Report On

Comparative Analysis Between Siemens Elevator and Other Competitors

Submitted By

Md Redwan Ibna Harun

ID: 16204013

Submitted To

Ummul Wara Adrita

Date of Submission: 12/06/2023

Declaration

It is hereby declared that.

1. The internship report submitted is my/our own original work while completing a degree at Brac University.

2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.

3. The report does not contain material accepted or submitted, for any other degree or diploma at a university or other institution.

4. I/We have acknowledged all main sources of help.

Student's Full Name & Signature:

_____

Student Full Name: Md Redwan Ibna Harun

Student ID: 16204013

Supervisor's Full Name & Signature:

_____

Supervisor Name: Ummul Wara Adrita

Letter of Transmittal

June 12, 2023

Ummul Wara Adrita

Lecturer,

Brac Business School

BRAC University

66 Mohakhali, Dhaka-1212

Subject: Submission of Internship Report

Dear Miss

I am pleased to present my internship report with “Metaland Technology Ltd”. This letter serves as an official notification of the conclusion of my internship, which was undertaken in fulfilment of the prerequisites for my Bachelor of Business Administration degree. My internship report focused on conducting a comparative analysis of Siemens Elevators and other industry competitors. Working in collaboration with you on the internship report has been a pleasurable experience. The utilization of knowledge gained within an educational setting has provided me with the necessary information and comprehension to produce a report on my findings and distribute them to a broader demographic. My utmost goal is for this report to surpass your expected level of contentment.

Thank you for your time and attention.

Sincerely,

Md Redwan Ibna Harun

ID: 16204013

BRAC Business School

BRAC University

Non-Disclosure Agreement

[This page is for the Non-Disclosure Agreement between the Company and The Student]

This agreement is made and entered into by and between [Name of Company] and the undersigned student at BRAC University …….

Acknowledgement

I would like to thank everyone who helped to make this report a success and to say thank you. First of all, I want to express my gratitude to Allah for giving me the strength and determination to complete this assignment while juggling my other commitments. Additionally, I want to express my appreciation and admiration to Ms Ummul Wara Adrita, a lecturer at the BRAC Business School, who is my academic supervisor. She has helped me learn how to learn more effectively in the workplace throughout the semester. My work has improved and becomes more accessible thanks to her invaluable advice and help throughout the semester. I appreciate her guidance and mentorship because they have been accommodating. I want to extend my sincere gratitude to Engr. Amir Hossain, Manager (Sales and Marketing) at Metaland Technology Ltd., is my field supervisor. His knowledge of the business's operation and direction at each stage have been priceless. Finally, I want to thank all of the workers at Metaland Technology Ltd for sharing their ideas, information, and industry insights with me. I sincerely appreciate their time and works it allowed me to finish my report with the help of their efforts.

Thank You

Md Redwan Ibna Harun

ID: 16204013

BRAC Business School

BRAC University

Executive Summary

This paper presents a comprehensive analysis of the lift sector, emphasizing its notable progress over time and future opportunities for further advancement in the forthcoming decade. The paper analyses the diverse drivers behind the expansion of the market, encompassing improvement in technology, the process of urbanization, and the development of infrastructure. The report assesses Siemens Elevator and its rivals in the sector, elucidating Siemens' collaboration with Jiangsu Xide Elevator and its dedication to furnishing its clientele with superior and dependable merchandise. The literature review underscores the strong market position of Siemens and its capacity to provide a variety of products that cater to the varied demands of its clientele. Furthermore, we analyze recommendations for a better and sustaining industry.

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CHAPTER 1- Overview of Internship

1.1 Student Information

Name: Md Redwan Ibna Harun

ID: 16204013

Program: Bachelor in Business Administration

Majors: Marketing

Minors: Human Resource Management

1.2 Internship Information

1.2.1 Internship Details

Internship Period: 3 months, extended one month (January 11th, 2023 – April 11th, 2023)

Company Name: Metaland Technology Ltd.

Address: House No# 49, Road No# 12, Sector# 4, Uttara, Dhaka - 1230

1.2.2 Internship Company Supervisor's Information:

Company Supervisor: Engr. Md. Amir Hossain

Designation: Manager (Sales & Marketing)

Email: amir@metalandtechnologyltd.com

1.2.3 Job Description

- Conduct market research to identify potential clients and analyses trends
- Assist with creating sales presentations, business proposals, and contracts
- Participate in sales meetings and provide input on sales strategies and leads
- Provide customer service by answering inquiries, providing information, and following up on leads and sales
- Manage customer accounts, including updating information and tracking sales data
- Conduct cold calls and emails to potential clients to generate leads

1.3 Internship Outcomes

1.3.1 Contribution to the company:

- Preparing lead gen sheets for the organization
- Assisting with sales presentations and creating business proposals for the new clients
- Market Survey
- New project hunting

