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# EXTENT OF PROBLEMS AND SATISFACTION EXPERIENCED REGARDING SAFETY AND SECURITY MEASURES ADOPTED BY THE SELECTED RESIDENTS OF VADODARA CITY

**APRIL 2025** **ISHA PANDYA**

# EXTENT OF PROBLEMS AND SATISFACTION EXPERIENCED REGARDING SAFETY AND SECURITY MEASURES ADOPTED BY THE SELECTED RESIDENTS OF VADODARA CITY

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By

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**APRIL 2025**

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# CERTIFICATE

This is to certify that the thesis entitled "EXTENT OF PROBLEMS AND SATISFACTION EXPERIENCED REGARDING SAFETY AND SECURITY MEASURES ADOPTED BY THE SELECTED RESIDENTS OF VADODARA CITY" submitted for partial fulfilment of the requirement for the degree of Masters in the Faculty of Family and Community Sciences (Family and Community Resource Management) to the Maharaja Sayajirao University of Baroda, carried out by Isha Pandya, is her original bonafide work.

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# Ethical Compliance Certificate 2024-2025

This is to certify Ms. Isha Pandva study titled: "Extent of Problems and Satisfaction experienced regarding Safety and Security measures adopted by the selected residents of Vadodara citY." from Department of Family and Community Resource Management has been approved by the Institutional Ethics Committee for Human Research (IECHR), Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda. The study has been allotted the ethical approval number IECHR/FCSc/M.Sc./10/2024/28.

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# CONTENTS

# LIST OF TABLES

# LIST OF PLATES

# LIST OF FIGURES

# LIST OF APPENDICES

# INTRODUCTION

# CHAPTER I
# INTRODUCTION

The feeling of safety and security that home provides is essential to our mental and emotional well-being. "A home is also a place of belonging. [1] In recent years, people purchase lots of land and construct houses and farmhouses. People install safety and security measures in their residences because they expect comfort, luxury, and safety. Security and safety are essential for people to live. Today, many women are managing dual career. Women need to take care of their families as well as they need safety and security measures in their residences for the protection of family members especially the children and old age people. Also, in today's era, crime rates are increasing day by day, so at this time, women think of installing safety measures for their residences. They involve safeguarding the inhabitants, property, and valuables **(Mishra et al.2013).** This safety and security measures aims at preventing accidents, mitigating risks, and enhancing the overall well-being of occupants. A home is equipped with technologies that make it easier to sense and monitor its populations as well as household appliances. The most popular uses for home safety and security measures include voice control, alarms, burner alert stove reminder disc, safety grills, face-finger locking systems, door locking systems, CCTV cameras, UV lights, and motion sensor lights, glass break sensor, Audio video controls, Sensor Faucets.

Some problems that may come up are technical failures, false alarms, integration challenges, installation issues, maintenance issues, hacker vulnerability, financial concerns, and a lack of instinctive user interfaces. Factors such as efficiency, dependability, ease of use, system compatibility, customer support, customization options, community engagement, and remote monitoring capabilities are key indicators of consumer satisfaction with safety and security equipment. Through the internet, the apps are connected to enhance and simplify our daily life, work, and play.

The installation of safety and security measures has become essential to protecting homes and guaranteeing the wellbeing of occupants in the quickly changing field of residential security. The devices, which vary from traditional alarm systems to state-of-the-art smart technology, are crucial for deterring possible intruders and creating a sense of security. As the use of these devices increases, it becomes increasingly important to evaluate the challenges users face as well as their satisfaction levels with

these systems. A complete understanding of the problems residents encounter with these devices is necessary to enhance the effectiveness of safety and security measures. Since user happiness directly affects how successfully these technologies are adopted and used, measuring it is equally essential. It is crucial to investigate the nuances of residents' concerns as well as the factors that either reinforce or contradict their satisfaction with security and safety devices.

Under each of the aforementioned topics, there is a vast array of equipment, gadgets, and technologies that fall under the umbrella of safety and security measures, all of which are produced by various companies. In order to raise the bar for the quality of the work and facilities offered to clients, most apartments, duplexes, bungalows, and other buildings now have safety and security systems installed by the builders themselves **(Gupte,2014).**

### 1.1.1 Important factors to be considered by the Homemakers before installing the Safety and Security Measures:

**Effectiveness:** It is important to evaluate how well the security devices are performing their intended functions. Selecting Safety Device, such as alarm, an interlock, or a sensor, etc. selection based on the application's requirements and the hazards that have been recognized. Homemaker should take into account variables like response time, dependability, and surrounding environments.

**Maintenance and Monitoring:** Homemaker should implement a regular maintenance schedule to ensure that safety devices remain in optimal working condition. Establish monitoring protocols to detect any malfunctions, a source of unhappiness could be recurring problems or maintenance challenges.

**Cost:** Many safety and security devices can be expensive to purchase and install, which can be a barrier for homemakers on a budget, determine whether the security gadgets are cost-effective. Concerns regarding the system's upfront cost, recurring expenses, or understood charges may exist among the population.

**Power Supply:** Devices dependent on electricity or batteries may face issues during power outages or battery failures, compromising home security. Many

modern safety and security devices, such as alarms, cameras, and electronic locks, depend on a continuous supply of electricity.

**False Alarms:** Alerts and motion sensors in security systems might set off false alerts because of insects, dogs, or other outside circumstances. This can be annoying and erode user confidence in the system.

**Emergency Response Planning:** Create and carry out emergency response plans that specify how to handle faults or activations of safety devices. Make confident that everyone is aware of these procedures.

**Compatibility with Current Systems:** It can be difficult to integrate new safety devices with home systematization or security systems that are not well-matched, requiring extra funding or expert assistance. [2]

### 1.1.2 Importance of Safety and security measures for residences:

**Protection of Property:** Security equipment helps prevent holdups and damage to houses and possessions. Alarms can notify authorities and homeowners of unwanted interruptions, allowing quick action.

**Personal Safety:** In an emergency, safety and security measures are crucial; instruments like smoke, carbon monoxide, and fire alarms are essential for giving early warning. They can save lives by providing residents with vital time to leave safely.

**Peace of Mind:** Today's population can live in peace of mind, knowing that their home is fully equipped with security equipment. When people feel secure, they also feel at comfort in their own homes, which improves wellbeing in general.

**Crime Prevention:** This involves proactive approaches such as community policing, environmental design, education, and social programs to deter criminal activities. Effective crime prevention can enhance community safety, improve quality of life, and promote a sense of security among residents. As deterrents to possible burglars and thieves, devices like motion sensers, burglar alarms, and CCTV cameras work. Even just having them there can greatly lower the chance of crime in a community.

**Remote Monitoring:** The comfort and peace of mind that come with being able to monitor and operate security systems remotely are enhanced by the fact that homeowners can use computers or cell phones to remotely monitor their property in real-time while they are away, ensuring ongoing inquiry.

