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FACTOR ANALYSIS FOR STUDYING CUSTOMER BEHAVIOR

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ABSTRACT

The three main customers' purchasing transactions, namely the in-store, online, and both in-store and online are the preferred transactions to purchase products and services. The United States Customer Behavior Report in 2019 shows that online transaction has the highest chance of customers' preferred transaction method for the payment. The study in this research paper uses normal data sets, probability density functions, one-way analysis of variance, and Cronbach's Alpha for factor analysis. Though the United States Customer Behavior Report concluded the online payment as the major transaction method, there is a greater chance of customers preferring the combination of online and in-store transacting methods due to the reasons of the randomness of modality in a specific phenomenon.



KEYWORDS : in-store, online, and both in-store and online.

INTRODUCTION

The consumer is at the center of the retail world, with every whim served by retailers eager to please. Buying to grab the attention of consumers and their money starts with understanding the rapid changes in consumer behavior that are happening today.

To keep up with technology and consumer behavior, retail channels are continuously developing. Creating a consistent experience between the online world, smartphone engagements, and in-store experiences is what this means today. They needed to discover more about how consumer buying behavior is impacting traditional retail channels. Traders and retailers leverage the power of these emotions, which emerge from a basic desire for instant fulfilment. For example, a person cannot specifically search for mints or candies in the supermarket. However, these items are prominently displayed in the checkout aisle to entice impulsive shoppers to buy things they might not have considered. Furthermore, spontaneous purchases might occur when a potential customer learns anything linked to a product that quells their interest, such as seeing a snapshot of a celebrity on the front cover of a magazine or in their favorite color bag.

According to previous studies, impulsive shopping is a prominent feature of American consumers. Research from the US and UK has shown that factors such as mood, emotional state,

national culture, and consumer demographics influence impulse buying behavior. However, it has also gained momentum in Asian markets such as China, India, Singapore, Hong Kong, Thailand and Pakistan.

The use of services that allow users to bill, such as back-end services and self-checkout apps, is one of the most prominent ways we see hybrid channels. Online ordering isn't new, but the transition from a desktop to a smartphone app is significant. Consumers are using retailer apps and websites to browse, purchase, and pay for in-store pickup more than ever before.

Consumers understand the value of pre-ordering and self-service: seamless convenience saves time. Pre-ordering apps make order acceptance and payment far more effective for retailers. The advantages don't end there: after clients download your app, you have various options for increasing engagement, like offering prizes and discounts. Consumers frequently add products to an online shopping basket but do not complete the transaction. Each customer journey is unique. The buying process is frequently interrupted, altered, or abandoned.

Retailers have been alerted by changing consumer habits. Cart abandonment is a serious worry for retailers. Everything in the sales process appears regular to the seller, with the exception of one crucial aspect: conversions. Understanding the reasons for cart abandonment (and how to prevent it) can help you increase conversions and sales. Free delivery was once thought to be a bonus, a one-time incentive, or something only available to big spenders ten years ago. It is completely fine to send an item the same week it is ordered, however there will be a price for this service.

The bar has been considerably raised. Major retailers' free and unlimited shipping (with subscription) has raised consumer expectations to unprecedented heights. "Rush hour" usually refers to the time of day, not the day. Free delivery is no longer a luxury, but rather a common practice. Consumers value home delivery since it is an integral element of their experience. Companies try to establish long-term client ties. Subscriptions have shown to be an efficient way to maintain long-term consumer connections. Customers receive value by receiving basic products and services at a low cost, and payments are frequently arranged and forgotten. Businesses benefit from pre-booking offers, stable revenue streams, and open lines of communication with their valued clients. Subscriptions are currently experiencing a surge in popularity, with subscriptions appearing in an increasing number of industries on a daily basis. We're getting closer to a world where actual customers are channel agnostic.

But we haven't reached there yet. Consumer channel preferences differ per industry, which can be both surprising at times. When asked why they would go to a specific retailer, Americans made it plain that they wanted everything. Price, location, and product variety are all extremely important factors in deciding whether or not to visit a retail business, according to the majority of customers polled. Consumers are better informed and have greater access to information than ever before, but everyone needs help now and then. When it comes to customer service, 45 percent of Americans believe it is critical to be able to speak with a live person. Boomers (age 51–69) were the least enthusiastic about the notion, with 31% saying they would be unhappy with drone delivery. Younger generations were the most receptive, with only 11% of Gen Z respondents and 13% of Millennials opposing the idea.

