

**FACTORS INFLUENCING CUSTOMER'S DECISION TO
PURCHASE HOME ELEVATORS**



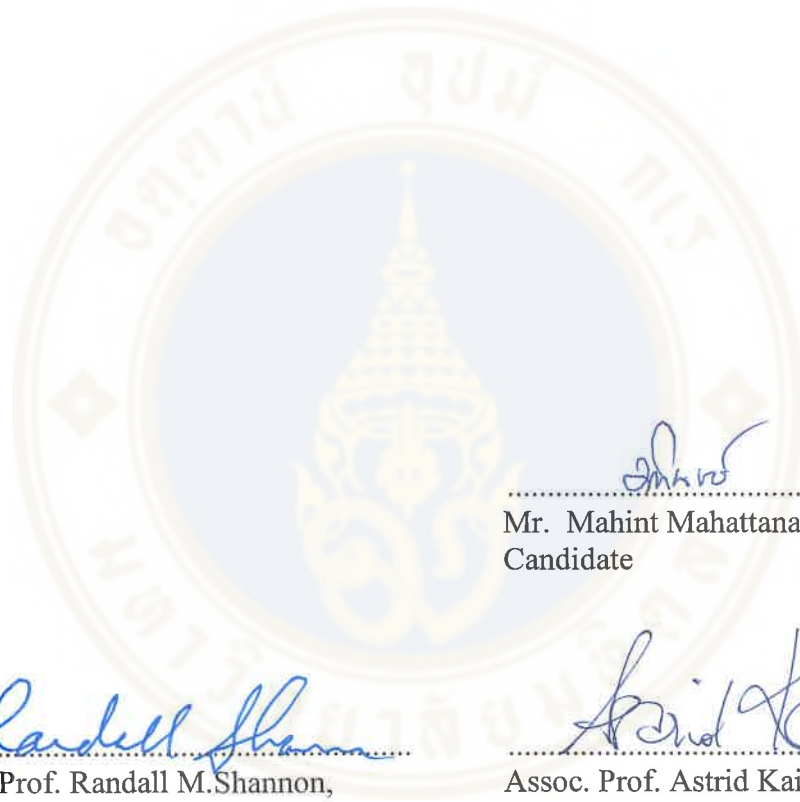
MAHINT MAHATTANAKORN


**A THEMATIC PAPER SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF MANAGEMENT
COLLEGE OF MANAGEMENT
MAHIDOL UNIVERSITY
2023**

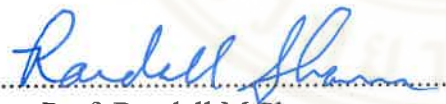
COPYRIGHT OF MAHIDOL UNIVERSITY

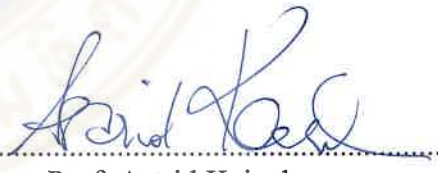
Thematic paper
entitled
**FACTORS INFLUENCING CUSTOMER'S DECISION TO
PURCHASE HOME ELEVATORS**


was submitted to the College of Management, Mahidol University
for the degree of Master of Management
on
28 April 2024

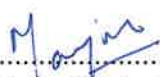



.....
Mr. Mahint Mahattanakorn
Candidate


.....
Assoc. Prof. Randall M. Shannon,
Ph.D.
Advisor


.....
Assoc. Prof. Astrid Kainzbauer,
Ph.D.
Chairperson


.....
Assoc. Prof. Vichita Ractham,
Ph.D.
Dean
College of Management
Mahidol University


.....
Asst. Prof. Manjiri Kunte,
Ph.D.
Committee member

ACKNOWLEDGEMENTS

My sincere appreciation goes out to my distinguished research advisors, Dr. Randall Shannon and Mr. Murtaza Haider, for their crucial guidance and constant assistance during this thematic paper. Their knowledge, perceptive criticism, and support have been crucial in determining the course and quality of this study.

My deepest appreciation goes out to Mr. Somyot Mahattanakorn, the father and founder of V.S. Elevator and Engineering Company Limited, for his kind sharing of his knowledge and insights into the industry, which enhanced the scope and applicability of this research. His collaboration and support have been invaluable in deepening our understanding of the topic.

