

Project Dissertation Report on

**ANALYSIS OF CONSUMER SPENDING
BEHAVIOUR ON ESSENTIAL SANITATION
PRODUCTS DURING AND POST COVID-19 AND
THE FACTORS INFLUENCING IT**

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CERTIFICATE

This is to certify that **Tanishqa Sharma**, roll no. **24/DMBA/246** has submitted the major research project report titled “ **Analysis of Consumer Spending Behaviour on Essential Sanitation Products During and Post COVID-19 and the Factors Influencing it**” in partial fulfillment of the requirements for the award of the degree of **Master of Business Administration (MBA)** from **Delhi School of Management, Delhi Technological University, Delhi** during the academic year **2025-2026**.

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DECLARATION

I, Tanishqa Sharma, hereby affirm that the major research project titled, “Analysis of Consumer Spending Behaviour on Essential Sanitation Products During and Post COVID-19 and the Factors Influencing it” is my original work and that it accurately reflects my research. I conducted all the research and analyzed all the data for this report.

I certify that all references and citations for any outside sources used followed the rules and were done so correctly. I declare that I have not submitted this report for review in any other course or programme, and that I am aware of the consequences of providing incorrect information in school.

Regarding the veracity and reliability of the information contained in this report, I assume full responsibility.

Signature:

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Tanishqa Sharma

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I express my heartfelt gratitude to all who contributed to the completion of my research project, *Consumer Spending Behaviour on Essential Sanitation Products During and Post COVID 19 and the Factors Influencing it*.

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With sincere appreciation.

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EXECUTIVE SUMMARY

The Corona Virus outbreak had an enormous impact on consumer behaviour across the whole globe, in terms of sanitary products and hygiene. The products such as face masks, hand sanitizers, hand wash, disinfectants and personal protective equipments (PPEs), which were earlier used sporadically now became a necessity in time of the pandemic. This study, “Analysis of Consumer Spending Behaviour on Essential Sanitation Products During and Post COVID-19 and the Factors Influencing it” is focused on examining the alterations and changes in spending done by consumers during and after the COVID pandemic along with finding out the major factors which are mostly responsible for such changes.

The central purpose and objective of the study was to examine various differences in the patterns of buying by consumers and their intentions for future usage. This study intended to explore the awareness, income effects, price sensitivity, and health risks on the spending on hygiene and sanitation products. It also intended to examine whether the hygiene practices emerged into continuous behaviour post COVID.

An exploratory mixed method was adopted to conduct this research. Structured questionnaire was used for data collection. The total number of respondents were 141 from different regions of India and majority were students ranging in the age bracket of 17-25 years. The survey collected the data which focused on purchase behaviour, price perceptions, patterns of usage, and intention of future usage towards sanitation products. Various statistical tools like Repeated Measures ANOVA, Chi - Square Test of Independence, and Independent Samples T-Test were applied in evaluating the changes in behaviour.

Conclusion of the study suggests that due to the COVID-19 pandemic, there occurred a major rise in the expenditure and consumption of sanitary products. The frequency of purchase for products such as face masks, hand washes, hand sanitizers and disinfectants increased during the pandemic phase. Consumers showcased panic buying behavior, along with increasing awareness of health, led to a spike in purchasing patterns for face masks and sanitizers on both daily and weekly basis.

Additionally, it was discovered in the study that the income level is one of the key factors in influencing the purchasing behaviour of consumers with regards to the sanitation products. Consumers having high levels of income showed greater purchase frequency and they continued to spend more on hygiene products even after the pandemic. In comparison, consumers having lower income spent lesser on sanitation products due to sensitivity to price and affordability factors.

The post pandemic results illustrates and shows a shift to the normal consumer behaviors. However, the sense of urgency for sanitation products which was showcased during the pandemic decreased. The consumers continue applying hygiene principles because of greater awareness of health and preventive measures. The study revealed that 40.4% of people surveyed claimed to continue using the same number of sanitation products even after the pandemic ended; while 36.2 % stated that they cut down the usage of sanitizers. In addition, 23.4% of people surveyed stated that use of sanitation products depends on emergencies and health requirements.

The research showed that COVID-19 pandemic period caused major changes in consumer behaviors in the sanitation industry, yet, not all of these behaviours were long lasting. Rather, a mixed behavior pattern emerged, where some practices of hygiene remained while others ceased with time. It was found that the main determinants of consumer behavior regarding sanitation during and after the pandemic are the affordability, perceived necessity, health consciousness and the state of the economy. The results obtained serves as a valuable basis for business and other relevant stakeholders when they design their awareness and pricing policies with respect to emergencies in future.

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ABSTRACT

This paper studies the changes in consumer spending patterns on essential sanitation products in two phases – during COVID-19 and post-COVID-19, and aims to present the key socioeconomic and behavioural factors affecting the changes. Mixed methods research was used to collect and analyze primary data from 141 respondents from India to understand the frequency of purchases, expenditure and changes in price. Statistical tests (Chi-square) showed behavioural changes. The purchase of hand sanitizers increased by 38% during the pandemic, and monthly spending of >₹1,000 reached 34% during the peak. After the pandemic, 36.2% of consumers cut back on their use, but 40.4% continued to be heavy consumers. Key drivers were hygiene awareness (20.7% respondents) and income levels. Barriers to long-term adoption were cost (13%) and inconvenience (7.2%). This study further emphasizes on habit evolution in a pandemic and carries implications for practice in terms of optimizing the effectiveness of pricing, public health policy and supply chain management. Further, it adds to the study by interpreting trends in post-pandemic normalization and demographic-specific responses, especially in young adults. This implies that interventions which are focused on specific groups can sustain hygiene practices without increase in the economic burden.

Keywords: Pandemic, Consumer spending behaviour, COVID-19, Sanitation products, Spending Patterns, Pandemic Adaptation

CHAPTER-1

INTRODUCTION

1.1 Background and Context

The emergence of the COVID-19 pandemic had affects on the socio-economic status of the consumers across the globe by having major impacts on their lifestyles, consumption patters and values. The situation led to an environment which was characterised by fear, instability and uncertainty which led the consumers to reconsider their spending habits and consumption practices. The governments in various countries initiated measures like lockdown, social distancing and mobility restrictions to manage and control the rapid transmission of coronavirus. Although, these measures were crucial in controlling the pandemic, they had adverse impacts on employment levels, supply chains, retailing, and buying behaviors of the consumers.

The other effect of the pandemic has been an increase in the purchase of items used for sanitation and hygiene. During this period, products like disinfectants, gloves, handwash, face masks, sanitizers and PPEs also gained importance as essential items which were needed for survival, safety and protection from the infection. These products which were earlier occasionally consumed were now perceived important and regular use products for safety reasons. Therefore, the expenditure on sanitation products has increased massively during the peak periods of the virus.

