

MARKET ASSESMENT OF HAND SANITIZER MARKET IN BENGALORE

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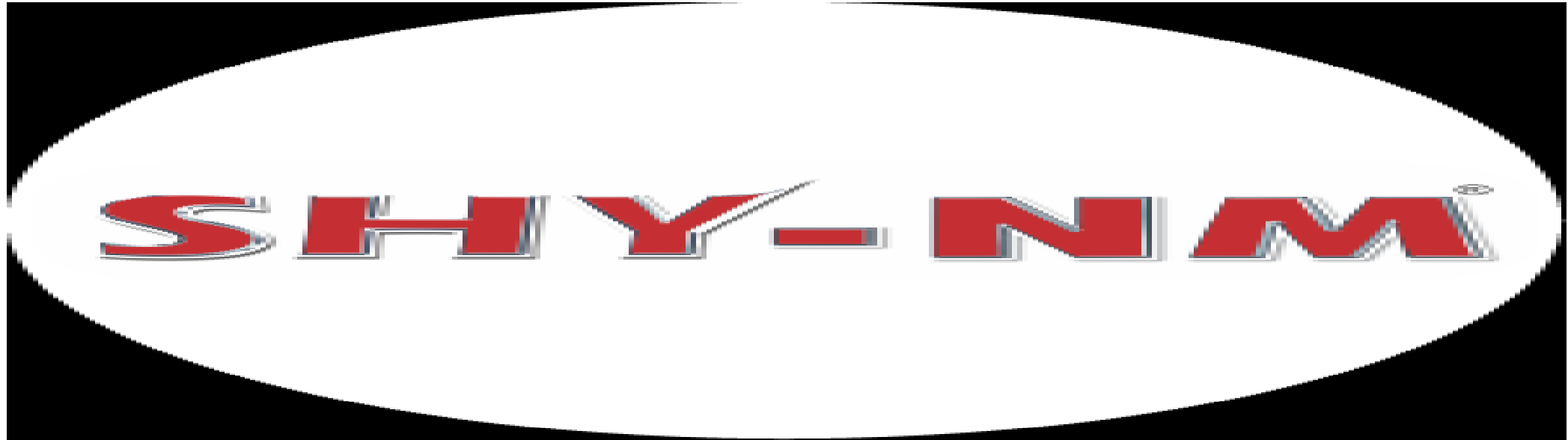
COMPANY PROFILE

Group Pharma is an innovative pharmaceutical company having 38 years of proven expertise in dental and oral care. At Group Pharma we develop, manufacture, market and export a wide range of niche oral care products that cater to consumers with specific dental and oral conditions combining newly researched ingredients as well as nature's goodness

Our facilities in addition to being ISO 9001:2015, ISO:22716 and ISO:13485 certified are WHO cGMP and PIC/S compliant. This enables us to consistently deliver the best products to the dental fraternity, consumers and also to contract, develop and manufacture for large Indian and multinational companies.

We constantly keep upgrading technologically and streamline our operations to ensure best industry practices. We are dedicated to over 800 employees, their families and all our stakeholders. We are driven by our purpose of delivering 'the best' for good oral health, well-being of the society at large and the growth of our people.

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Toothpaste that contains breakthrough bioactive glass for treating sensitive teeth

The logo for Freshclor, featuring the word "Freshclor" in a bold, blue, sans-serif font.

A specially formulated mouthwash that addresses bad breath by directly attacking bad oral bacteria.

The logo for SHY, featuring the letters "SHY" in a stylized, metallic, 3D font with a blue and silver gradient.

A potassium nitrate-based toothpaste and mouthwash for quick relief from sensitive teeth.

The logo for Amflor, featuring the word "Amflor" in a bold, dark red, serif font.

A duo of remineralizing toothpaste and mouthwash specially formulated to care for people

The logo for EnaFix, featuring the word "EnaFix" in a bold, blue, sans-serif font, with a registered trademark symbol (®) to the upper right of the "x".

A unique calcium sucrose phosphate toothpaste formulated to inhibit tooth decay.



A nanocrystalline hydroxyapatite toothpaste that helps strengthen teeth from within.



A bioactive glass with fluoride toothpaste that eliminates sensitivity and protects from cavities.



An enzyme-based low abrasive bleach-free stain removing toothpaste.

MARKETING

The heart of any good business activity is its marketing and distribution strength. Our consistent growth can be attributed to expertise in this area. We have a committed and competent team of 300 medical representatives guided by over 70 field managers who directly meet over 60,000 doctors every month. Our product and brand management team guides them with the required marketing and training inputs. Our distribution network spans 200,000 retailers serviced by 16 C and F Agents and 600 stockists making our presence strongly felt in most states in India.

MISSION AND VISION

1. We developed and launched many first-time product
2. Our purpose is to deliver best dental and healthcare products and services
3. We believe good oral health contributes to overall well being
4. Our commitment to spread smile goes beyond business
5. Our teams are focused on growth and developing people

Toothpaste

- › Aclaim
- › Amflor
- › Elsenz
- › EnaFix
- › Glodent
- › Omnident
- › SHY Oral Gel
- › SHY-NM
- › SHY-XT

PediflorKidz

- › PediflorKidz Bubble Gum
- › PediflorKidz Green Apple
- › PediflorKidz Melon

Mouthwash

- › Amflor Oral Rinse
- › Freshclor
- › Guard-OR
- › SHY-OR

Denture Care

- › Secure Adhesive Cream
- › Secure Adhesive Powder
- › Secure Adhesive Strips
- › Secure Cleansing Tablets

Oral Gels

- › Anabel
- › Anabel-CT
- › Astrigum
- › Clorni Gel

Disinfectants and hygiene

- › Inosept
- › Inosept C hand disinfectant
- › Inosept H

INTRODUCTION

Hand Sanitizer, also called as hand antiseptic or hand rub, agent applied to the hands for the purpose of removing common pathogens (disease-causing organisms). Hand sanitizers typically come in foam, gel, or liquid form. Their use is recommended when soap and water are not available for hand washing or when repeated hand washing compromises the natural skin barrier (e.g., causing scaling or fissures to develop in the skin). Although the effectiveness of hand sanitizer is variable, it is employed as a simple means of infection control in a wide variety of settings, from day-care centres and schools to hospitals and health care clinics and from supermarkets to cruise ships.

Hand sanitizers are more effective than plain soap and water alone in preventing transmission of bacteria from the hands of individuals. They play a significant role and could be an effective alternative to hand washing to achieve asepsis for all the health-care professionals in outreach program, water scarcity areas, and in routine clinical practice. Hence, stressing proper hand hygiene is an important first line defence against the spread of multiple infectious diseases.