**Reduce fear of falling:** As people age, their homes might become unsafe. Fear of falling or incapacity to carry out daily duties adequately are often the driving forces behind moving into an assisted living facility rather than a favourite home. But a range of residence equipment, including security systems, networked sensors, and several other devices, can address many common aging problems and support seniors in leading longer, safer, and healthier lives in their homes.[2]

Generally, safety and security equipments help create a more secure and safe living environment for entire communities in addition to protecting individual homes and inhabitants. They provide both material security and mental peace, making them essential tools for contemporary residential living.

## Justification of the Study

In present times people buy big space and build villas and bungalows. They expect safety, comfort and luxury in their residence so they install safety and security measures in their residences. Safety and security are essential human needs. Feeling of security are cultivated when their safety is ensured, and this leads to the general stability and harmony of society. Homemakers can benefit from home security systems that provide safety and security for their household as well as for their residents. Fire Alert features, and surveillance cameras offer reassurance in emergencies, enabling access to help and ensuring timely intervention in potentially dangerous situations.

There are many studies conducted on smart services, smart technology on functioned, flexibility and Bluetooth based home automation system such as “The usage of Automation System in Smart Home to provide a Sustainable Indoor Environment: A Content Analysis in Web 1.0”( Yi R. & Li M., 2013), “ Bluetooth based home automation using Arduino.”(Malva V. et al., 2019), “Systematic Survey on Smart Home Safety and Security Systems Using the Arduino Platform” (Sarhan,2020), “Preference and usability for Smart-Home

services and items - Focus on Smart-Home Living-Lab"(Seo E. *et al*. (2020), "Comparative study to analyse the impact of smart technology on functional flexibility and space occupancy"(Kamara R. *et al*., 2021), "Home Automation System Architecture based on FIWARE and Multi-Agent Systems."(Sofia Martins. et al., 2022). There are also some researchers conducted in the department of Family and Community Resource Management on, "Home Security System for Elderly: Extent of Utilization and Satisfaction." (Goswami., 2021), and "Home Automation: Utilization and Satisfaction of the Users." (Gupte., 2014) but none of them discuss about problems and satisfaction regarding safety and security measures used in the residences now a days.

Nowadays, a lot of women work, and they frequently have to leave the house for work, which means that their elderly parents and children need to be taken care off. In this technological era, smart appliances and gadgets are available in the market for safety and security reasons and the homemakers need to have knowledge regarding these devices to make use of it. Because of this, women who are not at home may still observe what goes on inside their home. The women are able to know the status of their homes and keep a track of the elderly residents of the home as well as their children.

The present research aimed to find out problems and satisfaction regarding safety and security devices and measures used by selected residences in Vadodara city.

This study aimed to provide the essential and correct knowledge of the safety and security measures available in the market for the use of the residences. The degree of user satisfaction will help determine the problems faced. The educational booklet was developed by the researcher on the available safety and security devices for residences which can be helpful for the homemakers as they can enhance their knowledge and accordingly be more satisfied if the correct information is provided to them.

## Statement of the Problem

The present study aimed to assess the extent of problems and satisfaction experienced regarding safety and security devices and measures adopted by the selected residences of Vadodara city.

## Objectives

1. To find out the types of safety and security measures used by the home makers for their residences.
2. To find out the extent of problems experienced by the homemakers regarding the safety and security measures used in their residences.
3. To assess the extent of satisfaction of the homemakers regarding safety and security measures used by them.
4. To prepare an educational booklet on the different safety and security measures available in the market for the residences.

## Delimitations of the Study

1. The study was limited to 120 homemakers residing in Vadodara city.
2. The study was limited to homemakers using safety and security measures since past 2 years.

## Hypotheses of the Study

1. The extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences varies according to their selected personal and family variables.
2. The extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences varies according to their selected personal and family variables.
3. There exists a relationship between extent of problems and extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences.

# REVIEW OF LITERATURE

# CHAPTER II

# REVIEW OF LITERATURE

Literature available on a particular topic is very useful information for a researcher as it provides better clarity regarding the subject matter with the present research problem. It also helps in avoiding doing work that has already been undertaken in the past. Earlier findings that are relevant to the current topic can be synthesized to provide relevant information through an thorough evaluation of the literature. Thus, a survey of literature was undertaken in order to investigate any previous studies that have been done on the problems and satisfaction experienced regarding safety and security measures adopted by the selected residents of Vadodara city. The primary source from which the data was collected were scholarly articles, books, journals, websites and other resources. Review of literature was beneficial to understand the importance of the research problem, to understand the methodology used in similar areas of past research and to identify the unexplored areas. For a clear and better understanding of the review, the present chapter is divided in the following subtopics:

**1. Theoretical Orientation**

1. Importance of safety and security measures in residences
2. Meaning of safety and security measures
3. Types of safety and security measures available in market
4. Needs of safety and security measures in today's residences

**2. Related Research Studies**

1. Research studies conducted in India
2. Research studies conducted Abroad

**3. Conclusion of review of literature**

### 2.1.1. Importance of safety and security measures in residences

Nowadays, many women are employed in various fields, and hence need to balance work along with caring for their families. With rising crime rates, many women are considering installing safety measures in their homes to protect their loved ones, property, and valuables. These safety and security measures aim to prevent accidents, reduce risks, and enhance the overall well-being of everyone in the household. Popular in this technological era, homes can be equipped with advanced devices that make it easier to monitor and secure both residents and household appliances. These technologies are designed to provide comfort, safety, and luxury. Common safety and security measures include voice control systems, alarms, burner alert stove reminders, safety grills, face and fingerprint locking systems, door locking systems, CCTV cameras, UV lights, motion sensor lights, glass break sensors, audio-video controls, and sensor faucets.

Effective security fosters peace of mind by creating a sense of safety and comfort for residents within their homes. By implementing healthy safety measures, residents not only protect their belongings and loved ones but also enhance their preparedness for unexpected emergencies and potential risks. This comprehensive approach contributes to a more stable and secure living environment.

Whether a woman lives alone, with family, or in a shared residence, she can feel authorized and safe when her home is safe. Unauthorized access and attacks can be pointed by the use of security cameras, monitored alarm systems, and tight locks. In an emergency, smart devices like panic buttons and video doorbells can also instantly notify police or other reliable people. In addition to improving women's personal security, fostering a safe home environment also promotes women's independence, well-being, and general peace of mind.

Now a days, technology provides powerful protection for the users of residence. There are two types of safety and security measures available in market,

**Wireless safety and security measures**: This kind of measures generally operating with wi-fi, Bluetooth, cellular network, solar system, voice access, actions, and mobile operators.

**Wired safety and security measures:** These types of measures operating with electrical wiring and any other connection from any electrical source.

After that, video surveillance and fire safety emerged. While video surveillance technology existed in the 1940s, it didn't become mainstream until the 1970s. The images were grainy at first, but users could see images of visitors on a television monitor. An early advancement was made in 1966, when nurse Marie van Brittan brown invented the first home video security system. It was the first time a remote control could be used to open a door (Goswami,2021).

Safety and security measures in residences are active for safeguarding both people and property. They play an important role in preventing crimes such as thefts, home attacks, and damage, offering residents peace of mind. These measures also prepare residences for emergencies like natural disasters, minimizing the risk of harm. A secure environment not only protects physical well-being but also enhances the peace of mind, allowing them to live free from continuous worry. In heart, these protections are essential for maintaining a safe, stable, and comfortable living environment.