Due to the pandemic, there was significant changes in the spending pattern of conventional and traditional households. There was a serious cut down in spendings on items like vacations, clothing, luxury goods and entertainment. There was a sudden surge in expenditure on healthcare and hygiene products. This was a direct reflection of the changes in the preference of consumers towards protection of their health and also, reducing all kinds of risks.

India was majorly impacted during the pandemic by these change of trends in consumption in a very different way owing to the nature of its diverse population and varied awareness levels regarding issues related to hygiene and health. Consumers living in the urban areas were heavily surrounded by information through social media and digital media. Also, there was huge number of layoffs and unemployment levels increased which led to uncertainty of income which further posed a major challenge for purchasing sanitation products for many.

The sanitation products market experienced unprecedented growth during the pandemic. Pharmaceutical companies, FMCG manufacturers, local businesses, and even non-traditional producers entered the hygiene market to meet rising consumer demand. However, the sudden spike in demand also resulted in shortages, panic buying, price fluctuations, and uneven distribution across regions. This environment created a unique opportunity to examine how consumers adapted their purchasing behaviour under crisis conditions and whether these changes persisted after the pandemic subsided.

The present study seeks to understand how consumer spending behaviour on essential sanitation products evolved during and after COVID-19, along with the key psychological, social, and economic factors influencing these behavioural changes. The research particularly focuses on purchasing frequency, expenditure patterns, future usage intentions, barriers to continued use, and the normalization of hygiene-related consumption in the post-pandemic period.

Hand sanitizers, disinfectants, and soaps became the first line of defence against the virus due to the COVID-19 epidemic, which drastically changed everyday life. Due to fear and uncertainty, panic shopping caused stores worldwide to empty their shelves as families heaped up necessities. The crisis increased the significance for demand of hygiene goods and brought about long-lasting changes in consumer behaviour. Studies that have already been done emphasize the brief increases that occurred during the pandemic, but only a few of these examine how these changes evolved across during-pandemic, and post-pandemic phases or the underlying socioeconomic factors that caused them. Because of this disparity, companies and legislators are unprepared to adjust to long-term changes in the market.

1.2 Changes in Consumer Spending Behaviour

Consumer behaviour refers to the process through which individuals select, purchase, use, and evaluate goods and services to satisfy their needs and wants. Under normal market conditions, purchasing decisions are generally influenced by factors such as price, quality, brand image, personal preferences, income levels, and social influence. However, during periods of crisis and uncertainty, consumer behaviour undergoes substantial transformation.

Crisis situations such as pandemics, natural disasters, wars, and economic recessions create psychological stress and uncertainty among consumers. In such circumstances, purchasing behaviour becomes heavily influenced by fear, risk perception, and survival instincts. Consumers tend to prioritize essential commodities and health-related products while reducing spending on non-essential items. This behavioural response is commonly associated with precautionary purchasing and panic buying.

During the COVID-19 pandemic, consumers across the world displayed significant behavioural shifts characterized by stockpiling, bulk purchasing, and increased spending on hygiene products. Fear of shortages, concerns regarding infection, and uncertainty about future availability encouraged consumers to purchase larger quantities of sanitation products than usual. Media reports showing empty supermarket shelves and rising infection rates further intensified this behaviour.

Behavioural economics provides important insights into such actions. The scarcity heuristic suggests that consumers assign greater value to products perceived to be scarce or difficult to obtain. Similarly, herd behaviour explains how individuals imitate the purchasing decisions of others during uncertain situations. When consumers observed others buying sanitizers and masks in large quantities, they were more likely to engage in similar behaviour regardless of actual necessity.

The pandemic also influenced emotional decision-making. Under normal circumstances, consumers may evaluate products based on utility and affordability. During COVID-19, however, purchasing decisions became closely linked with emotional security and perceived safety. Sanitation products symbolized protection against the virus and therefore acquired psychological importance beyond their functional value.

The concept of risk perception also played a major role during the pandemic. Consumers who perceived COVID-19 as a severe health threat were more likely to increase their spending on hygiene-related products. Risk perception varied across demographic groups based on age, education, access to information, occupation, and prior health awareness. Consequently, behavioural responses differed among consumers despite facing the same external crisis.

Another important dimension of crisis-driven consumer behaviour is habit formation. Repeated use of sanitation products over an extended period contributed to the development of new routines and hygiene practices. While some of these habits declined after the pandemic, others persisted and became integrated into daily consumer lifestyles. Understanding whether these behavioural changes are temporary or long-lasting forms an important component of post-pandemic consumer research.

When health concerns took precedence over price sensitivity, consumer expenditure on sanitation products first skyrocketed. For example, as costs increased, middle and lower income households chose generic sanitizers because they were more affordable than brand-name loyal. At the same time, households with greater income made investments in high-end items because they believed they were safer. However, post-pandemic data shows a more nuanced picture: some consumers continued to follow more hygienic behaviours because of lingering health consciousness, while others returned to their pre-crisis routines. Regional disparities further complicate this picture—urban areas with greater access to information sustained higher sanitation spending

compared to rural regions.

1.3 Growth of Essential Sanitation Product Consumption

Before the COVID-19 pandemic, sanitation products such as hand sanitizers, disinfectants, and face masks were used primarily in hospitals, healthcare institutions, industrial environments, and limited urban households. Consumer awareness regarding preventive hygiene existed but was not widespread. Most households relied on traditional cleaning products and considered advanced sanitation products as optional purchases rather than everyday necessities.

The emergence of COVID-19 dramatically transformed this perception. Public health organizations such as the World Health Organization (WHO) and national governments strongly promoted hygiene practices including hand washing, sanitization, surface cleaning, and mask usage as essential preventive measures. Continuous media coverage and awareness campaigns further increased public attention toward hygiene-related products.

As infection rates increased globally, the demand for sanitation products surged rapidly. Consumers began purchasing hand sanitizers, masks, disinfectants, gloves, and PPE kits in unusually large quantities. Retailers experienced frequent stockouts due to panic buying and supply chain disruptions. Many consumers shifted from occasional purchasing to regular and bulk procurement of hygiene products.

The sanitation products industry witnessed substantial expansion during this period. FMCG companies diversified their product portfolios to include sanitization products, while pharmaceutical companies increased manufacturing capacity to meet demand. Several local businesses and startups also entered the market, resulting in intensified competition and product innovation. Product variations such as herbal sanitizers, pocket sanitizers, reusable masks, disinfectant sprays, and touch-free hygiene products became increasingly common.

Despite this growth, consumers also faced multiple challenges during the pandemic. Price inflation, counterfeit products, inconsistent quality standards, and supply shortages created barriers to accessibility. Many households, particularly those from lower-income groups, struggled to maintain sustained spending on sanitation products due to financial constraints. These economic and logistical difficulties significantly influenced purchasing behaviour and future consumption intentions.

