

FACTORS SHAPING WORKING WOMEN'S PREFERENCE FOR ROBO VACUUM CLEANERS

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Abstract

This study considers preference for robo vacuum cleaner by working women. A vacuum robot is a small, automatic device geared up with sensors and brushes designed to navigate through a home, recognizing and cleaning dirt and debris from floorings, carpets, and even hard-to-reach locations. These devices operate using innovative innovation, consisting of mapping software application, barrier detection, and in some cases even smart-home combination. Robot vacuums have transformed home cleaning by offering a faster, easier, and more convenient way to maintain a tidy space. With features like hands-free operation, smart mapping, and customizable schedules, these devices automate the cleaning process, saving valuable time and energy for busy working women. The result of the study indicates that across all the brands studied, working women prioritize vacuuming, mopping, mapping, quality, tracking, cleaning, convenience, self-charging, battery life and maintenance, which directly influences working women preferences. However they give less preference on price.

Keywords: Robo vacuum cleaner- Preference-Working Women-Technology

Introduction

A robotic vacuum cleaner is an advanced household appliance designed to automate floor cleaning with minimal human effort. Equipped with sensors, programmable controls, and intelligent navigation systems, these devices can move around living spaces, detect dirt, and clean surfaces efficiently. Unlike traditional vacuum cleaners, robotic vacuums are compact, lightweight, and capable of operating independently through pre-set schedules or smart controls, offering convenience, time-saving benefits, and low noise operation. Many models also include features such as automatic recharging, obstacle detection, and app-based control, enhancing user experience. Despite their advantages, they may take longer to clean larger areas and can be relatively expensive. The growing participation of women in the workforce has significantly influenced household consumption patterns, particularly in the adoption of such smart technologies. Working women often face time constraints due to dual responsibilities, leading to a preference for convenient and efficient solutions. Robotic vacuum cleaners meet these needs by enabling automated cleaning with minimal supervision. Preferences are shaped by factors such as efficiency, affordability, brand reliability,

battery life, and advanced features, while the desire for a cleaner environment with reduced physical effort further strengthens their appeal, making them an increasingly preferred household tool.

Review of Literature

Recent studies have focused on understanding consumer preferences and user behavior toward robotic vacuum cleaners.

Jia Jia et al. (2024) analyzed consumer preferences using both questionnaire surveys and text mining techniques. The findings of the study reveal that consumers primarily focus on product performance, while preferences vary across brands and user segments. The study also highlighted that integrating traditional survey methods with modern data analytics improves the accuracy of consumer behavior analysis. **Kenan Carames et al. (2021)** examined online reviews to understand human interaction with robot vacuum cleaners. The research identified key factors such as navigation efficiency, mapping capability, and troubleshooting issues as critical determinants of user satisfaction. It also found that new users tend to be more satisfied than experienced users, indicating the role of expectations in shaping perception. **İbrahim Avcı et al. (2024)** applied the Extended Expectation-Confirmation Model to study user satisfaction and continuance intention. The results showed that factors such as battery life concerns and perceived privacy significantly influence customer satisfaction and their intention to continue using robotic vacuum cleaners. **Raman Kumar and Sunpreet Singh (2020)** emphasized that consumers evaluate multiple criteria such as cost, power consumption, and dust capacity when choosing vacuum cleaners. Their multi-criteria decision-making model demonstrated that purchasing decisions are complex and involve trade-offs among several functional attributes. **Bram Hendriks et al. (2011)** explored user experience and interaction with robot vacuum cleaners. The study found that users respond positively to robots that exhibit human-like behavior or “personality,” suggesting that emotional and psychological factors also influence user acceptance. **Vaussard et al. (2014)**, made a research in robotics and home ecosystems indicates that user acceptance of robotic vacuum cleaners depends on how well the device integrates into daily life. Poor compatibility with user environments and unmet expectations can lead to product rejection, highlighting the importance of user-centered design.

