numbers impact his evaluation of the product? Or does it even matter at all? Is it possible that when the attributes or components are priced differently (rounded vs. non-rounded) then their persuasion and influence change? The current research attempts to unravel these layers. Specifically, this paper attempts to understand how rounded and non-rounded numbers might be suited for different categories of products and product types.

Is it possible that the attributes or components of a product are more persuasive when accompanied by non-rounded numbers because of their disfluency? This research aims to answer this question by showing how a match between the product type (goal-oriented versus control) and non-rounded number (versus rounded numbers) leads to a higher evaluation for that product.

2. CONCEPTUAL BACKGROUND

According to prior research, a number is perceived as a rounded number if it comes to mind often and produces 0 or 5 as ending numbers[2]. Rounded numbers (e.g., 200.00, 100.00) as against Non-rounded numbers (e.g., 178.67, 237.45) are associated with mental salience and high processing fluency [3]. They are also linked to creating feelings of certainty [4]. Since they are easily accessible, the information on which they are based tends to be considered more credible and certain [5]. If some information comes to mind easily, it is considered to be more accurate and credible. There is an abundant stream of work that suggests how round numbers are easily processed and therefore elicit positive affect and transfers to judgments of overall liking. Moreover, Rounded numbers (e.g., 20.00, 30.00) as against non - rounded numbers (e.g. 20.34, 150.75) are viewed and anchored on more frequently [6]. They also tend be more affective [7].

In contrast to round numbers, research has done a considerable analysis of non-round numbers as well. Prior research states that non-rounded numbers are difficult to process because of what is known as disfluency [8] [9]. But this disfluency is much more engaging than fluency due to its higher involvement efforts [10] [11]. As a result, these non-rounded numbers (23 as against 20) that elicit disfluency and difficulty of processing may result in higher persuasiveness and more attention in some situations [11]. Some even refute prior literature to state its non-rounded numbers that increase confidence and credibility rather than rounded numbers [8].

3. HYPOTHESIS DEVELOPMENT

In sum, these findings suggest that roundedness of a number is more fluent and non-roundedness of a number induces disfluency. I contend that this difference will greatly influence how a consumer views and evaluates a goal-oriented product. More importantly, this research shows that the disfluency triggered by the non-roundedness of a precise number will make an individual evaluate the goal-oriented product more favorably. In the context of goal-oriented products, Labroo and Kim [11] have shown that uncomfortable feelings and experience of disfluency may serve as a cue for the greater instrumentality of the target. Drawing from the above arguments, I show that consumers with the goal to lose weight or goal to play a videogame may find an exercise plan involving non-rounded numbers (versus rounded numbers) (e.g., losing 10.21 pounds in a month) or a gaming console priced with a non-rounded number (versus rounded number) more helpful for achieving their goals.

H1 – Non-Rounded (versus rounded) numbers lead to higher purchase intentions for a goal-oriented product.

4. OVERVIEW OF THE STUDIES

In this research, I report two studies. The two studies use different product categories (salad and gaming console) to show the proposed effect. Further, study 2 shows the process of the proposed effect of moderation. The effect is attenuated when the product is no longer perceived as goal-oriented.

4.1. Study 1

4.1.1 Procedure

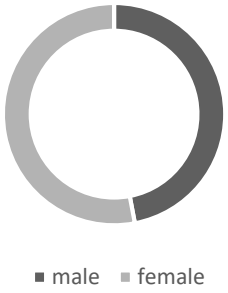

Figure 1 Gender distribution of respondents in this survey

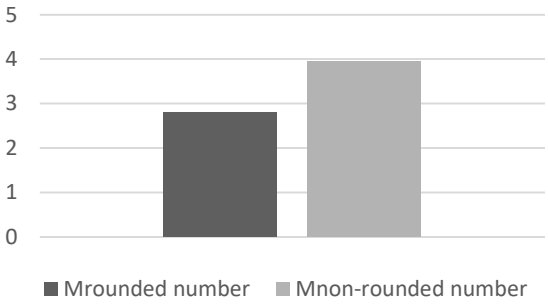

Figure 2 The intensity of consumer purchase intention in study1

I recruited 100 respondents (male 47, female 53, Figure 1) through the wenjuan.com. It was a between-subjects design, and participants were randomly divided into the rounded and non-rounded condition. The stimulus used was a gaming console (goal-oriented product) priced at ¥2000.00 and ¥2001.86 for rounded and non-rounded conditions, respectively. Finally, participants provided their age, education, and other related information and gave us feedback.

4.1.2 Result and discussion

Purchase Intentions. In this experiment, the results of a one-way ANOVA showed that the type of number significantly impacted a person's willingness to buy the gaming console ($F(1,98) = 50.273, p < 0.05$). As predicted, participants in the non-rounded number condition were willing to pay higher ($M_{non\text{-}roudned} = 3.94$) relative to those in the rounded number condition ($M_{rounded} = 2.79$). (Figure 2) This finding supports H1. In study 2 we replicate these findings with a completely different product category and show the process through moderation.

