

RADIOLOGY AND CARDIOLOGY EQUIPMENT LANDSCAPE IN METROPOLITAN HOSPITALS: A HOLISTIC VIEW

Under the guidance of Dr. J. P. Singh (Professor, IIHMR University, Jaipur)

By – Dr. Debam Saha

Roll No. – 1489

MBA HOM – 27

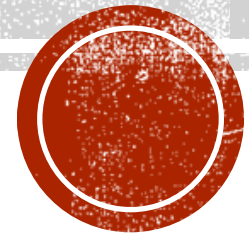


TABLE OF CONTENTS

Sr. No.	Title	Slide No.
1	Introduction	1
2	Literature Reviews	5
3	Methodology	8
4	Results	13
5	Discussion	27
6	Conclusion	32





INTRODUCTION

INTRODUCTION

BACKGROUND: OVERVIEW

- In today's rapidly evolving healthcare landscape, hospitals depend heavily on advanced medical equipment, particularly in radiology and cardiology, for early diagnosis and treatment. Selecting and equipping hospitals with efficient and user-friendly medical devices is crucial to ensuring patient and user satisfaction. This strategic approach not only enhances the quality of patient care but also supports the financial sustainability of healthcare institutions.
- India's healthcare industry is witnessing substantial growth, outpacing global trends. This growth is driven by advancements in medical technology, improved living standards, and a growing emphasis on preventive care and advanced diagnostics. The collaboration between public and private sectors, along with the expansion of health insurance coverage, has further fueled this growth. The global market for medical devices was valued at \$512.29 billion in 2022 and is projected to reach \$799.67 billion by 2030. India, ranking fourth in the Asian medical device market and among the top 20 globally, has seen its market size grow significantly, from Rs. 90,000 crore (\$11 billion) in 2022 to an expected \$50 billion by 2030.
- This growth has positioned India as a leading destination for medical services, supported by factors such as medical tourism revenue, the establishment of new healthcare facilities, and initiatives like the National Health Policy (NHP). Healthcare providers are adapting swiftly to meet the increasing demand for services, addressing diverse needs across structural, financial, operational, and sociocultural dimensions.

INTRODUCTION

BACKGROUND: KEY PLAYERS, USER SATISFACTION, BUYING DECISION FACTORS & RATIONALE

- **Market Scenario** – Dominated by global giants like GE Healthcare, Siemens, Philips & Shimadzu. About 70% of medical devices used in India are imported. These companies offer a wide array of products at competitive prices to increase market penetration.
- **User Satisfaction** - Crucial for high-quality patient care and operational efficiency. Influenced by factors such as user-friendliness, durability, reliability, maintenance requirements, and safety features etc. High satisfaction enhances hospital's confidence in the vendors and has positive impact on future procurement decisions.
- **Buying Decision Factors** - Procurement impacts service efficiency, reliability, and resource allocation. Shift towards value-based procurement models. More importance to factors like technology (DICOM & PACS), performance, loyalty, vendor reputation etc. Research shows that when choosing radiology equipment, picture quality and radiation dose management should take precedence above cost (Smith et al. 2019) .
- **Rationale** - Mumbai Metropolitan Region (MMR) is home to top-tier hospitals such as P.D. Hinduja, Lilavati, Jaslok etc. Hence it attracts both domestic and international medical device manufacturers to the market. Understanding the preferred brands, user satisfaction levels and the weightage of different buying decision factors will help make informed decisions to improve patient care quality and operational efficiency.

INTRODUCTION

▪ RESEARCH QUESTIONS:

1. Which brands of cardiology and radiology equipment are preferred among the MMR hospitals?
2. What is the user satisfaction level for these preferred brands?
3. What weightage do various buying decision factors have when it comes to hospitals' purchase of cardiology and radiology equipment?

OBJECTIVES:

1. To analyze and identify the preferred brands of radiology and cardiology equipment used in hospitals of Mumbai Metropolitan Region.
2. To understand the satisfaction level of the hospitals with the preferred medical equipment brands in the Mumbai Metropolitan Region.
3. To analyse the weightage of different factors which influence buying decision of medical equipment by hospitals.



LITERATURE REVIEWS



LITERATURE REVIEWS

Author (Year)	Study Location	Sample Size	Sampling Technique	Salient Features
Jung et al. (2015)	South Korea	116	Purposive Sampling	The main objective of the study was to understand the relationship between the factors affecting purchase decision of medical device, satisfaction and the intention to repurchase. The main focus was on USG machines in hospitals as big as a general hospital or larger. It was found out that brand is an important factor which affects the purchase decision which positively influences satisfaction and repurchase. Further, price was found to be negatively impacting satisfaction while performance had a positive impact on satisfaction.
Mohamed Gendia, Hamed M Shamma (2022)	Kuwait	120	Simple Random Sampling	The study was conducted to understand what are the most crucial factors which affect an orthopaedic doctor's decision regarding purchase of medical equipment and devices from medical device companies which will help in formation of realistic business strategy and allocation of higher resources for important factors and reduced money wasting on less important factors, thus positively impacting profitability of the hospital/company. It was found that implant review in a journal was the most important factor according to the doctors. It was then followed by brand. However, doctors would not procure a branded product with insufficient reviews in a journal. The other significant factors include price, technological support, after sales service, innovation and training.

LITERATURE REVIEWS

Author (Year)	Study Location	Sample Size	Sampling Technique	Salient Features
Sunardi (2023)	Indonesia	60	Purposive Sampling	The purpose of the study was to find out what were the factors that shaped the purchase of domestically produced USG product. At the end of the study, it was found that relationship factor was the most important decision factor when deciding to purchase medical equipment. These include trust, loyalty etc. It was followed by reliability factor which includes after-sales service, product delivery condition, payment mechanisms etc. Third was the environmental factors such as competition, availability of supply. It was further followed by product price, product quality, standards. Brand name, technology and market factor such as market trends were found to be the least influencing factors related to purchase decision.
Tourani et al. (2014)	Tehran, Iran	560	Purposive Sampling	The study was conducted to investigate the factors which should be given priority for purchase of medical equipment. The data collected was analysed via AHP model. It was found that there were 4 main factors which influenced the purchase decision. The main influencing factor was quality of the medical equipment. It was then followed by the after sales service provided by the manufacturer. The brand and the price of the product were the other 2 important factors.