1.3.2 Benefits of this Internship:

After completing my undergraduate studies, I engaged in an internship program at Metaland Technology Ltd. which proved to be a highly informative and educational experience. Throughout an internship in the elevator industry, I gained firsthand insight into the competitive environment, wherein firms fight for market dominance through pricing tactics and their ability to innovate and offer superior products and services. Throughout my four-month duration working at Metaland Technology Ltd, my team leader, supervisor, and colleagues proved to be exceptional resources, imparting me with valuable knowledge and guidance. Their aid and

direction made a noteworthy contribution to my proficiency in the elevator industry. The internship I undertook at Metaland Technology Ltd furnished me with the necessary hands-on experience in a domain of individual interest and the chance to attain proficiencies that will prove advantageous in future pursuits. My internship at Metaland Technology Ltd. was a great chance to improve my communication skills. Working with people of many backgrounds taught me the importance of adapting my communication style to different audiences. I learned patience, active listening, and questioning to improve communication. I also learned how nonverbal communication might build solid relationships and effective workplaces. I learned communication abilities that will benefit me in any job. In addition, Elevator engineering requires innovative problem-solving. During my internship, I worked on many projects that required creative problem-solving. I learned how to solve technological problems and create new sales pitch designs.

1.3.3 Problems Faced:

Acquiring proficiency in time and task management posed a formidable challenge for me. I had to establish priorities and organize my workload to ensure timely and high-quality completion of my responsibilities. Furthermore, the field of elevator engineering is characterized by its dynamic and fast-paced nature, which presents a unique set of challenges in the professional setting. Monitoring market changes and trends was essential to advise customers on the most effective advertising strategies.

CHAPTER 2- Company Overview & Management Structure

Metaland Technology Ltd. is a reputable importer and distributor of elevators and escalators in the Bangladeshi market. The company has been functioning on the market for several years, providing its customers with superior products and services. Metaland Technology is the authorized distributor of Siemens elevators in Bangladesh. Siemens is a globally renowned brand in the elevator industry. Metaland Technology is the exclusive distributor of Siemens elevators in Bangladesh at the present time. In the preceding three years, they have installed over forty elevators and escalators in various high-rise structures. On its venture into vertical transportation, SIEMENS began working with Jiangsu Xide Elevator Co., Ltd. in 2018, a long-standing strategic partner in automation and drive systems (Siwale, 2020). The company's slogan is "Inspiring the Future," and we plan to accomplish this purpose by meeting the needs of all of our customers and users with goods that are of the highest possible quality, are risk-free, and are as convenient as possible (Singh et al., 2013). Because the apparatus they employ is exceptional in every manner, it enables users to count on its reliability and get good service without having to worry about the safety of the apparatus.

SIEMENS and Jinangsu Xide Elevator Co., Ltd. established a long-term strategic partnership agreement in 2010, resulting in a productive commercial relationship. XIDE, a Chinese manufacturer of lifts, is strongly dedicated to delivering exceptional products and providing comprehensive customer support. This package comprises various vertical transit systems, such as elevators, escalators, moving walkways, and freight elevators. XIDE's headquarters is in Lianyungang, a picturesque coastal city in the Jiangsu Province. The company provides a range of lift services encompassing research and development, product design, production, distribution, and upkeep. According to Siwale (2020), SIEMENS Group is a globally recognized electrical engineering and electronics leader, with annual sales of €75 million. More than 600 production facilities, research laboratories, and sales offices are in 170 countries worldwide (Polat, 2018). Siemens' global research and development centre employs 32,000 highly skilled individuals dedicated to upholding the company's leading position in their respective fields (Lai, Jackson and Jiang, 2017).

The company produces various types of lifts and escalators, such as passenger, villa, medical, freight, sightseeing, and escalators. Metaland Technology offers its clients high-quality elevators and escalators and excellent maintenance services. The maintenance services' main goal is to optimize the functionality and safety of elevators and escalators. The service provider conducts regular maintenance, inspections, and timely restorations to prevent potential issues. Metaland Technology acknowledges the importance of elevator and escalator systems in various structures and industries. The service provider guarantees round-the-clock availability of services and supports to assist clients promptly as needed. The organization's professionals exhibit advanced training and preparedness to promptly address maintenance requests and urgent inquiries, establishing a dependable service for those they serve.

2.1- Management Structure

Metaland Technology Ltd utilizes a participatory leadership approach, wherein the manager retains ultimate decision-making power while encouraging employees to express their opinions and perspectives. Addressing senior personnel as colleagues is customary rather than utilizing formal titles. The work environment displays a pleasant and friendly atmosphere. The manager presents a comprehensive summary of the client's requirements, and team members suggest potential solutions per those specifications. This approach utilizes individual members' specialized knowledge and skills to inform decision-making. At Metaland Technology, our core values priorities of work, effectiveness, and innovation. The participative leadership style facilitates the organization in upholding these principles.