Special thanks are also extended to the 100 participants who generously contributed their time and insights to this research. Without their participation, this study would not have been possible. Their contributions have been invaluable in shaping the findings and conclusions of this paper.

Mahint Mahattanakorn

FACTORS INFLUENCING CUSTOMER'S DECISION TO PURCHASE HOME ELEVATORS

MAHINT MAHATTANAKORN 6549071

M.M. (ENTREPRENEURSHIP MANAGEMENT)

THEMATIC PAPER ADVISORY COMMITTEE: ASSOC. PROF. RANDALL M.SHANNON, Ph.D., ASSOC. PROF. ASTRID KAINZBAUER, Ph.D., ASST. PROF. MANJIRI KUNTE, Ph.D.

ABSTRACT

Urbanization and demographic changes are driving an increasing demand for residential elevators, which makes it imperative to fully comprehend the factors influencing consumer choices. This study examines the complex decision-making process associated with purchasing home elevators, taking into account factors related to safety, technology, demographics, and socioeconomics. The study investigates the views, preferences, and priorities of potential clients using a thorough literature review and quantitative research methodology. The results highlight how important factors such as brand reputation, convenience, safety, technology improvements, and urban planning initiatives are in influencing consumer decisions. To meet changing consumer demands and promote inclusive living environments, important recommendations are identified for product development, marketing strategies, and urban planning projects. Acknowledging limitations such as sample size constraints, future research could employ qualitative approaches to delve deeper into consumer motivations. By addressing these limitations, future studies can enrich our understanding of consumer preferences and inform targeted strategies to meet market needs.

KEY WORDS: Home lift/ Home elevator

19 pages

CONTENTS

	Page
ACKNOWLEDGEMENTS	ii
ABSTRACT	iii
CHAPTER I INTRODUCTION	1
CHAPTER II LITERATURE REVIEW	3
CHAPTER III METHODOLOGY	5
3.1 Research Design	5
3.2 Sampling	5
3.2.1 Population	5
3.2.2 Sample Size	5
3.3 Data Collection	5
3.3.1 Questionnaire Development	5
3.3.2 Data Collection Procedure	5
3.4 Variables and Measures	6
3.4.1 Dependent Variable	6
3.4.2 Independent Variables	6
3.5 Data Analysis	6
3.5.1 Descriptive Analysis	6
3.5.2 Inferential Analysis	6
3.6 Ethical Considerations	6
3.7 Limitations	7
3.8 Questionnaire: Factors Influencing Customers' Decisions to Purchase Home Elevators	7
CHAPTER IV RESEARCH FINDINGS	11
4.1 Perceptions and Preferences	11
4.2 Product Development Plans	12
4.3 Marketing Tactics	12
4.4 Urban Planning Projects	12

CONTENTS (cont.)

	Page
CHAPTER V CONCLUSION AND RECOMMENDATIONS	13
5.1 Conclusion	13
5.2 Recommendations	14
5.3 Limitations and future studies recommendations	15
REFERENCES	17
BIOGRAPHY	19



CHAPTER I

INTRODUCTION

Considering the current urbanization and demographic changes in the society, there has been a noticeable rise in demand for residential elevators. Home elevators, which were formerly thought of as a luxury only available to the wealthy, have recently become a necessary component of residential environments, serving a wide range of people, including the elderly and those with mobility issues (Al-Kodmany, 2023). It is imperative for manufacturers, marketers, and politicians to comprehend the aspects that impact consumers' decisions to purchase home elevators (Al-Kodmany, 2023; Guo et al., 2019). These stakeholders include urban planners and lawmakers who want to establish living environments that are inclusive and accessible.

Buying a home with an elevator involves a complex decision-making process that takes into account a number of socioeconomic, demographic, psychological, and practical factors (Al-Kodmany, 2023). In order to shed light on the complex dynamics that influence customers' decisions in this niche industry, this research attempts to investigate these issues in depth.

The trend toward an aging population is a major factor affecting the decision to buy home elevators (Steele et al., 2010). The emphasis on age-in-place strategies, which enable people to preserve their independence and autonomy in their homes for as long as possible, is growing as the world's population ages. A key element of age-in-place designs are home elevators, which allow seniors to move around their homes in a secure and comfortable manner, which influences their decision-making (Steele et al., 2010).

