

Investigation of the Application of Nudge Theory in Real World

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ABSTRACT

Under the background of the economic downturn brought by COVID-19 pandemic, the research is carried out after the 2020 COVID-19 pandemic in order to investigate the application of nudge theory, which is the method of changing consumer spending habits through the various method except for legislation and regulation, by analyzing the sales of three different shops after applying nudge theory, aiming to increase their sales revenue. The data of the article would be first-hand data collected by the author from the owners of the shop through face-to-face interviews. The result of the research would help improves the credibility of nudge theory by giving out real-world examples. The study suggests that there is a correlation between the nudge theory shops adapted and the change in sales revenue.

Keywords: *Nudge Theory, Behavioral Economics, COVID-19, Economics*

1. INTRODUCTION

Undoubtedly, COVID-19 imposed an enormous contraction on the global economy since the start of this world-scale pandemic in January, 2020.[1] Countless firms stopped production due to the lockdown issued by the government in order to minimize the spread of the disease, forcing owners to go into bankruptcy due to lack of revenue. The catering industry is undoubtedly one of the most severely affected industries by this virus crisis spread over the world. [2] Although the fast-rising demand for takeout food could save those restaurants from being closed forever [3], the lack of dining environment and workers are all detrimental to restaurants that operate traditionally (by using the word “traditionally”, here I refer to restaurants that mainly focus on offering eating in experiences for consumers). In Suzhou, the pandemic situation has been ameliorating since July, 2020.[4] As a result, restaurants need to make changes in order to attract consumers to their product. But with the financial difficulties that existed among these restaurants, the cost and benefit of each method should be taken into consideration.

This situation can be linked with the term “Nudge” in behavioral economics. Nudge refers to the method of influencing consumer’s choice imperceptibly without any coercion such as legislation [5]. At first, it is only applied to policymaking field. Later, Cass Sunstein and

Richard Thaler, they state that the nudge theory could offer solutions to social and personal issues, such as garbage assortment and energy conservation in Nudge: Improving Decisions about Health, Wealth, and Happiness [5]. Sunstein and Thaler claim that compared to staying with old methods used to affect consumers inclinations, such as emotions and desires which might sabotage consumers’ ability to make good choices, it might be more effective to find more creativity that can be put into good use. Nudge theory can be also applied to a wide variety of situations, from charging the additional costs for plastic bags at stores to reduce plastic consumption to offering fries and soft drinks as a suggestion when consumers buy burgers to increase sales. Although behavioral economics modify one of the major issues existing in Economics which is consumers could make most beneficiary decisions as the rationality of the brain takes control by introducing and explaining decision biases in the real world, it still lacks explanatory power as there are only limited measuring devices to illustrate the effect of nudge. [6]

Under this situation, the decoy effect is created, meaning that when confronted with the asymmetry-dominated third choice, consumers often generate specific preference changes between the two choices. Asymmetrically dominating refers to that an option is lower than one option in all aspects, the option is a bit inferior in some aspects and superior in others to another option.[7]

Therefore, the main focus of the article would be verifying the effect of nudges in the real world and thus the result of the investigation could be further used to testify to the credibility of the nudge theory and promote the nudge theory to a wider perspective of application

2. METHODOLOGY

2.1. Data Collection Process

After going through domestic and international papers related to decoy effects in behavioral economics written in both Chinese and English, this author found that there was little or nearly no literature writing about the effect of decoy effect specific to a certain area or a certain shop. Moreover, it is hard to gather data from restaurants that are not catering industry chains from the online database, because it is not required for those restaurants to reveal their operating conditions. As a result, it is not hard to collect data from three shops which

the author frequently visited and they are located in the same shopping mall. In this paper, the author collected first-hand data from these three coffee shops from the owners of both coffee shops about their sales revenue. One of them, A, does not employ the cup type policy, so its data would be used for the control group. In order to eliminate the fluctuation between two continuous months, the author collected six months of data, three months before the new cup type was introduced and three months after the cup type being introduced to the consumers and later the average value of three months before and three months after would be calculated. After obtaining the average values, the percentage change would be calculated to ignore the difference in the size of sales, making them easier to compare. Then, the author would plot these data into a diagram to investigate whether there is a change after adopting the policy.

2.2. Raw Data

Table 1. The Sales Revenue of Three Shops in Second Half Year 2020

Month		Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Sales Revenue(¥)	A	24,745	24,137	23,534	23,986	25,613	24,879
	B	19,358	20,637	19,279	22,736	23,348	24,167
	C	30,514	30,605	29,753	33,567	35,198	34,984

3. DATA ANALYSIS

chart, showing the general trend of sales revenue of these three chosen coffee shops over the past half-year.