METHODOLOGY



METHODOLOGY

■ RESEARCH DESIGN:

This study's design is a descriptive cross-sectional study which was carried out over the course of three months (April–June 2024) at the top hospitals which have earned the NABH accreditation. During these 3 months, the equipment usage followed a typical pattern with no seasonal variation. Qualitative as well as quantitative data was collected via the use of a structured questionnaire which was created specifically for this purpose.

■ STUDY SETTING:

The study is conducted in the Mumbai Metropolitan Region - Mumbai, Navi Mumbai and Thane. MMR is one of the largest and most densely populated metropolitan area in the country which is home to many NABH-accredited hospitals that employ cutting edge medical technology. Its diverse patient demographics and vast range of healthcare providers offer a comprehensive landscape to examine brand preferences, user satisfaction levels and buying decision factors.

■ STUDY POPULATION:

The radiology and cardiology equipment used in MMR hospitals accredited by NABH make up the study population in this study. The study focuses exclusively on X-Rays, Fluoroscopes, Mobile X-ray machines, C-arms, and Cath-Lab equipment.

METHODOLOGY

RESEARCH PROCEDURE/APPROACH:

Detailed questionnaire was used to collect data regarding the radio and cardiology equipment used in the hospitals. The questionnaire was filled due to valuable inputs provided by the radiologists, radiology technicians, biomedical engineers, purchase managers, OT technicians and cardiology technicians. Data was collected regarding user satisfaction level on 5 parameters – Accuracy, Ease of Use, Quality of Image, Durability and Support and Maintenance Service, using 0-5 Likert scale and for 5 factors influencing buying decision – Cost, Safety Features, Performance, Brand Image and Technology, using an Ordinal scale. The quantitative data was analyzed using descriptive statistics such as mean and mode while qualitative data was analyzed to understand different patterns and gain insights. Visualization tools such as pie charts, bar graphs and tables were used in order to depict the data clearly and concisely.

SAMPLE SIZE:

145 samples were collected over a period of 3 months from the 3 different cities of MMR i.e., Mumbai, Thane and Navi Mumbai.

Location	X-Ray	Mobile X-Ray	Fluoroscope	C-Arm	Cath-Lab	Total Machines
Thane	9	9	4	3	4	29
Navi Mumbai	16	11	3	12	6	48
Mumbai	17	19	4	17	11	68

METHODOLOGY

- **SAMPLING TECHNIQUE:**

Purposive Sampling. It allowed to specifically select hospitals which upheld quality meaning the data came from high standard institutions which enhanced the validity of the findings. Moreover, focusing on equipment which have been used for at least 3 years, gives more insight regarding the long-term performance of the equipment and user satisfaction. However purposive sampling may lead to results which may not be generalisable to all the hospitals, a smaller sample size and bias as the selection process is subjective and relies on researcher's judgement.

- **INCLUSION CRITERIA:**

Radiological and cardiological equipment which have been in use for more than 3 years in a consenting NABH-Accredited hospital of the Mumbai Metropolitan Region.

- **EXCLUSION CRITERIA:**

Radiological and cardiological equipment have been in use for less than 3 years. Equipment which are in use in a non-consenting hospital.

- **ETHICAL CONSIDERATIONS:**

This research adheres to ethical principles by obtaining informed consent from all participants and prioritizing data security, privacy, and confidentiality. Data will be anonymized to prevent unauthorized access, and rigorous ethical guidelines will be followed throughout the study.

METHODOLOGY

OPERATIONAL DEFINITIONS:

- **Brand Preference:** The degree to which certain brands of radiology and cardiology equipment are favoured by hospitals.
- **User Satisfaction Level:** The level of contentment among the hospitals and healthcare professionals regarding the equipment
- **Buying Decision Factors:** The different criteria which influence the procurement of radiology and cardiology equipment.
- **Accuracy:** The degree ability of the equipment to produce results that are in line with the true results.
- **Ease of Use:** Refers to how simple it is for the user to use the machine during procedure.
- **Quality of Image:** The ability of the radiology and cardiology equipment to produce sharp and clear images.
- **Durability:** The ability of the equipment to withstand wear and tear and be used repeatedly without much degradation or down time.
- **Support and Maintenance Service:** The standard and rapidness with which technical support and preventive services are provided by the equipment manufacturer.
- **Cost:** The amount of monetary resources that is required for procurement and maintenance of the equipment.
- **Safety Features:** The functions incorporated in the equipment to ensure patient and user safety to the highest degree possible during the procedure.
- **Performance:** The ability of the equipment to deliver accurate, reliable, high-quality results consistently.
- **Brand Image:** The perception that the consumers have with a particular brand of radiology or cardiology equipment.
- **Technology:** The new innovative features and technological capabilities installed within in the equipment.



RESULTS



RESULTS

BRAND PREFERENCE:

X-RAY (TOTAL = 42)

■ Siemens ■ Allengers ■ Shimadzu ■ Allans ■ Medion ■ Others

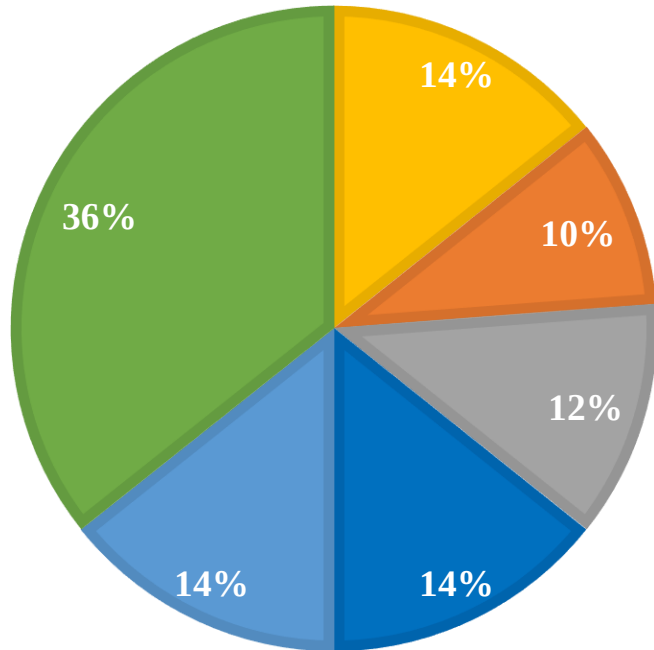


Figure 4.1: Brand Preference for X-Ray

The pie chart shows the preferred brands for X-Ray units among MMR hospitals. It indicates which brand have more market presence than the rest.