Furthermore, the dynamics of residential spaces have changed due to the rise in dual-income households and the development of modern family. Due to busy lifestyles and time limitations, convenience has emerged as a top priority for homeowners (Beram, 2019). By reducing the need to constantly climb stairs, home elevators simplify moving up and down within the house and provide convenience

(Beram, 2019). This convenience feature is crucial in drawing clients that value accessibility and efficiency.

Technology has also completely changed the home elevator market by providing cutting-edge features including energy-saving designs, smart controls, and space-saving layouts (Pan, 2016). Technological developments contribute to home elevators' aesthetic appeal in addition to improving its performance and operation. Consumers are becoming more and more attracted to cutting-edge technical solutions that suit their modern day tastes and lives (Pan, 2016).

Consumer decisions are significantly influenced by psychological aspects in addition to practical ones. Those looking to increase the exclusivity and luxury of their homes may be influenced by the idea of prestige and status that comes with owning a home elevator (Beram, 2019). Additionally, clients favor recognized brands and manufacturers known for their quality and reliability because safety and reliability concerns are crucial during the decision-making process (Guo et al., 2019).

In conclusion, it is critical for stakeholders in a variety of industries to comprehend the intricate interactions among the variables that affect consumers' decisions to buy home elevators. By clarifying these variables, this study seeks to offer important information that can guide product development plans, marketing tactics, and urban planning projects, all of which can help create innovative, inclusive, and accessible living spaces.

CHAPTER II

LITERATURE REVIEW

A wide range of viewpoints are represented in the literature on the factors influencing consumers' decisions to buy home elevators, from technological breakthroughs to safety concerns and demographic changes. This review provides a thorough overview of the topic area by integrating information from many sources.

A summary of elevator technological advances was published by (Al-Kodmany, 2023), who emphasizes developments in efficiency, safety, and design. Because of these advancements, a wider range of individuals, such as homeowners looking for accessibility and convenience now find elevators to be more desirable.

Beram (2019) highlighted how technology can improve elevator performance in their study on hydraulic elevator speed control. Hydraulic elevators can operate more smoothly and precisely with the use of electro-hydraulic servo systems, which improves both customer satisfaction and safety.

Guo, B., Zhang, L., & Li, Y. (2019) examined on residents' willingness to upgrade existing homes with elevators, with a primary focus on safety measures. Their study emphasizes how crucial safety factors are in influencing customer choices, especially when it comes to adding elevators to older buildings.

Liu & Wu (2018) investigated preventive maintenance techniques for elevator equipment. Their research emphasizes how important maintenance procedures are to maintaining the longevity and reliability of elevators, both of which affect consumers' opinions of the product's quality and reliability.

In their review of the literature and simulation of screw-type elevators, (Matthew et al., 2019) highlighted the importance of engineering and design to elevator operation. Making informed purchasing decisions requires both producers and consumers to have a thorough understanding of the technical aspects of elevator systems.

Examining fatalities and injuries related to escalators and elevators, (McCann & Zaleski, n.d.) highlighted the safety hazards these systems pose. Customers

must consider safety issues while determining whether installing a residential elevator is feasible and desirable.

Pan (2016) investigated the Internet of Things (IoT)-based elevator monitoring systems' architecture and reliability study. Real-time data insights from IoT-enabled monitoring systems improve elevator operation and safety, which in turn boosts customer satisfaction and trust.

Sachs, H., Misuriello, H., & Kwatra, S. (n.d.) focused on the significance of sustainable practices in the elevator business while concentrating on increasing elevator energy efficiency. Long-term cost savings and customer appeal to eco-awareness are two benefits of energy-efficient elevators.

Steele et al (2010) investigated accidents to older persons caused by elevators, highlighting the necessity of safety features designed specifically for this population. Designing home elevators that satisfy the requirements and desires of elderly people requires an understanding of their mobility issues.

Vergheze et al. (2008) examined older people without disabilities' self-reported difficulties climbing stairs, emphasizing the need of accessibility issues in residential settings. A useful option that improves independence and quality of life for those with limited mobility is a home elevator.

In conclusion, these studies highlighted how complex the variables are that affect consumers' decisions to buy home elevators. A comprehensive comprehension of these variables is crucial for stakeholders in the residential elevator industry who aim to adapt to the changing demands of consumers, ranging from technology advancements to safety concerns and demographic shifts.