### 2.1.2 Meaning of safety and security measures

Safety and security measures in residences refer to the actions, equipment, and systems put in place to protect the inhabitants and property from potential threats, dangers, and accidents. Safety measures in a residence helps to prevent accidents and injuries. This includes putting in smoke detector, fire extinguisher, and the residences safe. Security measures Focus on protecting the residences from theft and break-ins, this means using alarms, deadbolt locks, setting up security cameras, and making sure doors and windows are secure (Smith, S.J.,2010).

A security and safety measures is defined as to detect intrusion, unauthorized entry into a residential area and deny such unauthorized access, to protect the familiars from any harm. Safety and security measures is capable of securing residential space.by using different technology, or a measure the most known measures available in the market of Vadodara city. The most known measures are including voice control, alarms, burner alert stove reminder disc, safety grills, face-finger locking systems, door locking systems, CCTV cameras, UV lights,

and motion sensor lights, glass break sensor, Audio video controls, Sensor Faucets.

**Safety and security measures for residences are needed for the following reasons.**

1. Protecting against property damage and guarding against thief.
2. Monitoring and recording the accidents and movements.
3. Access in emergencies situation.
4. Detecting the Damage situation.
5. Monitoring surroundings.

Safety and security measures are essential for any residence. Designing an effective security system starts with assessing the specific needs of the customers.

### 2.1.3 Types of safety and security measures available in market

To protect residences, there are many devices are available for safety and security measures such as:

**1. Secure Entry Points**

i. Strong Doors and Locks: Use solid doors with deadbolt locks. Reinforce door frames and hinges to resist break-ins.

ii. Window Security: Install locks on all windows and consider impact-resistant glass. Use bars or grills on ground floor windows if necessary.

iii. Peepholes/Video Doorbells: Ensure that doors have peepholes or use video doorbells to allow residents to see who is outside before opening.

**Plate-1: Secure Entry Points**

**2. Alarm Systems**

i. Burglar Alarms: Install monitored or unmonitored alarm systems that alert authorities or residents in the case of a break-in.

ii. Smoke/Fire Alarms: Ensure fire alarms are installed in key areas like bedrooms and kitchens. Regularly check batteries and functionality.

**Plate 2: Alarm systems**

**3. Outdoor Lighting**

i. Motion-Sensor Lights: Install lights that activate when movement is detected to deter intruders and improve visibility at night.

ii. Pathway Lighting: Illuminate walkways, driveways, and other key areas to reduce the risk of accidents and improve visibility for security.

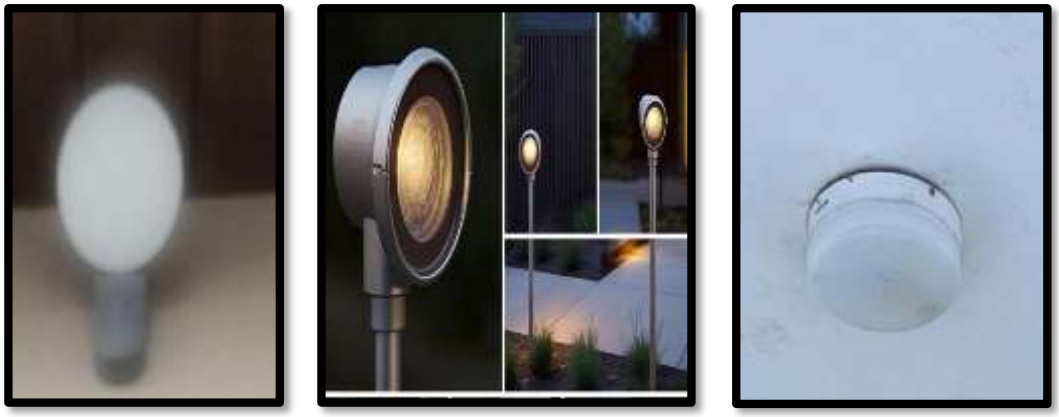

**Plate 3: Outdoor Lightings**

**4. Fencing and Gates**

i. Perimeter Fencing: Install fences around the property to create a barrier and control access.

ii. Secure Gates: Use locking mechanisms on gates that lead to the yard or house. Video intercom systems can provide extra security at the entrance.

**Plate 4: Fencing and Gate**

**5. Surveillance Systems**

i. CCTV Cameras: Install security cameras around the perimeter, entrances, and key internal areas of the house. Ensure the system records and stores footage.

ii. Remote Monitoring: Use systems that allow remote monitoring via smartphones or other devices for real-time updates and alerts.

**Plate 5: Surveillance Systems**

**6. Smart Locks**

i. Smart Systems: Use automation systems that allow you to control lighting, door locks, and security cameras remotely.

ii. Smart Locks: Install smart locks that use keypads, fingerprint scanners, or smartphone apps, offering more security than traditional locks.

**Plate-6: Smart Locks**

**7. Fire Safety Measures**

i. Fire Extinguishers: Place extinguishers in easily accessible locations, especially in the kitchen and near fireplaces.

ii. Escape Plans: Develop and practice fire escape plans with all residents, ensuring that all exit points are accessible.

iii. Fireproof Safes: Use fireproof safes for storing valuable documents, money, and important items.

**Plate 7: Fire Safety Measures**

**8. Childproofing locks and Other Safety Measures**

i. Child Safety Gates: Install gates at the top and bottom of staircases to prevent falls.

ii. Electrical Outlet Covers: Use covers on outlets to prevent children from inserting objects into them.

iii. Pool Safety: If the home has a pool, ensure it is fenced with a self-closing gate and consider using pool alarms.


**Plate-8: Childproofing Locks**

### 2.1.4 Needs of safety and security measures in today's residences:

In today's world of rapid change, when life is becoming more complex, it is imperative to make sure residential areas are safe and secure. Crime, natural calamities, and other unexpected events are more likely to arise as cities grow and their populations rise. Houses now require protection in order to remain secure and comfortable; they are no longer only places to enjoy. Installing are security systems, such as smart locks, alarm systems, and surveillance cameras, is crucial to preventing crime, particularly in light of the surge in home invasions, burglaries, and vandalism. Additionally, as technology introduces new hazards, cybersecurity has become essential to maintaining the safety of smart homes.

The severity of natural calamities due to climate change has highlighted the necessity of comprehensive safety protocols. Without the proper preparation, the effects of earthquakes, floods, storms, and wildfires can be disastrous and occur unexpectedly. Early warning systems, fire-resistant construction, and emergency kits make homes more equipped to manage emergencies and protect their occupants. The degree of security residents feel in their surroundings has a direct impact on their mental health in addition to their physical safety. Being

stress-free and feeling stable about their house helps people concentrate on their everyday activities instead of living in continuous fear of possible fears.

The safety of one house can affect the security of the entire neighbourhood as they get increasingly interconnected. Community alert systems and neighbourhood watch programs are two examples of collaborative activities that play a major role in improving residential areas' overall safety. These programs build a sense of unity and shared responsibility, motivating neighbours to look out for each other. Furthermore, safety precautions cover not only the exterior of houses but also the surrounding infrastructure. Secure parking lots, well-lit streets, and restricted access points are examples of features that are essential for preventing crime and guaranteeing the safety of the entire community.