- No major brand dominates the market.
- “Others” accounts for 36% of the market share. The “Others” refers to small brands of medical equipment such as SkanRay, Kiran, OMS, Olympicks, MedX, Cura etc.
- The prominent brands of medical equipment in the market such as Siemens, Allans, Allengers and Shimadzu have 14%, 14%, 14% and 12% of the X-Ray market share respectively thus depicting a fragmented market.

RESULTS

BRAND PREFERENCE:

The pie chart shows the preferred brands for Mobile X-Ray units among MMR hospitals.

- The market is similarly dispersed with “Others” accounting for 38% of the market share.
- Allengers leads the line amongst the prominent brands with a 23% share.

MOBILE X-RAY (TOTAL = 39)

■ Allengers ■ GE Healthcare ■ Medion ■ Shimadzu ■ Siemens ■ Others

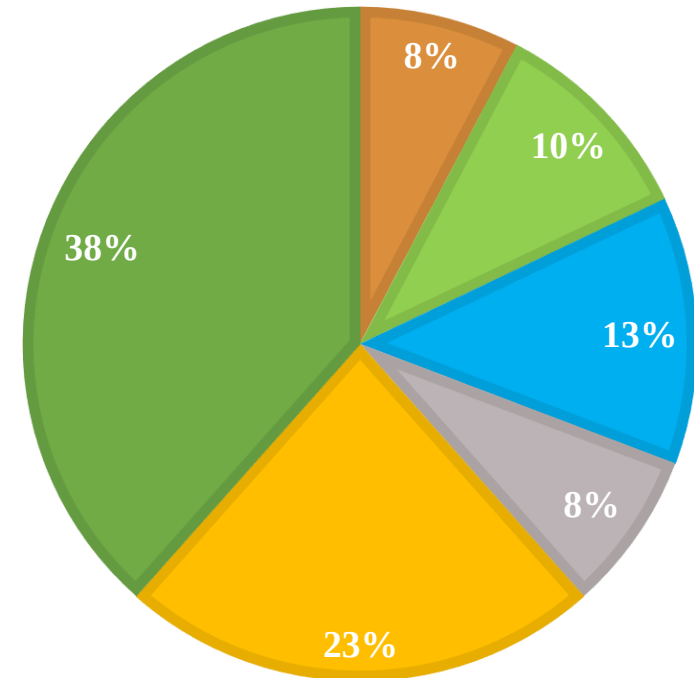


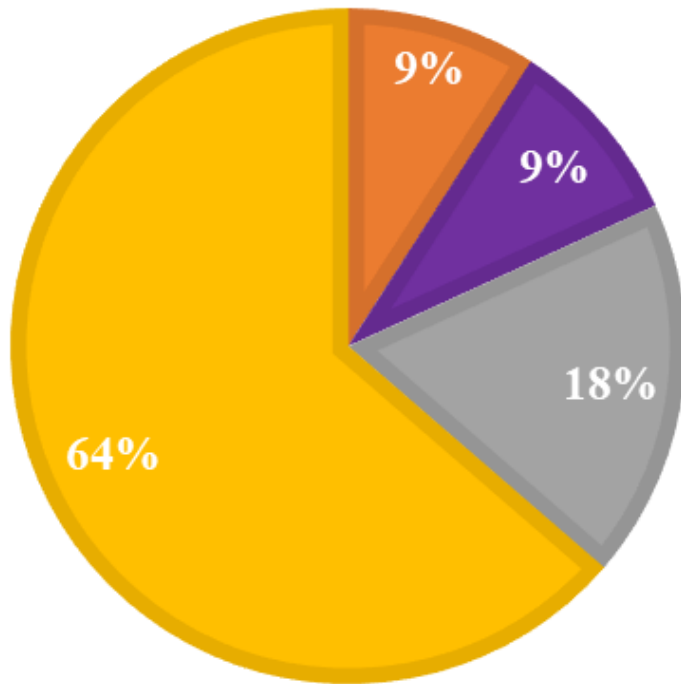
Figure 4.2: Brand Preference for Mobile X-Ray

RESULTS

BRAND PREFERENCE:

FLUOROSCOPE (TOTAL = 11)

■ Allengers ■ Philips ■ Shimadzu ■ Siemens



The pie chart shows the preferred Fluoroscope machine brands in MMR hospitals.

- Siemens is the most preferred brand holding 64% market share.
- Shimadzu is distant second with a 18% market share.
- No competition to Siemens when it comes to dominance in this market.

Figure 4.3: Brand Preference for Fluoroscope Machines

RESULTS

BRAND PREFERENCE:

The pie chart shows the preferred brands for C-Arm machines among the MMR hospitals.

- Siemens is the market leader holding 31% of the market share.
- Closely followed by Philips and Allengers, each of them having a 25% market share.
- Competitive landscape with a preference for established and leading medical equipment brands.

C-ARM (TOTAL = 32)

■ Allengers ■ Others ■ Shimadzu ■ Philips ■ Siemens

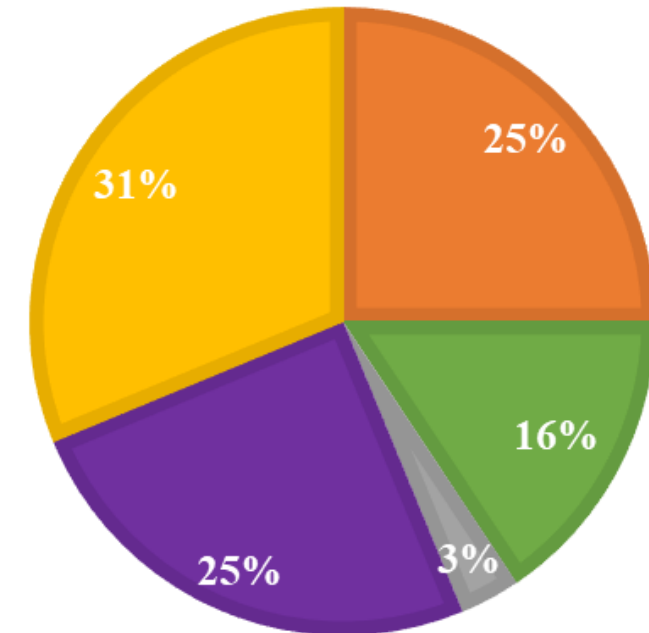


Figure 4.2: Brand Preference for C-Arm units

RESULTS

BRAND PREFERENCE:

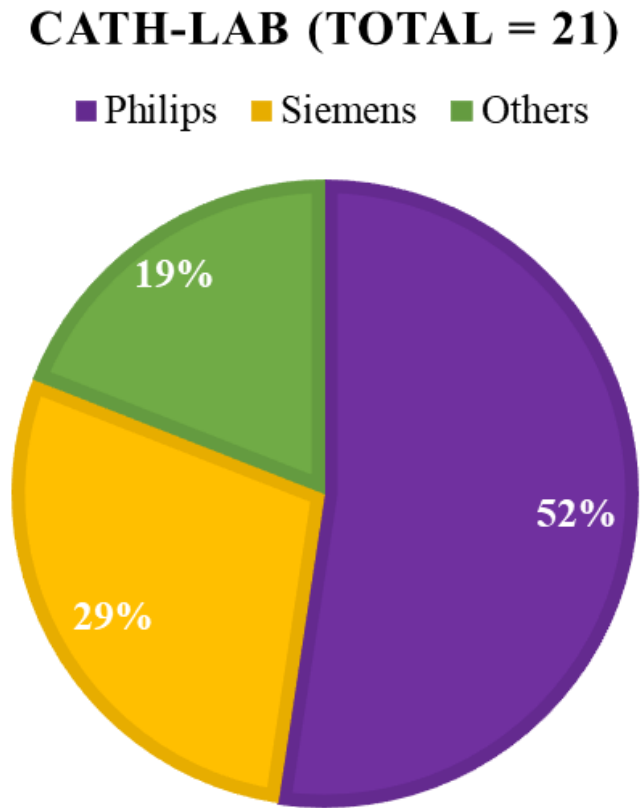


Figure 4.5: Brand Preference for Cath-Lab Machines

This pie chart shows the preferred brands for Cath-Lab equipment in the hospitals.

- Philips is the leading brand in the market for Cath-Lab machines holding 52% of the market share.
- Siemens comes in second, far behind Philips, having only 29% of the market share.

RESULTS

USER SATISFACTION LEVEL:

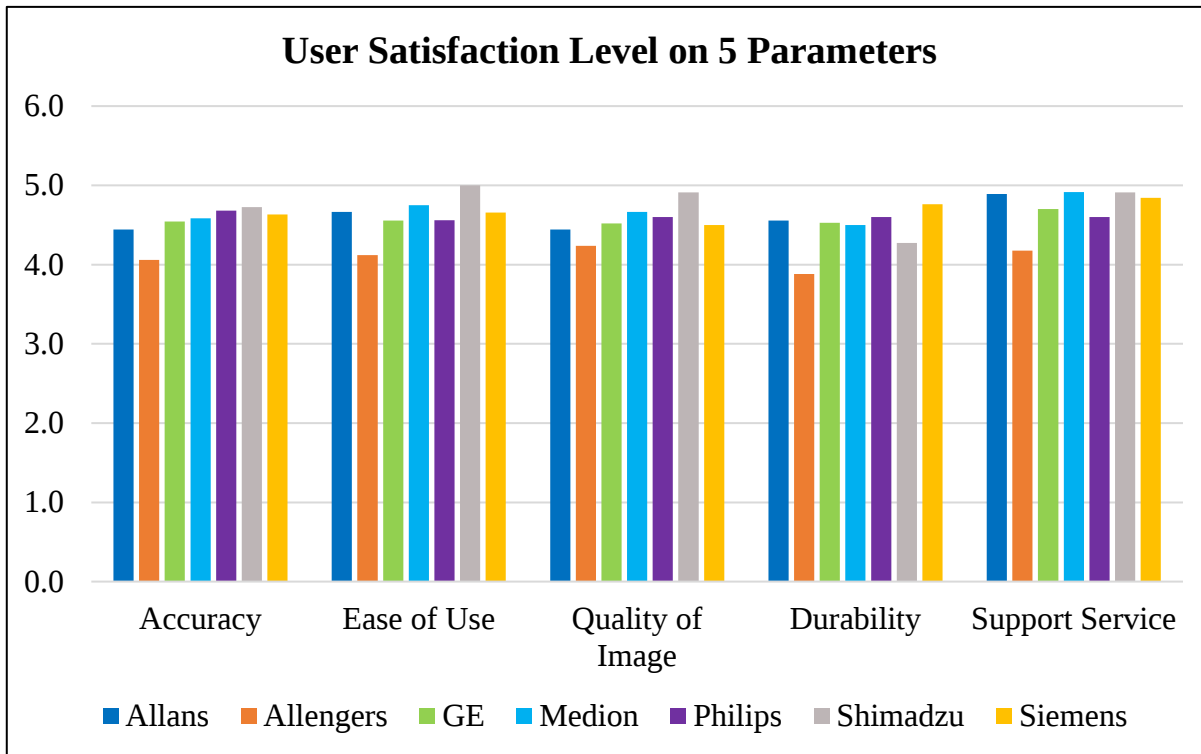


Figure 4.6: User Satisfaction Level for Preferred Equipment Brands on 5 Parameters

The bar graph shows user satisfaction level for the preferred medical equipment brands amongst the hospitals of MMR, across five parameters: Accuracy, Ease of Use, Quality of Image, Durability, and Support and Maintenance Service.

- Shimadzu has the highest user satisfaction in 4/5 factors (Highest being 5/5 for Ease of Use).
- Siemens takes the lead in Durability having a score of 4.8 out of 5.
- The main concern is that one of the leading brands of medical equipment, Allengers, consistently scored the lowest on all 5 factors with the lowest score of 3.9 out of 5 for Durability of the machines. Such low satisfaction level may hamper the future market share of Allengers.

RESULTS

USER SATISFACTION LEVEL:

The bar graph provides an aggregate view of the overall user satisfaction level across the parameters.

- Shimadzu has the highest overall score of 4.8 out of 5, closely followed by Siemens, having an overall user satisfaction score of 4.7 out of 5.
- Allengers scores the lowest at 4.1.
- This indicates that while the market share is dispersed, high satisfaction levels are associated with these leading brands, suggesting that users value quality and reliability in their imaging equipment.