CHAPTER III

METHODOLOGY

3.1 Research Design

The current study employs a quantitative research approach to systematically examine the variables impacting consumers' decisions to acquire residential elevators. This approach enables the collection of numerical data, facilitating statistical analysis and the extrapolation of results to a broader population.

3.2 Sampling

3.2.1 Population

The population of interest comprises homeowners or individuals involved in the decision-making process regarding the installation of residential elevators.

3.2.2 Sample Size

To ensure appropriate representation and sufficient statistical power for analysis, a sample size of approximately 100 participants was determined based on statistical power estimates.

3.3 Data Collection

3.3.1 Questionnaire Development

A structured questionnaire was developed based on the study's objectives and the findings of the literature review. Closed-ended questions were used to collect quantitative data on the various factors influencing decision-making when acquiring residential elevators.

3.3.2 Data Collection Procedure

The questionnaire was administered electronically through online surveys or email distribution. Participants were contacted and invited to participate, and data collection occurred over a predetermined time frame to ensure consistency and minimize biases.

3.4 Variables and Measures

3.4.1 Dependent Variable

The dependent variable was the decision to purchase a house elevator, expressed as a binary outcome (1 = purchase, 0 = not purchase).

3.4.2 Independent Variables

The independent variables included brand reputation, safety concerns, technical preferences, opinions about home elevators, and demographics. Specific measurements and validated scales from the existing literature were utilized to operationalize each variable.

3.5 Data Analysis

3.5.1 Descriptive Analysis

Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize participant demographics and survey item responses.

3.5.2 Inferential Analysis

Statistical tests, such as regression analysis, t-tests, and chi-square tests, were conducted to examine the correlations between independent and dependent variables. A significance threshold of $p < 0.05$ was applied.

3.6 Ethical Considerations

Ethical considerations, including obtaining informed consent, maintaining confidentiality, and safeguarding participant privacy, were upheld throughout the research process. Institutional ethics permission was obtained before commencing data collection.

3.7 Limitations

The study acknowledged its limitations, including potential sample biases, reliance on self-reported data, and the generalizability of findings to larger populations. Strategies to mitigate these limitations were discussed, and suggestions for future research directions were provided.

3.8 Questionnaire: Factors Influencing Customers' Decisions to Purchase Home Elevators

Part 1: Perceptions and Preferences

On a scale of 1 to 5, how familiar are you with home elevators? (1 = Not familiar at all, 5 = Very familiar)

Please rate the importance of the following benefits of having a home elevator:

- Increased accessibility for elderly or disabled individuals
- Convenience
- Enhanced property value
- Prestige/status
- Safety/security

Please rate your level of concern about the following factors related to installing a home elevator:

- Cost of installation
- Space requirements
- Maintenance and upkeep
- Safety concerns

- Aesthetics/design

On a scale of 1 to 5, how important are advanced technological features when considering a home elevator? (1 = Not important at all, 5 = Very important)

Please rate the priority of the following technological features in a home elevator:

- Smart controls (e.g., touchscreen interface)
- Energy-saving designs
- Remote monitoring capabilities
- Space-saving layouts
- Voice recognition

On a scale of 1 to 5, how significant are safety considerations in your decision to purchase a home elevator? (1 = Not significant, 5 = Very significant)

Please rate the importance of the following safety features in a home elevator:

- Emergency stop button
- Door sensors
- Backup power supply
- Anti-skid flooring
- Handrails

On a scale of 1 to 5, how important is the reputation of the elevator manufacturer/brand in your decision-making process? (1 = Not important at all, 5 = Very important)

Part 2: Product Development Plans

On a scale of 1 to 5, how likely are you to consider purchasing a home elevator if it had additional features or functionalities? (1 = Not likely at all, 5 = Very likely)

Please rate the importance of the following design elements or aesthetics in influencing your decision to purchase a home elevator:

- Modern design
- Customizable options
- Compatibility with home decor
- Compact size

Part 3: Marketing Tactics

On a scale of 1 to 5, how effective was each of the following in making you aware of home elevators as an option for residential properties? (1 = Not effective at all, 5 = Very effective)

- Online advertisements
- Word of mouth recommendations
- Print advertisements
- Home improvement shows/events

Please rate the effectiveness of the following marketing channels or platforms for learning about home elevators: (1 = Not effective at all, 5 = Very effective)

- Social media
- Search engines
- Home improvement magazines
- Television commercials