4.2. Study 2

4.2.1 Procedure

I recruited 160 respondents (male 80, female 80) through the wenjuan.com. It was 2 (rounded versus non-rounded) x2 (health-oriented goal versus no-goal)

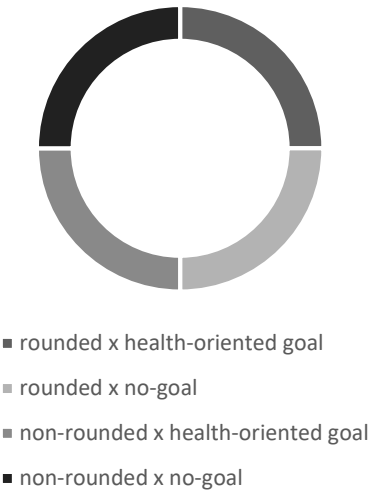

Figure 3 Grouping situation and proportion

between-subjects design, and participants were randomly divided into all these conditions (Figure 3). I prime participants' health-related goal by telling them the importance of losing weight and how everyone (including them) should strive towards losing weight and becoming healthier. The stimulus used was a salad priced at ￥50.00 and ￥50.17 for rounded and non-rounded conditions, respectively. Finally, participants provided their demographic details.

4.2.2 Result and discussion

Purchase Intentions. A two-way ANOVA on participants' willingness to pay for the item revealed a significant interaction of product type and roundedness of numbers ($p =<0.05$). Contrast analysis showed that in the goal-oriented condition, participants exhibited a significantly stronger purchase intention for non-rounded numbers than rounded numbers ($M_{rounded} = 2.43$, $M_{non-rounded} = 3.48$; $p <.05$, Figure 4). The differences cease to exist on the non-goal oriented condition. The findings from this study replicate the previous results and show the process through moderation.

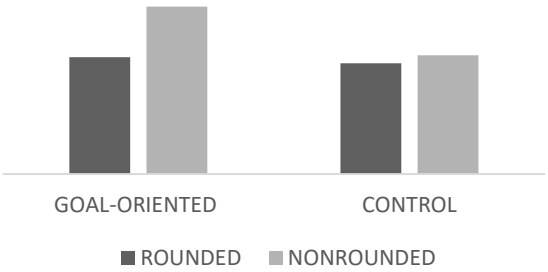

Figure 4 The intensity of consumer purchase intention in study2

5. CONCLUSION

In conclusion, this research shows the positive impact of non-rounded numbers (vs. rounded numbers) on goal-oriented consumption. This paper has significant theoretical and managerial contributions. First, this research contributes to the literature of round and nonrounded numbers. This is the first study to show the differential impact of non- roundedness of numbers on goal-oriented consumption. Second, these findings also link two diverse streams of literature which are numbers and goal-oriented consumptions. Finally, this research provides insight to product managers to correctly price their product depending on their product type. A slight change in numbers can have a big impact on a company and its profit maximizing goals. By showing the positive impact of non-rounded numbers on purchase intentions, we contribute significantly to these pricing domains and decision making tasks as well.

Table 1 Summary of studies

Study	purpose	Stimuli
Study1	Main hypothesis	Xbox
Study2	Process through moderation	A salad bowl (control vs losing weight

REFERENCES

[1] G. Y. Bizer, Z. L. Tormala, D. D. Rucker, and R. E. Petty, "Memory-based versus on-line processing: Implications for attitude strength," J. Exp. Soc. Psychol., vol. 42, no. 5, pp. 646–653, 2006.

[2] C. Diemand-Yauman, D. M. Oppenheimer, and E. B. Vaughan, "Fortune favors the: Effects of disfluency on educational outcomes," Cognition, vol. 118, no. 1, pp. 111–115, 2011.

[3] J. Hornik, J. Cherian, and Z. Dan, "The influence of prototypic values on the validity of studies using

time estimates," J. Mark. Res. Soc. Mark. Res. Soc., vol. 36, no. 2, pp. 145–147, 1994.

[4] E. L. KAUFMAN and M. W. LORD, "The discrimination of visual number.," Am. J. Psychol., vol. 62, no. 4, pp. 498–525, Oct. 1949, [Online]. Available: http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=15392567&lang=zh-cn&site=ehost-live.

[5] C. M. Kelley and D. S. Lindsay, "Remembering Mistaken for Knowing: Ease of Retrieval as a Basis for Confidence in Answers to General Knowledge Questions," J. Mem. Lang., vol. 32, no. 1, pp. 1–24, 1993.

[6] H. KIM, A. R. RAO, and A. Y. LEE, "It's Time to Vote: The Effect of Matching Message Orientation and Temporal Frame on Political Persuasion.," J. Consum. Res., vol. 35, no. 6, pp. 877–889, Apr. 2009, [Online]. Available: http://10.0.4.62/593700.

[7] A. MONGA and R. BAGCHI, "Years, Months, and Days versus 1, 12, and 365: The Influence of Units versus Numbers," J. Consum. Res., vol. 39, no. 1, pp. 185–198, 2012.

[8] Monica, Wadhwa, Kuangjie, and Zhang, "This Number Just Feels Right: The Impact of Roundedness of Price Numbers on Product Evaluations," J. Consum. Res., 2015.

[9] R. M. Schindler and R. F. Yalch, "It Seems Factual, But Is It? Effects of Using Sharp versus Round Numbers in Advertising Claims," Adv. Consum. Res., vol. 33, pp. 586–590, 2006.

[10] M. Thomas, D. H. Simon, and V. Kadiyali, "The price precision effect: Evidence from laboratory and market data," Mark. Sci., vol. 29, no. 1, pp. 175–190, 2010, doi: 10.1287/mksc.1090.0512.

[11] C. I. Tsai and A. L. Mcgill, "No Pain, No Gain? How Fluency and Construal Level Affect Consumer Confidence," Soc. Sci. Electron. Publ.

[12] R. F. Yalch and R. Elmore-Yalch, "The Effect of Numbers on the Route to Persuasion," J. Consum. Res., vol. 11, no. 1, p. 522, 1984, doi: 10.1086/208988.