First of all, the author put the data collected into a line

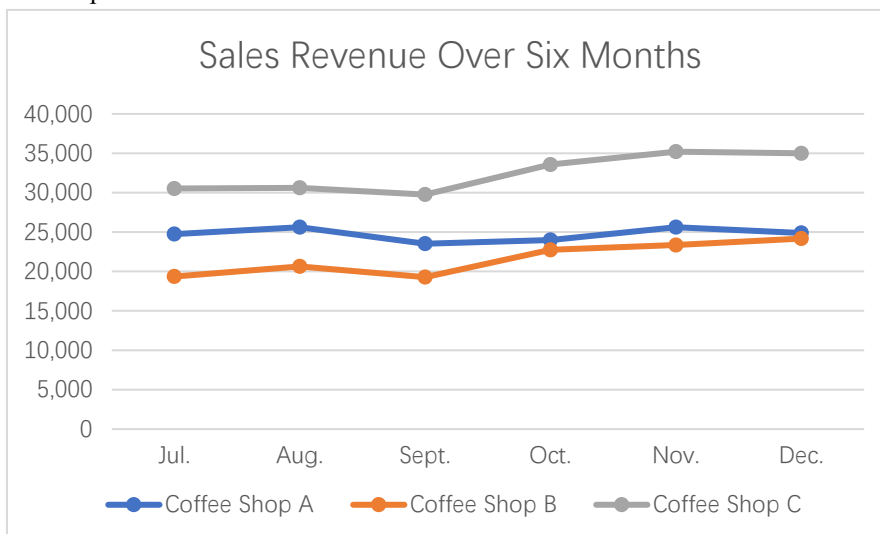


Figure 1 The Trend of Sales Revenue of Three Shops in the second half year of 2020

According to the diagram above, all three shops had an increase in their sales revenue in November, which

might be resulted from the end of year sale the shopping mall hosted. The sales revenue of coffee shop A, which

is the control group of the investigation, meaning the shop that does not adopt any new policy in order to increase its sales, shows only some small fluctuation of the data over the six months, presenting a generally stable trend. Whereas, the sales revenue of coffee shop B and coffee shop C both show a rapid increase in October when the new cup type was first introduced to the consumers, which is suggesting that the introduction of the new cup type is actually imposing an effect on the sales revenue.

Then, in order to further investigate the relationship

Table 2. Average Sales Revenue Difference

Shops	Sales Revenue(¥)	
	Before	After
A	24,139	24,826
B	19,758	23,417
C	30,291	34,583

After calculating the average sales revenue before and after the introduction of the new cup type, because it is inaccurate to compare the sales revenue change among three shops without taking their difference in business

between the actions taken and sales revenue and eliminate the effect of fluctuation due to different natural seasons in a year, the average sales revenue before and after the implementation of a new policy would be calculated by using the formula below:

$$ASR = \frac{\text{Sum of Sales Revenue over Number of Months}}{\text{Number of Months}} \quad (1)$$

According to the formula, the average sales revenue would before and after the implementation for each shop would be:

size and volumes into account, the different the percentage changes in sales revenue would be calculated by applying the following formula to eliminate such differences across three different coffee shops:

$$\% \Delta = \frac{\text{sales revenue after introduction} - \text{sales revenue before introduction}}{\text{sales revenue before introduction}} \quad (2)$$

The calculated percentage change of each shop would be:

Table 3 Percentage Change of Sales Revenue before and after the Implementation of Nudge Theory

Shops	Percentage Change (%)
A	2.85
B	18.52
C	14.17

According to the calculation shown above, we can see that despite coffee shop A, which had no change in its policy and acts as the control group of this experiment, showing a 2.85% change in its sales revenue, both coffee shop B and coffee shop C both presents an increase that is larger than 10% in its sales revenue. As a result, it again shows that the decoy effect is creating changes in the sales revenue of the coffee shops.

4. RESULTS

Thus, the analysis shows there is a positive increase in the percentage of the sales revenue after the shop implemented the new policy in relation to the nudge theory. Moreover, the control group of the article Shop A does not show a great percentage change in sales revenue as the other two shops that implemented the nudge theory in their menu.

5. LIMITATIONS

Although this paper has successfully managed to calculate the percentage change of sales revenue across three shops and also illustrate possible consumer behavior towards their product after the new policy is implemented by conducting the interview. However, the validity of the methodologies used and some of the calculation processes is still questionable due to the following reasons:

Despite using and analyzing primary data, mainly from the owner of the shop and also reading various academic research before applying it, the methodology used in this article is a more general method.[8] Therefore,

different cities might need to adopt different methods to calculate the external cost.

Another change in their cost is not considered part of the changes made by those shops. It is hard to measure and get accurate statistics over the past six months when the economic situation is fast changing due to the existence of the COVID-19 pandemic. Moreover, it does not mean that those actions do not impose any effects on the change of new policy.[9]

While conducting the survey, the number of samples might be too little to represent the whole industry.

6. CONCLUSION

It can be concluded that within the data, the sales revenue of these shops indicates that there is a correlation between the new policy they adapted and the change in sales revenue.

However, the correlation between these two sets of data does not necessarily mean that there is a causation relationship between the former and the latter, because at the same time, there might be a change in consumer behaviors as the pandemic situation improves and vaccines being widely used, result in they are now more willing to going out comparing to the time where the pandemic situation is still horrifying without the invention of vaccines and government actions.

Moreover, it is still unclear whether the action taken by the general shopping mall, aiming to increase the population who visited the mall in order to generate revenue has any positive or negative effect on individual coffee shops, because some of them choose to promote their product during the activity hosted by the mall and some of them choose not to

Yet, it cannot directly suggest that introducing a new type of option that is asymmetrically dominated would be useful to increase the sales revenue of other options because the sales revenue might also increase due to the introduction of the new option, but by leading consumers to think it is the new one that is most favorable and beneficial to purchase instead of those two options that is already existed.

All in all, these three shops should consider changing their price determinant in order to affect their sales revenue, because it is one of the factors that directly impose changes on the demand for one specific product. Moreover, it is obvious that non-price determinants, such as advertisements would also affect the sales revenue rapidly, so producers should also take these non-price determinants into account.

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