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Nudge theory and its application for modern e-commerce markets

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ABSTRACT

Nudge theory can mainly be credited to two academics—Richard H. Thaler and Cass R. Sunstein. Thaler and Sunstein defined their concept as: "A nudge, as we will use the term, is an aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any op)ons or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap" Nudge Theory has great implications in many fields such as public health, financial markets, government, fundraising, etc. In this paper, I aim to explore the question "What are some nudges that e-commerce companies exploit to increase sales". I have aimed to structure this paper in chronological order of the nudges that a consumer is expected to come across when buying any product. For this, I have gone onto the popular e-commerce website amazon.com and seen some of the possible nudges used there are. At the end of the paper, I also discuss the limitations of nudge theory

Keywords: *Nudge Theory, E-commerce, Digital Nudging, Cognitive Bias*

INTRODUCTION TO NUDGE THEORY

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"A nudge, as we will use the term, is any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid".

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In this paper I aim to explore the question "What are some nudges that e-commerce companies exploit to increase sales". I have aimed to structurethis paper in chronological order of the nudges that a consumer is expected to comes across whenbuying any product. For this I have gone onto popular e-commerce website amazon.com and seen what some of the possible nudges used there are. At the end of the paper I also discuss the limitations of nudge theory

Digital Nudging

According to a study of Dimensional Research, 90%of customers make decisions based on online reviews. 58% of these individuals saidthat they are now more likely to share their experiences on the internet. With more and more people making decisions online and through the internet with an estimated billion people shopping online, there has beenan increase in attention towards the concept of "digital nudging".

Much like in the offline scenario, biases and heuristics (Tversky and Kahneman 1996) constantlyinfluence the decisions that people make. Due to this influence, the concept of digital nudging can be applied to various types of contexts. Digital nudges influence decisions by either modifying what content is presented to a user or how the content is presented. Heuristics have been definedas simple ''rules of thumb'' (Hutchinson and Gigerenzer 2005, p. 98) that people use to ease their cognitive load in making judgments ordecisions.

The Anchoring Effect

Many e-commerce channels show the consumer an arbitrary advertisement which can be used as anumeric anchor. Hence, it is one of the first nudgesa consumer could come across. Anchoring is one of the many biases discovered by Amos Tversky and Daniel Kahneman. They prove this in their famous experiment by providing people with an arbitrary number before judgementby spinning

a wheel. The wheel however was rigged to stop at only 65 and 10. The participants were then asked to note down their number. They went on to observe that the participants who wrote down 65 gave a higher price. This is becausethey took the number 65 as their reference point.

In this section I aim to discuss the implications of the anchoring effect on ecommerce. Conformationbias tends to lead people to focus on information that in in support of their initial anchor. I aim to show the difference between auction and standardproducts in terms of the effect of the anchoring effect as well as discuss the varied effects of numeric and semantic priming. Numeric priming is simply when the price of a nearby, unrelated product affects the consumer's decision. Semantic priming is the presentation of a high or low quality product before buying. Semantic and numeric priming while similar are results of completely different cognitive processes. I also aim to discuss the possibility of using CAPTCHAs as anchors as proposed by Michiels 2018. An example of numericpriming would be the experiment conducted by Tversky and Kahneman while an example of semantic priming would be putting a moderately price item on a catalogue filled with more expensive ones.

According to many arguments put forward by researchers, cognition is of two chief types. Tverskyand Kahneman have classified these two types of cognition into system one and system two cognition. System one is continuous and automatic. Numeric priming mainly concerns system one cognition while semantic priming is more dependant on system two cognition. System two cognition is deliberate rational and effortfulthinking. Priming is presenting a stimulus that changes behaviour.

Numeric Priming is the presentation of an unrelated number to a consumer before he or she decides. Numeric priming mainly engages system 1cognition and works best in the context of an auction etc.

Semantic priming is used to engage system 2 cognition when the consumer must think about the features of the stimulus product and what features mean high quality. Simply, certain featuresin the consumers mind are defined as those of low-or high-quality products which influence all the other decisions. Often semantic priming has contained aspects of numeric priming because a high price does signify high quality.

One thing common to both of these types of priming is that they are applied before the decisionalthough in e-commerce one must use concurrent priming which is implemented at the decision- making stage.