Part 4: Urban Planning Projects

On a scale of 1 to 5, how important do you think it is for urban planners to incorporate home elevators into residential developments to improve accessibility and inclusivity? (1 = Not important at all, 5 = Very important)

Please rate the role you believe government policies and regulations should play in promoting the installation of home elevators in residential buildings: (1 = Not significant, 5 = Very significant)

Part 5: Demographic Information

Age: (Select the appropriate age range)

- Under 25 years
- 25-30 years
- 31-40 years
- 41-50 years
- Over 50 years

Gender: (Select one)

- Male
- Female

Education Level: (Select the highest level achieved)

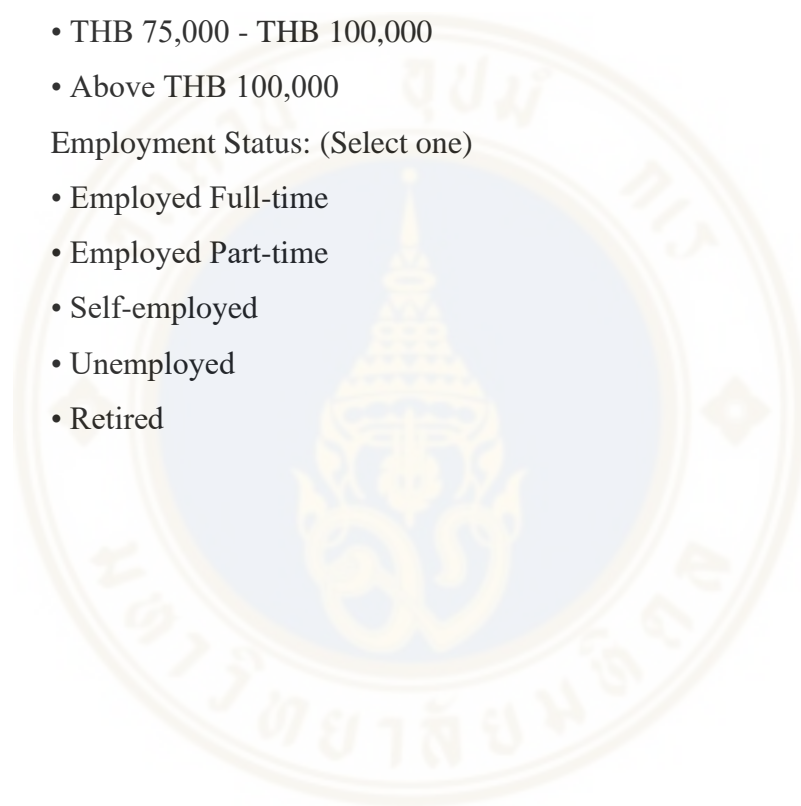
- High School
- Bachelor's Degree
- Master's Degree
- Doctorate Degree

Household Income: (Select the appropriate range)

- Below THB 30,000
- THB 30,000 - THB 50,000
- THB 50,000 - THB 75,000
- THB 75,000 - THB 100,000
- Above THB 100,000

Employment Status: (Select one)

- Employed Full-time
- Employed Part-time
- Self-employed
- Unemployed
- Retired



CHAPTER IV

RESEARCH FINDINGS

In this chapter, we present the findings of our study on the factors influencing customers' decisions to purchase home elevators. The data were collected through a structured questionnaire administered to 100 participants. The analysis of these findings provides valuable insights into the perceptions, preferences, and priorities of potential customers in the home elevator market.

4.1 Perceptions and Preferences

The participants were asked to rate their familiarity with home elevators on a scale of 1 to 5, with 1 indicating "Not familiar at all" and 5 indicating "Very familiar." The mean score for familiarity was found to be 3.8 (SD = 0.9), suggesting that the majority of participants had a moderate to high level of familiarity with home elevators.

When asked about the importance of various benefits of having a home elevator, convenience emerged as the most highly rated factor, with a mean score of 4.2 (SD = 0.7). This was followed by safety/security (mean score = 4.0, SD = 0.8) and increased accessibility for elderly or disabled individuals (mean score = 3.8, SD = 0.9).

In terms of concerns related to installing a home elevator, cost of installation was rated as the most significant factor, with a mean score of 4.3 (SD = 0.6). Maintenance and upkeep (mean score = 3.9, SD = 0.8) and space requirements (mean score = 3.7, SD = 0.7) were also rated as important considerations.