Hand sanitizers do not serve as a replacement for thorough handwashing. Instead, they are thought to bring consumers some of the benefits of handwashing when handwashing is not practical. The relationship between hand sanitizer use and reduced illness has not been firmly established by epidemiological studies, but several laboratory studies suggest hand sanitizers help to prevent infections by killing transient pathogenic bacteria.

Handwashing and hand sanitizers reduce microbial populations in different ways.

Handwashing - whether done with "antibacterial" soap or plain soap - **physically removes microorganisms from the skin, literally washing the live microbes down the drain. Hand sanitizers reduce levels of microorganisms by killing them chemically, just like disinfectants kill germs on environmental surfaces.** The magnitude of the effect of handwashing is mainly a function of wash time and soap usage. Washing hands without soap is much less effective. Effectiveness from hand sanitizers is best when a large volume of product is applied to the hands. Applying a large volume of hand sanitizer ensures excess active ingredient and extends the period of chemical activity before the hand sanitizer evaporates.

Unlike disinfectants, which may be left practically on surfaces for up to about 5 minutes, hand sanitizers must do their job within a brief period of time to produce the necessary effect. The reality is that most people just won't tolerate wet hands for more than about 30 seconds. Accordingly, Microchem Laboratory believes that 30 seconds - maybe one minute in special cases - should be the contact time limit for laboratory testing of hand sanitizers.

Types of Hand Sanitizers

The hand sanitizers available in the market are both alcohols based and non-alcohol. The alcohol-based hand sanitizer claims to kill 99.99% microorganisms including the most resistant form. The alcohol-free hand sanitizer viz. povidone-iodine, benzalkonium chloride or triclosan have persistent antimicrobial activity for a prolonged period and claim to be effective in killing microorganism.

The hand sanitizers are available in the form of liquid, foam or easy flowing gel formulations, which can be applied on palm of the hand, rub the product over all surfaces of hands and fingers until hands are dry. The product is widely used by the doctors, surgeons before and after the surgery, pathologists, and researchers and is also used at restaurants, toiletries etc. The medical and applied medical science colleges in their laboratories also have hand sanitizer which the students use after every practical class.

Composition

Consumer alcohol-based hand sanitizers, and health care "hand alcohol" or "alcohol hand antiseptic agents" exist in liquid, foam, and easy-flowing gel formulations. Products with 60% to 95% alcohol by volume are effective antiseptics. Lower or higher concentrations are less effective; most products contain between 60% and 80% alcohol.

In addition to alcohol, hand sanitizers also contain the following:

- additional antiseptics such as Chlorhexidine and quaternary ammonium derivatives

- Sporicides such as H₂O₂ that eliminate bacterial spores that may be present in ingredients,

- Emollients and gelling agents to reduce skin dryness and irritation,

- a small amount of sterile or distilled water

- sometimes foaming agents, colorants and fragrances

Effectiveness

The effectiveness of hand sanitizer depends on multiple factors, including

1. the manner in which the product is applied (e.g., quantity used, duration of exposure, frequency of use) and
2. whether the specific infectious agents present on the person's hands are susceptible to the active ingredient in the product. In general, alcohol-based hand sanitizers, if rubbed thoroughly over finger and hand surfaces for a period of 30 seconds, followed by complete air-drying, can effectively reduce populations of bacteria , fungi, and some enveloped Viruses (e.g., influenza A viruses).

Similar effects have been reported for certain alcohol-free formulations, such as SAB (surfactant, allantoin, and BAC) hand sanitizer.

Despite the variability in effectiveness, hand sanitizers can help control the transmission of infectious diseases, especially in settings where compliance with hand washing is poor. For example, among children in elementary schools, the incorporation of either an alcohol-based or an alcohol-free hand sanitizer into classroom hand-hygiene programs has been associated with reductions in absenteeism related to infectious illness. Likewise, in the workplace, the use of alcohol-based hand sanitizer has been associated with reductions in illness episodes and sick days. In hospitals and health care clinics, increased access to alcohol-based hand sanitizer has been linked to overall improvements in hand hygiene.

Safety Concerns

Agencies such as the WHO and the U.S. Centre For Disease Control and Prevention promote the use of alcohol-based hand sanitizers over alcohol-free products. Indeed, the use of alcohol-free products has remained limited, in part because of WHO's and CDC's focus on alcohol-based products but also because of concerns about the safety of chemicals used in alcohol-free products. Research has indicated that certain antimicrobial Compounds, such as **triclosan, for example, may interfere with the function of the endocrine system.** Environmental contamination from triclosan is another concern. Disinfectants and antimicrobials also can potentially contribute to the development of antimicrobial resistance. In 2014, mounting concerns over triclosan led authorities in the (EU) to restrict the chemical's use in various consumer products in the EU. By comparison, concerns **over the use of alcohol-based hand sanitizer have centred primarily on product flammability and ingestion,** both unintentional (e.g., by young children) and intentional (by individuals seeking to abuse alcohol). With proper storage and strategies that limit access to alcohol-containing sanitizer (e.g., issuing hand sanitizer to individuals), the risk of fire or poisoning from accidental or intentional ingestion of alcohol-based hand sanitizers is considered to be low.

BACKGROUND AND RATIONALE OF THE STUDY

The market segment of Hand sanitizer is very competitive and fragmented, and this poses many challenges for the stakeholders, therefore investigations are the need of the hour to derive better understanding and estimation of the market of Disinfection market. **The global hand sanitizer market size valued at USD 2.7 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 22.6% from 2020 to 2027.** Shifting consumer preference towards convenient hygiene products is expected to drive the market. In **addition, recent COVID-19 pandemic in the beginning of 2020 have spurred the market for hand sanitizer.** The demand for hand hygiene products has been exceeding the supply in both online as well as brick and mortar sale channels worldwide owing to the global outbreak of the virus in a short time span.

Currently, the demand for instant hand sanitizer gel is considerably high due to outbreak of coronavirus and rise in consumer awareness regarding the hand hygiene worldwide. Owing to these factors, instant hand sanitizer gel accounts for the highest share in the hand sanitizer market. It is also expected to remain dominant through the course of the forecast period.

Nowadays, various healthcare professionals across the globe are recommending washing hands regularly with soap and water to prevent from spread of coronavirus. Instant hand sanitizer gel is perfect alternative to use when soap and water is not available to reduce the level of germs from the hands. In addition, the instant hand sanitizer gel is formulated with Ethanol or ethyl alcohol ingredient that kill 99.9% of bacteria within seconds. It also contains moisturizers to reduce skin dryness are some of the primary factors boosting the demand for hand sanitizer across the globe.

OBJECTIVE OF THE STUDY

Minor Objective- 1. To quantify the market of disinfectant products and brands of Hand sanitizer

2. To study the competitive landscape of disinfectant market

Major Objective- To launch a new product in disinfectant (Hand Sanitizer) market.