Different types of priming are useful in different area. For example, in an online auction context system one cognition is more dominant because the decision is a split second one. Here, I suggest an idea to implement numeric priming. Numeric priming would be remarkably simple to implementby just using higher "product numbers".

In the traditional retail context where the retailer has specified a price the anchor has no noticeable effect. Also, if there are two anchors the one that ismore relevant is useful. As Denis et. al demonstrate in their paper the MSRP which was the useful anchor was more impactful. Through this Denis et. al demonstrated an important implication for numeric priming in e-commerce which is that it is only impactful when there is no other significant anchor like the MSRP.

Another important boundary that Denis et. al highlight is that for semantic priming to be usefulthe products must be related.

Michaels also proposes an interesting concept in his paper "Gotcha With a Captcha". The paper proposes the usage of a CAPTCHA (Completely Automated Public Turing test to tell Computers andHumans Apart.) Here, the usage of a CAPTCHA can be classified as numeric priming as higher numbersare presented to users. There is however a catch the CAPTCHAs must be whole numbers, so theydon't raise suspicion.

This idea has significant upside. First, the consumeris forced to pay attention to the anchor. There havebeen ideas proposed for the same such as using a red bold front by Wu et. al but this could raise suspicion whereas this doesn't raise suspicion.

Further fonts that are difficult to read have a largereffect since they require more mental effort.

I would also like to propose another idea building on this. This involves two CAPTCHAs. Here, the consumer is first presented with a number in the first CAPTCHA. This is the first numeric prime. Thenhe is presented with another number. This is the second anchor. The first anchor is lower and second higher. The anchor that is needed is however, the 1st one but the 2nd number makes the1st number look small, hence it seems smaller when needed as a price anchor.

The Decoy Effect

The decoy effect is likely the first nudge one may observe because it is very easily integrated into thebasic interface which a consumer sees when they are scrolling through the websites.

Imagine this scenario. A consumer was at the fair. It was a sunny day. The consumer were shopping for lemonade. The consumer saw that the price of a small glass lemonade was 1.5$. Then you also saw that there was also a medium sized glass for 2$ and a large for 2$ 10cents. The consumer's mind starts to think that the price for the medium and large glasses was almost the same. His mind starts to think that it is more profitable to buy a single large lemonade and ironically he isn't even very thirsty, the consumer goes home and end up throwing half of it. Here the seller of the lemonadeused the decoy effect to lure the consumer into buying the larger one.

A decoy works best when there are three options-a target, competitor and decoy. The target is the choice someone wants you to make, the competitor is the option against the target which they don't want you to choose and the decoy which ideally changes your choice from the competitor to the target. (Sherlin et al. 2020 pg 127). A decoy also changes the way in which we evaluate a product.

The decoy effect also changes the way we evaluateproducts. For example, when evaluating two waterbottles. One (bottle1) may be more durable whereas another (bottle2) may be able to hold more volume of liquid. Here the consumer is at a crossroads. However, if a new product (bottle3) is introduced which has the same volume of water asbottle 2 but is double the price the consumer is more likely to choose bottle2. The consumer then revaluates his original two options. One (bottle2) was similar to the new third option, the only difference being price. This makes bottle2 seem more appealing. This is because we are always looking at things around us in relation to others (Ariely- Predictably Irrational).

As Sherlin et al (2020) note in their experiment with the Indonesian online marketplace Shopee a product with negative reviews can also be used as a decoy. Data also shows that a negative review can have a moderating effect. By this I mean that ifa target has a bad review then people may be ableto justify the higher price of the decoy etc.

While it seems easy to use the decoy effect in ecommerce it is also worth noting that some ecommerce retailers have options to sort productsby certain categories (Refer fig1). These types of retailers should try to make sure that the decoy is always present (close to) with the target and competitor in most of these options.

I also propose that the decoy effect can be even more useful when certain products are of such a nature that a user has never shopped for them before. In this scenario the decoy can be used as aprice anchor and as a decoy. For example, there isno convention on how much one should pay for a new type of product- the consumer has no set price in his head. In this case the decoy can be used to set an expected price.

If a new type of product is released there can be afew options.

1. One with longer charging. 200$
2. One with better graphics. 250$
3. A more expensive one with graphics asgood as the previous one. 400$

Here the 3rd one is the decoy and the target is the2nd one. Compared to the 2nd one the third one is expensive so the 2nd one seems like a good deal.

