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Influences of Gender, Age and Income Differences on Consumers' Purchasing Behavior

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Abstract

This paper studies whether gender, age and income differences matter for in-store purchases of selected non-durable and durable consumer goods in the southwest region of the state of Louisiana. Primary data are collected by face-to-face interviewing of randomly selected adult population within the age groups of 15 years to 64 years (active age), and above. Using the collected primary data for categorical variables, X^2-tests are implemented for six separate null hypotheses of statistical independence between/among variables of interest. The results reveal that only gender difference matters the most for in-store purchases of both non-durable and durable goods in the region. Age and income differences seem to have no significant influences on such purchases. As the findings suggest, the regional in-store retailers should focus more on female shoppers to promote sales of non-durable goods. At the same time, they should focus more on male shoppers for promotion of sales of durable goods in the region. Due cautions are in order for any kind of generalization of the findings of this study, given the unique regional characteristics of the primary data.

Keywords: retail sales, in-store, non-durable goods, durable goods, shoppers, age, gender, income.

I. INTRODUCTION

Retail sales of consumer goods (non-durables and durables) act as a key driver of the economy. Also, a strong economy drives such sales. In other words, retail sales and economic growth are intertwined and they reinforce each other. Profit maximizing retailers seek to boost sales to enhance profit. For this purpose, they need to understand buyers' shopping behaviors and purchase decisions that are largely conditional on their demographic and psychographic characteristics, among others. Demographic factors broadly include gender, age, income, education, occupation, employment status, etc. Psychographics involve mental mapping and accounting in purchase decision-making process, based on motivation, perception, belief, life-style, etc. At a micro-level, each shopper is different demographically and psychologically. As a result, they behave and decide differently while buying various types of non-durable and durable consumer goods (e.g., Nejati et al., 2011; Kotler & Keller, 2012; Moon, 2014; Estiri et al., 2018; and Naeem, 2019).

Based on the above, consumers behave differently in making buying decisions and they are classified, accordingly. Broadly, they are categorized as rational, impulsive,

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discount-seeking, bargain-hunter, compulsive and loyal customers. In general, their purchase decision making process in sequence involves 1) need recognition, 2) information search, 3) alternatives evaluation, 4) product choice and 5) post-purchase evaluation (e.g., Solomon, 2004; Riley, 2012). Consumers buy different products to satisfy varying needs at different stages of life-cycle. Differences in age groups, genders and income shape shopping orientations across buyers and over time. Shopping preferences prove to be dynamic currently switching between in-store and online buying. This is likely to put brick and mortar stores at competitive disadvantages losing market shares to online vendors. In changing market environments, retailers must seek to understand and foresee the changes in consumer behavior. However, complete comprehension is impossible due to a complex mixture of observed and unobserved psychological factors. In particular, in-store retailers need to redesign marketing strategies for their survival, given the ongoing uptrend in online purchases by young and elderly consumers (e.g., Pinar et al., 2017; Emami & Naderi, 2018; Rahman et al., 2018; and Haji & Stock, 2021). To add further, Armstrong and Kotler (2022) reflect the major trends and shifting forces that impact marketing in this digital age of customer value, engagement and relationship.

Age is another important demographic factor that affects consumer behavior. As people age, their needs change. Such changes induce changes in their buying decision-making patterns. With age, health needs change accompanying changes in many other needs. Age brings changes to people's lifestyle affecting their needs and personal values. Young people spend relatively more on their lifestyle needs originating from fun and fashion motives. As they grow older, their expenses on these things shrink. Elderly people mostly remain indoor, and their health-related expenses may rise. Thus, age becomes one of the fundamental demographic factors influencing consumer behavior and buying decisions. Age does not just affect the buying behavior, it is also an important factor affecting market segmentation and marketing strategy. Marketers set their target market on the basis of age groups of potential buyers. For example, specific products are marketed only to the millennials. Similarly, there are products meant for the elderly that meet the need of people past their middle ages. Lifestyle gadgets and magazines are mostly marketed to the youth or the millennial generation. The taste of this generation is vastly different and they are more digitally inclined. These affect not just the choice of marketing strategy, but also the marketing channels used to market to them (e.g., Punj, 2011; Dabija et al., 2017; and Rather & Hollabeek, 2021).