RESEARCH METHODOLOGY

Research Design:

Study type: Descriptive study

Data source: Primary and secondary research

Data collection technique: Survey

Data collection tool: Researcher administered Semi structured questionnaire.

Sample Design:

Target population: Dispensing Pharmacist

Sampling method: Non-probability convenience sampling

Sample size: 200 Dispensing Pharmacist (at 95% Confidence Interval)

Study Location: Major Places of Bangalore

ETHICAL CONSIDERATION

The research was completed with appropriate research guidelines. Enough time was given to the respondent of the study so that they can depict their true view on research questions. Consent from the respondents was taken and appropriate permission was also ensured for the usage of their given data. The disclosure of respondent identity was based on their permission where if they are not willing to disclose identity, their identity was exhibited.

LITERATURE REVIEW

1. The hand plays an important role in transmission of infectious agents as suggested by Semmelweis particularly when people live in close contact with each other. The contagious agents can be spread through hands in families, schools, college dormitories. In close contact the infectious agents are not only transferred by hand to hand contact but also indirectly by inanimate objects like doorknobs sitting ground etc . **In 2007, a study was conducted to review the effectiveness of hand sanitizer in reducing the respiratory infection .** Currently hand hygiene is considered as one the most important measure to prevent any hand transmitted infection . Since hand washing was not considered as the standard method to eliminate all microorganisms, alcohol based hand sanitizers are recommended for disinfection of hand. This is due to its efficiency, applicability and tolerability. These hand sanitizers are recommended throughout the world including America and Europe . Alcohol based hand sanitizers are proved to be the best for gastrointestinal and respiratory infections caused by viruses and gram negative bacteria . The side effect of alcohol based hand sanitizer is its dryness of the skin. However it can be prevented by addition of humectants and skin conditioning agents . Non-alcohol based hand sanitizer viz. benzalkonium chloride is known to have weak activity against gram negative bacteria as compared to alcohol and is prone to contamination by these bacteria . Hand sanitizer is better option than the soap and water. It is safe and easy to handle and can be used in the community.

2. The global hand sanitizer market size valued at USD 2.7 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 22.6% from 2020 to 2027. Shifting consumer preference towards convenient hygiene products is expected to drive the market. In addition, recent COVID-19 pandemic in the beginning of 2020 have spurred the market for hand sanitizer. The demand for hand hygiene products have been exceeding the supply in both online as well as brick and mortar sale channels worldwide owing to the global outbreak of the virus in a short time span. The outbreak has reinforced the significance of regular hand sanitizing and cleaning practices among consumers and is among the prominent factor driving the market. Hand sanitizers have an advantage over conventional hand washing products as they can be applied directly without water. Also, renowned manufacturing companies such as Henkel Corporation, Unilever, and Procter and Gamble have been offering hand sanitizers in convenient packaging such as sachet and mini bottles, which can easily be carried in a bag or a pocket by the consumers. These factors have widened the scope for the market. **According to findings, there is a preference for using hand sanitizer by 77.0% of the population covered in a survey, while 23.0% claim to not to use the product.** The 77.0% population in the favour of using hand sanitizer is comprised of **37.5% male users and 62.5% of female users.** Moreover, key manufacturers are adding to their product line in order to increase their market share with increasing awareness. For instance, as per findings, **62.0% of population surveyed in 2017 claims to use Dettol hand sanitizer, 21.0% use Lifebuoy hand sanitizer, and 17.0% use Himalaya hand sanitizer.** Increasing awareness towards hand hygiene is gaining prominence on account of being an important measure to restrict the occurrence of nosocomial infections

Therefore, hand hygiene forms the most important element of personal care, thereby driving the popularity of hand sanitizers. In addition, **government further promotes the usage of hand care products in order to increase awareness as well as avoid health issues among consumers.** For instance, WHO and FDA have taken initiatives in order to make people aware about hand hygiene and the risks associated with not maintaining the hygiene. **Moreover, rising influence of social media and online advertisements have exposed people to the recent trends of personal care and hygiene which is also accelerating the usage of hand sanitizers among consumers.** These advertisements also allow people to get exposed to information regarding cleansers and healthy lifestyles. **Key companies such as Reckitt Benckiser Group plc and Hindustan Unilever are also leading among consumers with their initiatives on spreading awareness about basic hand hygiene.** Hand sanitizers come across as a beneficial product to consumers in various aspects. The extent to which it is easy to use as well as portable and convenient has made the product popular among consumers. According to studies, this product also minimizes the risk of gastrointestinal and respiratory infections among consumers. Moreover, hand sanitizers also contain ingredients which help in reducing skin dryness and irritation compared to hand washing. Furthermore, according to studies, classroom application of hand sanitizers is expected to reduce absenteeism of students due to illness by 20%. However, growth of the market can be hampered by the usage of chemical ingredients associated with the product causing allergies to some people. While product innovation and new product development strategies adopted by the companies to introduce organic and natural ingredients in the manufacturing of hand sanitizers, which will gain the trust of consumers.

3. The Global Hand Sanitizer Market size was valued at \$919 million in 2016 to reach \$1,755 million by 2023 and is anticipated to grow at a CAGR of 9.9% from 2017 to 2023. Hand sanitizer is an antiseptic solution, which is used as an alternative to soap and water. It is used to prevent the transmission of infection, which is majorly caused through hand transmission, further causing several diseases such as nosocomial food-borne illness and others. **Consumer inclination towards health & wellness and product innovation such as addition of fragrances in formulation of sanitizers are projected to boost the growth of the global hand sanitizer market.** Furthermore, improvement in living standards, rise in health expenditure, increase in awareness about hand hygiene, and support from organization such as WHO, FDA, and others towards the need for sanitation augment the demand for hand sanitizers. However, health hazards associated with chemical ingredients are anticipated to hamper the market growth during the forecast period

4. The global hand sanitizer market reached a value of US\$ 1.2 Billion in 2019. Hand sanitizer, also known as hand antiseptic, is a foam, gel or liquid-based sanitizing agent that is applied on hands for removing various disease-causing pathogens. It is applied for preventing diseases caused by the transmission of germs and infections through hands. **Ethyl alcohol, isopropyl alcohol or a mixture of both is the most commonly used active ingredient in hand sanitizers. Alcohol acts as an antimicrobial that is effective against bacteria and various viruses. Hand sanitizers also contain humectants that retain the moisture in hands and do not remove natural oils from the skin despite repetitive use.** They are widely considered as a more efficient and gentler option for the skin as compared to the commonly used soap bars. **Growing awareness** about hand hygiene is one of the key factors driving the market. Owing to increasing inclination toward health and wellness, consumers are now adopting precautionary measures to prevent contracting any disease. Hand sanitizers are crucial in preventing the transmission of infections, owing to which they are gaining preference among the expanding health-conscious consumer base. Furthermore, hand sanitizer dispensers are increasingly being installed in schools to combat health issues such as diarrhoea, cough, cold and other related infections among students. Additionally, the introduction of fragrant and perfumed hand sanitizers that give a pleasant scent to hands while maintaining hygiene, coupled with the launch of environment-friendly and natural product variants, is also propelling the product's demand. Moreover, the market is also being driven by various innovations in formulations and dispenser designs such as touchless dispensers that increase the product's aesthetic value, thus escalating the probability of its sales. Looking forward, IMARC Group expects the market to exhibit strong growth during 2020-2025.