Statement of the Problem

The rapid increase in women’s participation in the workforce has significantly altered traditional household roles, creating a growing demand for smart and time-saving home appliances. Robotic vacuum cleaners have emerged as an innovative solution to reduce the burden of routine cleaning tasks. Despite their technological advancement, the level of adoption and preference among working women remains inconsistent. Technology acceptance is influenced by factors such as perceived usefulness, ease of use, cost, and behavioral intention. Working women often seek efficient solutions to balance professional and domestic responsibilities, yet their purchasing decisions are affected by multiple dimensions including product performance, affordability, durability, brand trust, and after-sales service. Research on smart home technologies further indicates that awareness, social

influence, and attitudes toward automation significantly shape user acceptance. Despite these insights, there is limited empirical research specifically focusing on the preferences of working women toward robotic vacuum cleaners, particularly in emerging markets. This gap restricts manufacturers and marketers from fully understanding user expectations and designing targeted strategies. Therefore, this study aims to examine the various factors influencing the preference of working women towards robotic vacuum cleaners and to provide insights that can enhance product acceptance and customer satisfaction.

Objectives

The objectives of the study are:

- ❖ To know the socio-economic profile of the working women
- ❖ To identify the reasons for preferring robo vacuum cleaner by working women
- ❖ To ascertain the variables associated with the level of preference on robo vacuum cleaner

Research Methodology

The study is based on primary data collected using google form from working women who are using robo vacuum cleaner. It contains questions relating to the socio-economic profile, and reasons for preferring robo vacuum cleaner. A sample of 200 working women residing in Pollachi Taluk has been selected by adopting convenience sampling method. Simple Percentage, Friedman Rank Test and Chi-square test have been used to analyse the data.

Findings

The finding of the study is divided in to three sections namely, socio-economic profile, brand preference and preference for robo vacuum cleaner by working women.

(i) Socio- Economic Profile

- Majority 140(70%) of the working women are residing in urban area
- Majority, 168(84%) of the working women belong to the age group of up to 30 years
- Majority 163(81.5%) of working women are unmarried
- Majority 140(69.7%) of working women are under graduate
- Most 59(29.5%) of the working women are private employees
- Majority 120(60%) of the working women earn below Rs.30,000
- Majority 100(50%) of the working women monthly family income is up to Rs.50,000
- Majority 162(81%) of the working women belong to nuclear family
- Majority 132(66%) of the working women have up to 2 earning members
- Most of the working women, 68(34%) came to know about robo vacuum cleaner through advertisement
- Majority of the working women, 158(78.6%) use robo vacuum cleaner for less than a year
- Majority 102(50.7%) of the working women are using robo vacuum cleaner weekly
- Most 100(50%) of the working women are using robo vacuum cleaner for less than an hour daily

- Majority 110(54.7%) of the working women are using tile flooring

(ii) Brand Preference for Robo Vacuum Cleaner – Friedman Ranking

Sony, Agaro, Xiaomi, Eureka Forbes, Philips, **Dreame**, Voimi, Narwal, **ILIFE** and Evovacs are some of the brands preferred by the Working Women. Friedman Ranking has been used to find the most preferred brand.

Table:1

Brand Preference for Robo Vacuum Cleaner - Friedman Rank Test

Brand	Mean Score	Rank
Sony	9.03	X
Agaro	8.06	IX
Xiaomi	7.66	VIII
Eureka Forbes	4.72	IV
Philips	5.92	VI
Dreame	5.24	V
ILIFE	6.36	VII
Viomi	3.95	III
Narwal	3.31	II
Evovacs	2.79	I

It is observed from the above analysis that among the various robo vacuum cleaner, the working women ranked Evovacs is ranked first followed by Narwal, Voimi, Eureka Forbes, **Dreame**, Philips, **ILIFE**, Xiaomi, Agaro and Sony.

(iii) Preference for Robo Vacuum Cleaner

The table below shows the classification of working women based on their level of preference for robo vacuum cleaner.