In conclusion, a number of causes, such as the rise in crime, the growing frequency of natural calamities, and the continuous threat of cyberattacks, are responsible for the requirement for safety and security measures in today's residences. These safety measures help to the community's overall security by protecting inhabitants' mental health in addition to their touchable belongings. People can make their living environments safer and more secure for themselves and future generations by making investments in cutting-edge security systems, disaster preparedness, and community-based projects.

## 2. Empirical Research Studies:

### 1. Research studies conducted in India:

Shet and Chokkadi (2012) conducted research on Home Automation Indian Scenario: A survey of Architectures and Technologies. Home automation is the automatically controlling the day today activities of the home. Home automation involves the controlling of various devices of the home, taking care of the wellbeing of the occupants, providing security to the occupants, monitoring health of the occupants. Home automation network involves wireless embedded sensors and actuators which monitor various devices used for home management. One of the most critical aspects in home automation is communication and network technology. In this article a discussion is done about the Indian needs, challenges faced as per the Indian requirements and shortage of resources in India. The already available home automation technology can be tuned to be cheaper and widely acceptable even at the remote areas.

Paraskumar (2014) conducted a study on Home Security Systems in Pune, Maharashtra. In the study, researcher proposed a Home Security System which focuses on monitoring home space to detect intruders and the visitors that are visiting the home. Based on ZIGBEE and GPRS technology a wireless remote and smart Home Security System has developed. Study concluded that, wireless remote systems for smart home application is developed to analyse and detect the status of home equipment. Through this newly developed device, the user can monitor the home status using the android phone even when the user is not at home.

Gupte N. (2014) conducted a research study on Home Automation: utilization and satisfaction of the users. A study was conducted on 90 households which had at least one Home automated system installed and were using since past one year. The main objectives were to find out home Automation systems available in the market; to study the extent of utilization and satisfaction regarding Home Automation systems by the residents in the selected area of Vadodara city. The data were gathered through interview schedule. Findings of the study revealed that out of 11 products identified

only 6 products were installed by the respondents contacted for the study. It was found that more number of people did not used home Automation devices because they were costly. So to spread the importance of Home Automation system government can provide grants and subsidies to the construction projects so that more comfortable, secure, convenient and energy efficient environment can be provided to the residents of the Vadodara city. The findings also revealed that majority of the respondents who had installed Home Automation devices since minimum past one year were highly satisfied by the specified criteria of functioning of device, initial cost, and amount of maintenance cost required, after sales services, design of the device, comfort experienced and various other features. The findings of the study presented in the research which would prove to be beneficial to the home automation industry. The manufacturers may improve upon their products, if needed. The field of Family and Community Resource Management would get the updated knowledge of home automation available in market.

David et al. (2015) conducted research on Design of a home automation system using Arduino. This paper presents a low cost and flexible home control and environmental monitoring system. It employs an embedded micro web server in Arduino Mega 2560 microcontroller, with IP connectivity for accessing and controlling devices and appliances remotely. These devices can be controlled through a web application or via Bluetooth Android based Smart phone app. The proposed system does not require a dedicated server PC with respect to similar systems and offers a novel communication protocol to monitor and control the home environment with more than just the switching functionality. To demonstrate the feasibility and effectiveness of this system, devices such as light switches, power plug, temperature sensor, gas sensor and motion sensors have been integrated with the proposed home control system.

Kaur et al. (2016) conducted research on Home Automation and Security System in New Delhi, India. The focus of this study is on providing comprehensive information on home automation and security systems that use Arduino, GSM, and Android applications to manage household

appliances. The study found that the main purpose of implementing home automation systems based on Arduino, GSM, and Android is to make it easier for consumers to control their household equipment. When they are used, it means that if someone tries to break into the property, an SMS alerting the owner to the presence of someone inside will be sent to his phone, allowing him to take precautionary steps to keep the burglar at haven.

Chitnis et al. (2016) has conducted an investigative study for Smart Home Security: Issues, Challenges and Countermeasures. The study was conducted in Pune, India with the goal of creating a socially intelligent robot (SIR) that can elevate home security to a new level by real-time classifying and recognizing human-robot interaction (HRI) for the smart home system. A poll was conducted as part of the investigative investigation to get opinions from a variety of respondents with varying backgrounds. The study's conclusions showed that having children and elderly relatives living at home or in the vicinity of the home greatly increases the requirement for sophisticated home security systems. Using intelligent remote monitoring, the suggested model provided the predicted reaction and was shown to be more useful and adaptable in real-time scenarios.

Palanisamy et al. (2018) has done a Study on Fire Safety on Residential and Commercial Construction Sites. The construction industry in India is the country's second largest industrial sector, after agriculture. The construction industry makes a remarkable contribution to the Indian economy and provides employment to a large number of people of India. Fire is a chemical reaction of a combustible substance with oxygen, involving heat and is usually accompanied by a visual flame or incandescence. Ensuring fire safety has always been a challenge to the stakeholders, i.e. building owners, construction companies, contractors and sub-contractors, and government employees due to the multiplicity of the factors involved and their complexity. There are various legal standards and requirements for ensuring fire safety on construction sites. The buildings are normally provided with firewalls during construction and these firewalls separate two structures or divide a structure into smaller portions to prevent the spread of fire. The lightweight construction and trusses are designed to support only their own

weight. During a fire, if one fails, a domino effect happens and all fail rapidly within 5 to 10 minutes. Prolonged exposure to fire may result in structural collapse and injury or death of the occupants of the building under construction. Fire safety on construction sites is still in its primitive stages in India. There is a great necessity to improve fire safety on construction sites to protect construction workers and other occupants of the buildings. This study aims to design and implement fire safety systems for construction sites, thereby enhancing the standards to meet the system requirements at par with global standards.

Sankpal et al. (2018) has done a Review on Home Security Systems in Sangli, India. This review of the literature discusses several intelligent home automation technologies and systems, such as cloud-based, GSM/GPRS, Zigbee, Raspberry Pi, Siri, and human tracking. The researchers came to the conclusion that using these systems would make home automation so much easier, daily living so much simpler, and energy savings so great. Any automated system's primary draw is its ability to reduce labour, effort, time, and mistakes made by careless humans.

Malva et al. (2019) assessed Research paper on Bluetooth based home automation using Arduino. The world is moving Fastly towards automation. People have less time to handle any work so automation is simple way to handle any device or machine will work to our desire. This paper aim is to develop and design a home automation using Arduino with Bluetooth module. Home automation system gives a simple and reliable technology with Android application. Home appliances like fan, Bulb, AC, automatic door lock are controlled by home automation system using Arduino Uno with Bluetooth module. The paper mainly focuses on the monitor and control of smart home by Android phone and provide a security based smart home, when the people does not present at home. This paper motive is controlled home appliances in smart home with user friendly, design at low cost, simple installation.