2.2 - SWOT Analysis

The SWOT analysis is a strategic instrument that aids in evaluating and comprehending the internal and external elements that could potentially offer prospects or obstacles for a business.

Strengths-

- Siemens has established a notable reputation in the industrial sector, enhancing its appeal among customers who acquire its products.
- The transmission efficiency surpasses 95%, and the optimal energy-saving effect of the primary motor's micro-torque-high-efficiency design is a substantial advantage.
- Siemens provides various elevator systems to meet their esteemed customers' diverse needs and preferences.

Weaknesses-

- Siemens elevators are often associated with a higher price point than their competitors, which poses a challenge in appealing to customers prioritizing cost-effectiveness.
- Siemens' market share in the elevator industry is constrained, despite its notable brand recognition.
- The growth and stability of the construction sector are closely linked to the prosperity of the elevator industry owing to interdependence.

Opportunities

- With the increase in population, emerging nations are expected to experience a surge in the requirement for vertical transportation systems in high-rise structures.
- The modernization of outdated elevator systems in pre-existing structures by Siemens represents a prospective opening for the corporation within the retrofitting industry.
- The capacity of Siemens to manufacture superior and more efficient elevators relies on the company's sustained commitment to investing in state-of-the-art technologies.

Threats

- The elevator sector is characterized by intense competition, as numerous market players provide comparable products at reduced costs.

- The advent of novel technologies such as automated vertical transportation and smart elevators can cause significant disruption to the conventional elevator industry, posing a potential threat to the market share of Siemens.
- The elevator division of Siemens could potentially experience adverse effects from worldwide economic fluctuations, such as those caused by the Covid pandemic, which has already had a detrimental impact on the construction industry.

2.3- Porter's Five Model Forces

Porter's Five Forces model effectively identifies and analyses five competitive forces that impact every industry, providing invaluable insight into an industry's weaknesses and strengths. The Five Forces analysis is a standard method for determining an industry's structure and the optimal corporate strategy.

The Threat of New Entrants- LOW

The elevator industry exhibits a low susceptibility to new entrants owing to significant barriers to entry. The elevator industry demands significant capital outlays towards research and development, establishing production infrastructure, and creating extensive supply chains (Siwale, 2020). Furthermore, the elevator sector is subject to stringent regulations, exacerbating the intricacies of penetrating the market (Singh et al., 2013). Henceforth, extant enterprises like Siemens enjoy a notable edge over potential entrants in the market.

Bargaining Power of Buyers- Moderate

Customers' ability to negotiate prices in the elevator market varies by demographic. Large commercial property owners have more clout in negotiations and may thus get better deals due to their size and prominence. However, home buyers have less leverage owing to their limited resources and lack of experience. On the other hand, Siemens elevators have the upper hand in price negotiations because of their well-known reliability and high quality (Sachs, 2015)

Bargaining Power of Suppliers - Low

Since the elevator business depends so much on standardized components and only a handful of significant suppliers, elevator suppliers need more negotiation power. On the other hand,

Siemens' position as a major player and its longstanding ties with its suppliers may provide it greater leverage in negotiations than its smaller rivals.

The Threat of Substitutes – Low to Moderate

Elevators are a crucial component of large buildings and constructions, and identifying alternative mechanisms that are functionally commensurate with elevators may be an enormous challenge (Hamilton, 2004). Escalators and moving walkways are potential options that could be employed in situations where they are considered appropriate. It is imperative to remember that the unique demands of elevators in tall buildings may pose challenges in identifying viable substitutes.

Rivalry Among Existing Competitors- Very High

The elevator sector is predominantly dominated by well-established corporations, including Siemens, Otis, KONE, Schindler, and Thyssenkrupp (Almeida et al., 2012). Enterprises functioning within the market are engaging in intense competition to attract clientele by introducing novel products, implementing cost-reduction strategies, and providing exceptional customer service (Habel, 2023). The presence of substantial impediments to entry may diminish the probability of new market entrants inducing disruption to the incumbent players.