Then when shopping for any product like that 250$will be the anchor price.

Suppose that the most profitable product I can sellis the 250$ one with better graphics. If people buythe only one with better charging, then no reason to offer better graphics. You could increase the price of the competitor, make it the target, and geta new decoy- this works best with products that are a onetime shopping experience.

Price Framing

The next nudge the consumer is likely to come across is price framing. This is because companiesemphasis the price along with the product or anyother offers.

One of the most commonly known phenomenain behavioural economics is the framing effect. It is a cognitive bias where people decide on option based on the way they are presented.

One of the most common examples of framing effects is using positive way (such as 75% lean) or negative way (25% fat) by supermarkets to display meat information can affect consumers'perception of meat quality. In this section I aim to discuss differential price framing, combined vs partitioned prices and downgrade vs upgradeframing.

DPF or differential price framing is a price- framing strategy where sellers quote the price difference between a standard and premium option. DPF makes the price difference between a premium and standard option more obvious and hence increases the amount of evaluation the customer gives to the differencebetween price and quality. DPF through a seriesof empirical experiments by Allard et al. (2019) has been proven to be useful in influencing people to choose a more premium option.

Also, the price difference between the premiumand the standard models is less than the price of the standard hence the brain focuses mainly on the price difference hence making the premium option seem cheap. Also, I would liketo propose that this pricing strategy would also increase the sales of the standard option when the consumer is not willing to buy the premiumproduct. The possible theoretical framework behind this could be the endowment effect.

This is because when the consumer is told that he can upgrade from standard to premium for a given amount it may trigger a feeling of possession for the standard one which—as Plottand Zeiler (2005) prove in their paper "The Willingness to Pay-Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations"—increases the value of a given item or product.

Another important method used in price framing is combined vs. partitioned prices. A partitioned price is used to have the consumer pay for needed aspects separately while a combined price offers all the aspects needed under one price. According to Hu and Li

(2018),combined prices are preferred by consumers because they are easier to use. I would like to propose the possibility that there are other underlying mechanisms for the same as well.

Firstly, due to status quo bias, the consumer is less likely to take something out of the package.This can be used to sell premium versions of accessories. For example, a printer can be sold as a bundled price along with premium ink cartridges when a consumer would have normally bought standard cartridges. One of the best examples is what amazon.com does byadding frequently bought together items (see figure 1.2).

There is however, one especially important limitation for the combined prices. This is the Bundling bias which explains that humans valueindividual purchases more than bundles.

Furthermore downgrade vs. upgrade framing can have an important effect because of loss aversion. In the upgrade scenario, the consumermust add things to his product and the price increases. However, in the downgrade scenario the consumer sees taking away add-ons from his product as losses, hence making him loss averse.

The Out-of-Stock Effect

The next nudge one may possibly observe is thescarcity effect. If a product is scare the website likely advertises this in the form of a popup below the price saying "Limited amount left" ora similar statement.

The Out-of-Stock effect is simply a nudge that exploits the scarcity bias. The Scarcity Effect is thecognitive bias that makes people place a higher value on an object that is scarce and a lower value on one that is available in abundance. In this section I aim to explore the out-of-stock effect in the online context. I will try and provide an in depth understanding about the two types of scarcities-limited quality scarcity and limited time scarcity (Jang et al, 989, 2015) and the difference between conspicuous and inconspicuous products.I will also try and explain demand-based vs supply-based scarcity. I will also explain scarcity as a sales hinderer.

In 2 experiments, a total of 200 female undergraduates rated the value and attractivenessof cookies that were either in abundant supply or scarce supply. In the scarce condition, the cookies were either constantly scarce or they began in abundant supply and then decreased. The results indicated that (a) cookies in scarce supply were rated as more desirable than cookies in abundant supply; (b) cookies were rated as more valuable when their supply changed from abundant to scarce than when they were constantly scarce; and (c) cookies scarce because of high demand were rated higher than cookies that were scarce becauseof an accident. Some customers however, mentioned that the scarce cookies tasted the samebut were valued more. This clearly shows that the behaviour was irrational because the cookies tasted the same however, were valued more whenscarce.

Scarcity is implied by the seller by signalling alimited quantity of a given product.