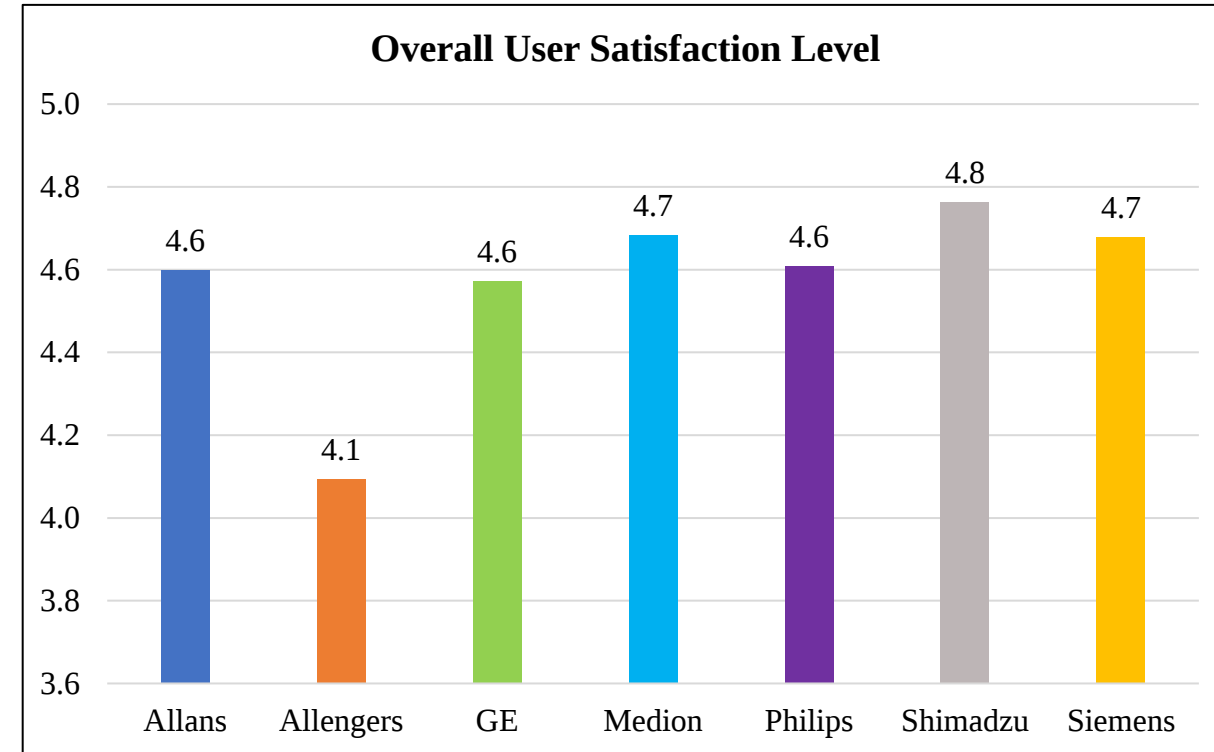


Figure 4.7: Overall User Satisfaction Level for Preferred Equipment Brands on 5 Parameters

RESULTS

BUYING DECISION FACTORS:

X-RAY: WEIGHTAGE OF BUYING DECISION FACTORS

■ Brand Image ■ Performance ■ Technology ■ Safety Features ■ Cost

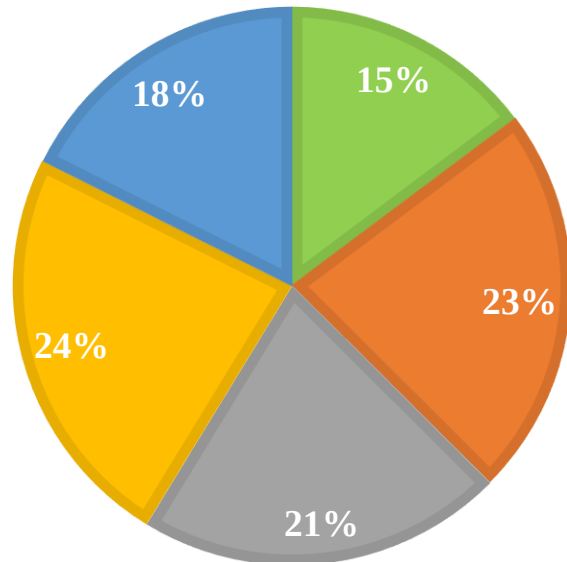


Figure 4.8: X-Ray: Weightage of Buying Decision Factors

The pie chart shows the relative importance of the 5 buying decision factors for X-Ray machines.

- While purchasing X-Ray machines, Safety features and Performance are the major factors which influence the buying decision.
- It is followed by technology, cost and lastly brand image.

RESULTS

BUYING DECISION FACTORS:

The pie chart shows the relative importance of the 5 buying decision factors for Mobile X-Ray machines.

- Again the Safety features and Performance of the equipment are the major factors which played a role in the procurement of the equipment.
- Closely followed by Technology.
- The Brand Image and Cost have the least role to play.