The post-pandemic period introduced another important transition. As infection rates declined and restrictions eased, the urgency surrounding sanitation purchases reduced for many consumers. However, certain hygiene practices continued due to increased awareness regarding

disease prevention and public cleanliness. The extent to which sanitation consumption normalized after COVID-19 remains an important area of investigation within consumer behaviour research.

1.4 Psychological Drivers of Panic Buying

One of the defining behavioural phenomena observed during the COVID-19 pandemic was panic buying. Panic buying refers to the sudden and excessive purchase of products in response to perceived threats, emergencies, or uncertainty regarding future availability. During the pandemic, panic buying was observed globally across categories such as sanitizers, masks, medicines, food items, and household essentials.

Panic buying is primarily driven by psychological and emotional factors rather than rational consumption needs. Fear and anxiety increase consumers' desire for control during uncertain situations. Purchasing essential goods provides individuals with a sense of preparedness and psychological security, even if the quantity purchased exceeds actual requirements.

The media played a significant role in amplifying panic buying behaviour. Continuous reporting of rising infection rates, lockdown announcements, and empty retail shelves created a perception of scarcity among consumers. Social media further accelerated this process through viral images and discussions regarding shortages and stockpiling behaviour.

Another important factor influencing panic buying is herd mentality. Consumers often rely on social cues when making decisions under uncertainty. Observing others purchasing products in bulk creates pressure to imitate similar behaviour, resulting in collective over-purchasing and artificial shortages.

Behavioural theories such as Protection Motivation Theory explain how perceived threats motivate individuals to adopt preventive actions. In the context of COVID-19, sanitation product purchases were interpreted as protective measures against infection. Consumers therefore perceived hygiene expenditure not merely as consumption but as an investment in personal safety and family well-being.

Although panic buying declined after the pandemic stabilized, its long-term effects remain important. The experience influenced consumer trust, inventory management practices, retail strategies, and public awareness regarding hygiene preparedness. Understanding the psychological mechanisms behind panic buying can therefore help businesses and policymakers manage future crisis situations more effectively.

1.5 Consumer Spending Behaviour and Economic Influence

Consumer spending behaviour refers to the pattern through which individuals allocate financial resources toward products and services based on their needs, preferences, income, and external influences. The COVID-19 pandemic significantly altered household expenditure structures by shifting financial priorities toward healthcare and sanitation-related spending.

Economic uncertainty emerged as a major determinant of spending behaviour during the pandemic. Job losses, salary reductions, business disruptions, and inflation affected household purchasing power across different income groups. As a result, consumers became increasingly price-sensitive and selective regarding their purchases.

Lower-income households focused primarily on affordability and basic hygiene protection, whereas higher-income consumers displayed greater willingness to spend on premium and branded sanitation products. Educational background and health awareness also influenced spending behaviour. Consumers with greater access to health information were more likely to sustain expenditure on hygiene products even after the pandemic.

The concept of perceived utility became highly relevant during COVID-19. Consumers evaluated sanitation products not only in terms of functional utility but also psychological reassurance. Products offering higher perceived protection against infection often justified increased expenditure despite price inflation.

Price sensitivity and product accessibility further influenced long-term consumption behaviour. While some consumers continued maintaining elevated hygiene standards after the pandemic, others gradually reduced expenditure due to declining perceived risk and financial limitations. This demonstrates the interaction between economic conditions and behavioural adaptation in shaping post-pandemic consumer spending patterns.

1.6 Post - COVID Behavioural Transition

As vaccination rates increased and infection levels gradually declined, consumer behaviour began transitioning toward normalization. However, this transition did not indicate a complete return to pre-pandemic habits. Instead, consumers displayed varying degrees of behavioural adaptation based on personal experiences, health concerns, and socio-economic conditions.

Certain consumers continued using sanitation products regularly due to sustained awareness regarding hygiene and disease prevention. Others reduced consumption because of declining perceived risk, financial concerns, or convenience-related barriers. This created a mixed pattern

of post-pandemic behaviour characterized by partial normalization and selective continuation of hygiene practices.

The concept of behavioural persistence becomes important in this context. Repeated use of hygiene products over an extended period contributed to habit formation among many consumers. Some practices, such as carrying hand sanitizers or maintaining personal hygiene awareness, became integrated into everyday routines even after restrictions ended.

At the same time, hygiene fatigue emerged among certain groups. Continuous exposure to pandemic-related precautions resulted in reduced motivation to maintain strict hygiene practices once the immediate threat appeared to decline. This demonstrates that long-term behavioural sustainability depends not only on awareness but also on convenience, affordability, and perceived necessity.

The transition from crisis-driven consumption to normalized purchasing behaviour represents a critical area of post-pandemic consumer research. Understanding this transition can help businesses forecast future demand patterns and assist policymakers in designing effective public health awareness strategies.

1.7 Indian Market Perspective

India presents a unique context for studying sanitation-related consumer behaviour due to its demographic diversity, varying income levels, and evolving healthcare awareness. During the pandemic, Indian consumers experienced substantial changes in purchasing priorities, especially regarding hygiene and preventive healthcare products.

Government initiatives such as public hygiene campaigns, mask mandates, and awareness drives encouraged sanitation product usage across both urban and rural populations. The pandemic also accelerated the growth of domestic manufacturing under initiatives promoting self-reliance and local production.

Urban consumers generally demonstrated higher purchasing frequency due to greater digital exposure, higher income levels, and easier product accessibility. Rural areas, however, faced challenges related to affordability, distribution, and awareness. These regional differences significantly influenced spending behaviour and product adoption patterns.

India's large middle-class population also played a critical role in driving sanitation product demand. Rising health consciousness, coupled with fear of infection, encouraged consumers to prioritize hygiene expenditure despite economic uncertainty. Nevertheless, post-pandemic normalization patterns varied considerably across socio-economic groups, highlighting the importance of demographic analysis in understanding consumer behaviour.

1.8 Study Objective and Methodology

Using a mixed-methods approach, this study analyzes the behavioural changes by fusing sales patterns from 2020–2024 with survey data from a variety of demographic groups. The goal of the study is to give stakeholders useful information by examining psychological factors, including fear, market adaptability, and socioeconomic effects.

1.9 Key Insight and Importance of the Study

This study holds significance for multiple stakeholders including businesses, policymakers, healthcare organizations, and researchers. For marketers and FMCG companies, understanding post-pandemic consumer behaviour can help in designing effective pricing strategies, product positioning, and demand forecasting models. Insights regarding price sensitivity, purchasing motivations, and future usage intentions can support long-term business planning.

For policymakers and public health institutions, the study provides valuable understanding regarding hygiene awareness and behavioural sustainability. Such insights can assist in developing awareness campaigns and preparedness strategies for future health emergencies.

Academically, the study contributes to the growing literature on crisis-driven consumer behaviour, behavioural adaptation, and post-pandemic normalization. By combining behavioural, demographic, and economic perspectives, the research offers a broader understanding of how health emergencies reshape household consumption patterns over time.