Goswami P. (2021) conducted a research study on Home Security System for elderly: Extent of utilization and satisfaction. The purpose of the study

Research has explored the effectiveness and user satisfaction of these systems among the elderly population. A study conducted with 120 respondents in Assam aimed to assess the availability, utilization, and satisfaction levels associated with home security systems specifically for older adults. This study focused on identifying the types of security systems available in the market, evaluating how these systems were used, and gauging user satisfaction. Findings from the study highlighted that seven distinct types of home security systems were available in Assam. It was observed that individuals aged 60 to 81 predominantly utilized security cameras for over two years. In contrast, those aged 82 to 92 showed a preference for medical security devices in addition to cameras. The choice of security system also varied with family income; lower-income families more frequently installed medical security devices, while higher-income families tended to Favor security cameras. Furthermore, respondents experiencing hearing loss or dementia were more likely to use smart door locks, medical security cameras, and automatic pill dispensers. Overall, users reported high satisfaction with various components, including automatic pill dispensers, medical security devices, video door phones, smart door locks, security cameras, and motion sensor lights. The study also provided a set of working drawings and cost estimates for integrating these systems into a specific residence, demonstrating practical applications of security technology tailored to individual needs.

### 2.2.2 Research Studies conducted Abroad

Assaf M.& Das S.*et al*. (2012) conducted a research on Sensor Based Home Automation and Security System. The conventional design of home security systems typically monitors only the property and lacks physical control aspects of the house itself. Also, the term security is not well defined because there is a time delay between the alarm system going on and actual arrival of the security personnel. This paper discusses the development of a home security and monitoring system that works where the traditional security systems that are mainly concerned about curbing burglary and gathering evidence against trespassing fail. The paper presents the design and implementation details of this new home control and security system based

on field programmable gate array (FPGA) The user here can interact directly with the system through a web-based interface over the Internet, while home appliances like air conditioners, lights, door locks and gates are remotely controlled through a user-friendly web page. An additional feature that enhances the security aspect of the system is its capability of monitoring entry points such as doors and windows so that in the event any breach, an alerting email message is sent to the home owner instantly.

Yi R. & Li M. (2013) investigated The usage of Automation System in Smart Home to provide a Sustainable Indoor Environment: A Content Analysis in Web 1.0.The fast development in computer and various mobile devices have bought changes to our living environment. Pressing a button to open the door of flat when we are in office is no longer purely imagination in cartoons or films. More importantly, home automation as such provides us an alternative solution to reduce the usage of energy, save costs and convenience. This paper reviews the advantages of home automation smart home in Hong Kong and Australia from industry perspective with the help of content analysis.

Suseelan D. *et al*. (2015) conducted a research on Home Automation Systems - A Study. Electronic and Electrical environment with respect to this context is any environment which consists of appliances such as fans, television sets, air conditioners, motors, heater, lighting systems, etc. A remotely accessible environment is an environment in which each appliance can be remotely accessed and controlled using software as an interface, which includes an Android application and a Web application. Such remotely accessible systems are already available in the market, but have a number of drawbacks as well.

Manikandan J. (2016) Conducted a research an Design and evaluation of wireless home automation systems. Smart homes are in huge demand and have gained significant consumer awareness. Smart homes and home automation systems are generally used with reference to a wide range of solutions that includes controlling, monitoring and automating various functions inside a home. In this paper, design of home automation systems using various technologies is proposed and their performances are evaluated.

The proposed work is an outcome of a funded project and the systems proposed, designed and reported in this paper can be easily adapted for various applications such as control of machines in machining industries, automotive industry, navigating mobile wireless nodes and automating offices.

Seo E. *et al*. (2020) did a research on preference and usability for Smart-Home services and items - Focus on Smart-Home Living-Lab. This study surveyed smart technology (service) and item preferences for Smart-Home Living-lab visitors and presented an evaluation of the preference of smart technology (service) and items based on experience. Based on this, a broader understanding of Smart-Home was derived by applying usability to each item. The results are as follows. First, A survey of all age groups showed a high preference for Health care and Emergency, and Safety response items. Second, In particular, there was a high interest in daily health and body change management. Third, Contrary to expectations, seniors' preference for health-related services and items was low. Forth. Preference scores for items corresponding to automatic sensing, which are services and items that respond to daily behaviour, were high.

Kamara R. *et al*. (2021) assessed Comparative study to analyse the impact of smart technology on functional flexibility and space occupancy. Human lives include living, family raising, socializing, shopping, and leisure, which both spatial and temporal aspects cannot be isolated. Technologies enhance time–space trade-off such that we can effectively utilize time and space. In current homes, the most common definition of space is its division according to functions such as bedrooms, bathrooms and living rooms. The incorporation in future living spaces of home automation technologies will alter activities. An investigation into home automation has been ongoing for decades to have a network topology of smart devices in the immediate future. While smart technology aims to improve internal space efficiency by integrating technologies, the usage is central. Numerous remark-able smart home studies focus intensively on implementing emerging technologies, preventing other aspects of lifestyle and space. In this context, we need to understand the impact of smart technology on functional flexibility (time efficiency) and

space occupancy, enhancing the quality of inner space. This research's main impact is to use mathematical and graphical tools to test hypothetical prototypes designed by the researcher and analyse to analyses how functional flexibility and space occupancy in conventional house compares to that achieved by using smart technology in a futuristic smart house in Iraq. Results showed that smart homes show better internal spaces than conventional homes through the efficient use of time and space for a wide range of functions with smart devices.

Elena k. et al. (2021) Studied on Consumer Attitudes to the Smart Home Technologies and the Internet of Things (IoT). This paper focuses on the consumer preferences for the so-called "smart homes" (also known as "smart houses") which represent a novel addition and a product of the on-going digitalization and the deployment of the Internet of Things (IoT). The major scientific contribution of our study is the empirical model build on the data from the online questionnaire conducted with randomly selected respondents (N = 523) from four European Union (EU) countries and Russia. Even though our results are subject to limitations (no Southern of Northern European countries are included in the scope of this research, which might have yielded different results due to the differences in wealth of citizens and climate in comparison to the Central and Eastern European countries or Germany), they demonstrate that the users included in our sample generally feel inclined to the smart homes technologies and perceive them as a plausible means for improving the safety and security of their lives. On the other hand, some respondents from our sample expressed their concerns over the cybersecurity and technology dependence issues associated with smart homes. It is also apparent that younger respondents (aged 16–35) featured in our research are more worried about their personal data being monitored and analysed (with a pending threat of leakages). All these results are original and constitute an important scientific value-added to the field of research in smart home technologies and their acceptance by the general public. We demonstrate that the further enhancement of smart homes, and the increase of their popularity and affordability among the customers both in the Central and Eastern European countries and beyond, might depend on the

development of the smart grids which these smart homes are an integral part of. The reliability of the smart systems constitutes the key element for achieving the satisfaction of the smart homes residents, and hence needs to be achieved and secured in an effective way. This would ensure the right mix and balance of energy security and efficiency for all customers involved in this process.