It's important to connect with customers in the way they feel most comfortable communicating. Along with help desks, call centers, and email support, retailers are finding they can better connect with customers through live chat. Whether powered by humans or automated through artificial intelligence (AI), chat tools help retailers speak to customers in the format they prefer. 59% of U.S. consumers surveyed used live chat to get more information about a product or service while shopping on a retailer's website. Men (67%) are more likely than women (51%) to have 'chatted' with a retailer, while Millennials (76%) are twice as likely as baby boomers (38%) to have used a retailer. . In what is arguably the most intuitive consumer interface of all, voice-activated devices have emerged to capture American consumer engagement. From smart homes to smart cars, from smart speakers to smart devices, voice-activated interfaces seem to be everywhere. Speech interfaces are succeeding thanks to rapid advances in speech recognition technology and artificial intelligence (AI).

Mobile is fundamental Mobile purchases and payments are at the heart of contemporary consumer experiences. Smartphones are becoming ubiquitous at almost every consumer touchpoint,

even (and especially) in stores. From online shopping to on-site research, smartphones are the glue that binds commerce. Smart retailers optimize the mobile consumer experience - instore and out-of-store. Payments form the links at the most sensitive intersections between retailers and consumers. The payment experience should offer the same convenience and security while being responsive to the first world on mobile devices. This selection of a reliable payment partner is the basis of these efforts.

The authors reporting Cronbach's alpha results describe or interpret the significance of the alpha statistic in various ways and some cite the statistic without any explanation. Articles identified in the 2015 volumes of four research journals surveyed (IJSE, JRST, RISE, SE) were checked to see if the authors cited alpha values (64 articles) how to describe it. The most common descriptors are (separately or together) reliability or internal consistency. Twelve articles used these two terms, including one describing the alpha of internal consistency, reliability, and discriminatory power, in this study of customer behavior when predicting purchase

Authors who consider reliability and internal consistency to be equivalent may assume that this is understood by the reader and need not be explicitly stated. In some cases, the difference between the terms was clear enough. So, for example, in a study examining gender differences in the motivation and engagement of high school physics students (Abraham & Barker 2014), alpha was directly related to the two algorithms. language: "In a preliminary analysis, we tested the Cronbach's alpha estimate. Internal consistency of each scale a priori... More specifically, supporting the six-factor model requires (a) acceptable confidence for each scale (i.e. alpha = 0.70 or higher. However, sometimes there is no such clear link, as in a study that explored students' perceptions regarding their learning and self-efficacy (Lin, Liang & Tsai, 2015), who report on a questionnaire based on a previously published instrument Lin and colleagues explicitly refer to Cronbach's alpha as a confidence coefficient in the context of source instrument discussion and experimental results. new. However, readers must understand that internal consistency is considered synonymous with reliability.

REVIEW OF RELATED LITERATURE

Credit cards, debit cards, 24-hour sales, and online shopping are all examples of marketing advancements that contribute to impulse buying. Researchers have also discovered that Indian shoppers' shopping habits have changed dramatically, with impulse shopping becoming a more prominent behavior because of the entry of foreign goods into the Indian market, growth in the organized retail trade, rising income, favorable demographic segmentation, and dynamical culture and style (Muruganatham and Bhakat, 2013). Some variables like time convenience (Beatty & Ferrell, 1998), gender, mood, materialism, age, culture, cash convenience, product class (Mai et al., 2003), and merchandise value (Wong and Chow dynasty, 2004) are common among such patrons in market settings, according to studies of impulse buying in sub-continent countries. For the past sixty years, researchers and practitioners have been interested by the field of impulse shopping. Many types of impulse buying research are carried out in industrialized countries such as the United States, Canada, England, and Norway, as well as emerging countries such as Asia, the Philippines, Korea, Poland, Lithuania, Indonesia, India, and Pakistan. In these studies, marketing researchers have mostly focused on identifying the final elements that boost impulse purchasing. Over the last decade, various developments in American society have had an impact on the home furnishings industry, either directly or indirectly. Technological advancements, the rise of social media, changing demographics, and hence the growing purchasing power of women are just a few of the elements that furniture manufacturers and merchants should consider in their marketing efforts (York 2013). because the economy is showing signs of a slow but steady recovery (Miller and Matthews 2013; Coy 2012), furnishings manufacturers try to see the most effective ways in which to regulate to those dynamical client demands.