5. The reported study estimated the Hand Sanitizers Market to reach up to USD 2762.1 million in 2025, with a compound annual growth rate of 11.5% over the forecast period (2019-2025). The report provides a comprehensive research study based on survey conducted to analyze the buying patterns, consumer behavior and factors affecting buying decisions. The report also provides insights into the marketing strategies and steps taken by the companies to retain their market position in the local and/or global market. The study also provides insights into the factors affecting the buyer decisions, consumer preferences, and the demographic factors promoting the growth of the products of hand sanitizers market.

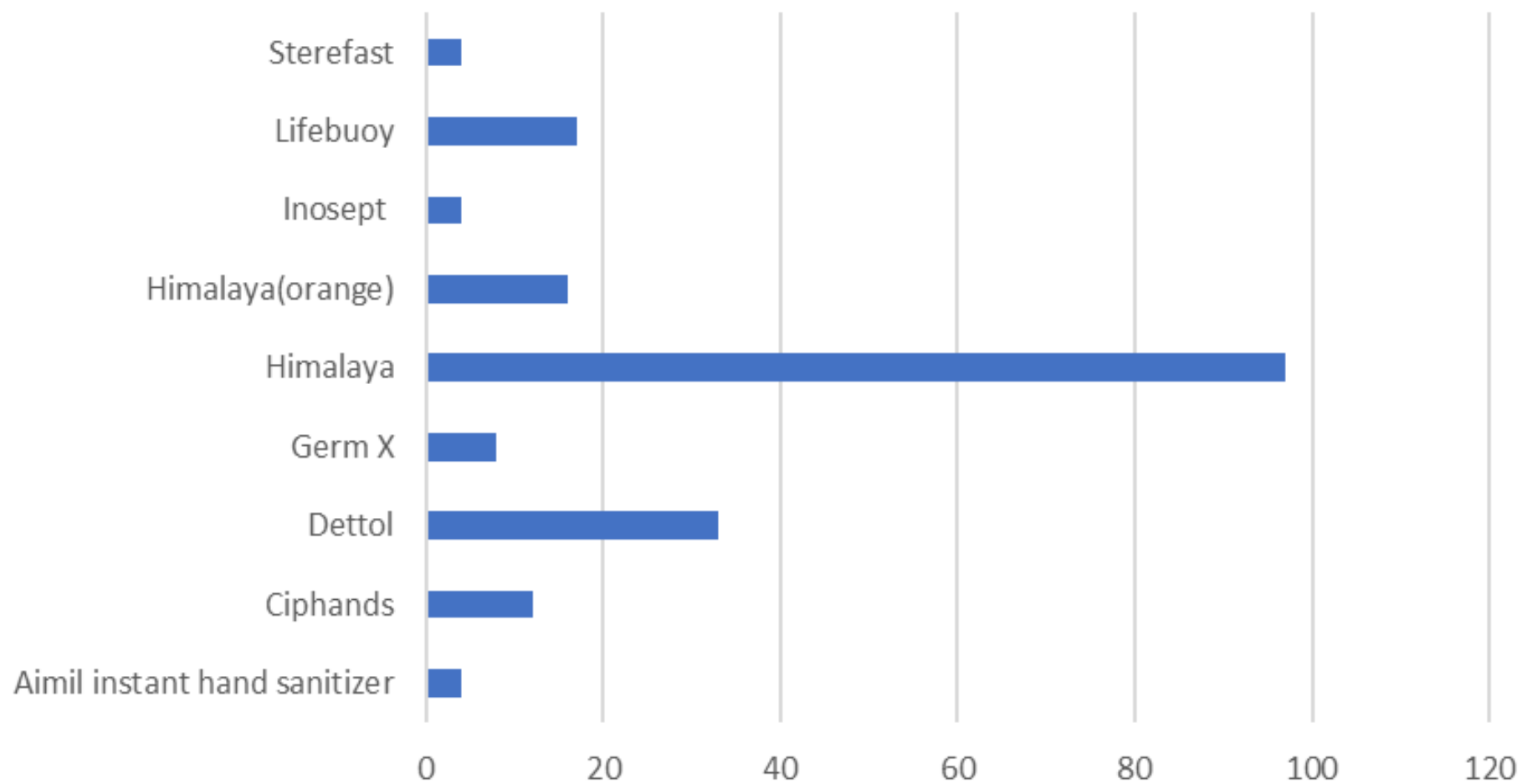
Gel Hand Sanitizers are Preferred More than Other Types

The report includes a detailed study on the consumer preference towards various products in the market. According to the survey results, majority of the people in the world preferred their hand sanitizers in gel form as compared to other forms of hand sanitizers. The major factor driving the preference of gel hand sanitizers is the wide range of products available in the stores to choose from. Majority of the companies in the market offer a broad range of gel hand sanitizers with different fragrances, ingredients, and packaging. The large variety of products available in the market offers a greater choice to the consumers encouraging them to buy one of them. Moreover, the ease of use and higher effectiveness of the gel hand sanitizers make them more preferable than other forms.

Hand Sanitizers Market to Grow on the Backdrop of Coronavirus Outbreak: The coronavirus or COVID-19 outbreak started in the Wuhan district of China in December 2019 and till the mid of March 2020, the disease spread throughout the world. As of March 2020, COVID-19 had affected nearly 800 thousand people across the world and killed more than 38,500 people. The coronavirus disease mainly spreads by getting in contact with an infected person or by touching a surface that has the virus on it. Social distancing and maintaining proper hand hygiene are the only known preventive measures to avoid coronavirus. Washing and sanitizing hands on regular intervals provide protection from coronavirus and other diseases. The use of hand sanitizers as prevention from coronavirus is augmenting the demand for hand sanitizers. Moreover, the other factors including rising awareness regarding hand hygiene, better convenience, better availability and a number of initiatives from health organizations to spread hygiene awareness are expected to boost the growth of the global hand sanitizer market. Furthermore, increasing use of online channels to promote hand hygiene and related products is providing favorable business opportunities to the key market players. The rise in the penetration of social media offer a broader audience for promoting various initiatives and products. This, in turn, is anticipated to boost the sale of hand sanitizers.