Seitz B.& Graef S. et al. (2021) Conducted a research on A Comparison of Open-Source Home Automation Systems. Homes are becoming an ecosystem of digital devices and appliances, which can be interconnected and controlled. This interconnection can be facilitated by a central smart hub on which home automation software is deployed. Commercially available hubs, while easy to install and use, often support a limited set of devices and protocols, and have a high total cost of ownership. Open-source home automation systems provide an affordable and open alternative, bringing support for devices and services that are unsupported by commercial alternatives. In recent years, the number of available open-source home automation systems has increased drastically. Each system comes with its own set of functionalities and limitations, making choosing a specific solution challenging, as a wrong decision may be costly. In this work, we overview 20 of the prominent open-source home automation systems, from which we select the four most promising ones. To evaluate and compare these systems, we identify key features from a set of use cases and extract specific features for home automation. This results in a two-phase study. In the first phase, we perform a use case-based analysis based on the extracted features. In the second phase, we perform a criteria-based analysis with 34 criteria that covers aspects such as setup time, quality of documentation, pricing, and hardware requirements. We also identify the commonalities in the architecture that emerge from the systems. The results help to identify the strengths and weaknesses of the various systems and can help the developer and the practitioner make an informed choice when selecting an open-source home automation solution.

Khan H.& Alomari M. et al. (2021) studied on Systematic Analysis of Safety and Security Risks in Smart Homes. The revolution in Internet of Things

(IoT)-based devices and applications has provided smart applications for humans. These applications range from healthcare to traffic-flow management, to communication devices, to smart security devices, and many others. In particular, government and private organizations are showing significant interest in IoT-enabled applications for smart homes. Despite the perceived benefits and interest, human safety is also a key concern. This research is aimed at systematically analysing the available literature on smart homes and identifying areas of concern or risk with a view to supporting the design of safe and secure smart homes. For this systematic review process, relevant work in the most highly regarded journals published in the period 2016–2020 (a section of 2020 is included) was analysed. A final set of 99 relevant articles (journal articles, book sections, conference papers, and survey papers) was analysed in this study. This analysis is focused on three research questions and relevant keywords. The systematic analysis results and key insights will help researchers and practitioners to make more informed decisions when dealing with the safety and security risks of smart homes, especially in emergency situations.

Martins S et al. (2022) studied on Home Automation System Architecture based on FIWARE and Multi-Agent Systems. The continuous migration of people towards cities has led to an increase in resource consumption among homes, primarily in terms of energy and water. This phenomenon calls for resource management solutions in an attempt to drive sustainable consumption patterns. Among these solutions lie Home Automation Systems (HAS) capable of monitoring and controlling different appliances so as to deliver services such as appliance control and security surveillance. As in most HAS architectures today, these appliances are uniquely identified and connected to the Internet, as in Internet of Things (IoT) networks. Though, despite their potential, such architectures generally fail to address four essential features altogether: easy adaptability, access to remote services, interoperability and software portability. In this work, we propose a reference HAS architecture which implements the previous features. Our approach is based on the synergy between the FIWARE IoT middleware and a multi-agent system (MAS), leading to an autonomous IoT (A IOT) system. To

demonstrate the applicability of this architecture and to evaluate its potential to drive sustainable resource consumption, we have deployed a Home Energy Management System (HEMS) in accordance with the proposed architecture, and gathered results of various simulations of a home environment managed by the HEMS. Our results suggest that the HEMS can aid homeowners in decision making, raise awareness as of their resource consumption profiles, and provoke behavioural changes leading to more sustainable consumption patterns.

**2.3 Conclusion of review of literature:**

Safety and security are very important for the well-being of city residents. The analysis reveals that even though many safety measures are in place, people still face issues like poor infrastructure, low awareness, and difficulties with policy enforcement. Satisfaction with these measures varies depending on personal experiences, economic status, and where people live. While some residents are happy with the security measures, others are not due to problems or gaps in the system. The analysis suggests that researches are conducted in India on, Home Automation and Security System, Smart Home Security and Home Security System for elderly, outside India researches were conducted on Sensor Based Home Automation and Security System, usage of Automation System in Smart Home to provide a Sustainable Indoor Environment, Design of a home automation system using Arduino, Design and evaluation of wireless home automation systems, Bluetooth based home automation using Arduino, preference and usability for Smart-Home services and items, impact of smart technology on functional flexibility and space occupancy, Consumer Attitudes to the Smart Home Technologies and the Internet of Things (IoT), A Comparison of Open-Source Home Automation Systems, Home Automation System Architecture based on FIWARE and Multi-Agent Systems, but the researcher has not come across any study on Extent of problems and satisfaction experienced regarding safety and security measures adopted by the selected residences of Vadodara city. Hence this study was undertaken. Additionally, there is a need to enhance the knowledge of the respondents, regarding the different safety and security measures available for residents therefore booklet was prepared.

# METHODOLOGY

# CHAPTER III
# METHODOLOGY

This chapter provides a brief explanation of the research design, the operational definitions, the data collection tool, and the sampling technique. To ensure a systematic and organized presentation, this chapter is divided into clearly defined sections.

1. Research Design
2. Operational definitions
3. Variables of the study
4. Locale of the study
5. Unit of Enquiry
6. Sample size and sampling procedure
7. Selection and Description of the tool
8. Establishment of Reliability of the tool
9. Data collection
10. Data analysis
11. Development of Booklet

## 1. Research Design

"A research design is the plan or proposal to conduct research, involving decisions about the priority of the research questions, the nature of the data to be collected, the methods for data collection, and the analytical approaches to be used" (Creswell, 2014).

The aim of the present study was to find out the safety and security measures adopted by the selected residences of Vadodara city, and assess the level of satisfaction with the use of safety and security devices and measures. For this purpose, a descriptive research design has been adopted for the study.

## 2. Operational definition

1. **Safety measures:** Safety measures were operationally defined as measures taken in residences to prevent accidents, injuries, or harm caused to residents.

2. **Security measures:** Security devices and measures were operationally defined as measures taken in residences to provides a comfortable, safe and secure environment for the residents.

3. **Extent of problems:** For the present study it was defined as the problems experienced by the respondents using safety and security devices and measures.

4. **Extent of satisfaction:** It is defined as the extent of satisfaction experienced by the users using safety and security devices and measures.

## 3. Variables of the study:

### 1. Independent variables:

**I. Personal Variables:**

1) Age
2) Occupation
3) Family Monthly Income
4) Education

**II. Family Variable:**

1) Types of family

2) Number of the family members
3) Type of House

### 3.3.2. Dependent Variables:

1. Extent of problems experienced by the homemakers regarding the safety and security devices and measures used in their residence.

2. Extent of satisfaction experienced by the homemakers regarding the safety and security devices and measures used in their residence.

### 3.3.3. Hypothetical Relationship between the Variables:

The following figure shows a schematic diagram illustrating a hypothetical relationship between selected variables.