More educated buyers are more likely to make hasty purchases as a result of their social status and position. According to Saraswat and et al. (2012), a middle-income cluster in Noida, India, is more likely to engage in impulsive purchasing for financial reasons, as promotional offers aid in gaining financial advantages. Different dynamics of promotional material, such as product advertisements in print and visual media, celebrity endorsements, promotional material mistreatment in three

dimensions, product signs and pamphlets, and events organized by the organization, all have an impact on the majority of respondents. A thorough understanding of

customers, particularly how they acquire and obtain home furnishings, is necessary to create a successful marketing plan.

According to Dewey (1910), while considering a purchase, customers go through five stages: (1) problem or want recognition, (2) information search, (3) different analysis, (4) outlet selection and purchase, and (5) post-purchase analysis.

The entire call process for regular products that are acquired frequently (i.e., groceries or instrumental things) is quite brief, and there's often little or no consideration of the distinct market options. In the case of house goods, however, this may not be the case. Because it is pricy, sturdy, and not acquired on a regular basis, furniture may be a product that requires extensive flow identification. Furthermore, many customers regard their homes and hence the furnishings in them as extensions of themselves, so it is regarded as an emotional buy (Perry 2007). As a result, because customers don't have a lot of furniture shopping experience, they normally walk through these stages of the selection process deliberately, methodically, and purposefully to ensure that the right piece(s) of furniture are selected.

According to Cho & et al. (2014), in-store browsing and hence shoppers' pleasant mood are the most potent indicators of impulse shopping behavior. Positive mood shoppers inspire them to explore more sections and aisles in-store, and encourage individual shoppers to bring documented teams of firms (friends, peers, family members) on an extremely long trip to broaden the scope of shoppers, making them excited and elated, and responding more favorably

to the environment and merchandise analysis stimulation expo. Customers with a high deal disposition angle and inquisitive behavior make greater impulse purchases in the presence of a fine dynamic retail setting, according to Azim (2013). And, in order to increase people's impulse shopping behavior, businesses should create a smart environment for their consumers within the store and understand different customers' tendencies toward classified ads in order to attract the right customers. According to Bashir and et al. (2013), cultural values and style have a beneficial impact on impulse purchase behavior in Pakistan. There is a strong link between all of the cultural values and lifestyle characteristics. Security, life happiness, role, monetary satisfaction, in-group contact, and style characteristics of cultural values and lifestyles of Pakistani customers all predict impulse purchase behavior, according to the findings.

RESEARCH METHODOLOGY

Researchers frequently use at least one of the three categories of significance to assess the relevance of a study's findings: statistical significance, practical significance, and clinical significance. Researchers will begin to observe the impact of reliability on effect sizes and statistical power against Type II error as practical significance acquires traction in publications. Because of the potential impact of score reliability on the interpretation of research results, researchers must grasp it. According to Thompson (1994), failing to incorporate score reliability in substantive research might have a negative impact on research study interpretations. For example, because score reliability naturally attenuates effect sizes, we may perform trials that will not generate notable effect sizes. If we do not consider the dependability of the scores we are examining, we may not be able to appropriately evaluate the effect sizes in our investigations. There are a few typical misunderstandings about the fundamental concepts of score reliability. Misconceptions are generated as a result of a lack of knowledge of the idea of reliability and sloppy use of statistical jargon in conversation. To avoid misinterpretations of research findings, these myths should be addressed. Dependability is not a quality of a test or a measurement tool, as many researchers agree; rather, reliability is a characteristic of scores. This trait was first established by Spearman (1904), who used a method that measured each individual many times. Spearman used this method to establish dependability by comparing an individual's scores across consistent research forms.

In this research paper, the data set will be the 2019 United State Consumer Behavior Report, doing the normal statistics through probability distribution function for parametric test through factor analysis and comparison measures.