Count of Top selling Hand sanitizer

Count of Top selling Hand sanitizer

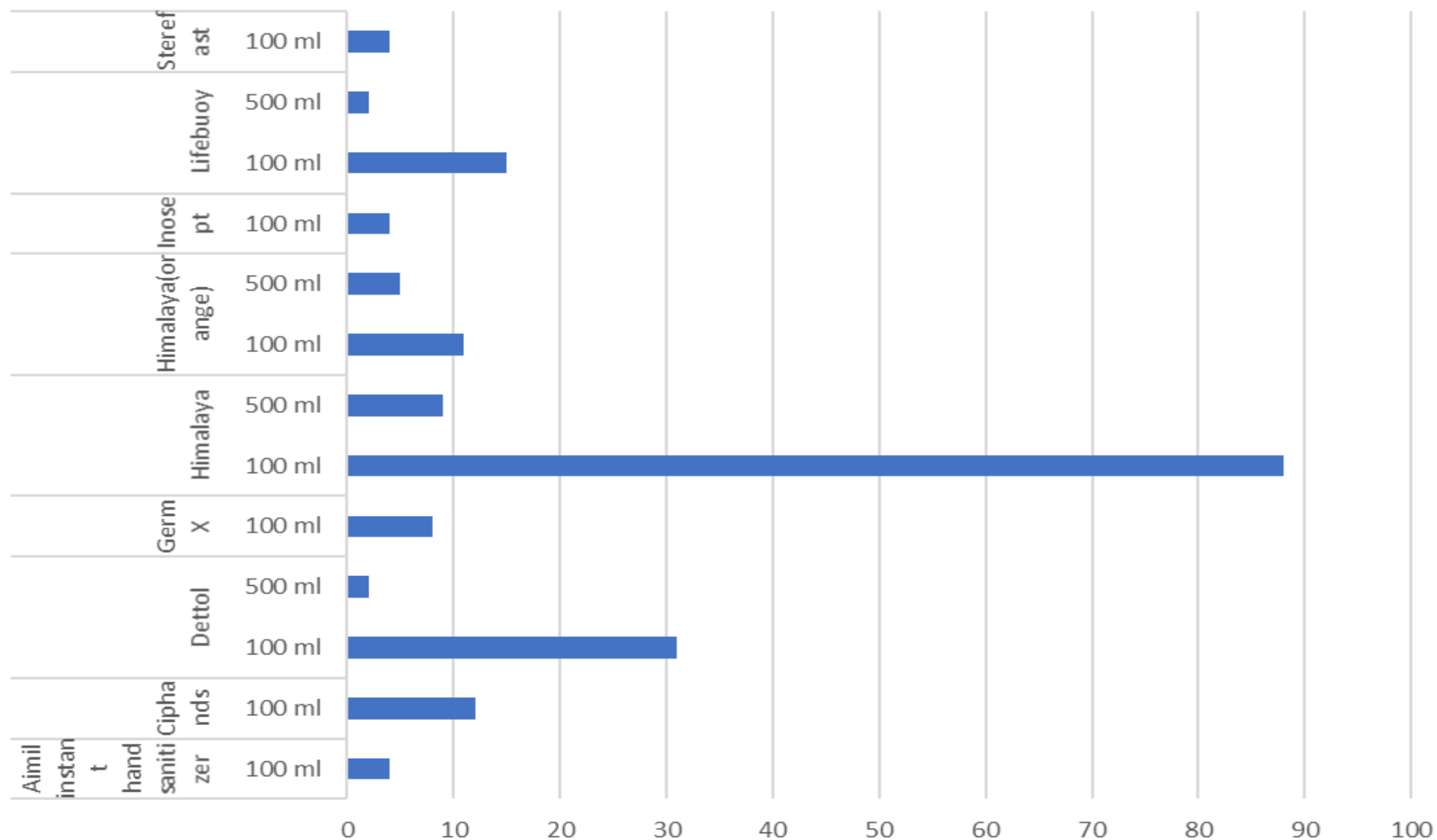


Top selling Hand sanitizer ▼

Count of Top selling Hand sanitizer

Count of Top selling Hand sanitizer