MOBILE X-RAY: WEIGHTAGE OF BUYING DECISION FACTORS

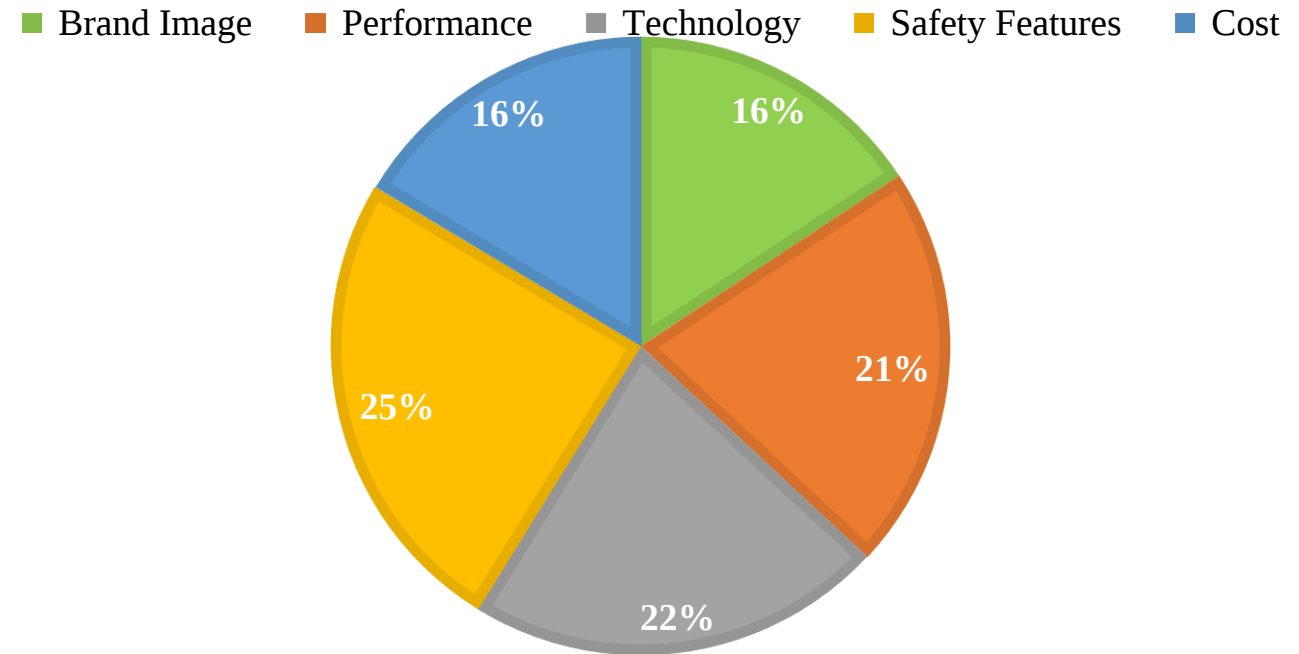


Figure 4.9: Mobile X-Ray: Weightage of Buying Decision Factors

RESULTS

BUYING DECISION FACTORS:

FLUOROSCOPE: WEIGHTAGE OF BUYING DECISION FACTORS

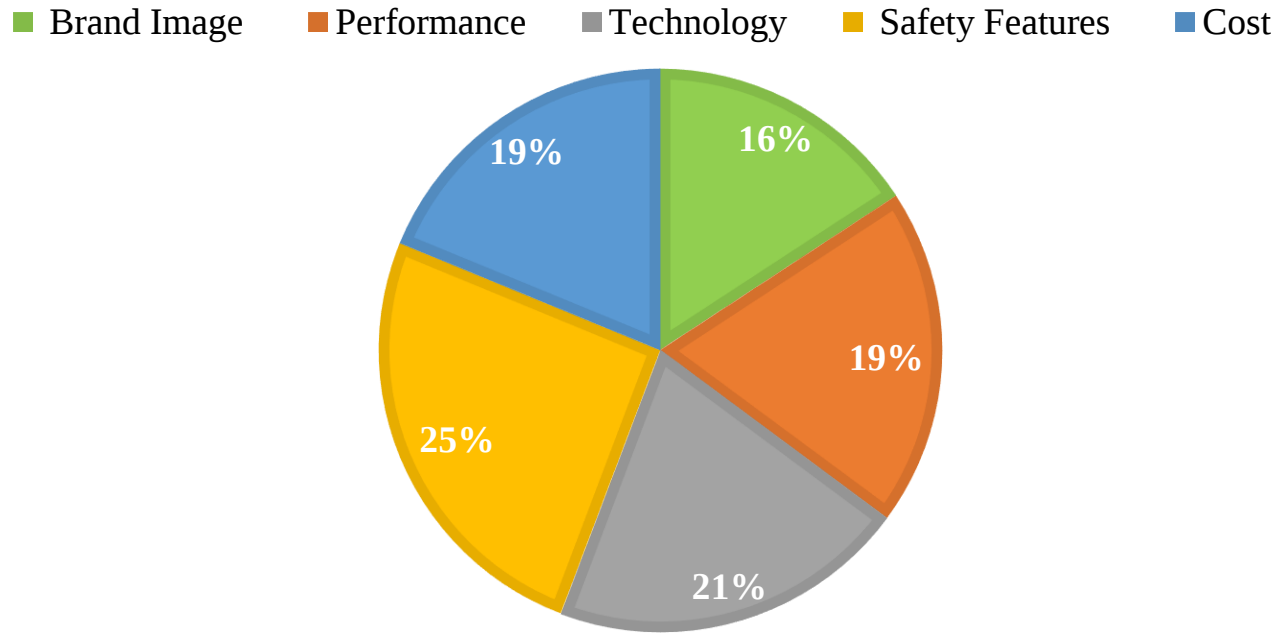


Figure 4.10: Fluoroscope: Weightage of Buying Decision Factors

The pie chart shows the relative importance of the 5 buying decision factors for Fluoroscope machines.

- We see that Safety features of the machine play a major role in buying decision.
- It is then followed by the other 3 factors (Technology, Performance, Cost) playing a more or less equally important role.
- Brand Image is given the least weightage.

RESULTS

BUYING DECISION FACTORS:

The pie chart shows the relative importance of the 5 buying decision factors for C-Arm units.

- Most important factor for purchase of such machines is the Performance of the machine.
- Closely followed by the safety features of the machine.
- Technology, Cost and Brand Image follow.