Income is another very important factor that affects the buying decision and consumer behavior. Across different income levels, the differences in product choices and buying patterns can be markedly different. A person in the middle class makes his/her buying decisions, based on utility function. Someone in the upper income group would consider style, design and special product features while making a purchase. The channels for the marketing of luxury items are different from those for the essential ones. Luxury items are mostly marketed through luxury magazines. The level of income determines what kind of product someone regularly purchases. A buyer with higher disposable income will relatively spend more on luxury or lifestyle items. People with higher disposable income also spend more on vacations and tours. In addition, customer service and after-sales-support become important factors for big-ticket items. Apart from the above, demographic, psychographic and geographic factors too have an effect on consumer behavior. They deeply impact how people buy and spend. Accordingly, marketing strategy must be devised to achieve higher sales (e.g., Shah et al. 2012; Tully et al., 2015).

Given the profound economic and business importance of the topic, the paper aims at investigating the effects of differences in gender, age and income on retail purchases of various non-durable and durable consumer goods. To elaborate on each of them, between male and female shoppers several characteristics are different impacting thus their buying preferences. They have different needs in terms of fashion and life-style. So, their consumption behaviors in these two product-segments are quite likely to be different. Presumably, this is the difference in needs that lead to differing choices. There are several areas where consumption patterns are similar in terms of food and fun, same fast food brand, and technological gadgets. However, still there are many products in the market that are meant for either of them. Decision making patterns also may vary between them. In most of the households, women jointly influence most of the ultimate expensive durable product selections (e.g., Solomon, 2004; Kotler & Keller, 2012; and Riley, 2012).

The balance of the paper is organized as follows. Section II provides a brief review of related and recent literature since 2000. Section III discusses regional survey data collection process and empirical methodology. Section IV reports results with brief discussions. Section V offers conclusions.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Brief Review of Related and Recent Literature Since 2000

The body of theoretical and empirical literature on consumer behavior and buying decisions is vast and expansive. To be brief, consumers buy items to satisfy their basic needs and other desires. Consumer behavior is much more than studying what consumers buy. It attempts to understand how the decision-making process goes and how it affects consumers' buying behavior (Solomon, 2004). Marketers study consumer buying patterns to find where they buy, what they buy and why they buy. However, why consumers buy a specific product is not that easy to understand because the decision-making is deeply rooted in the consumers' mind (Kotler & Armstrong, 2009; Kardes et al., 2011). Generally, consumers can be categorized as individual and organizational. Individual consumers seek to satisfy their own needs by purchasing for themselves or to satisfy the needs of others. These individual consumers can come from different backgrounds, ages and life stages (Kardes et al., 2011).

A consumer's buying behavior is influenced by cultural, social, personal and psychological factors. Consumer behavior is a part of human behavior. By studying previous buying behavior, marketers can estimate how consumers might behave in the future when making purchasing decisions (Kotler & Armstrong, 2009). Social factors also significantly affect consumer behavior. An individual may have someone around influencing his/her buying decisions. The important social factors include reference groups, family role and status (Perreau, 2014).

Family members can influence individual consumer's buying behavior. A family forms the environment for an individual to acquire values, develop and shape personality. This environment offers the possibility to develop attitudes and opinions towards several subjects such as social relations, society and politics. A family creates first perceptions about brands or products and consumer habits (Khan, 2006; Kotler & Armstrong, 2009).

Individuals play many different roles in their lives. Each role consists of activities and attitudes that are expected from an individual to perform according to the persons around him/her (Kotler & Armstrong, 2009).

Consumers' behavior changes during their life-cycle and buying of products alter depending on age and stage of life. Age related factors are such as taste in food, clothing,

recreation and furniture. Moreover, environment, values, lifestyle, hobbies and consumer habits evolve during lifetime. Family life stages change purchasing behavior and brand selection. Traditionally, a family life-cycle includes only young singles and married couples with children. Nowadays, marketers are focusing on alternative non-traditional stages, such as, unmarried couples. A consumer's occupation and purchasing power influence purchasing decisions and buying behavior. The income level affects what consumers can afford and the perspective towards money (Solomon, 2004).

Consumer's life-style tells how the person lives and spends money. It is combined from earlier experiences, current situation and congenital characteristics. The product choices that consumers make are related to their life-style. An individual's life-style consists of different life-style dimensions (Khan, 2006).

Consumers mostly indulge in shopping due to underlying psychological motivations. Accordingly, behavior turns out into rational buying, impulsive buying or compulsive buying (Penman & McNeill, 2008). Consumers engage in buying process to fulfill different desires, such as, to have a change in mood or self-esteem (Dittmar & Durry, 2000).

One of the fundamental issues in purchasing behavior is the way customers develop, adopt, and use decision-making strategies (Moon, 2004). Accordingly, marketers endeavor to offer a product, consistent with the needs and preferences of consumers (Kotler & Keller, 2012). The traditional purchase behavior model depends on a series of cultural, social, personal, psychological factors, etc., among which age and gender have been considered in various studies (e.g., Estiri et al., 2017; Naeem, 2019; Nejati et al., 2011).