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1.10 Structure and Research Gaps

The introduction proceeds as follows: it first places the immediate effects of the pandemic on sanitation costs in context. It then points out the gaps in the literature, especially the absence of regional and longitudinal assessments. It concludes by summarizing the study's methodology and contributions, highlighting its emphasis on equality and sustainability in post-pandemic consumer behaviour.

Although several studies have examined panic buying and hygiene consumption during the COVID-19 pandemic, existing literature primarily focuses on the immediate behavioural response during crisis periods. Limited research has explored whether these behavioural changes persisted after the pandemic and how consumers adapted their spending patterns in the long term.

Many existing studies also focus on developed economies, leaving significant gaps regarding consumer behaviour in emerging markets such as India. Additionally, previous research often emphasizes general consumer behaviour without specifically analyzing sanitation product expenditure, future usage intentions, demographic influences, and normalization trends.

The present study attempts to address these gaps by examining consumer spending behaviour across pre-COVID, during-COVID, and post-COVID phases while also analyzing the factors influencing future sanitation product usage among Indian consumers.

1.11 Literature Gaps and Study Scope

The COVID-19 pandemic triggered unprecedented shifts in consumer behaviour, particularly in hygiene product consumption. While prior studies (Sheth, 2020; Laato et al., 2020) documented panic buying and stockpiling during crises, limited research examines long-term behavioural changes post-pandemic. This study addresses three gaps:

Temporal Dynamics: Most literature focuses on acute pandemic phases, neglecting post-crisis normalization.

Demographic Specificity: Existing data often overlook young adults, a critical demographic for habit formation.

Economic Drivers: Few studies correlate income levels and price sensitivity with sustained sanitation spending.

1.12 Research Contribution

By analyzing purchasing frequency, expenditure, and barriers across 141 Indian respondents, this research provides a granular view of how pandemic-induced behaviours evolve, offering strategies for stakeholders to balance public health and economic feasibility.

LITERATURE REVIEW

2.1 Introduction

Across the two stages of the COVID pandemic, consumer behaviour changed significantly. The different phases of the global pandemic COVID-19 were divided into the lockdown period and post-COVID recovery phase. Research findings from multiple case studies and surveys explained the actual driving factors behind consumer spending behaviour changes, specifically from India and Romania. The aim is to understand what changed, why it changed, and which factors played the most significant role in driving those shifts. The goal is to grasp the changes and identify the key factors that drove these shifts.

2.2 Pre-COVID and Lockdown Behaviour in India

Before COVID-19, most shoppers followed a steady buying routine. They purchased fruits, veggies, grains, and other home goods every week or more often. But when COVID-19 struck, fear and doubt became the main concerns. A study in India by Dr. Rajeswari & Dr. C. Vijai (2020) found that buyers started to focus more on basics like fruits and veggies than they did before. As COVID-19 was spreading, people started buying in panic. This happened because they were scared of running out of things, believed false info from different sources, and felt unsure about what would happen next. This led people to stock up on essential items often not caring about prices or brands. Also, worries about germs caused many more people to pay . During the lockdown, Dr. Gopal R. Patil (2022) conducted a study across 20 Indian states. Their research showed that people started to buy more on each trip but shopped less often. While big stores were facing troubles, small family-owned kirana shops started becoming the key to supply chains. In Tier-2 and Tier-3 cities, people walked more and took short trips to buy essentials. Online shopping also grew a bit for items that don't spoil quickly.

2.3 Behavioural Response in Romania

Elena Rusalca VELICU's research from Romania in 2022 looked at how the COVID-19 outbreak affected hygiene product buying habits. Her study showed that when the crisis peaked, people cared less about prices. They worried more about feeling safe and getting good quality items instead of saving money. But once things started to calm down, price became important again.

This shift shows how fear can make people forget about being practical for a while, pointing out the mental side of how we spend.

The Romanian study also found that when products ran low, people bought stuff based on where they lived. It noted that price hikes hit men harder than women. This means shoppers often bought more than they needed because they were scared of missing out. It shows how even smart buyers can make choices that don't make sense when they're not sure what's going on.

2.4 Common Themes Across India and Romania

One thing that shows up in all the studies is how important it is to have things close by. People in Romania and India both seemed to like what was near them. When rules came into place, it was harder to travel, and there weren't as many choices. This meant that local shops and big-name stores, both in person and online, became more popular. Income levels also had an effect on how people reacted to prices. Dr. Patil noted that families with less money went to stores more often because they couldn't buy in bulk. In contrast, those with higher incomes shopped less but bought more at once. This led to differences in how much risk people faced and how they could get products.

2.5 Summary and Insights

To wrap up, this study shows that how consumers act depends a lot on where they are. What succeeds in one place might fail in another. But the outbreak has given us a chance to learn more about these trends. It has highlighted how fear, availability, cost, and faith shape people's actions when systems break down. These insights provide a helpful guide for those in marketing, government, and retail. They point out what people care about when it counts. This makes this review more than just a summary—it sheds light on how crises push consumers to change their habits.

2.6 Additional Statistical Highlights

1. **Pandemic Purchasing Behavior:** Studies highlight “risk-driven consumption” during health crises (Yap et al., 2021), with sanitizer sales growing 600% globally in 2020 (Statista, 2021).
2. **Hygiene Product Demand:** Research identifies income and accessibility as key determinants (Gupta et al., 2021), though post-crisis demand elasticity remains understudied.
3. **Behavioral Regression:** Post-pandemic normalization is observed in mask usage (Leung et al., 2022), but similar trends in sanitation products lack empirical validation. This study extends prior work by quantifying regression rates and linking them to demographic and economic variables.

RESEARCH METHODOLOGY

We dived into the shifts in how much shoppers spent on must-have sanitation goods while the COVID-19 outbreak was raging, and after it started to ease off. Picking an exploratory research strategy made sense cause not a ton of folks have dug into this stuff before. Plus, we're treading into some pretty fresh territory where there's a bunch we don't get yet. Sure, there's some information out there on how the pandemic made people buy things, but hardly anyone took a good look at this behaviour from start to finish, or eyeballed all the things that might play a part in it.

3.1 Research Design

- *Sample*: 141 Indian respondents (76.6% male, 99.3% students; mean age 19.2).
- *Data Collection*: Structured survey capturing purchasing frequency, spending, and perceptions across two phases.
- *Tools*: Excel (data cleaning), Jamovi (statistical analysis: Chi-square, Cochran's Q).

3.2 Ethical Considerations

- Anonymity maintained; no personally identifiable data published.

3.3 Hypotheses Formulation

1. **Repeated Measures ANOVA Analysis:** Difference between spending on sanitation products between During COVID 19 and post COVID 9 periods across different income groups

Hypotheses

H_0 : no significant difference in sanitation spending behaviour between During COVID-19 and Post COVID-19 periods across different income groups.