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$$

f(x) = probability density function
 σ = standard deviation
 μ = mean

For the comparative analysis, the one - way analysis of variance will be used to determine if there is a significant difference between these data sets, namely the in - store, online and both in - store and online data sets in terms of means. The Cronbach’s Alpha for measures of reliability on the data will be applied for the internal consistencies of the data as a mean for factor analysis. Below is the table of the derived data set on the 2019 United State Consumer Behavior Report, the percentage in each preferred customers’ way of transactions with seven selected product and service businesses:

| | In - Store | Online | Both |
|-------------------------------|------------|------------|------------|
| Supermarket and Grocery | 72 percent | 11 percent | 18 percent |
| Home Improvement | 60 percent | 14 percent | 26 percent |
| Clothing and Footwear | 44 percent | 17 percent | 40 percent |
| Electronics/Department Stores | 44 percent | 17 percent | 39 percent |
| Hotels | 21 percent | 52 percent | 27 percent |
| Airlines and Travel | 19 percent | 60 percent | 21 percent |
| Convenience Stores | 73 percent | 13 percent | 14 percent |

FINDINGS

1) For the comparative analysis on data set for the 2019 United State Consumer Behavior Report, the following one - way analysis of variance data is now presented as follow:

- Level of Significance: 0.05
- Degrees of Freedom: dfb = 2 dfw = 18
- Critical Value: 3.55 (if the computed f is greater than or equal to the critical value, there is a significant difference among the customers’ buying behaviors: in - store, online and both. Otherwise, there is no significant difference)
- Computed F: 3.11
- DECISION: There is no significant difference among the customers’ buying behavior in terms of their preferred transactions, namely in - store, online and both. all customers can still choose in a random pick of season whether to use in - store, online or the combined.

2) For the normal distribution statistics, the probability distribution function for parametric test is utilized and the percentages are as follow:

- In - Store: 93%
- Online: 50 %
- Both: 103 %
- DECISION: This shows that the highest rate of probability chances for predicting next purchases will always be under the combination of in - store and online services and product marketing.

3) Below will be the last, the Cronbach Alpha of Reliability of the data set for the 2019 United State Consumer Behavior Report:

- Variance among the services: 0.41
- Sum of inter - item covariance of the services: 0.10
- Cronbach’s Alpha: 0.88
- Number of Data Set: 7
- * The Cronbach’s Alpha is good.
- DECISION: This concludes Cronbach Alpha of Both category is high which means a customer can pay online or in-store according to his need in future.

For Reference:

| Cronbach’s Alpha | Internal Consistency |
|--------------------|----------------------|
| $a \geq 0.9$ | Excellent |
| $0.9 > a \geq 0.8$ | Good |
| $0.8 > a \geq 0.7$ | Acceptable |
| $0.7 > a \geq 0.6$ | Questionable |
| $0.6 > a \geq 0.5$ | Poor |
| $0.5 > a$ | Unacceptable |

ANALYSIS

The three main customers’ purchasing transactions, namely the in – store, online and both in – store and online are the preferred transactions to purchase products and services. The combination of in – store and online purchasing of products and services has the highest chance of customers’ preferred transacting method for the product and services to be offered in the last 2019 United States Customer Behavior Report. The internal consistency of data is good due to the normality of the data set in each purchasing transaction with different products and services offered (supermarket and grocery, home improvement, clothing and footwear, electronics/department stores, hotels, airlines and travel, convenience stores).

DISCUSSION

Though the aforesaid 2019 the United States Customer Behavior Report showed the online transaction as major transaction, there is always the greater chance that the customers prefer the combination of online and in-store transacting methods due to the reasons of the randomness of modality in a specific phenomenon. For an instance, if the customer wants to use the online transaction but there is system maintenance or any kind of emergency which the customer unwanted, it would probably use – store transaction method as another means of transacting.

FUTURE SCOPE

For the next research topics related onto here, it is highly recommended to check the other reports all over the world when it comes to the factor analysis in customers’ buying behavior and next purchase prediction and undergo strict comparative and normal statistics, assuming that they are under normal data for parametric sampling. Those reports that had been undergone factor analysis shall require worldwide comparative and internal consistencies in the data sets, just to produce a very substantial-conclusion and recommendations in predicting purchases and behavioral remarks.

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