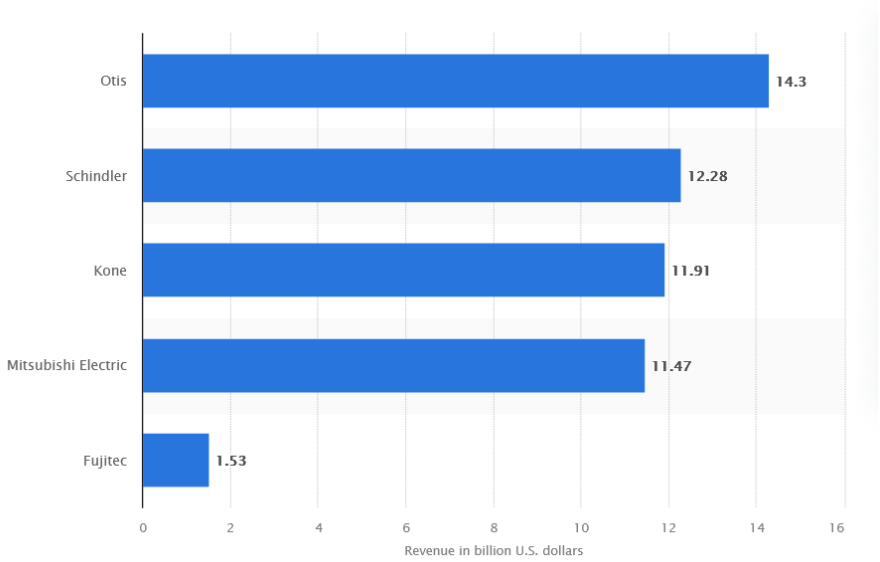

Figure: Elevator Companies Leading the Industry (**SOURCE: STATISTA, 2023**)

2.4 Summary and Conclusions

In conclusion, Metaland Technology Ltd. dominates the Bangladeshi market as the leading importer and distributor of elevators and moving walkways. The firm has exclusive distribution rights for Siemens lifts in Bangladesh, where it has built forty elevators and escalators during the last three years in a wide range of high-rise structures. The SWOT analysis focuses on Siemens' advantages, such as the company's recognizable brand, reliable transmission, and extensive elevator product line. Weaknesses include having higher pricing than the competition and having a smaller market share. The increasing need for elevators in emerging nations makes the prospect of modernizing ageing systems alluring. Potential threats include disruptive technological innovation, intense competition, and the potentially detrimental repercussions of global economic changes. According to Porter's Five Forces, consumers have far more leverage than suppliers. There is intense competition from up-and-coming businesses, but the risk of substitution is low. Metaland Technology's management philosophy is based on collaborative leadership that values and promotes innovative problem-solving approaches. The company provides 24/7 support for elevators and escalators in response to the persistent demand for such services.

2.5 Recommendations

Monitoring Industry Trends- To remain apprised of the latest monitor industry developments. Businesses in the elevator industry must be vigilant to keep up with innovations and regulations, as the industry is perpetually evolving. The find investigation findings allow Metaland Technology to make more informed strategic decisions.

Involving CSR Activities- The company should participate in Corporate Social Responsibility (CSR) activities to show that it cares about the welfare of its surrounding community and the environment. Supporting nonprofits in the area, lobbying for greener legislation, and participating in community improvement projects all fall under this umbrella category. Brand recognition may rise, and firms that take part may gain clients who value doing good.

Training for Workforce- Investing in employees' ongoing training and development can enhance their expertise. Our aim is to develop a skilled and motivated workforce through technical elevator system training, customer service seminars, and leadership training.

Customer Feedback and Satisfaction- Ensure consumer satisfaction by regularly seeking feedback to identify areas for improvement. By incorporating consumer feedback through active listening and implementation, it is possible to improve the customer experience and establish lasting relationships.

CHAPTER 3- Project Part

3.1 Introduction

Over the last several decades, the elevator business has seen significant growth as it has become an increasingly important component of the broader building and construction industry (Hamilton, 2004). It plays a vital role in raising the overall efficiency of a structure by supplying easy and efficient ways for vertical movement (Zhu and Teppo, 2003). This is possible because of the availability of vertical movement systems. According to market studies, the elevator business's value is expected to skyrocket in the following decades, increasing from $95 billion in 2023 to $270 billion by the time 2033 comes to a close (Al-Kodmany, 2023). Between 2023 and 2033, the market is anticipated to expand at a compound annual growth rate of 11% CAGR (Polat, 2018). Elevators function as a mode of vertical transit in multi-level buildings, offering support to those with mobility limitations, such as those who use wheelchairs or need help going between floors (Anand and Mahesh, 2016). They also serve as a method of vertical transportation in single-level structures. According to Polat (2018), the construction industry frequently uses lifts to move people and materials between floors of a structure. This allows for more efficient use of the space available in the building.

The rise of the market may be ascribed to several different causes, including the expansion of the economy, the increase in the population, and infrastructure improvements (Almeida et al., 2012).

The demand for intelligent elevators may be traced back to the progress made in scientific research and technological development (Polat, 2018). The rapidly increasing urbanization is responsible for the ever-increasing need for technologically advanced elevators. It is estimated that there will be a rise in the demand for lifts due to the anticipated expansion in the world population and economy (Anand and Mahesh, 2016). This is expected to lead to an increase in the costs associated with building lifts. It is projected by Zhu and Teppo (2003) that growth in global hotel and hospital development projects would lead to an increase in the demand for elevators in various kinds of commercial edifices all over the globe. The increased disposable income of consumers and the heightened demand for single-family homes contribute to the proliferation of elevators inside residential structures. Lifts for high-rise buildings are now being designed by some of the most prominent manufacturers, incorporating advanced controls, energy-efficient hardware, and other forms of technology into those designs (Almeida et al., 2012).