Top selling Hand sanitizer ▼
Pack size ▼

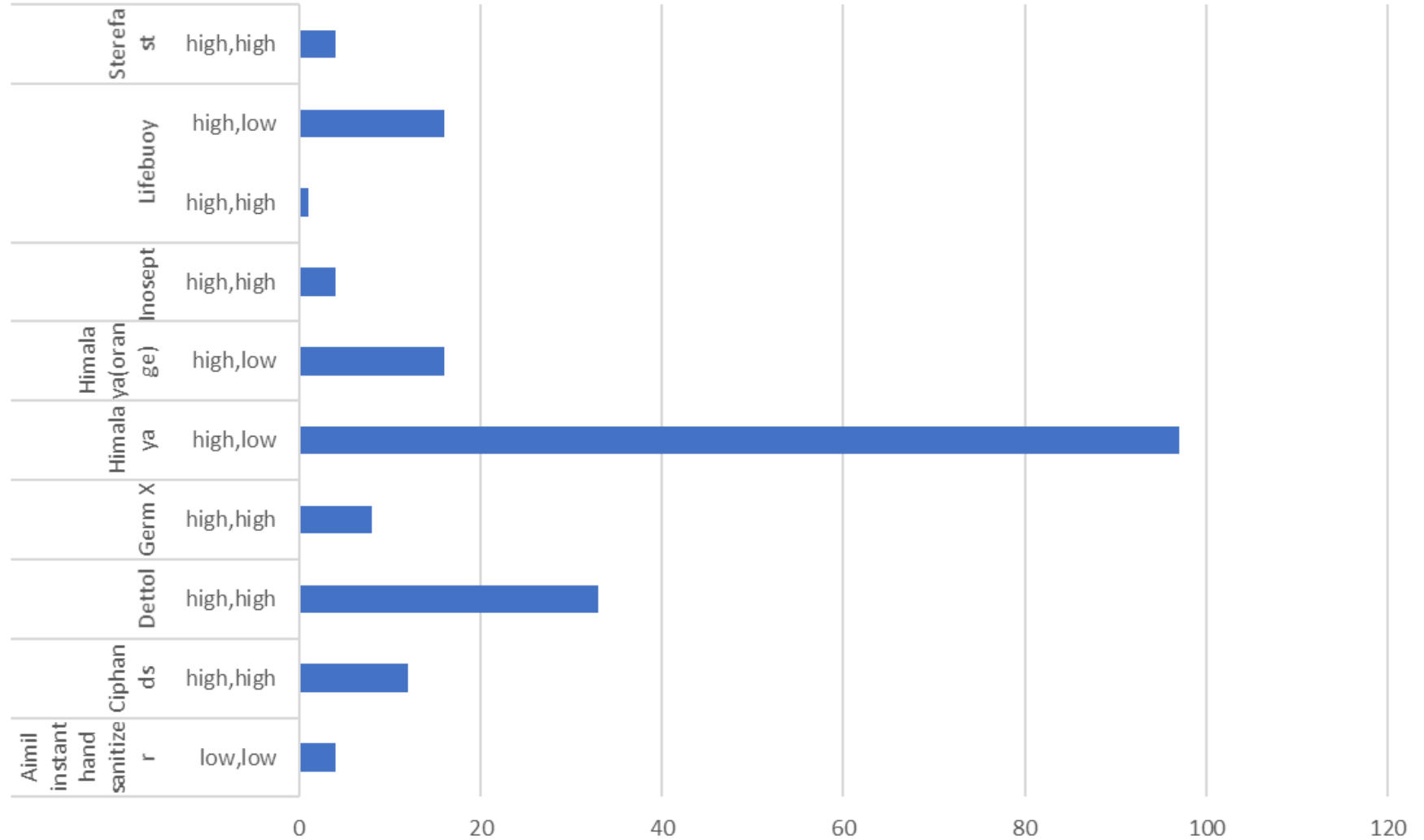


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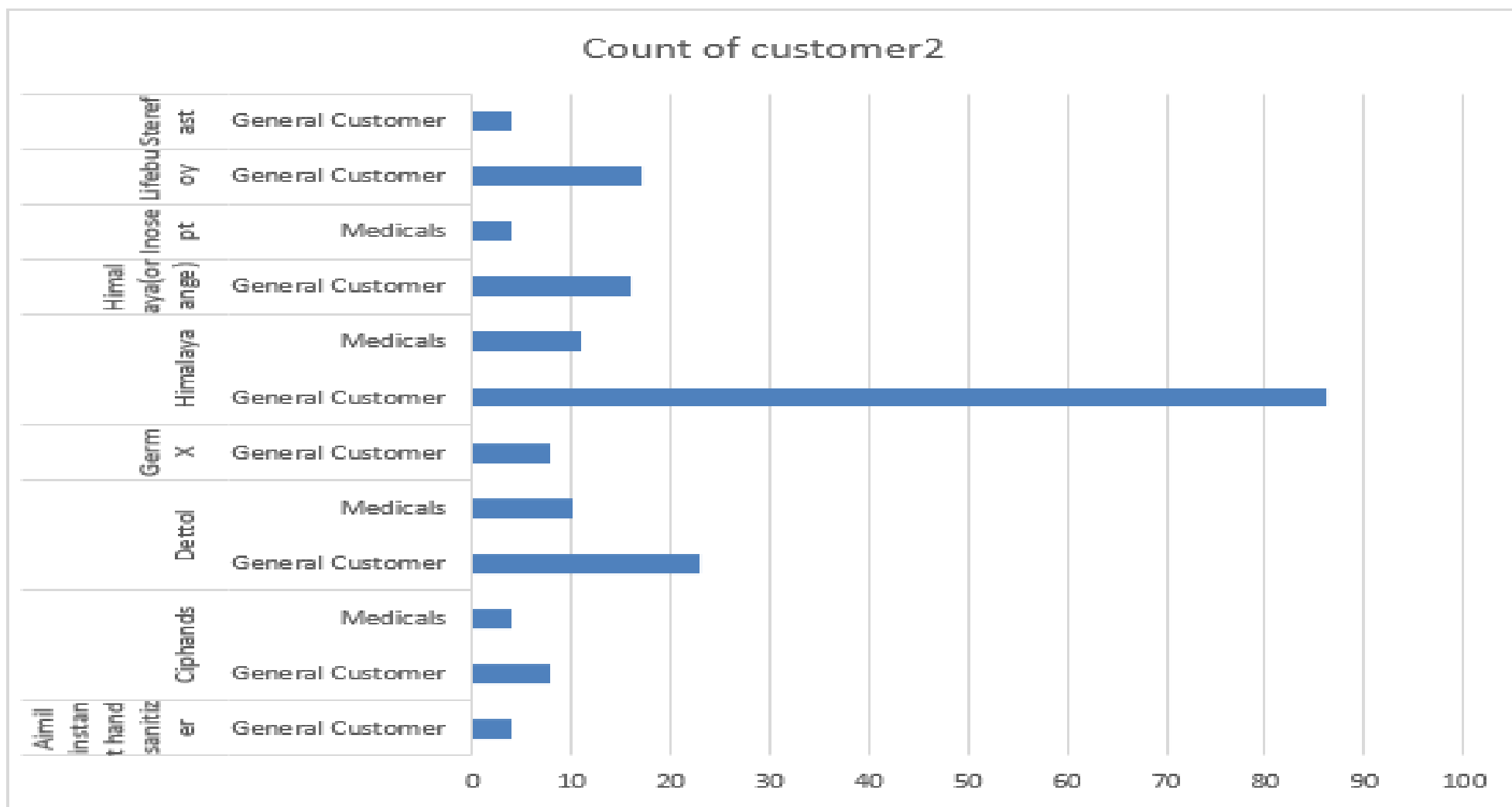
Count of Top selling Hand sanitizer