Table:2

Preference for Robo Vacuum Cleaner

Factors	Strongly Agree	Agree	Disagree
Convenience	110 (55%)	77 (38.5%)	13 (6.5%)
Saves Times	49 (24.5%)	140 (70%)	11 (5.5%)
Easy Maintenance	48 (24%)	86 (43%)	66 (33%)
Use of Technology	65 (32.5%)	125 (62.5%)	10 (5%)
Vacuuming	74 (37%)	105 (52.5%)	20 (10.4%)
Mopping	58 (29%)	120 (60%)	22 (11%)

Mapping	70 (35%)	90 (45%)	40 (20%)
Considerable Price	25 (12.5%)	50 (25%)	125 (62.5%)
Brand	75 (37.5%)	100 (50%)	25 (12.5%)
Long Battery Life	30 (15%)	110 (55%)	60 (30%)
Cleaning Preference	60 (30%)	105 (52.5%)	35 (17.5%)
Self-Charging	50 (25%)	120 (60%)	30 (15%)

The analysis above reveals that across all the brands studied, working women prioritize vacuuming, mopping, mapping, quality, tracking, cleaning, convenience, self-charging, battery life and maintenance, which directly influences working women preferences. However they give less preference on price.

(iv) Variables Associated with the Level of Preference on Robo Vacuum Cleaner

Chi-square test has used to find out the association between the selected variables namely age, area of residence, marital status, educational qualification, occupation, monthly income, family income, type of family, earning members in the family, source of awareness, period of usage, monthly usage, daily usage, type of flooring and the level of preference for robo vacuum cleaner. Level of significance is five percent.

Table:3

Variables Associated with the Level of Preference on Robo Vacuum Cleaner

Variables	Calculated Chi-Square Value	D.f	Table Value @ 5% Level
Age	7.597	6	12.592
Area of residence	14.896*	4	9.488
Marital Status	5.54	2	5.991
Educational Qualification	2.685	6	12.592
Occupation	15.225	8	15.507
Monthly Income	16.135*	6	12.592
Family Income	18.909*	6	12.592
Type of Family	6.477*	2	5.991
Earning Members in the Family	9.554*	4	9.488
Sources of Awareness	18.438*	6	12.592
Period of Usage	18.005*	4	9.488
Monthly Usage	20.447*	6	12.592
Daily Usage	18.881*	6	12.592
Type of Flooring	36.334*	10	18.307

The above table discloses that out of fourteen variables selected, ten variables namely area of residence, monthly income, family income, type of family, earning members in the family, source of awareness, period of usage, monthly usage, daily usage and type of flooring are found to be significant with the level of preference for robo vacuum cleaner at five percent level.

Suggestions

Based upon the study conducted, the following suggestions are made:

- The study suggests that consumers prefer robot vacuum cleaners that offer a balance between price and performance, making mid-range models more attractive
- The findings indicate that longer battery life is highly preferred, so companies should design products that can clean larger areas on a single charge
- The research shows that brand trust plays an important role, so companies like Xiaomi and Eureka Forbes should emphasize after-sales service and warranty support
- It is recommended that companies increase awareness about robot vacuum cleaners through advertisements and product demonstrations, as many consumers are still unfamiliar with the technology
- The findings indicate that user-friendly design and easy maintenance features should be prioritized to enhance customer experience

Conclusion

Robotic vacuum cleaners have transformed modern home cleaning by offering a smart, convenient, and time-saving solution for maintaining cleanliness. With features like automated scheduling, multi-surface cleaning, and smart navigation, they provide significant advantages, especially for busy households and pet owners. However, they also come with limitations such as navigation issues, small dustbins, and the need for regular maintenance. Despite these challenges, ongoing advancements in technology continue to improve their efficiency, intelligence, and user experience. As smart home ecosystems grow, robotic vacuum cleaners are expected to play an even greater role in everyday cleaning routines, making them a valuable addition to modern living.

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