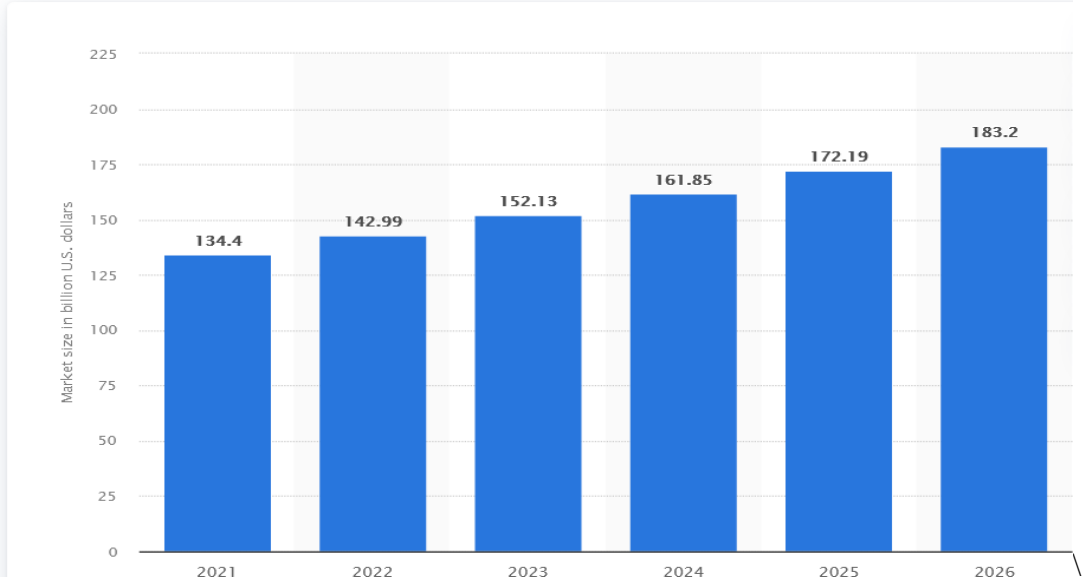

Figure: The projected size of the global elevator market between 2021 and 2026 (**Source: STATISTA, 2023**)

Elevators of the modern era may be found in various buildings, including ships, hydroelectric power facilities, and other notable structures like rocket launch sites (Liu et al., 2023). In addition to this, they have the capability of transporting both people and goods. Hydraulic lifts

provide many advantages, including increased safety standards, minimum requirements in civil engineering, and great utilization of shaft space (Habel, 2023). Implementing government initiatives to improve infrastructure, such as constructing various facilities like dams, bridges, roads, schools, airports, and other related projects, is anticipated to contribute significantly to market expansion in developing nations (Wang et al., 2019). Because of rapid urbanization, there has been an increase in the number of multi-story buildings, which has led to the rise in the need for elevators. Liu et al. (2023) predicted that there would be a link between the increase in construction investment and the rise in lift sales that will correlate to the increase in construction investment. The focus on modernizing infrastructure in the industrial, commercial, and residential sectors is predicted to be the primary driver of the market's anticipated expansion over the next several years (Habel, 2023). As per Al-Kodmany (2023), there will be a rise in market revenue due to an increase in the demand for lifts by manufacturing facilities. This is because manufacturing facilities are expected to produce more goods (Wang et al., 2019). The imperative is pushing forward this need to simplify moving large products between levels.

3.1.1- Research Objectives and Purposes

Primary Objective- This report aims to conduct a comparative evaluation of Siemens Elevator and its competitors within the industry.

Secondary Objective

- To evaluate Siemens's significant competitors in the elevator industry.
- To contrast Siemens's products and services with those of its competitors.
- To analyses the market share and revenue of Siemens and its competitors.
- To determine opportunities and risks for Siemens in the elevator industry

3.1.2- Literature Review

Siemens is a worldwide firm that specializes in various sectors, including the lift industry, one of such industries (Liu et al., 2023). Siemens Lift is a well-known and well-established brand with a strong presence in many countries worldwide. In lift manufacturing, Siemens is one of the top three companies (Siwale, 2020). Siemens can provide customers with various goods, including escalators, quick elevators, and pedestrian conveyances (Singh et al., 2013). The elevator

manufactured by Siemens is well-known for its energy-saving and safety-enhancing properties. Significant resources have been allocated by Siemens to research and development, which has resulted in the production of industry-changing goods such as the MULTI lift system (Hebel, 2023). Innovative lift technology, known as the MULTI system, allows for vertical and horizontal movement, thanks to eliminating the need for ropes (Siwale, 2020). This system gives travelers more capacity and shorter wait times than its predecessor. Siemens offers various services, including maintenance and modernization, to ensure its lifts continue functioning at the highest possible efficiency during their entire lifecycle (Liu et al., 2023).