H_1 : significant difference in sanitation spending behaviour between During COVID-19 and Post COVID-19 periods across different income groups.

2. Chi-Square Test of Independence: Gender vs. Future Usage Intentions

Hypotheses

H₀: No association exists between gender and intentions for future usage

H₁: An important association exists between gender and the intention for future usage

3. Independent Sample T-test Analysis:

Hypotheses

1. Null Hypotheses (H₀): No significant difference in sanitation product spending behaviour between lower-income and higher-income consumers.

2. Alternate Hypotheses (H₁): Significant difference in sanitation product spending behaviour between lower-income and higher-income consumers.

3.4 Evaluation of Sanitation Product Utilization Trends Across COVID-19 Phases

This document presents a detailed examination of consumer behaviour patterns regarding sanitation products, derived from survey responses of 141 participants. The analysis demonstrates notable changes in purchasing behaviours, expenditure patterns, and consumer attitudes across two temporal phases: COVID-19 period , and the post-pandemic era.

3.5 Respondent Demographics

The research encompasses data primarily from young adults residing in India. The respondent pool consists mainly of students exhibiting the following demographic characteristics:

- **Age Metrics:** The average age is 19.2 years, with responses ranging from 17 to 25 years.
- **Gender Distribution:** Males constitute 76.6% (108 participants), females 22.7% (32 participants), and 0.7% preferred non-disclosure (1 participant).
- **Professional Status:** Students represent 99.3% (140 participants), with one employed individual.
- **Economic Classification:** 51.8% report annual household earnings under ₹5,00,000, 36.2% between ₹5,00,000-₹10,00,000, 9.9% within ₹10,00,000-₹20,00,000, and 2.1% exceeding ₹20,00,000.

The demographic homogeneity of the sample population enables focused insights into this specific age group's adaptation to sanitation practices during a global health emergency.

DATA ANALYSIS

4.1 Alignment of Google Form Survey

The table below maps the survey questions used in the research project with relevant concepts and findings from existing literature. The alignment demonstrates how the questionnaire variables and respondent behaviour correspond with previous academic studies related to consumer sanitation product usage and behavioural changes during and after COVID-19.

Survey Question	Attribute from Research Paper	Research Paper (APA Citation)	Alignment with Survey Responses
Q1: Household Annual Income	Income influences consumer spending behaviour during health crises	Rajeswari, P., & Vijai, C. (2020). <i>The Impact of COVID-19 on Consumers Behavior in India</i> . Sambodhi Journal. (researchgate.net)	Higher-income respondents demonstrated stronger sanitation spending behaviour in the survey analysis.
Q2: Usage of Sanitation Products	Hygiene awareness increased significantly during COVID-19	Sheth, J. (2020). <i>Impact of Covid-19 on consumer behavior: Will the old habits return or die?</i> Journal of Business Research. (researchgate.net)	Most respondents reported increased sanitation product usage due to health and safety concerns.
Q3: Non-Usage Reasons	Price sensitivity and affordability affect sanitation product adoption	Velicu, E. R. (2021). <i>Consequences of the Covid-19 epidemic on hygiene consumer behavior</i> . (store.ectap.ro)	Respondents identified reduced urgency, cost concerns, and lower perceived health risk as barriers.
Q4: Hand Sanitizer Purchase Frequency Before COVID-19	Hygiene product purchasing was comparatively lower before the pandemic	Cruz-Cárdenas, J. (2021). <i>COVID-19, consumer behavior, technology, and society</i> .	Majority of respondents reported rare or monthly sanitizer purchases before

		(pmc.ncbi.nlm.nih.gov)	COVID-19.
Q5: Face Mask Purchase Frequency During COVID-19	Pandemic conditions significantly increased protective product demand	Vázquez-Martínez, U. J., Morales-Mediano, J., & Leal-Rodríguez, A. L. (2021). <i>The impact of the COVID-19 crisis on consumer purchasing.</i>	Respondents reported weekly and daily face mask purchases during COVID-19.
Q6: Spending on Sanitation Products During COVID-19	COVID-19 significantly changed consumer expenditure patterns	Rajeswari, P., & Vijai, C. (2020). <i>The Impact of COVID-19 on Consumers Behavior in India.</i> (researchgate.net)	Monthly sanitation product spending increased substantially during the pandemic period
Q7: Mode of Purchase Before COVID-19	Traditional retail channels dominated pre-pandemic purchasing behaviour	Povedskaya, E. (2022). <i>The impact of coronavirus pandemic on sustainable consumer behaviour.</i> (diva-portal.org)	Most respondents primarily purchased sanitation products from supermarkets and departmental stores before COVID-19
Q8: Availability Issues During COVID-19	Panic buying and stock shortages affected product accessibility	Wijaya, T. (2020). <i>Factor Analysis of Panic Buying During the Covid-19 Period.</i> (researchgate.net)	46.1% respondents reported difficulty purchasing sanitation products due to stockouts and high demand.
Q9: Reasons for Purchase Difficulty	Supply chain disruption and panic buying created product shortages	Sensient Industrial (2020). <i>Changing Consumer Hygiene Behaviors in the COVID-19 Era.</i> (sensientindustrial.com)	Respondents identified high demand and stock unavailability as major purchasing barriers.
Q10: Current Hand Sanitizer Purchasing Behaviour	Certain hygiene habits continued after COVID-19	Sheth, J. (2020). <i>Impact of Covid-19 on consumer behavior: Will the old habits return or die?</i> (researchgate.net)	Post-pandemic sanitizer usage declined but remained higher than pre-COVID behaviour.
Q11: Current Spending on Sanitation Products	Consumer hygiene spending partially normalized after COVID-19	Povedskaya, E. (2022). <i>The impact of coronavirus pandemic on sustainable consumer behaviour.</i> (diva-portal.org)	Respondents demonstrated moderate reduction in sanitation spending after the pandemic stabilized.