Consumer behavior includes all aspects of purchase, use and disposal of products and services. As Kotler & Keller (2012) opine, individuals or groups buy, use and dispose of goods, services, ideas and experiences to satisfy their needs. To understand consumers' buying decision and behavior, it is important to know how different types of consumers make buying decisions, based on the level of involvement and the ability to perceive significant differences among brands. Hawkins & Mothersbaugh (2010) define the term buying involvement as the degree of interest a consumer possesses in buying a product or service. Kotler & Armstrong (2018) describe consumers' buying decision behavior as 1) complex buying behavior, that refers to consumers' high purchase involvement and their ability to perceive significant differences among brands, 2) dissonance – reducing buying behavior, that refers to consumers' high purchase involvement and their inability to perceive significant differences among brands, 3) habitual buying behavior, that refers to consumers' low purchase involvement and their inability to perceive significant differences among brands, and 4) variety-seeking buying behavior, that refers to consumers' low purchase involvement and the ability to perceive significant differences among brands (Palalic et al., 2020).

Gender differences can affect consumer decision-making approaches and the difficulty of decision-making. Gender differences also affect behaviors and attitudes. There are also differences in the responses of males and females to advertising in marketing (Haji & Stock, 2021). Males and females have different paths in data processing and in evaluating their services. Females are more likely than males to have negative evaluations of services since females consider more value for negative information (Pinar et al., 2017; Emami & Naderi, 2018). Moderating the gender effect can be explained by social role theory and evolutionary psychology. Furthermore, studies reveal that males show a higher tendency to conscientiousness and being systemic in taking risks than females (Rahman et al., 2018). As the saying goes, "females shop and males buy".

Age matters since it affects consumption patterns and is also associated with several important social and psychological factors, such as, family size, income and self-knowledge (Pun, 2011). Thus, service providers should consider age and gender in designing their services (Ying et al., 2013; Dabija et al., 2017; and Rather & Hollebeek, 2021). Purchase decisions are the results of a long and detailed process that may include a broad information search, brands comparison, and evaluation. Marketers' success in influencing purchase behavior depends to a large extent on how well they understand consumer behavior. Marketers need to know the specific needs customers try to satisfy and how they turn it into purchase attributes. So, they need to understand how consumers gather information about different alternatives and use this information to select among competing brands (Belch & Belch, 2009). To add, marketing decisions are based on assumptions and knowledge of consumer behavior (Hawkins et al., 2007).

A consumer's decision-making process goes through five steps before the actual purchase. In these stages, the consumer recognizes the need, gathers information, evaluates alternatives and makes the purchase decision. After the actual purchase, post-purchase behavior comes into play to evaluate the received satisfaction level. (Kotler & Armstrong, 2010) suggest that the consumer can skip a few stages during a routine purchase. However, when a consumer faces a new and complex purchase situation, all of these five stages need to be used to complete the buying process.

Financial constraints shift the consumer's attention to money (Mullainathan & Shaffir, 2013) and change the way they use this scarce resource (Shah et al., 2012). Literature on choice restriction focuses on how financial constraints limit consumption of products and services that consumers need (Botti et al., 2008). Literature on social comparison emphasizes the role of financial constraints in shifting consumers' motivations (Snibbe & Markus, 2005; Stephens et al., 2007) and attention (Piff et al., 2010). Finally, literature on environmental uncertainty suggests that financial constraints shift the way consumers interact with their environment (Mittal & Griskevicius, 2014). Opportunity costs may be more psychological salient for consumers facing scarcity (Spiller, 2011; Shah et al., 2015), though other evidence suggests that low- and high-income consumers are equally likely to spontaneously consider opportunity costs (Plantigna et al., 2018).

III. RESEARCH METHODOLOGY

3.1. Data Collection Process and Empirical Methodology

The primary data were collected from randomly selected adults living in different parts of the southwest region of the state of Louisiana in 2019. Twenty students helped data collection from the areas of their residence. Each student was given fifty questionnaires. They conducted face-to face interviews to administer the questionnaires. They were briefed to explain the importance of the research survey and to assure each respondent of his/her anonymity and strict confidentiality of information, as provided. The survey questionnaire was limited to in-store purchases of selected non-durable and durable goods.