C-ARM: WEIGHTAGE OF BUYING DECISION FACTORS

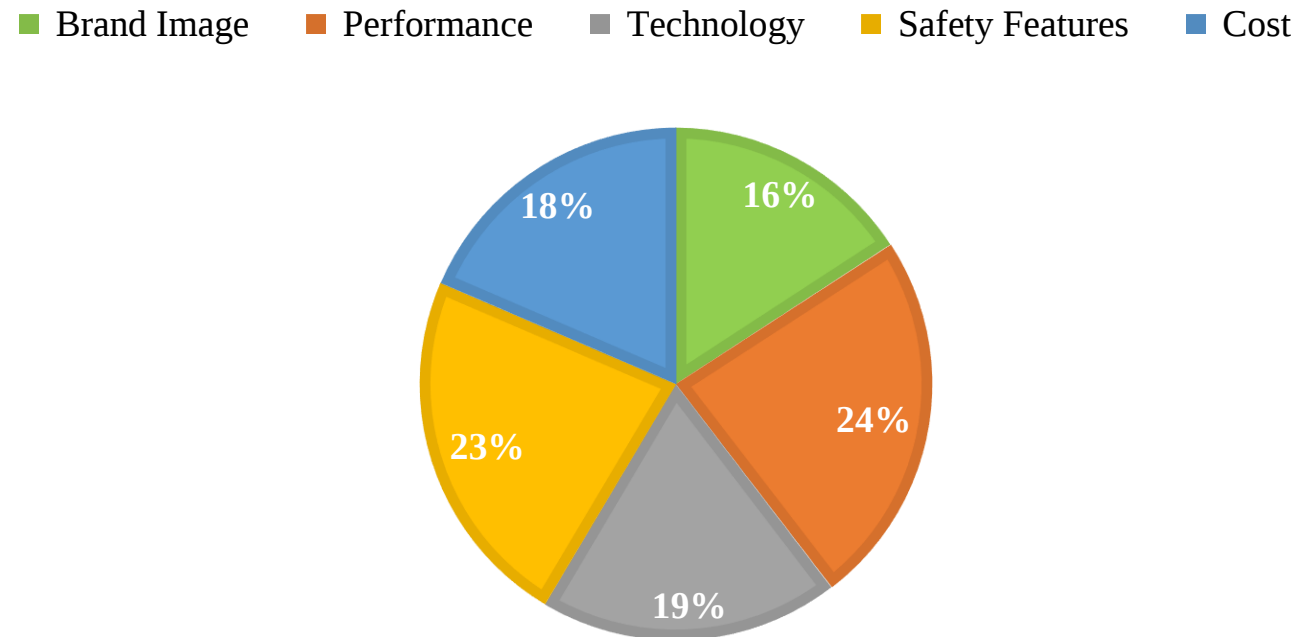


Figure 4.11: C-Arm: Weightage of Buying Decision Factors

RESULTS

BUYING DECISION FACTORS:

CATH-LAB: WEIGHTAGE OF BUYING DECISION FACTORS

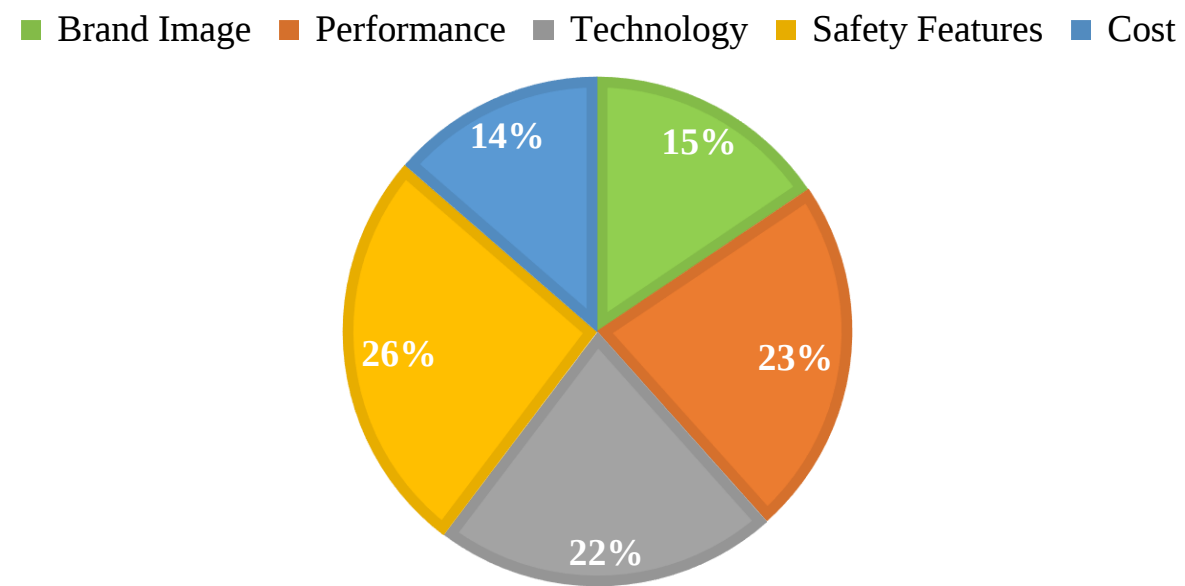


Figure 4.12: Cath-Lab: Weightage of Buying Decision Factors

The pie chart shows the relative importance of the 5 buying decision factors for the Cath-Lab equipment.

- Safety Features top the list of priorities.
- It is followed by performance and technology.
- Relatively, little importance to cost of the equipment and brand image.

RESULTS

BUYING DECISION FACTORS:

This table ranks the weightage of different buying decision factors for each type of equipment.

- Safety Features is the most important factor which emphasizes a significant focus on well-being of the patients and users.
- Performance is the second most important factor which is crucial but not as dominant as safety features.
- Technology plays a moderate role in the buying decision as it can enhance the appeal of the product but is not a decisive factor.
- Cost is a consideration but is not a primary driver as consumers are more interested in meeting their needs.
- Brand Image is the least influential factor as consumers prioritize the product's features over the brand name.

Table 4.1: Weightage of Buying Decision Factors Matrix

FACTORS	X-Ray	Mob X-Ray	Fluoroscope	C-Arm	Cath-Lab
Brand Image	MIN	MIN	MIN	MIN	2ND MIN
Performance	2ND MAX	MID	MID	MAX	2ND MAX
Technology	MID	2ND MAX	2ND MAX	MID	MID
Safety Features	MAX	MAX	MAX	2ND MAX	MAX
Cost	2ND MIN	2ND MIN	2ND MIN	2ND MIN	MIN



DISCUSSIONS



DISCUSSIONS

BRAND PREFERENCE:

- **No single brand dominates** the X-Ray and Mobile X-Ray market in the MMR.
- **Smaller brands collectively hold the majority** of the market share by providing required features and affordability. A study by Patel et al. (2021) found that cost and after sales service play an important role in equipment selection by hospitals of India.
- This is in **contrast to the more concentrated market preferences found elsewhere** such as in China where brands such as Siemens, Philips and GE were preferred for high resolution medical equipment (Li et al. 2019), or in Europe, where the healthcare professionals held Siemens and Philips in high regard due to their cutting-edge technology and reliability which are crucial factors (Johnson and Brown 2020).
- **Siemens is a market leader for fluoroscopy** machines with a 64% market share while **Philips is the leader in the Cath-Lab** market with more than 50% market share. Thompson and Harris (2018) found that Siemens's innovation and customer service are the reason for their global presence.
- The **C-Arm market which is dominated by Siemens & Philips** which highlights the importance of technology and reliability for medical equipment, as also noted by Martinez and Gonzalez (2022) in the Latin American markets.