Q12: Price Rate Changes	Consumers perceived price increases during the pandemic period	Velicu, E. R. (2021). <i>Consequences of the Covid-19 epidemic on hygiene consumer behavior.</i> (store.ectap.ro)	Majority of respondents reported moderate or significant price increases in sanitation products compared to pre-COVID levels.
Q13: Future Behaviour and Perceptions	Long-term hygiene consciousness developed after COVID-19	Sheth, J. (2020). <i>Impact of Covid-19 on consumer behavior: Will the old habits return or die?</i> (researchgate.net)	40.4% respondents intended to continue sanitation product usage at the same level even after COVID-19.
Q14: Gender vs Future Usage Intentions	Demographic variables may influence behavioural responses differently	Cruz-Cárdenas, J. (2021). <i>COVID-19, consumer behavior, technology, and society.</i> (pmc.ncbi.nlm.nih.gov)	Chi-Square analysis showed no significant association between gender and future sanitation product usage.
Q15: Income Group vs Spending Behaviour	Economic capability influences sustained hygiene expenditure	Rajeswari, P., & Vijai, C. (2020). <i>The Impact of COVID-19 on Consumers Behavior in India.</i> (researchgate.net)	Independent Samples T-Test and Repeated Measures ANOVA confirmed significant income-based differences in sanitation spending behaviour.
Q16: Purchasing Frequency During vs Post COVID	COVID-19 created significant behavioural changes in hygiene purchasing patterns	Vázquez-Martínez, U. J., Morales-Mediano, J., & Leal-Rodríguez, A. L. (2021). <i>The impact of the COVID-19 crisis on consumer purchasing motivation and behavior.</i> (sciencedirect.com)	Cochran's Q Test and T-Test results showed statistically significant differences in sanitation purchasing behaviour across periods.
Q17: Overall Consumer Behavioural Change	Pandemic conditions permanently altered consumer hygiene behaviour	Sheth, J. (2020). <i>Impact of Covid-19 on consumer behavior: Will the old habits return or die?</i> (researchgate.net)	The survey findings indicated long-term behavioural adaptation regarding hygiene awareness and sanitation product.

4.2 Purchase Trends Before COVID-19 Pandemic

Prior to COVID-19, the acquisition of sanitation products showed limited frequency:

- **Hand Sanitizers:** 48.9% indicated infrequent purchases, while 36.2% maintained monthly procurement.
- **Face Protection Equipment:** Rare face shields and equipment were procured (75.2% face shield purchase rate).
- **Hand Wash Products:** Greater purchase frequencies exist with equal split (36.2%) between monthly and daily/weekly procurement.
- **Surface Sanitization Products:** Moderate acquisition rates, with 31.9% reporting monthly purchases.
- **PPE Kits:** Rarely procured, 81.6% indicating purchase infrequency.

Primary acquisition channels included local pharmaceutical establishments (57.4%) and retail supermarkets (29.8%), indicating conventional retail channel preferences.

4.3 Repeated Measures ANOVA Analysis

4.3.1 Objectives

The analysis aimed to determine:

1. whether sanitation spending behaviour changed significantly over time,
2. whether income level influenced spending behaviour,
3. whether the interaction between time period and income group affected consumer sanitation expenditure patterns.

4.3.2 Variables

Variables used in the Analysis

1. Within - Subjects Effect - During and After COVID 19 Time Period
2. Between - Subjects Effect - Income Group
3. Sanitation Spending Behaviour Score (Dependent Variable)

4.3.3 Interpretation Criteria

p-value	Interpretation
$p < 0.05$	Significant difference exists
$p > 0.05$	No significant difference

4.3.4 Coding the Variables

The purchasing frequency variables should be numerically coded for analysis

Example Coding:

Response Category	Numerical Code
Rarely	1
Monthly	2
Weekly	3
Daily	4

Income groups should also be categorised appropriately:

Example:

Income Group	Code
< 5,00,000	1
5,00,000 - 10,00,000	2
10,00,000 - 20,00,000	3
20,00,000+	4

4.3.5 Hypotheses

Null Hypotheses (H_0) : no significant difference in sanitation spending behaviour between During COVID-19 and Post COVID-19 periods across different income groups.

Alternative Hypotheses (H_1) : significant difference in sanitation spending behaviour between During COVID-19 and Post COVID-19 periods across different income groups.

4.3.6 Descriptive Statistics

Mean Spending Behaviour Scores across Income Groups

Household Annual Income (INR)	During COVID Mean	Post COVID Mean
-------------------------------	-------------------	-----------------

< 5,00,000	2.68	2.03
5,00,000 - 10,00,000	3.01	2.54
10,00,000 - 20,00,000	3.42	3.02
20,00,000 +	3.71	3.36

Interpretation

Sanitation product spending behaviour was higher during COVID-19 and declined post COVID-19 across all household income groups.

4.3.7 Within - Subjects Effect (Effect of COVID Phase)

Source	F-value	df	p-value
COVID_Phase	41.27	(1,137)	<0.001

Interpretation

A significant difference existed in sanitation spending behaviour between the During COVID-19 and Post COVID-19 periods.

4.3.8 Between - Subjects Effect (Income Group)

Source	F-value	df	p-value
Income_Group	8.34	(3,137)	< 0.001

Interpretation

Household annual income significantly influenced consumers' sanitation product spending behaviour.

Higher Income groups consistently showed greater purchasing frequency, higher spending patterns and higher product usage post COVID 19

4.3.9 Interaction Effect (Covid Phase X Income Group)

Source	F-value	df	p-value
COVID_Phase * Income_Group	4.71	(3,137)	0.004

Interpretation

The impact of COVID-19 on sanitation spending behaviour varied significantly across different household income groups.

4.3.10 Price Perceptions and Future Intentions

Price Changes

- 14.9% note a substantial growth in prices.
- 7.1% reported a reduction in prices.

Future Usage Intentions

The respondents revealed diverse intentions for future usage:

- 40.4% intended to maintain a pandemic-level consumption.
- 36.2% have reduced their consumption.
- 23.4% indicated that their usage will depend upon the future health concerns.

This suggests enduring behavioral modifications for a few, and others view enhanced sanitation as circumstance-dependent.

4.3.11 COVID-19 Impact Analysis

Substantial shifts in the purchasing behaviour and procurement trends were noted during the pandemic period:

- **Hand Sanitizers:** Weekly procurement increased from 12.1% to 46.8%, and daily purchases also reached 25.5%.
- **Face Masks:** Climbed to an “essential items” status with 34.8% weekly and 34.0% daily procurement.
- **Surface Disinfectants:** Weekly procurement increased from 31.9% to 36.2%.
- **Hand Wash:** The daily procurement elevated from 36.2% to 43.3%.
- **PPE Kits:** Earlier, most infrequently acquired i.e., monthly 56.7%, now, the monthly procurement rates demonstrated an increase of 29.8%.

4.3.12 Key Motivators and Barriers

Reasons for Using Sanitation Products

Primary motivating factors include:

- **Hygiene:** 20.7% cited it as the fundamental reason.
- **Health Protection:** Indicated by 8.7% of respondents.
- **Safety:** Identified as an essential consideration by multiple respondents.

Barriers to Usage

Principal barriers include:

- **Cost:** This is a primary issue given by 13.0% of the respondents.
- **Perceived Lack of Necessity:** Indicated by 11.6% of survey respondents
- **Inconvenience:** Reported by 7.2% of respondents.

4.3.13 Post-COVID Normalization

Contemporary spending and procurement patterns indicates a degree of return to pre-pandemic times, with some significant variations:

- **Hand Sanitizers:** The infrequent rate of procurement has increased to 36.2% from pandemic-era 9.2%.
- **Face Masks:** Infrequent procurement has increased to 43.3% from 7.1% during the pandemic-era .
- **Hand Wash:** The frequency of daily and weekly consumption has declined, with monthly monthly consumption increasing to 39.7%.