Currently, the Asia-Pacific area commands a market share of 50% on a global scale in the elevator industry (Liu et al.,2023). The expansion of the market in the site is being driven in large part by the fast rate of urbanization that is taking place in developing countries as well as the rising focus placed on the construction of infrastructure. The rapid development and construction of tall buildings, increasing efforts by leading market players to create a reliable supply chain, and the accessible availability of raw materials may all be linked to the present growth of the industry (Al- Kodmany, 2023). The trend of product innovation, which has grown more prominent, has observed a spike in momentum within the lift sector, which has witnessed a surge in rate overall (Polat, 2018). To maintain their dominant position in the lift and escalator sector, the most successful companies are now directing most of their research and development efforts towards developing linked complex technologies (Wang et al., 2019). The use of open Application Programming Interfaces (APIs) makes it possible to handle a wide variety of devices, applications, and services seamlessly while integrating them into systems already in place and systems being upgraded. The growing number of worries about the environment has resulted in a rise in the demand for items that are sustainable and favorable to the environment (Kulkarni et al., 2021). The ever-increasing expectations of consumers for value-added features in moving walkways, escalators, and elevators are increasingly expanding to include high-end solutions. Utilizing eco-friendly materials in construction is one of the most effective ways to reduce carbon footprints and other negative environmental impacts (Wang et al., 2019). These materials help reduce the negative influence on the environment, achieving goals related to sustainability, cutting down on emissions, and conserving energy. The incorporation of eco-friendly practices is an essential aspect of the lift industry (Al- Kodmany, 2023). The increasing demand for energy-efficient lifts has prompted businesses to respond by creating eco-friendly

products and services. The KONE Monospace 500 lift reduces energy consumption by up to 35% compared to conventional hydraulic lifts. In contrast, the ThyssenKrupp MULTI lift system showcases a more significant reduction in energy consumption of up to 60%. (Kulkarni et al., 2021).

The Covid-19 pandemic has significantly impacted the lift industry (Habel, 2023). The onset of the COVID-19 pandemic can be traced back to December 2019, and its effect has been observed in the form of extensive lockdown measures implemented in numerous nations (Gamil and Alhagar, 2020). The elevator market has encountered an adverse effect in recent months. Restrictive measures resembling curfews have been implemented in several countries, including Italy, the United States, and India, whereby non-essential enterprises were barred from conducting operations. The COVID-19 outbreak has slowed growth within the construction industry in recent months (Habel, 2023). The circumstance above has led to temporal extensions that can be ascribed to the interference of multiple distribution channels. A directive was issued in response to the pandemic to suspend the advancement of several commercial construction projects to mitigate the virus's transmission. These factors have significantly influenced the current demand for elevators in recent months (AL- Kodmany, 2023). It is expected that elevator manufacturers, as well as the construction industry in its entirety, will face numerous challenges. This phenomenon can be attributed to the high probability of multiple commercial endeavors being abandoned or postponed. The causes of these delays can be traced back to various factors, such as disturbances in the supply chain, limitations on cash flow, unavailability of the workforce, and cessation of production. The end of construction activities at project locations has increased the strain on various producers and builders. There is anticipated to be an increase in the need for elevators in the forthcoming months due to diverse governing bodies' gradual easing of lockdown measures. The anticipated relaxation of lockdown measures is projected to result in a surge in the construction sector. Nonetheless, the pace of this expansion is expected to be slower than in prior years. The worldwide revival of commercial enterprises is anticipated to surge the need for elevators in the forthcoming months (Gamil and Alhagar, 2020). There is an expectation that the elevator industry will undergo a resurgence in the first quarter of 2021 and demonstrate a significant compound annual growth rate (CAGR) over the subsequent five-year period (Kulkarni et al., 2021). China is anticipated to continue dominating the global elevator industry as the primary contributor (Yaman, Baygin and Karakose, 2016).

3.2 Methodology

We used secondary research methods to conduct this analysis. The data was sourced from internal channels, including information provided by supervisors, as well as the official website of the company. The relevant documents comprise reports, customer feedback data, and any accessible Siemens Elevators customer satisfaction surveys. The supplementary data comprises scholarly articles, published works, and credible online sources that provide significant perspectives on the elevator sector, customer satisfaction benchmarks, and competitor analysis. Incorporating this supplementary information will enhance the primary data and facilitate a comprehensive analysis.

3.3 Competitors

The market for elevators is typified by severe rivalry, with prominent industry companies such as Otis, KONE, Schindler, and ThyssenKrupp owning considerable market shares in their respective categories (Hamilton, 2004). The businesses above consistently allocate resources towards research and development endeavors to provide innovative commodities and amenities, such as intelligent lifts, destination control systems, and anticipatory maintenance, to satisfy consumers' requirements and enhance their standing within the market (Almeida et al., 2012).