Consumer's ability to signal uniqueness comes from the scarcity condition because only a set number of individuals can possess the given product. The scarcity also creates an impression that a product is more valuable for customers. Since there are a smaller number of units scarcity creates an effect of the product being more special. Scarcity messages are better to use in caseof a "conspicuous" product. Conspicuous productsare ones that are visible, signal uniqueness, signal conformity to exclusive groups and signals wealth. An example of this would be an expensive product.Hence, on a website selling luxury products it would be best to use scarcity.

This proves that scarcity is important for customersto signal wealth or to signal that they are a part of exclusive groups. The best example of this would be that original artworks sell for much more than a replica and sellers are always very careful tomention the same.

Under scarcity there are two further subdivisions of scarcity. The first type is supply framed scarcity. Low supply causing scarcity is what supply-framed (Huang, Liu, Kandampully, Bujisic) scarcity tries to imply. The other type of scarcity is demand framed scarcity. Demand framed scarcity implies that the scarcity is due to high demand. The demand-basedscarcity tends to stimulate a more salient sense of competition to get a product. Aggressive behaviourcan also be triggered by demand framed scarcity leading to consumers paying less attention to potential risks and having their behaviour further irrationalised. The demand framed scarcity can also be supplemented with the social proofing nudge hence making people feel that the risk of buying a given product is less. This is because people believe that products high in demand are high in quality.

In this context I would like to propose that ecommerce sights can incorporate into their interface a counter. This way they can further create a sense of competition between consumersleading to aggressive behaviour which leads to consumers paying less attention to potential risk. In this regard I also propose that demand framed scarcity be used with "non-conspicuous" since there is no need to create an effect of exclusivity with them.

The nest type of scarcity is supply framed scarcity. The supplier limits the number of units available tothe consumers. This conveys exclusivity. This supply-framed scarcity can also lead to the snob effect (Jain and Amaldos 2005).

The scarcity bias is also possibly more useful in thecontext of an online retailer because when advertising a physical good the scarcity can be framed negatively as well. By this I mean that consumers may feel that it is possible that a product will be out of stock and especially for maynot make the effort to go to the shops however this is not a problem in the e-commerce setting.

Social Proof

Just below the price and the "deal" if any the e- commerce website will likely display an indicator ofsocial proof like a "star rating".

Social Proof is a psychological effect that leads people to conform. It creates a kind of herd mentality. The effect is because people make a lot of their decisions based on other people's choices.This nudge has been most notable in ecommerce in the form of customer reviews etc. I aim to explain the factors that make a review more reliable. I also aim to look more deeply into the tourism industry since there is a huge impact of social proof there because of the nature of tourismas an intangible experience. I further aim to investigate how the impact of negative customer reviews can be mitigated.

When was the last time you were on any ecommerce website? Did the star ratings given toany product influence your decision in any way? The star ratings as well as reviews are all a form ofthe social proof nudge. Recent surveys show that 70% of users trust online reviews and the numberis slowly increasing. 89% of customers will not actuntil they read reviews. 15% of users do not trust businesses without reviews. Only 6% of consumers do not trust customer reviews at all. Asingle business review can raise revenue by up to 10%! Given all this, it is no wonder consumer reviews are so important for e-commerce companies.

Trust is one of the most important factors in any form of consumer and seller interaction. This is one of the most important reasons why the social proof nudge works. People feel that if others have had good experiences with a seller, they too can trust the seller. One of Zig Ziglar's famous quotes is"If people like you, they'll listen to you, but if they trust you, they'll do business with you." This iseven more important in the context of ecommercebecause people are not able to physically see goods. Hence, they are expected to trust sellers.

There are many factors which people feel make anonline review reliable. Firstly, when consumers encounter numerous pieces of useful information there is an impact on their decisions. Hence, an online site that has a larger number of reviews offers customers greater value. Many researchers recently have also talked about the importance ofpresenting a consumer's identity. This is because people are sceptical about the reviews because they can be written by anyone. However, having aconsumer name is reassuring. Park et al. also wenton to suggest that pictures contribute greatly to the online review.

This has many practical implications. Firstly, using the previously mentioned concept of default options, sellers can have a default checkbox optionto include the reviewer's name. There must also bea prominent option to include a photograph. To further ensure that people post pictures I propose a reward system for reviews. There can be certain benefits for posting a review and they increase for posting a picture as well, such as a 50-cent cash back for posting a review and 75 cents for a picture.