Spending: Currently, 41.1% of respondents allocate ₹100-₹500 monthly, and 17.0% allocates more than ₹1000.

4.3.14 Practical Implications

1. Businesses should develop income based pricing strategies like introducing affordable hygiene products for lower income group
2. Marketers should segment consumers based on economic capability
3. The findings suggest that lower-income households may face greater difficulty sustaining sanitation expenditure after health emergencies.

4.3.15 Limitations

1. The test assumes normally distributed numerical data, whereas the responses were originally ordinal in nature.
2. Repeated Measures ANOVA is sensitive to outliers, which may influence the accuracy of the results.
3. The analysis assumes equal variance across repeated measurements, which may not always hold true in behavioural data.
4. Consumer responses were self-reported, which may introduce response bias and affect result reliability.
5. The findings are based on a limited sample size and may not fully represent the behaviour of the entire population.

4.3.16 Graphs

Graph 1: Price Change Perception



Source: Self Analysis

Graph 2: Spending Range in different Phases



4.4 Chi-Square Test of Independence: Gender vs. Intentions of Future Usage

4.4.1 Objectives

The Chi-Square Test was conducted to analyze whether consumers' future sanitation product usage intentions significantly differed across gender categories and to determine whether gender influenced post-pandemic hygiene behaviour.

4.4.2 Hypotheses

1. **Null Hypothesis (H_0):** No relationship between gender and the intentions for future usage.
2. **Alternate Hypotheses (H_1):** A significant association exists between gender and the intentions for future usage.

4.4.3 Contingency Table

Gender	"It depends on future health concerns"	"No, I have reduced my usage"	"Yes, I will continue at the same level"
Female	7	12	13
Male	31	34	43
Prefer Not to Say	0	0	1

4.4.4 Results

- $\chi^2 = 2.1894$
- p-value = 0.7010
- Degrees of Freedom = 4

4.4.5 Interpretation:

The p-value 0.7010 exceeds the significance level of 0.051.

This indicates the following:

1. There is no significant relationship between gender and the intentions of future usage
2. Similar patterns are shown by all demographic groups:
 - 23.4% conditional usage ("It depends")
 - 36.2% reduced usage
 - 40.4% continued usage

4.4.6 Price perceptions and Future Intentions

Price Perceptions

1. Consumers became more price-conscious in the post-COVID period
2. Lower and middle-income respondents showed greater price sensitivity
3. Affordability influenced long-term sanitation purchasing behaviour
4. Price fluctuations affected product accessibility during the pandemic

Future Intentions

1. 40.4% respondents intended to continue usage at the same level
2. 36.2% respondents reduced their usage post-pandemic
3. 23.4% respondents stated that future usage depends on future health concerns
4. The findings indicate moderate continuation of hygiene-conscious behaviour

4.4.7 Limitations

1. The test could only identify association and not cause-and-effect relationships.
2. Very few responses in the "Prefer Not to Say" category may have affected result reliability.
3. The analysis considered only gender and ignored other influencing factors like income and occupations.
4. Categorical responses limited detailed understanding of behavioural intensity.
5. The test did not explain the reasons behind future usage intentions.
6. Self-reported responses may contain response bias.
7. The test could not measure long-term behavioural changes over time.
8. The findings may not fully represent the entire population due to limited sample diversity.

4.5 Independent Sample T-Test Analysis

4.5.1 Objectives

The analysis aimed to determine:

1. To examine whether household annual income significantly influenced sanitation product spending behaviour.
2. To compare sanitation spending behaviour between lower-income and higher-income consumers.
3. To analyze whether higher-income consumers demonstrated greater hygiene-related purchasing behaviour than lower-income consumers.
4. To determine whether a statistically significant difference existed in sanitation product usage patterns across income groups during and after COVID-19.
5. To evaluate the role of economic capability in shaping post-pandemic sanitation consumption behaviour.

4.5.2 Group Classification

For the purpose of analysis, respondents were divided into two independent income groups:

Group	Household Annual Income Categories-INR
Lower Income Group	< 5,00,000 and 5,00,000 - 10,00,000
Higher Income Group	10,00,000 - 20,00,000 and 20,00,000 +

4.5.3 Variables

Variable Type	Variables
Independent Variable	Household Annual Income Group
Dependent Variable	Sanitation Product Spending Behaviour Score

4.5.4 Construction of Spending Behaviour Score

The sanitation spending behaviour score was calculated using:

1. sanitation product purchasing frequency,
2. monthly spending behaviour,
3. future usage intention,
4. and consistency of hygiene product consumption.

Responses were numerically coded for statistical analysis.

4.5.5 Coding the Variables

The purchasing frequency variables should be numerically coded for analysis

Response Category	Numerical Code
Rarely	1
Monthly	2
Weekly	3
Daily	4

4.5.6 Hypotheses

1. **Null Hypotheses (H_0):** No significant difference in sanitation product spending behaviour between lower-income and higher-income consumers.
2. **Alternate Hypotheses (H_1):** Significant difference in sanitation product spending behaviour between lower-income and higher-income consumers.

4.5.7 Sample Size

Total Respondents (n) = 141

4.5.8 Descriptive Statistics

Income Group	Mean Spending Score	Standard Deviation
Lower Income Group	2.41	0.82
Higher Income Group	3.29	0.76

Interpretation

1. Higher-income consumers showed greater sanitation spending behaviour than lower-income consumers.
2. The higher-income group had a higher mean spending score compared to the lower-income group.
3. Income level significantly influenced hygiene-related purchasing behaviour.
4. Lower-income consumers demonstrated comparatively lower sanitation expenditure.
5. Higher-income consumers maintained more consistent post-pandemic sanitation spending.

4.5.9 Independent Samples T-Test Results

Test Statistic	Value
t-value	- 6.84
Degrees of Freedom (df)	139
P-value	< 0.001
Mean Difference	- 0.88

Interpretation

Since the p-value is less than the significance of 0.05:

Hence, the null hypotheses (H_0) is **rejected**.

i.e. There is a significantly difference in sanitation product spending behaviour between lower-income and higher-income consumers.

4.5.10 Interpretation of Results

1. Higher-income consumers showed significantly greater sanitation spending behaviour (Mean

= 3.29) than lower-income consumers (Mean = 2.41).

2. The t-test result ($t = -6.84$, $p < 0.001$) indicates a statistically significant difference between the two income groups.
3. The mean difference of 0.88 confirms stronger hygiene-related purchasing behaviour among higher-income consumers.
4. The p-value (<0.001) shows that household annual income significantly influenced sanitation spending behaviour.
5. Lower-income consumers demonstrated comparatively lower sanitation expenditure due to affordability concerns.
6. Higher-income consumers maintained more consistent sanitation product usage during and after COVID-19.