Dion and Borraz (2017) claim that the Otis Lift brand is well-known for its reliable performance, simplified functionality, and attention to safety in its products. Otis has contributed to advancing technology through funding research and development, which has resulted in the production of ground-breaking goods such as the Gen2 lift system (Yaman, Baygin and Karakose, 2016). Because this system uses a flat belt rather than a traditional cable, its operation is more effective and less noisy than one that uses a line.

The Kone Corporation also has a player presence in the lift sector. Kone has been recognized as one of the top five lift firms in the whole world. The Kone Lift firm is well-known for the ecologically responsible practices it employs, the innovative products it creates, and the excellent customer service it provides. The Ultra Rope lift system was developed due to expenditures made by Kone in research and development activities, which led to the company's system construction (Yaman, Baygin and Karakose, 2016). A core made of carbon fiber is included in this system, which ultimately results in a lighter weight and an operation that uses less energy.

The Schindler Group is a Swiss business created in 1874 (Kulkarni et al., 2021). Developing, installing, and maintaining elevators, escalators, and other conveyances for pedestrians are some of the company's areas of expertise (Liu et al., 2023). The company has a market share of roughly ten percent within the global lift business and maintains a global presence spanning over one hundred different countries (Yaman, Baygin and Karakose, 2016).

Within the elevator industry, Thyssenkrupp Elevator is a well-respected and well-known business (Sachs, 2015). Thyssenkrupp has been recognized as one of the top five lift businesses in the whole world (Mittag et al., 2018). The Thyssenkrupp lift brand is famous for the innovative nature of its product range, which is best demonstrated by the TWIN lift system (Wang et al., 2019). This method uses twin cabins inside a single shaft to achieve the goal of increasing capacity while maintaining high levels of operating efficiency. In addition to the production of lifts, Thyssenkrupp also offers a wide range of services, such as maintenance and modernization, to ensure that its lifts maintain the highest possible level of operational efficiency during their entire lifecycle (Mittag et al., 2018).

3.4 Comparative Analysis

Product Range

Siemens Elevator provides an extensive selection of lifts, encompassing high-speed, low-rise, machine-room-less, and hydraulic lifts (Sachs, 2015). Furthermore, the corporation offers tailored solutions to meet clients' requirements. Siemens provides comprehensive guide rails. Consequently, the elevator operation is not expected to produce any shaking or vibration. The utilization of Solid Guide Rails is associated with a prolonged duration of service provision (Singh et al., 2013).

Otis, an additional significant participant in the lift industry, provides a variety of lift systems, including high-speed, freight and escalators (Sachs, 2015). Otis lifts are renowned for their sophisticated safety features, such as the Gen2 system's flat-belt design, eliminating the need for conventional steel cables (Yaman, Baygin and Karakose, 2016).

Another competitor, Kone, is well-known for its inventive lift designs, such as the Ultra Rope, a lightweight carbon-fiber elevating cable suitable for high-rise buildings. Additionally, Kone

provides various intelligent lift solutions, such as destination control and remote monitoring systems (Wang et al., 2019).

Another significant participant, Schindler, provides a variety of elevator systems, including passenger elevators, freight elevators, and escalators. Elevators manufactured by Schindler are renowned for their energy-saving features, including regenerative actuators and destination control systems.

Another competitor, ThyssenKrupp, provides a variety of lift systems, including passenger, freight and escalators. The innovative designs of ThyssenKrupp's lifts include the MULTI lift system, which utilizes numerous compartments that travel independently within the same shaft.

Innovation

Siemens Elevator is recognized for its inventive approaches and allocates significant resources towards research and development to maintain a competitive edge. The company has created a regenerative drive technology that can decrease energy consumption by as much as 70% (Silwale, 2020). The SIEMENS Frequency Converter improves the control and drive of the door motor system by making it more compatible and stable during operation (Habel, 2023).

The Otis Elevator Company places significant emphasis on innovation and has created a variety of energy-efficient lifts. Both KONE Corporation and Schindler Group have demonstrated noteworthy advancements in innovation. KONE Corporation, for instance, has successfully developed the world's inaugural machine-room-less lift.

Safety

Safety is a top priority for the leading companies in the lift industry, which have implemented rigorous safety protocols to safeguard passengers (Shi and Xu, 2018). Siemens Elevator is renowned for its state-of-the-art safety features, such as its "Safe Ride" technology that identifies irregular vibrations and halts the elevator in an emergency. The Otis Elevator Company provides sophisticated safety features, such as the "Gen2" elevator, which utilizes a flat-belt drive

mechanism to minimize noise and vibration. KONE Corporation and Schindler Group have devised pioneering safety measures.