One-point pre-testing was performed giving questionnaires to similar respondents for testing appropriateness, reliability and validity of the questionnaire. Out of 1,000 questionnaires, 350 were received completed. The authenticity of the information was independently verified by randomly contacting 20 percent of the 350 respondents living in various parts within the region. Later on, purchased items in each broad category are tabulated across buyers' gender, age and income groups.

In this study, the well-known X^2-tests are implemented for statistical independence between non-durable as well as durable purchased items and buyers' above demographic attributes. The formula to compute X^2-statistic is as follows,

$$\chi^2 = \sum \left[\frac{(f_0 - f_e)^2}{f_e} \right] \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad \textbf{1}$$

Where:

f_0 = observed frequency.

f_e = expected frequency, and

$f_e = \frac{\text{row total} - \text{column total}}{\text{total table}}$ in any cell of a two-way frequency table.

The degrees of freedom for the chi-square test are calculated using df= (r-1) (c-1), where r is the number of rows and c is the number of columns. If the observed chi-square test statistic is greater than the critical value at the conventional level of significance (1% or 5% or 10%), the null hypothesis is rejected.

The X^2-test is used for statistical significance since it is unique among the possible measures of fit in structural equation modeling (SEM). This consists of a single value. Moreover, it is an objective and useful metric for small sample of categorical variables (Schumacker & Lomax, 2010).

To note, the sample sizes/frequencies in each cell and total frequencies in Tables 1A through 3B in this study are different. As none of the expected frequencies in any cell of any contingency Table cell are below 10 or 5, it is not necessary to use Yates (1934) correction factor of (-0.5) in the above formula to calculate X^2-statistic (Camilli & Hopkins, 1979; Thompson, 1988). In other words, the usual X^2-statistic is applicable to each Table with different sample size (Hitchcock, 2009).

As for descriptive statistics to summarize distributions of particular categorical variables means cannot be calculated and hence standard deviations cannot be calculated, as they are applicable to quantitative data sets. Likewise, median cannot be calculated either, amid a few others. In that case, mode and proportions can be calculated, but they can be misleading in data contextuality https://stats.stackexchange.com/questions/32813/what-summary-statistics-to-use-with-categorical-or-qualitative-variables.

IV. RESULTS AND DISCUSSIONS

Table-1A below reports the observed frequencies of purchased items in non-durable category by male and female shoppers.

Table 1A

Purchases of Non-Durables by Gender

Non-Durables	Male	Female
Groceries	21	160
Clothing	15	171
Electronics	108	37
Utilities	57	75
Medicines	22	109
Toys	30	103
Chi-square Stat	242.134	

As observed above, female shoppers are much more involved in buying groceries, clothing, medicines and toys than male shoppers. Electronic products are primarily purchased by male shoppers. Both participate almost evenly in buying utility products. X^2-test is appropriately conducted for the above categorical variables as follows:

H$_0$: null hypothesis, purchases of different non-durable goods are independent of buyer's gender.

H$_a$: alternative hypothesis, purchases of different non-durable goods are not independent of buyers' gender.

The computed value of X^2-statistic is 242.134 that is much higher than its critical values with 5 degrees of freedom at 15.1, 11.1 and 9.24 at 1%, 5% and 10% levels of significance, respectively. Hence, the above null hypothesis is rejected providing clear evidence in favor of the alternative hypothesis. In this case, female shoppers dominate purchases of essential non-durable consumer goods.

Table 1B reports similar information for durable goods that are usually purchased individually and jointly as follows:

Table 1B
Purchases of Durables by Gender

Durables	Male	Female	Jointly
Automobile	200	63	45
Computer	137	77	68
Furniture	168	23	104
Major Household Appliances	199	32	63
Chi-Square Stat		80.655	

The above table shows that the male shoppers play a much greater role in purchasing all the above big-ticket durable consumer goods than female shoppers. In some instances, both make joint buying decisions in mutual consultation and consent. The X^2-test is implemented as follows:

H$_0$: purchases of durable consumer goods are independent of buyers' gender.

H$_a$: purchases of durable consumer goods are not independent of buyers' gender.

The computed X^2-statistic at 80.655 far exceeds the critical values of 16.8, 12.6 and 10.6 with 6 degrees of freedom at 1%, 5% and 10% levels of significance, respectively. Again, this comparison clearly rejects the null hypothesis in support of the alternative hypothesis. In this case, male dominance is evidenced in purchases of major durable goods. So, in-store retailers in this region ought to focus relatively more on male shoppers for sales promotion of major durable goods.