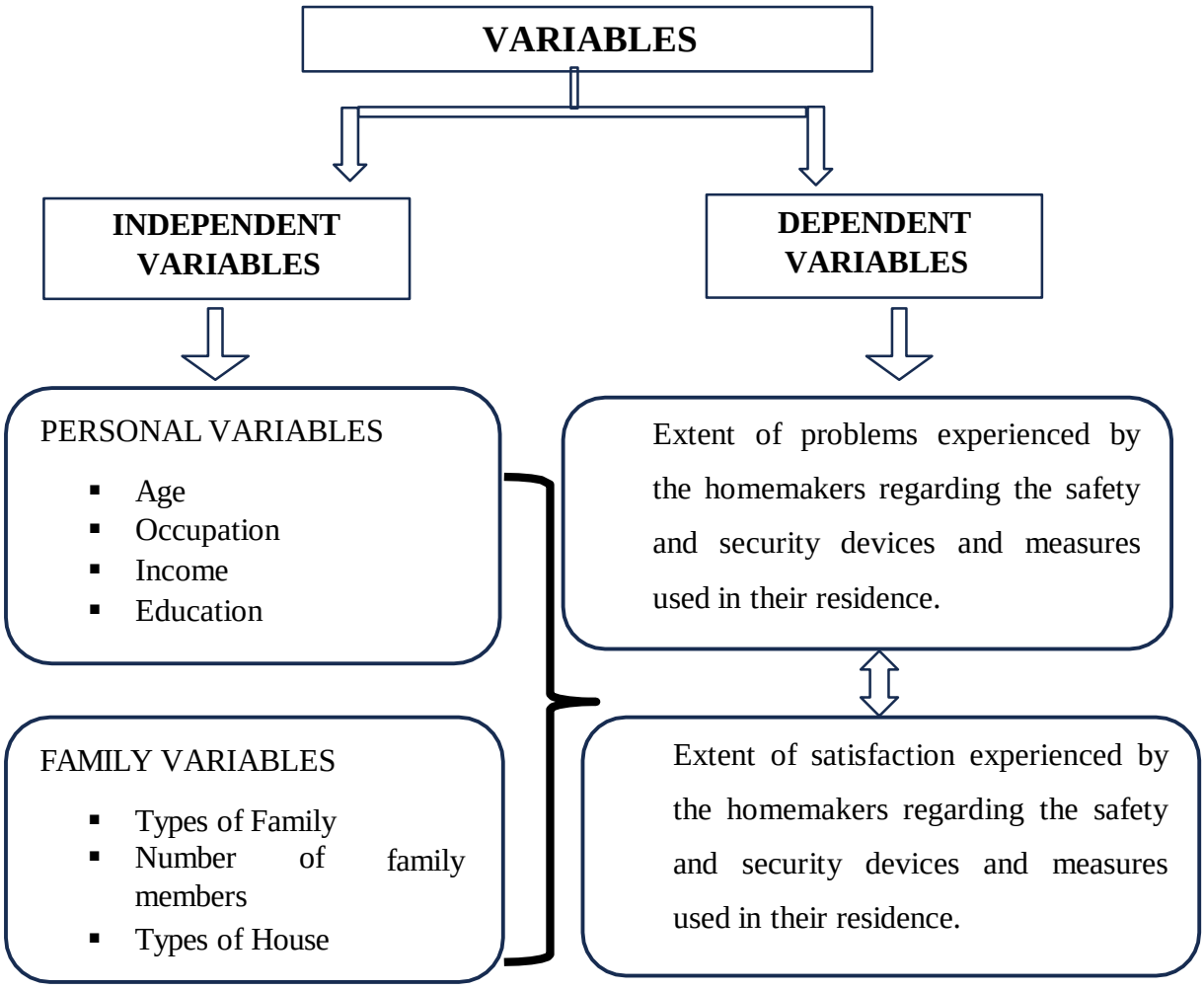


**Figure 1: Schematic presentation of Hypothetical Relationship between the Variables**

**Explanation of Conceptual Framework:**

It was theorized that personal variables of the respondents such as age (in years), Occupation of the respondents, Income (in rupees) of the respondents and education of the respondents, family variables such as type of family, number of family members, influence the extent of Problems and satisfaction experienced regarding safety and security devices and measures.

**4. Locale of the Study:** The present study was conducted in Vadodara city of the Gujarat state, India.

**5. Unit of Inquiry:** For the present study**,** the unit of inquiry were the homemakers using safety and security devices and measures since past two years.

**6. Sample size and sampling procedure:**

**1. Sample size:** The sample of the present study comprised of 120 homemakers residing in Vadodara city.

**2. Inclusion criteria for the study:**

1. 120 homemakers selected should be residing in Baroda. and should be the owner of the house.
2. The selected residents should be using safety and security devices and measures since past two years.

**3. Sampling procedure:**

For the present study, purposive Sampling technique was used to select residences having safety and security devices and measures since past two years, and snowball technique was used to select homemakers from Vadodara city.

**7. Selection and Description of the tool:**

**1. Selection of the tool:**

Questionnaire was used as a tool for the survey, it was considered appropriate for the research because of the following reasons:

1. Respondents had enough time to think and answer.
2. The answers were unbiased and written in the respondents' own words.
3. It made it easy to reach people who are hard to contact.

### 3.7.2. Description of the tool:

Based on the objectives of the present study questionnaire was prepared. The

questionnaire comprised of following sections: -

**Section I: Background Information of the Respondents:**

This section consisted of questions regarding the background information like age, education, occupation, monthly family income, type of house, number of family members and type of family.

**Section II: Safety and security measures used by the home makers for their residences.**

This section focused on the safety and security devices and measures used by the homemakers for their residences. The responses were recorded on 2 points scale i.e.; Yes or No.

**Section III: Extent of problems experienced by the homemakers regarding the safety and security measures used in their residences.**

This section consisted of information regarding the extent of problems experienced by the homemakers regarding the safety and security devices and measures used in their residence. The respondents were asked to respond on a 3-point continuum scale in terms of "Always", "Sometimes" and, "Never" and the scores from 3 through 1 were given to the respondents respectively. To obtain the categories of extent of problem, the score range was divided on an interval basis.

**Section IV: Extent of satisfaction of the homemakers regarding safety and security measures used by them.**

This section comprised of the information regarding the extent of Satisfaction of the homemakers regarding the safety and security devices and measures used in their residents. The respondents were asked to respond on a 3-point continuum scale in terms of "Satisfied", "Un-decided" and, "Dissatisfied" and the scores from 3 through 1 were given to the respondents respectively. To obtain the categories of extent of satisfaction, the score range was divided on an interval basis.