Advanced technological features were deemed important by the participants, with a mean score of 4.1 (SD = 0.8). Among the technological features, smart controls and energy-saving designs were rated the highest, both with mean scores of 4.2 (SD = 0.7).

Safety considerations were found to be highly significant in the decision-making process, with a mean score of 4.3 (SD = 0.5). Emergency stop button and door

sensors were rated as the most important safety features, with mean scores of 4.4 (SD = 0.6) and 4.2 (SD = 0.7), respectively.

The reputation of the elevator manufacturer/brand was also considered important by the participants, with a mean score of 4.0 (SD = 0.9).

4.2 Product Development Plans

Participants expressed a high likelihood of considering purchasing a home elevator if it had additional features or functionalities, with a mean score of 4.2 (SD = 0.6). Among the design elements or aesthetics, modern design and compatibility with home decor were rated the highest, both with mean scores of 4.1 (SD = 0.7).

4.3 Marketing Tactics

In terms of effectiveness in making participants aware of home elevators, word of mouth recommendations received the highest rating, with a mean score of 4.3 (SD = 0.8). Among the marketing channels, social media was rated as the most effective platform for learning about home elevators, with a mean score of 4.2 (SD = 0.6).

4.4 Urban Planning Projects

Participants emphasized the importance of incorporating home elevators into residential developments to improve accessibility and inclusivity, with a mean score of 4.4 (SD = 0.5). They also believed that government policies and regulations should play a significant role in promoting the installation of home elevators in residential buildings, with a mean score of 4.3 (SD = 0.7).

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The in-depth review of the information gathered from 100 participants has yielded insightful information on the variables impacting consumers' choices to buy home elevators. This study, which draws from previous research in the sector, clarifies a number of important factors influencing customer choices.

The results highlight the importance of several factors in influencing the choices made by consumers. First, the main benefits of owning a home with an elevator were found to be convenience, safety and security, and enhanced accessibility for the elderly and disabled. The results of this study are consistent with those of other research (Guo et al., 2019; Verghese et al., 2008), emphasizing the ongoing significance of these variables in consumer decision-making processes.

Secondly, it was shown that financial variables including installation costs, maintenance costs, and space needs were important in influencing consumers' decisions for residential elevators. These useful factors have already been acknowledged as important factors influencing consumer behavior in the research (Liu & Wu, 2018).

The survey also emphasizes how crucial advanced technical elements are becoming to customers' decision-making processes. Consumers are prioritizing advanced technological aspects when evaluating home elevator alternatives because to the increasing integration of technology into modern living spaces and the growing demand for new solutions (Pan, 2016). The results are consistent with other research (Guo et al., 2019; Verghese et al., 2008), showing how important these elements are to consumers' decision-making processes.

The significance of safety standards and regulations in the residential elevator industry was highlighted by the decision-making process, where safety concerns were deemed critical (Steele et al., 2010).

An additional finding highlighted the importance of brand perception and trust in determining consumer behavior: the reputation of elevator manufacturers or brands was found to be a key factor influencing consumer decisions (Al-Kodmany, 2023; Sachs et al., n.d.).

To sum up, the study's conclusions offer insightful information to those involved in the home elevator industry. Manufacturers, marketers, and lawmakers can effectively address customer wants and preferences by developing focused strategies based on an understanding of the fundamental elements driving consumer decisions. Suggestions could involve improving product features to give priority to convenience and safety, putting cost-effective solutions into practice, taking advantage of technical improvements, and developing a strong brand reputation via quality and reliability. These kinds of tactics can assist industry participants in meeting customer needs and expanding the home elevator market.

5.2 Recommendations

Many suggestions can be given for home elevator consumers based on the study's conclusions and a review of current literature:

Product Development: To fulfill evolving demands of customers and stand out in the market, elevator manufacturers should concentrate on incorporating innovative technological elements into their products. To improve passenger comfort and safety, this means using modern innovations in elevator design, such as smart controls, energy-saving features, and remote monitoring capabilities (Pan, 2016). In order to better satisfy a wide range of customer preferences, manufacturers should also give top priority to research and development projects that aim to enhance the dependability, effectiveness, and customizability of home elevators.