Count of Top selling Hand sanitizer

Top selling Hand sanitizer ▼
Effectivity and alcohol content ▼



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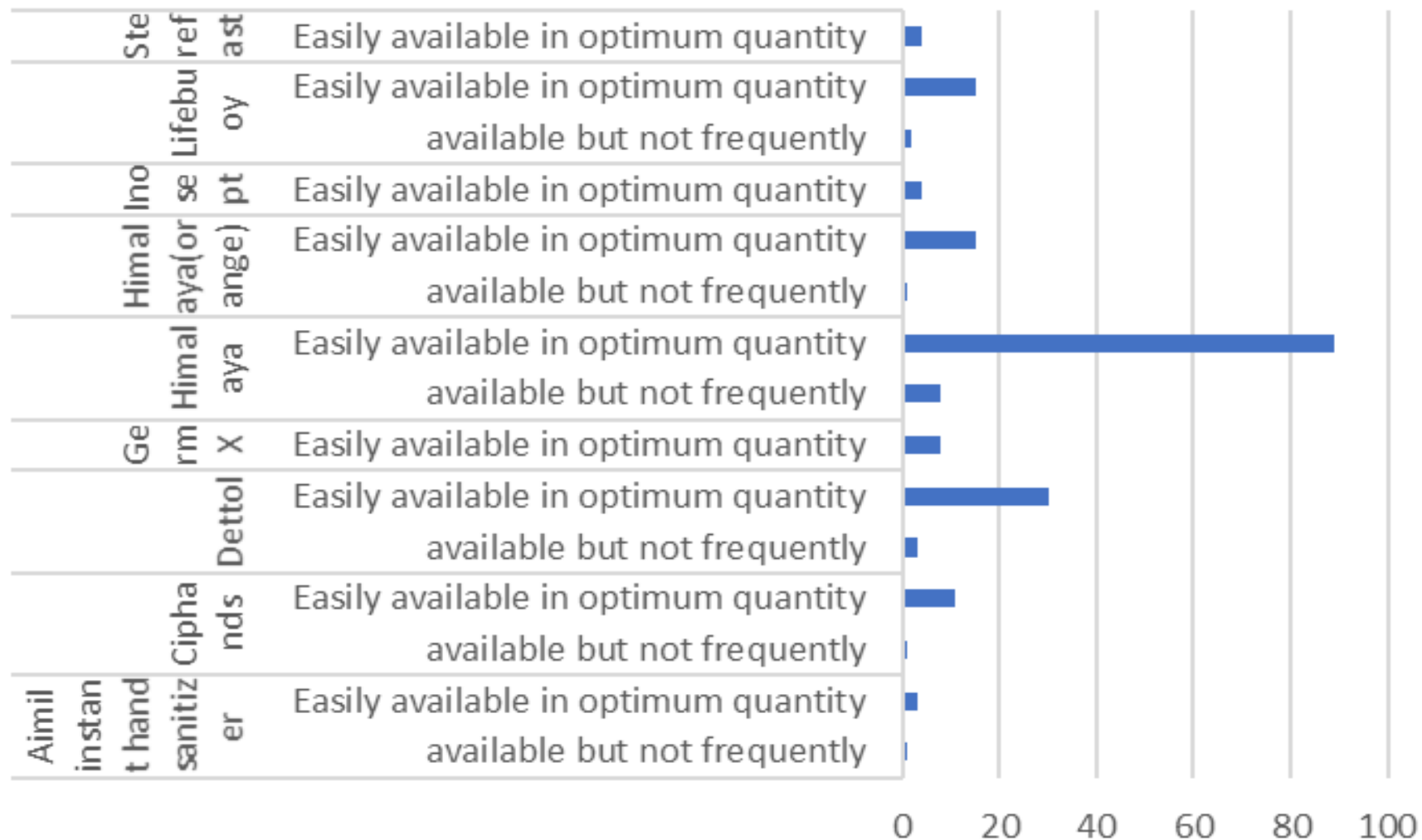