Table 2A reports observed frequencies for purchases of non-durable goods by shoppers in active-age (15-64) years group and retirees (65 years +) as follows:

Table 2A
Purchases of Non-Durables by Age

Non-Durables	(15–64) years	65 years +
Groceries	215	62
Clothing	211	60
Electronics	204	57
Utilities	210	57
Medicines	204	59
Toys	180	49
Chi-Square Stat	0.171	

Consumers in working-age group are predominantly the buyers of essential non-durable consumer goods. This is so because of relatively high income and large family sizes, as opposed to those of retired elderly shoppers. However, the sample size of working-age shoppers is much larger than shoppers who are 65 years old and beyond. The X^2-test is applied as follows:

H_0: purchases of essential non-durable consumer goods are independent of the above age groups.

H_a: purchases of essential non-durable consumer goods are not independent of the above age groups.

The computed X^2-statistic with 5 degrees of freedom at 0.171 is much less than 15.1, 11.1 and 9.24 at 1%, 5% and 10% levels of significance, respectively. Thus, shoppers' age differences do not matter much for purchases of daily basic necessities of life. However, the sales volumes depend on the population size in each age-group.

Similarly, observed frequencies of purchases of durable goods by active-age shoppers and retirees are reported in Table 2B as follows:

Table 2B
Purchases of Durables by Age

Durables	(15-64) Years	(65+) Years
Automobile	239	69
Computer	221	61
Furniture	229	66
Major Household Appliances	230	64
Chi-Square Stat	0.082	

In the case of the above different durable consumer goods, working-age shoppers at the early stages of life-cycle dominate the retirees in purchases. As observed, the respondents in the working-age far exceed those in (65+) age group. However, their shopping affinity and need may likely be similar. The X^2-test is applied as follows:

H_0: age differences do not matter in purchases of durable goods.

H_a: age differences matter in purchases of durable goods.

The X^2-statistic is 0.082 that is far less than the critical values, as stated earlier. So, the null hypothesis cannot be rejected. Perhaps, this is due to the common nature of necessity of the durable goods as listed in this study. In this case too, age differences do not matter in regard to what shoppers buy.

Table 3A presents the observed frequencies of purchases of non-durable goods by shoppers with less than annual average per capita real income and above that as follows:

Table 3A
Purchases of Non-Durables by Income

Non-Durables	Income ≤ $26,000	Income > $26,000
Groceries	32	244
Clothing	31	239
Electronics	30	230
Utilities	30	236
Medicines	30	232
Toys	27	202
Chi-Square	0.035	

Annual average per capita real income at $26,000 is the 5-year average from 2014 to 2018 in Louisiana that is less than the national average. The sample size is much larger for above average income shoppers than below average income shoppers by a few thousand dollars. Both groups of shoppers have similar needs for the necessary non-durable goods. The X^2-test is applied as follows:

H_0: below and average annual income earners do not matter what shoppers buy in this category of consumer goods.

H_0: below and average annual income earners do matter what shoppers buy in this category of consumer goods.

The computed X^2-statistic at 0.035 is far below the critical values. So, the null hypothesis cannot be rejected. In other words, shoppers' purchases of the listed items are independent of their annual income levels because both require them to satisfy basic needs.

Finally, Table 3B presents similar information for purchases of durable goods as follows:

Table 3B
Purchases of Durables by Income

Durables	Income ≤ $26,000	Income > $26,000
Automobile	52	255
Computer	44	237
Furniture	48	246
Major Household Appliances	47	246
Chi-Square Stat	0.190	

Similar pattern is observed here as in the Table 3A. Again, the computed X^2-statistic at 0.190 is far less than the critical values, as earlier. Thus, the null hypothesis cannot be rejected. This means that differences in shoppers' annual income levels do not matter for the purchases of the above durable goods. This is so because of the nature of the goods.

V. CONCLUSION

This study concludes that gender differences emerge as the most important factor in deciding which items shoppers are likely to buy in the lists of non-durable and durable consumer goods. Differences in age and annual per capita real income appear not to have discernible influences on which items shoppers are likely to purchase. These inferences, however, may not be valid on a national scale, given the extremely small regional primary data set and the region-specific demographic characteristics of shoppers.

As for implications, in-store retail marketing strategies should have greater intense focus on gender differences of buyers to retain sales in the age of surging larger digital shopping and marketing of products. Despite the findings of this paper, age and income levels of shoppers should also receive due attention for broader retail marketing strategies.

In closing, the inferences of this study should be weighed with due caution because of its extremely narrow regional scope and very limited purchase items, as listed in non-durable and durable consumer goods categories. The listed items in both categories deem to be of basic necessities. So, differences in shoppers' age and income do not appear to matter much for what they buy in this particular region.

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