Another factor that effects the perceived usefulness of a review is the expertise of the reviewer. This is because consumers feel better reading a review done by someone with more experience. For this asking for things like profession may be an invasion of privacy. However,simple things like displaying the number of reviewssomeone has written may establish their position as a credible "product reviewer".

Review elaborateness is also important. A more elaborate review helps the consumers understandmore. An explanation for this could be one particularly important cognitive bias. The ambiguity bias states that people's decisions are affected due to a lack of information.

Park and Nicolau also discuss the asymmetric effects of consumer reviews. Their findings state that people find that moderate reviews are less useful than extremely positive or negative ones. Strikingly, Park et al. claim that a negative reviewcan also have a positive effect. This is because a product with a negative review stays in the consumer's consideration set for a longer period.
Another reason why extreme reviews are useful isthat products stay in consumer's "consideration sets" for longer. This is due to salience bias.

Salience bias simply states that people focus on more prominent things. Here a review that is positive or negative may be "prominent". Also, if the consumer likes a product, it is likely that choicesupportive bias will lead him to remember only thegood reviews.

Another important aspect of reviews is when the consumer sees them. I propose that this may havea large effect when the consumer is making the decision due to loss aversion, however after the consumer starts to favour a given product choice supportive bias will mitigate loss aversion.

I further propose that the serial position bias couldbe very easily exploited here. This bias states that people remember things that are at the end of listsmore vividly. Hence, when listing reviews, it wouldbe beneficial to the seller to list the negative reviews in the middle of the list—not at the start, not at the bottom.

Default Effect
After clicking on a product the interface is likely togive you default of frequently bought items, whichare defaults.
A default is defined as "the alternative a consumerreceives if he or she does not specify otherwise"(Brown and Krishna 2004 pg 530).

Defaults are one of the most used nudges in the online context and are especially easy to use in various scenarios like check boxes etc. In this section I aim to give an overview of the usage of default options in ecommerce. I also clearly explainthe different kind of consumer responses that different types of defaults generate. I also aim to look into the different explanations for defaults such as Park et al (2000), Johnson et al (2002) etc. Ialso aim to study an important aspect of the defaults which is the effect of the marketplace metacognition of the consumer. I will further look specifically into the effect of defaults in the product configuration phase/

personalisation phase.

Default options are very widely used in today's world especially online due to the ease with whichthey can be employed. Johnson, Lhose and Bellman (2002) have proved that consumers who actively have had to opt out are twice as likely to receive mails than those who must actively opt in.Park et. al prove that when consumers were presented with a fully accessorised car and could remove features to save money they spent more money.

The default effect or default heuristic has been proven in many experiments. The chances of anoption being chosen if it is a default are much higher. There are many explanations for the psychological mechanisms that lead to the defaultbeing effective. Some of these are…

- The cognitive effort it takes to choose an option is not wanted because consumers don't want to take the trouble of evaluating two options. An example of thiswould be what Lhose and Bellman proved.
- Switching costs- It takes effort to search foradditional options and consumers don't want to do this.
- Loss aversion- People feel that a default isa reference value, and anything less may be seen as a loss.
- Endowment effect- The endowment effectis a bias where people feel more strongly about a certain object when they own it. Here the consumer may feel that the default option is what he owns and feels that reducing costs by removing features islike giving something he owns away. The endowment effect thus predicts that high end defaults will have a more profound impact that low end ones.
- Focus of comparison effects- The attractiveness and choice probability of analternative can be enhanced by making it the focus of a comparison (the focal option) with a competing alternative (Dharand Simson). Here the default is made the focus of the comparison.
- Another explanation for this could be status quo bias. people feel action regret(aregret that you feel when you do something and cause a negative result) bigger than inaction regrets(a regret that you feel when you don't something and cause a negative result), even if they have the same negative result. Here the inactioncould be not ticking another box and the action could be actively choosing another option.
- Further the default options reduce choiceoverload which may lead to consumers being happier with their purchase.

Different types of defaults can be explained withdifferent theories from above.