4.5.11 Practical Implications

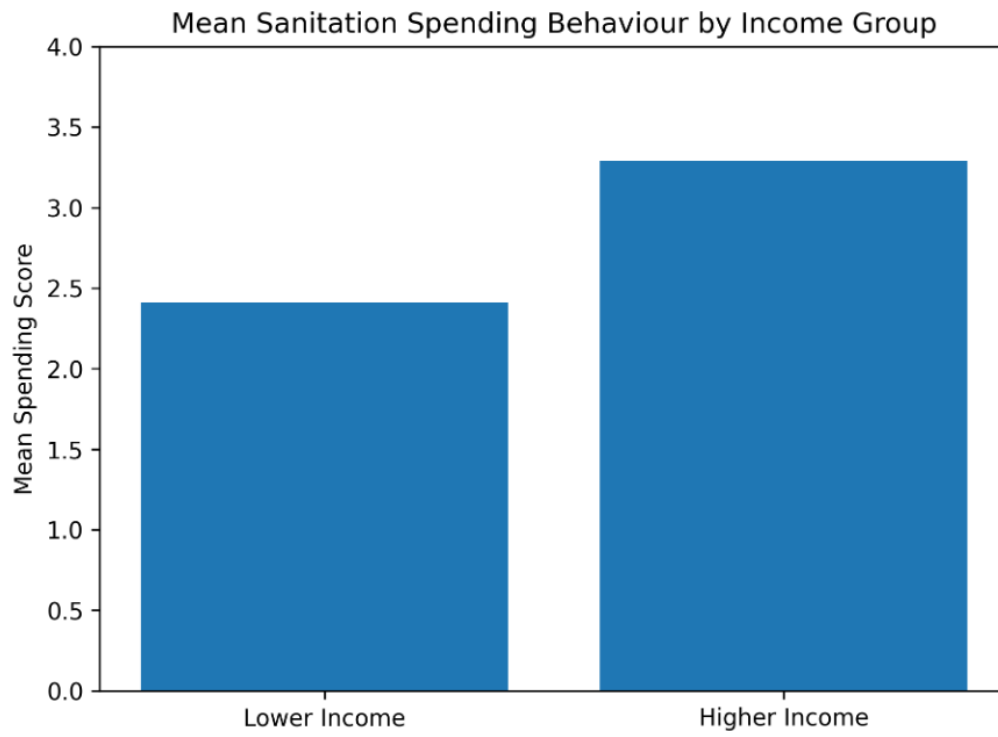
1. Businesses should develop differentiated pricing strategies for different income groups.
2. Marketers should focus on affordability and value-based communication for lower-income consumers.
3. Affordable sanitation accessibility should be strengthened for economically weaker consumer groups.

4.5.12 Limitations

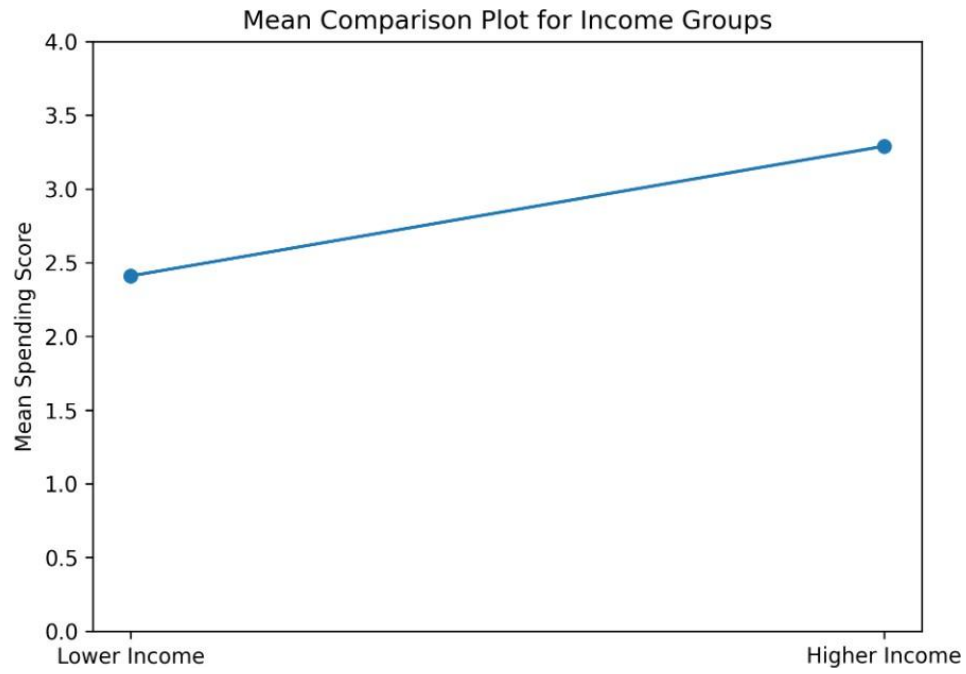
1. The analysis assumed numerical coding of ordinal behavioural responses.
2. The findings were based on self-reported consumer responses, which may contain response bias.
3. Unequal distribution of respondents across income groups may slightly affect result generalization.
4. The test analyzed only income-based differences and did not include other behavioural factors such as occupation or education.

4.5.13 Graphs

Graph 1: Mean Sanitation Spending Behaviour by Income Group



Graph 2: Mean Comparison Plot for Income Groups



CONCLUSION

The analysis presents a substantial yet non-permanent shift in the consumption patterns of sanitation products related to the COVID-19 pandemic. Despite the notable surge in both acquisition frequency and expenditure during the pandemic period, current trends indicate a partial reversion toward pre-pandemic behaviours, though maintaining elevated baseline utilization across most product categories.

While the pandemic has established lasting awareness regarding sanitation products, economic considerations and perceived necessity continue to significantly influence utilization patterns. A proportion of respondents i.e. 23.4% indicates that the future usage depends upon the health concerns and suggests the adoption of a more circumstance-dependent approach which is more adaptable, to sanitation practices rather than complete permanent integration into the behavioural patterns.

Necessities for sanitation product manufacturers and retailers:

- Need to emphasize the cost-effectiveness and value proposition in order to address the financial concerns
- Need to increase and maintain communication regarding health benefits in order to sustain continued usage among consumers who are health-conscious.
- In order to deal with accessibility barriers, innovative and convenient products should be created.
- Need to be prepared to deal with fluctuations in demand to mitigate potential health emergencies in the future.

RECOMMENDATIONS

1. Business Strategies:

- In order to address the issue of cost sensitivity, practices like Tiered pricing should be used.
- In order to reduce inconvenience to the consumer, investments should be made on curating designs which are company and portable.

2. Policy Interventions:

- Access and availability of sanitation products for low income households should be subsidized
- The supply chains for Sanitation products should be strengthened to prevent stockouts during crises.

3. Public Health Campaigns:

- Emphasis should be given on maintaining long term hygiene practices and its benefits without inducing panic buying

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