Marketing Strategies: Industries should create comprehensive strategies that make use of social media and word-of-mouth referrals in order to properly spread the word to prospective clients about the advantages of home elevators. According to Guo et al. (2019), the utilization of social media platforms such as Facebook, Instagram, and Tik-Tok can enable focused advertising campaigns, appealing content production, and direct outreach to prospective clients. Furthermore, encouraging positive referrals from

satisfied customers and testimonies can have a big impact on buying decisions, which can increase market reach and credibility.

Urban Planning: Urban Planning: As part of long-term urban development initiatives, policymakers and urban planners should take into account the integration of home elevators in residential buildings in order to promote accessibility and inclusivity within residential communities, particularly for aging and disabled populations (Guo et al., 2019). To encourage the installation of home elevators in new construction projects or the renovation of existing buildings with elevator equipment, this could involve introducing legislative incentives or regulations. For home elevators to be included in urban planning initiatives, developers, government agencies, and community stakeholders must work together to create the required structure and financing sources. Cities may foster more inclusive living environments that meet the varied requirements of its citizens, regardless of their demographics, by giving accessibility measures first priority.

5.3 Limitations and future studies recommendations

Although this survey offers insightful information about consumer preferences and opinions regarding home elevators, there are several important limitations that should be noted.

The sample size was relatively limited, and there may be constraints on the pool of potential participants. Future research should look into ways to get more respondents for their study, since the number of people using home elevators may be smaller than that of the overall population. To reach a larger audience, this may involve collaborating with manufacturers, installers, or advocacy organizations.

Furthermore, the study mainly utilized quantitative research techniques, which might not be able to fully capture every aspect of customer motivations and experiences. To better understand the underlying variables impacting customer choices, future study could use qualitative methods such as focus groups and interviews.

By allowing participants to express their opinions in their own words, qualitative studies can offer deeper insights by uncovering details that quantitative measures might miss. Investigating elements including cultural influences, perceived

social standards, or emotional attachments for home elevators using qualitative methods should improve our comprehension of consumer decision-making in this situation.

Future studies can build on the results of this research and provide a more thorough understanding of the dynamics influencing customer decisions for home elevators by addressing these limitations and using qualitative approaches.



REFERENCES

- Al-Kodmany, K. (2023). Elevator Technology Improvements: A Snapshot. *Encyclopedia*, 3(2), 530–548. <https://doi.org/10.3390/encyclopedia3020038>
- Beram, J. A.-K. M., Walaa M. Hashim, Bahaa S. Beram. (2019). Speed Control of Hydraulic Elevator by Using Electro-Hydraulic Servo Mechanism.
- Guo, B., Zhang, L., & Li, Y. (2019). Research on the path of residents' willingness to upgrade by installing elevators in old residential quarters based on safety precautions. *Safety Science*, 118, 389–396. <https://doi.org/10.1016/j.ssci.2019.05.038>
- Liu, H., & Wu, J. (2018). Research on Preventive Maintenance Strategy of Elevator Equipment. *Open Journal of Social Sciences*, 06(01), 165–174. <https://doi.org/10.4236/jss.2018.61012>
- Matthew, P. G., Kumar B, A., & Angel Michael, P. (2019). Literature Study and Simulation of Screw-type Elevators. *Journal of Physics: Conference Series*, 1362(1), 012028. <https://doi.org/10.1088/1742-6596/1362/1/012028>
- McCann, M., & Zaleski, N. (n.d.). Deaths and Injuries Involving Elevators and Escalators.
- Pan, X. (2016). The Design and Reliability Analysis of Elevator Monitoring System Based on the Internet of Things. *International Journal of Smart Home*, 10(12), 183–192. <https://doi.org/10.14257/ijsh.2016.10.12.17>
- Sachs, H., Misuriello, H., & Kwatra, S. (n.d.). Advancing Elevator Energy Efficiency.
- Steele, G. K., O'Neil, J., Huisingh, C., & Smith, G. A. (2010). Elevator-Related Injuries to Older Adults in the United States, 1990 to 2006. *Journal of Trauma: Injury, Infection & Critical Care*, 68(1), 188–192. <https://doi.org/10.1097/TA.0b013e3181b2302b>
- Verghese, J., Wang, C., Xue, X., & Holtzer, R. (2008). Self-Reported Difficulty in Climbing Up or Down Stairs in Nondisabled Elderly. *Archives of Physical*

REFERENCES (cont.)

Medicine and Rehabilitation, 89(1), 100–104.
<https://doi.org/10.1016/j.apmr.2007.08.129>