Count of customer2

Count of customer2

Top selling Hand sanitizer ▼

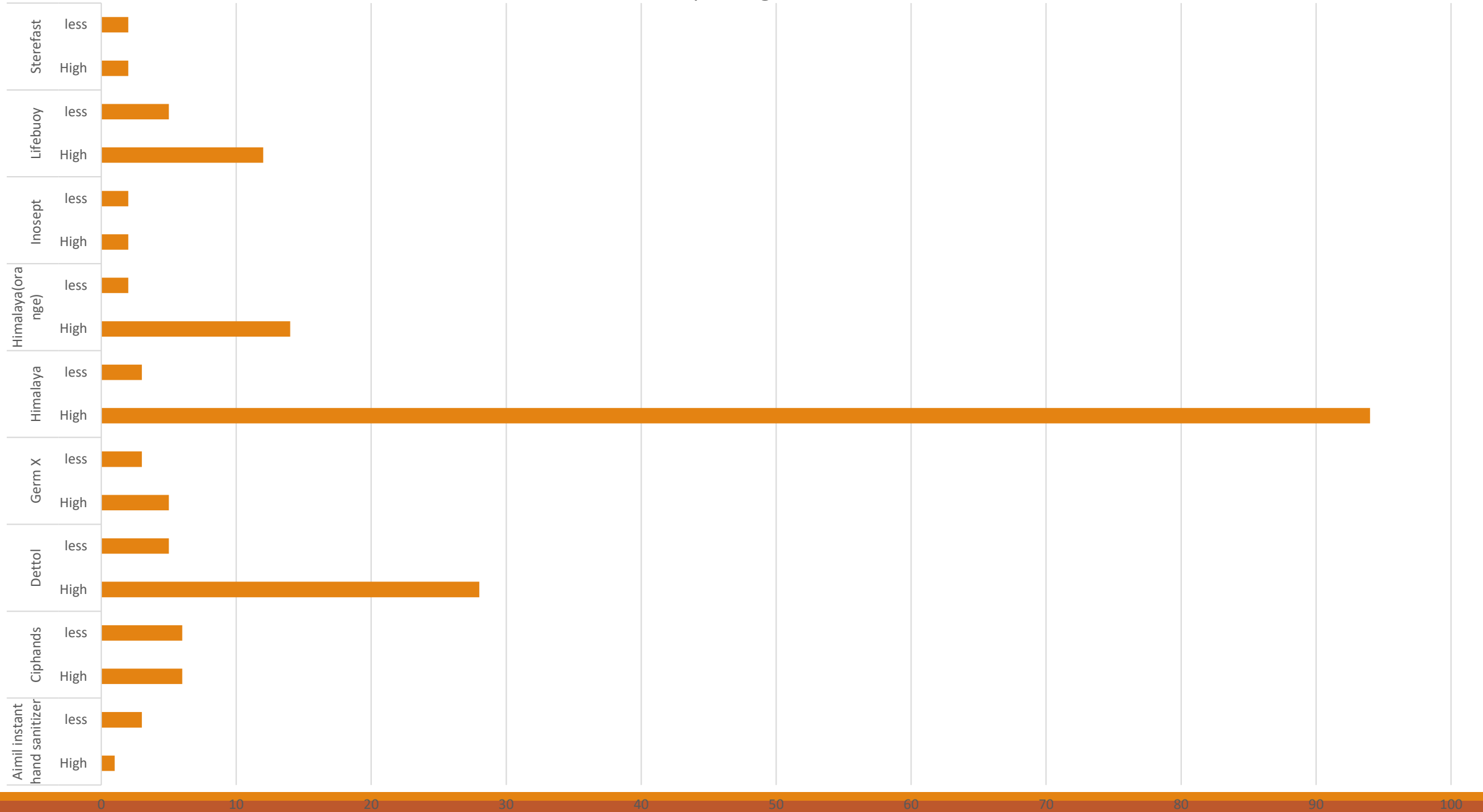
AVAILABILITY ▼



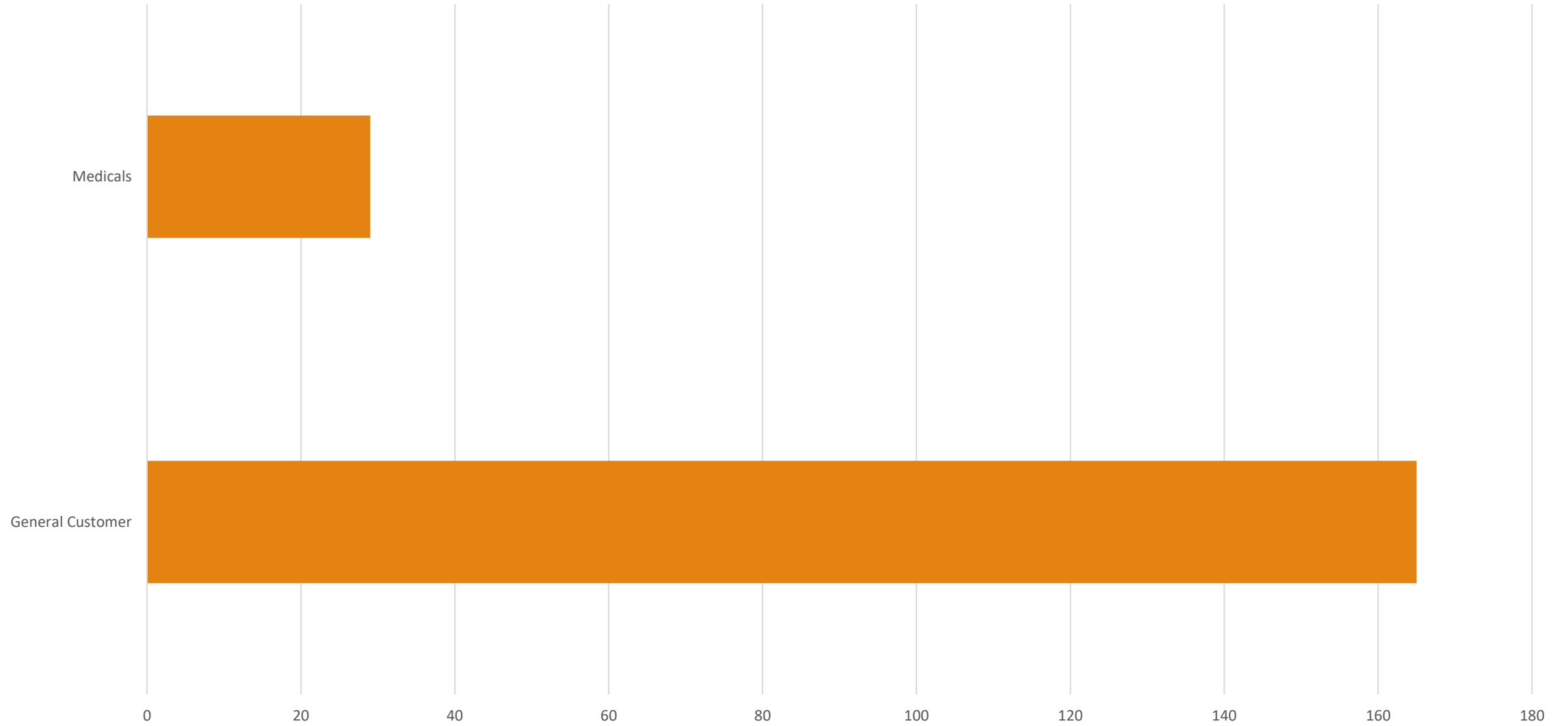
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Count of Top selling Hand sanitizer



Count of General Customer



Conclusion

In the conclusion part , it can be said that the major selling product is Himalaya. The repurchase rate is also high for Dettol and Himalaya. The qualities which a brand leader should possess like accurate price, accurate smell, effective advertising, recall of product into the customers all are high.

So, for adopting market share in the Hand sanitizer market, effective marketing strategy like digital promotion, molecule preference, odour, feel(skin irritation or not), Brand image (during corona) all should be taken care by company and in an untouched area for promotion should be searched and Customer targeting should be done properly.

BIBLIOGRAPHY

1. Hassan AO, Hassan RO, Muhibi MA, Adebimpe WO. A survey of *Enterobacteriaceae* in hospital and community acquired infections among adults in a tertiary health institution in Southwestern Nigeria. *Afr J Microbiol Res*. 2012;6:5162–7. [[Google Scholar](#)]
2. Mondal S, Kolhapure SA. Evaluation of the antimicrobial efficacy and safety of pure hands herbal hand sanitizer in hand hygiene and on inanimate objects. *Antiseptic*. 2004;101:55–7. [[Google Scholar](#)]
3. Pratt RJ, Pellowe C, et al. The epic project: Developing national evidence-based guidelines for preventing healthcare associated infections. Phase 1: Guidelines for preventing hospital-acquired infections. Department of Health (England) *J Hosp Infect*. 2001;47(Suppl 1):S3–82. [[PubMed](#)] [[Google Scholar](#)]
4. Centers for Disease Control and Prevention. Guideline for Hand hygiene in health-care settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA hand hygiene task force. *MMWR*. 2002;51:1–56. [[PubMed](#)] [[Google Scholar](#)]
5. World Health Organization. WHO/IER/PSP/2009/01. Geneva, Switzerland: World Health Organization; 2009. WHO Guidelines in Hand Hygiene in Health Care. [[Google Scholar](#)]
6. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5091001/>
7. Armstrong JA, (1964), "Inactivation of viruses by benzalkonium chloride", *Appl. Microbiol*, Vol. 12(2): 132-137.
8. Bloomfield S, (2007), "The effectiveness of hand hygiene procedures in reducing the risks of infection in home and community settings including hand washing and alcohol based hand sanitizers", *AJIC*, Vol. 35 (10): 27-64.
9. Boyce JM, (2002), Guidelines for hand hygiene. *MMWR Recommendations and Reports*.
10. Ennen J, (2006), "Regular use of hand cream", *BMC Dermatol*, Vol. 6:1.

11. Jefferson T, (2008), "Physical intervention to interrupt or reduce the spread of Respiratory viruses", Systemic Review, BMJ, Vol. 336:77-80.
- 12 . Kampf G, (2004), "Epidemiologic background of hand hygiene", Clin.Microbiol Rev, Vol. 17: 863-893.
- 13 . Kramer A, (2006), "How long do nosocomial pathogens persist on inanimate surfaces?" A Systemic Review. BMC Dist, Vol. 6:130
14. Rotter M, (1997), "150 years of Hand disinfection" Hyg Med, Vol. 22: 332-339.
15. Semmelweis, (2004), "Birth of infection control" Qual.Saf. Health Care, Vol. 13(3): 233- 234.
- 16.https://www.researchgate.net/publication/283081628_TO_STUDY_THE_EFFECT_OF_HAND_SANITIZERS_USED_IN_KINGDOM_OF_SAUDI_ARABIA_AGAINST_THE_COMMON_BACTERIAL_PATHOGENS
17. <https://www.grandviewresearch.com/industry-analysis/hand-sanitizer-market>
18. <https://www.alliedmarketresearch.com/hand-sanitizer-market>
19. <https://www.futuremarketinsights.com/reports/hand-sanitizer-market>

THANK YOU