Customer Service

Customers may use a wide range of services from Siemens Elevator, including installation, maintenance, and repair. Siemens Elevator is well-known for providing excellent customer care. The company has a global network of service centers, which makes it possible for the company to provide prompt and efficient assistance to its customers in different parts of the world (Anand and Mahesh, 2016)

In addition to the goods it manufactures, Otis offers its customers a wide range of after-sales services, including installation, maintenance, and repair. The company has a support network of service centers all around the globe and offers help to customers at any hour of the day or night.

Both Kone and Schindler offer a range of client services, including installation, maintenance, and repair assistance, which demonstrates their dedication to serving consumers all over the globe with services that are both comprehensive and easily accessible.

Overall, it can be observed that the leading companies in the lift industry, such as Siemens Elevator, Otis, Kone, Schindler, and ThyssenKrupp, provide an extensive array of products and services to cater to the varying requirements of their clientele. Every company is recognized for its unique and creative methods, commitment to safety, and dedication to providing excellent customer service. Siemens Elevator is known for its focus on energy efficiency, while Otis is recognized for its advanced safety features. Kone is widely recognized for its innovative lift designs, while Schindler is known for its focus on energy-saving features. ThyssenKrupp has created lift systems that incorporate multiple compartments within a single shaft, showcasing their innovative approach to elevator technology. These companies' priorities customer service and provide installation, maintenance, and repair services through their service centers worldwide. The lift industry constantly advances by introducing new technologies and creative solutions that enhance passengers' safety, efficiency, and comfort.

3.5 Findings

Siemens Elevator offers a comprehensive selection of elevator solutions to cater to the varying requirements of its customers. The organization provides tailored solutions to guarantee that the distinct needs of every customer are fulfilled. The utilization of solid guide rails has been correlated with a prolonged duration of operation. Otis offers a variety of systems, such as high-speed, freight, and escalators, that are recognized for their advanced safety capabilities. The flat-belt design of the Gen2 system is a notable feature. Kone is acknowledged for its innovative elevator concepts, including the Ultra Rope. Schindler focuses on energy-saving features such as regenerative actuators and destination control systems. The MULTI lift system, developed by ThyssenKrupp, utilizes advanced designs that integrate several compartments that operate autonomously within a single shaft.

In the vertical transportation industry, innovation is a critical factor, and organizations allocate significant resources towards research and development to maintain a competitive edge. Regenerative drive technology has been developed by Siemens Elevator, which can potentially decrease energy consumption by up to 70%. Otis has developed a series of energy-efficient elevators. KONE Corporation has successfully developed the world's first machine-room-less elevator.

Safety is a top priority for major companies in the lift industry. Siemens Elevator is acknowledged for its advanced safety features, which incorporate the "Safe Ride" technology. Otis utilizes the Gen2 elevator to mitigate noise and vibration. Innovative safety protocols have been developed by Kone and Schindler.

The lift industry places significant importance on the provision of installation, maintenance, and repair services, with a focus on delivering exceptional customer service across all companies. Siemens Elevator and Otis offer prompt and efficient assistance through their global network of service centers, whereas Kone and Schindler are committed to providing comprehensive and easily accessible services to their customers worldwide.

Recommendations

Highlighting the Company's Dedication to Energy Efficiency: Siemens Elevator prioritizes energy efficiency and has developed regenerative drive technology that can reduce energy consumption by up to 70%. To differentiate itself from competitors, Siemens should highlight its unique selling point in marketing materials and when communicating with customers.

Expanding Global Centers: Siemens Elevator boasts a sturdy worldwide network of service centers, which provides timely and practical support to our esteemed clientele across the globe. The potential benefits of expanding its service centers to cater to customers in different regions worldwide should be considered.

Enhancing investment in R&D: Siemens Elevator invests a significant amount of resources in research and development as well as the creation of innovative products. It would be highly beneficial for the firm to consider further investment in R&D and exploring innovative technologies to sustain its market leadership and enhance passenger safety, efficiency, and comfort.

Customize the company's Offerings: Siemens Elevator offers personalized service, ensuring that every esteemed client is bestowed with a tailor-made elevator that impeccably aligns with their unique specifications. This must be strengthened to showcase the company's unparalleled flexibility and expertise in delivering specific solutions to diverse, highly regarded clientele.

Conclusions

To conclude, the elevator industry on a global scale is highly competitive, with notable market players including Siemens Elevator, Otis, Kone, Schindler, and Thyssen Krupp. These businesses have created diverse, innovative elevator systems and solutions to cater to different client needs. These esteemed companies prioritise the safety of their passengers and have put in place rigorous safety protocols. The companies prioritise delivering high-quality customer service and have established service centres worldwide to provide timely and practical support to their customers. The elevator industry constantly evolves, and embracing new ideas is essential to stay ahead of the competition. These companies have demonstrated impressive progress in their research and development efforts, and their steadfast dedication to innovation will profoundly impact the future of the vertical transportation industry.

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