There are attention-based defaults where the default is used to reduce the amount of cognitive effort needed. This supports the first explanation for defaults mentioned above. This has been proven by Johnson et. al in their experiment whereconsumers were more likely to choose a checkbox with a tick in it rather than an empty one.

There are processing based defaults as well. In thiscase the consumer anchors onto the default optionand hence his processing is biased. This is proven by Park et. al, Dhar et. al and Johnson et. al.

However, all of these do not account for one important factor- defaults may contain informationabout the value of the choice alternative. This is accounted for by the Information Based Defaults. Ifa consumer is unaware of his preference he may judge the options relative to the default. This has been clearly proved by Prelec et. al in their experiment on museum goers who had to choose from rain ponchos of three sizes. While the consumers had no knowledge of poncho sizes theyknew if they were tall, average height or short and made choices based on this.

It is also worth noting that in some scenarios a low ie. Less expensive nudge can have a more positive effect than high defaults(Brown and Krishna). If a consumer feels that a firm is suggesting a default that is not in his own interest but rather in the firms there may be backlash. This is because it activates the consumers social knowledge about the marketplace tactics and he actively thinks of what he can do to not succumb to them(marketplace metacognition). For the same it is optimal that the ordinal position of the default be considered because an item that is not the mostexpensive item of a given set that the consumer is presented with is less likely to induce marketplace metacognition. Marketplace metacognition also has no effect on the likelihood of a lower priced product as a default.

Product configuration is an important tool that companies use to bridge customer needs. In this process customers choose from a predefined set ofattributes. Some online configurators provide default options for each attribute. Simple put it is the "customisation" of products to a customer's likes.

As wang et. al note in their experiment there are avariety of factors which can moderate the effect ofdefaults on a consumer. Based on their experiment where they study the distribution of choices with and without defaults they conclude that experience is a very important factor. This means that a customer with higher expertise is more likelyto choose the default options. Another factor is the consumer's concern. A concerned consumer is lesslikely to select a default(this can be supported by invocation of marketplace metacognition). A consumer is also more likely to select a default when there are more options. This is because the cognitive effort to choose from a variety of optionsis higher.

In this regard I propose that ideal utilisation of default options would be when there are many options offered to the user to increase the cognitive effort required to sort through all. Alsothe default should be positioned with other products where it is not the most nor least expensive product of the set so as to not invokemarketplace metacognition.

Nudge Theory- Drawbacks and Opposition.

While in the previous parts of this paper I have discussed the applications of nudge theory in this section I aim to discuss the draw backs. I will covera more general overview of nudges and go furtherinto their limitations in the world of e-commerce. Iaim to discuss primarily five factors

1. Nudges that fail and why they do.
2. When nudging a customer can backfire-why and how.
3. Can nudges be transparent yet effective atthe same time.
4. The varied effects of digital nudging techniques on the five main personalitytypes

While nudge theory has been proven to be quite effective in many contexts such as public policy, brick and mortar retail and e-commerce there are some instances when nudges fail. Sunstein 2017 describes that strong antecedent preferences on the part of the person being nudged may lead to the nudge being ineffective. He explains this through an example of marital names. In America by default men and women keep their pre marriage surnames however, the majority of American women do change their surnames. This is due to four main factors. First, there is a clear preference in favour of changing names majority ofthe time. This tells us that clear preferences on theconsumer's part may lead to nudges being effective.

Secondly, the issue was highly salient. It was something important and therefore people proactively acted on the same. This highlights an important implication for nudge theory in e- commerce. The effectiveness of nudge theory is less if the product is an expensive purchase or an important one (ie. A refrigerator) since it is not thekind of decision that is in the background and not given ample thought. This is because a consumer would not be affected by procrastination and inertia.

Also, changing names after marriage isn't an activity people defer. It isn't a choice they don't want to make and the so called "effort tax"-that a nudge like a default can save them-is no longer existent. The last factor is that keeping pre-maritalnames can impose significant costs if one has a child etc. This is important to note for e-commercecompanies because a default option that is much more expensive than another one will not work.

Nudges also fail to work on people with more experience shopping for a given product. Gächter et al. have proved this in an experiment where they framed in late registration fee for a conference as either a loss for late registration or again for early registration. While the less experienced experimental economists were susceptible to this the more experienced ones were not affected by loss aversion.