DISCUSSIONS

USER SATISFACTION LEVEL:

- **User satisfaction level** in the MMR is the **highest for Shimadzu, followed by Siemens**, with Shimadzu leading in all parameters except durability, where Siemens excels.
- This strong user satisfaction score for Siemens and Shimadzu **indicates a high level of trust** in their equipment's performance and quality. This **trend is seen all around the world** where these brands are celebrated for their technological advancements, user friendly interface and consistently high performance. A study by Kim et al. (2018) also found that Siemens equipment was favoured in South Korea due to reliability and features, aligning with our study.
- However, **Allengers** despite being a **well-known brand**, scored the **lowest in all satisfaction parameters** in the study. Similar concerns have been found in other studies as well. A study by Rodriguez and Martinez (2017) also found that certain models from well-known brands received low satisfaction scores because of customer service and maintenance issues.
- Such **low scores** for Allengers **highlights the importance of continuous quality improvement** in order to maintain customer satisfaction. The findings remind us that even well renowned brands **need to address their customers' concerns** in order to maintain a good market position.

DISCUSSIONS

BUYING DECISION FACTORS:

- **Safety Features** is the buying decision factor having the **maximum weightage**, emphasizing a significant **focus on well-being of the patients as well as the users**. This finding aligns with Smith et al. (2018) who found that hospitals across the world consider patient safety as top priority when selecting equipment.
- **Performance** is the relatively **second most important** factor following Safety Features as it is important **for accurate diagnosis and efficiency**. Similar findings are seen in a study by Chen and Wu (2017), which found that reliability and consistency impact the user satisfaction and their repurchase intention.
- **Technology plays a moderate role** as it **enhances the appeal** of the product but is **not the primary decisive factor**. Though technological advancements are welcome by the hospital, they are not given preference over safety and performance. It was also seen by Johnson and Brown (2020) that technological features are supplementary to the core function of safety as well as performance.
- **Cost is a consideration** but **not a driver** in purchase decisions. Hospitals are much more interested in equipment which fulfil their need over the cheap ones. This was also observed by Patel et al. (2021), that though hospitals have budget constraints, they are willing to spend more for high quality equipment.
- **Brand Image** is found to be the **least influential factor**. This is in alignment with the study of Martinez and Gonzalez (2022) who found that even the smaller brands can gain a large market share if they focused on better performance and safety.

DISCUSSIONS

LIMITATIONS:

1. The study is **confined to the Mumbai Metropolitan Region**. As a result, the findings may not be generalizable to other regions or countries having different healthcare infrastructure or market dynamics.
2. Certain chain hospitals such as **Fortis and Cloudnine did not give consent** and refused to provide data for the study. Future studies which incorporate these chain hospitals into the study will be able to provide an even clearer picture of the market scenario.
3. As it is a **cross-sectional study**, all the findings are for a specific point in time. Future advancements in the medical technology may lead to changes in brand preferences and user satisfaction levels.
4. **User satisfaction is subjective** in nature and therefore varies depending on individual expectations and experiences.
5. The study **focuses only on X-Ray, Mobile X-Ray, Fluoroscope, C-Arm and Cath-Lab machines**. Future studies which take into consideration a broader range of equipment such as USG, CT scan and MRI machines, can provide an even broader view of procurement and satisfaction regarding radiology and cardiology equipment.
6. While certain user satisfaction parameters and factors influencing the buying decision of medical equipment were studied in this research, there are many **other factors are remaining** which can be incorporated in the future studies for an even better understanding.



CONCLUSION

CONCLUSION

This study aimed to understand brand preferences, user satisfaction levels and weightage of key factors which influence the buying decision of NABH-Accredited hospitals for radiology and cardiology equipment in the Mumbai Metropolitan Region. The findings of the study reveal diverse market landscape and also helps us to understand the user satisfaction associated with the leading brands of medical devices and what is the most important factor which influences procurement of these machines.

KEY TAKE AWAYS:

- **For X-Ray and Mobile X-Ray machines, no single brand dominates** the market with a sizeable portion of it belonging to the smaller players. In the **fluoroscope market**, **Siemens** comes out to be the market leader which shows its strong reputation in advanced imaging technology. **Siemens and Philips** are the significant brands when it comes to the **C-Arm market** while the market for **Cath-Lab equipment** is completely **dominated by Philips**.
- **User satisfaction** scores were **the highest for Shimadzu** followed by Siemens, indicating that these brands are very highly valued for their quality and reliability.
- **Safety feature** emerges as the **most critical factor influencing the buying decision**, followed by performance and technology while **cost and brand** are found to be generally the **least important**.

CONCLUSION

RECOMMENDATIONS:

- **Medical equipment companies:** **Emphasis** on **safety features** and **superior performance**. User **feedback collection** is essential to improve customer service.
- **Shimadzu:** Crucial to capitalize on their high user satisfaction levels to attract more customers. **Enhancement of market presence** is required. Good opportunity in the X-Ray and Mobile X-Ray markets, where no true leader exists.
- **Siemens:** Use their **market presence** and **positive image** to **attract more customers**. **Continuous product improvement** and innovation are key to maintaining their strong position.
- **Allengers:** Address low user satisfaction through **better product quality** and **performance improvements** as it is at risk of losing business to competitors offering premium features.
- **GE, Philips, Allans & Medion:** Need to enter into other segments in order to **expand their business**.
- **Hospitals:** **Conduct thorough market research** before procurement to identify all the eligible players. Ensures procurement of premium products and avoid settling for mediocre brands with large market presence.
- Development of **Hospital-Vendor partnership** is required to harbour trust, loyalty and ensure premium services.
- **Procurement process:** A **multidisciplinary team** comprising radiologists, surgeons, radiological technicians, OT technicians, cardiology technicians, biomedical engineers, and purchase managers should be involved in the **purchasing process**. Hospitals should **procure equipment compatible with existing system**. Continuously **monitor performance** of the equipment for earlier problem identification and to reduce downtime.

THANK YOU!