Another instance where nudging may be ineffective is when self interested actors employcounter nudges to affect people's decisions. For example the Federal Reserve Board made a rule that banks cannot auto enrol people in overdraftprotection schemes more than 10%. This was a nudge to protect the people from high overdraftfee. Here the nudge was to have the default as "not enrolled in the scheme" to make sure the banks didn't trick people. The banks however, used successful counter nudges such as framing the decision to not join the scheme as a loss(lossaversion).

Nudges can also backfire. One of the most common reasons why nudges can backfire is that even when they work they fail to achieve the ultimate goal. They can be too narrowly focused sothey cannot achieve the ultimate objective. For example while a default option nudge may lead a consumer to put a certain item in their basket (seethe section on default options) the consumer may take it out of the basket. The same way it has beenobserved that in large scale undertakings to improve the general public health that while supermarkets may employ green arrows to direct consumers towards the fresh produce there is no guarantee that the consumers will actually buy theproduct and even if the do buy it there is no guarantee that they will actually consume it instead of throwing it out after a week.

This provides an important implication for e- commerce and nudging. With the variety of choosing stages like the e-basket and checkout thenudges must be consistent because the cost of a consumer changing his mind is nothing.

Finding the correct balance when engineering a nudge is also very important. If the nudge is too weak there will be no influence on customers, if itis too obvious the customers may reject it. An example of a nudge that is too weak would be companies auto-enrolling employees in a 2-3% retirement savings plan. This 2-3% is much less than someone should be saving for retirement.

If a nudge is overt, people may rebel. For example when a California based electric utility nudged customers by sending reports comparing efficient energy use, average energy use and their energy use conservatives rebelled and increased their energy usage. The widespread press coverage of nudge theory has also made customers immune tonudges to a certain extent.

One proposed idea is to use motivational psychology tools such as implementation plans etc.which can amplify the benefits of the nudges and neutralise the dangers.

Another common discussion regarding nudge theory has been how ethical it is. People have raised concerns about violation of personal autonomy, violation of human dignity, manipulation and prevention of more importantstructural reform etc.

Bruns et. Al conducted a laboratory experiment toevaluate wether nudges would be successful.

Participants were instructed to separate computerterminals where they were given a 10 euro endowment which they could indicate how much of they wanted contribute to the climate.protection fund. In one scenario the participants were given a default of 8 euros for contribution and one had no default. In one scenario they were given a default but it was followed by a sentence that induced transparency-the purpose, information about defaults or both. Their experiment shows that there was a default effect on contributions

in all four experiments.

Surprisingly the experiment shows that was conducted showed that contribution did not decrease significantly either when participantswere informed of the default's purposes, information about defaults or both.

The big five personality traits were originally developed by D.W. Fiske. They have been proven tobe useful to measure personality across a variety of settings. The five traits are neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. High neuroticisms is the most consistent predictor of susceptibility to nudges such as social norms.

Roccas et. Al find that openness to experience was negatively correlated to consumers susceptibility to social norms. Conscientiousness, agreeablenessand neuroticism were positively correlated with susceptibility to nudges like social norms.

Biby and Ferguson write that loss aversion is positively correlated to extraversion. This shows that different types of consumers are susceptible to different kinds of nudges and a nudge must be designed to suit the main target audience- Nudgesaren't just a "one size fits all" concept.

CONCLUSION

As seen above there are many nudges which can be employed by e-commerce companies to nudgeconsumers. While some things between brick and mortar nudging and online nudging are the same there are certain aspects that must change to fit the online version (like the limited cost of channel switching etc.) There are also however some opportunities, for example the idea of using CAPTCHAs (Completely automated public turning test to tell computers and humans apart) as numeric anchors or consumer reviews. There are also some aspects that make nudging in the onlinecontext more difficult such as less trust from the consumers.

This paper has presented ways in which e- commerce companies can implement nudge theory especially to suit their purpose. It is also important however, to remember the limitations ofnudge theory and that they are not a guaranteed success due to various reasons.

While this research is based on only a few nudges and biases further research can look into many different biases or nudges such as choice supportive bias (consumers can be given a free trial and will likely come back for the more expensive version to prove to themselves that theywere right), or the just world hypothesis, rosy retrospection (consumers are presented with products typical of their childhood which they will recollect more fondly and may buy even if they don't need it), the bye now effect, present bias etc.

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