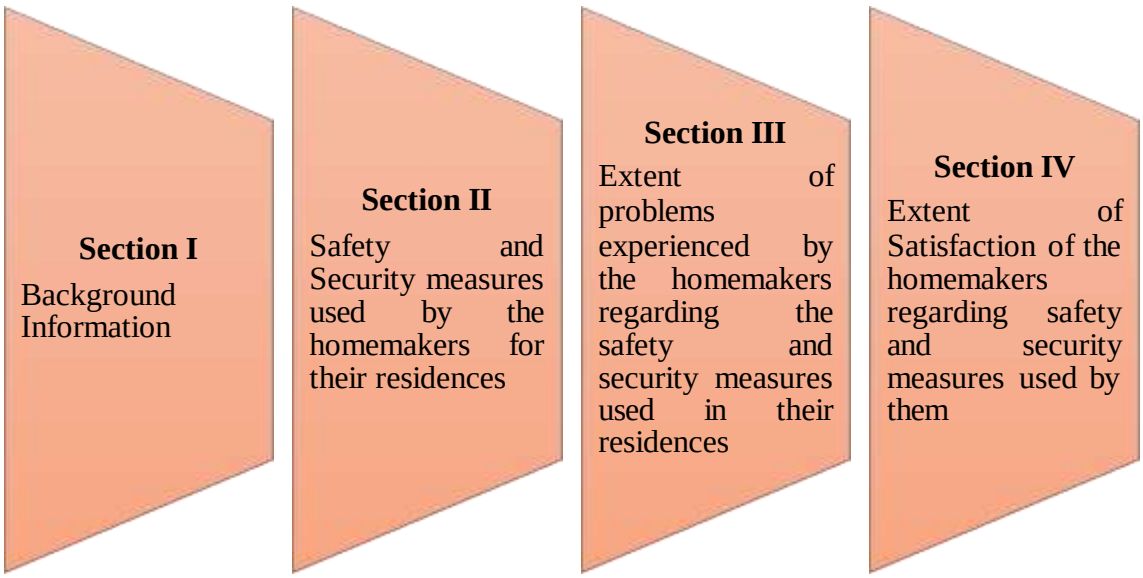


**Figure 2: Description of Questionnaire**

8. **Establishment of content validity of tool:**

   To establish content validity, the developed tools were given to the panel of judges comprising experts from Family and Community Resource Management. The judges were requested to give suggestions for the developed tool. The valuable suggestions given by the experts were incorporated and the tool was modified and finalized for the data collection. Further, the questionnaire was administered on 30 non-respondents to see the feasibility and clarity of the developed data collection tool.

9. **Data collection:** The data were gathered by the researcher from October 2024 to November 2024. The questionnaire was used for data collection. The purpose of the research was explained and a rapport was built to get the true responses. The researcher personally distributed and collected back the filled in questionnaire.

10. **Data analysis:**

    Different data analysis procedure like categorization, coding, tabulation and statistical analysis were utilized to analyse the data.

**Categorization**

Categorization of the data was done for the age, type of family, number of family members, income of the family, occupation of the respondents, and education of the respondents.

For the purpose of analysis of the data the variables were categorized as follows:

**Section I: Background Information**

1. **Age of the respondents:** The obtained range of age of the respondents based on equal intervals was divided as follows:
   i. 25-45 years
   ii. 46-65 years
   iii. 66-85 years
2. **Educational Qualification of the respondents:** It referred to the educational information of the respondents. It was categorized as follows:
   i. S.S.C
   ii. H.S.C
   iii. Graduation
   iv. Post-Graduation
3. **Occupation of the respondents:** It referred to the respondent occupation means what they do at the time of data collection. It was categorized as follows:
   i. Employed
   ii. Self-employed
   iii. Not employed
4. **Income (in rupees) of the respondents:** It referred to the monthly income of the individual acquired at the time of data collection from various sources. It was categorized as follows:
   i. 30,000-60,000
   ii. 60,000-90,000
   iii. 90,000-1,20,000
5. **Type of house of the respondents:** It referred to the type of House of the respondents at the time of data collection and was categorized as follows:

i. Apartment
ii. Tenement
iii. Bungalow

6. **Number of the family members of the respondents:** It referred to number of the family members of the respondents at the time of data collection and was categorized as follows:
    i. 2-5
    ii. 6-9
    iii. 9-12
7. **Type of family of the respondents:** It referred to the type of family of the respondents and was categorized as follows:
    i. Nuclear
    ii. Joint family

**Section II: Safety and security devices and measures used by the home makers for their residences.**

This section focused on the safety and security devices and measures used by the homemakers for their residences, viz; CCTV Camera, Door locking, safety grill, Alarms and Sensor etc. The responses were recorded on 2 points scale i.e.; Yes or No.

**Section III: Extent of problems experienced by the homemakers regarding the safety and security devices and measures used in their residences.**

This section describes about extent of problems experienced by the homemakers regarding the safety and security devices and measures used in their residents, viz; CCTV Camera, Door locking, safety grill, Alarms and Sensor etc. The respondents were asked to respond on a 3-point Likert scale in terms of low extent, moderate extent and high extent were 3, 2, 1 were the scores assigned to them. Minimum and maximum possible score were divided into 3 categories of equal interval to determine the extent of Problem into Low, Medium and High category. The minimum score was 34 and the maximum score was 102.

| Sr.no. | Extent of Problems | Range of Score |
|---|---|---|
| 1. | Low extent | 34 - 57 |
| 2. | Moderate extent | 58 - 80 |
| 3. | High extent | 80 - 102 |

**Section IV: Extent of satisfaction experienced by the homemakers by using safety and security devices and measures in residence.**

This section describes the extent of satisfaction experienced by the homemakers using safety and security devices and measures, viz; CCTV Camera, Door locking, safety grill, Alarms, Sensors and other measures and devices. The respondents were asked to respond on a 3-point Likert scale in terms of low extent, moderate extent and high extent were 3, 2, 1 were the scores assigned to them. Minimum and maximum possible score were divided into 3 categories of equal interval to determine the extent of satisfaction into Low, Medium and High category. The minimum score was 24 and the maximum score was 72.

| Sr.no. | Extent of Satisfaction | Range of Score |
|---|---|---|
| 1. | Low extent | 24 - 39 |
| 2. | Moderate extent | 40 - 56 |
| 3. | High extent | 57- 72 |

### 3.10.2. Coding:

Coding operation is usually done at this stage through which the categories of data are put in the form of tables, and then the information from each section of the questionnaire were transferred on the Excel sheet.

### 3.10.3. Tabulation:

Tabulation is part of the technical procedure where in the classified data are put in the form of tables. The data were transferred from raw form into tabular form to give a clear picture of the findings.

### 3.10.4. Statistical Analysis

1. **Descriptive statistics**: the data were presented in frequencies, percentages, mean, standard deviation, and weighted mean.
2. **Relational Statistics**: data were analysed by using relational statistics (t-test, F- test and correlation Coefficient).

### 3.11. Development of Booklet

A booklet was developed for highlighting the various safety and security measures available in the market for the residences in Vadodara city. The content in the booklet included information of the safety devices and security measures available in market and information about the safety and security measures. The content of the booklet was developed with the aid of Review of Literature. A panel of experts from the Department of Family and Community Resource Management were requested to validate the importance of topic, content and language clarity of the content. The suggestions given by the experts were incorporated and changes were done accordingly.

# FINDINGS AND DISCUSSION

# CHAPTER IV

# FINDINGS AND DISCUSSION

This Present chapter focuses on the findings from the collected data. Relevant discussions and interpretations are included to support the findings. To ensure clarity and organization, the chapter is divided in the following sections:

**Section I:**

1. Background Information of the Respondents

**Section II:**

2. Safety and security measures used by the home makers for their residences.

**Section III:**

3. Extent of problems experienced by the homemakers regarding the safety and security measures used in their residences.

**Section IV:**

4. Extent of satisfaction of the homemakers regarding safety and security measures used by them.

**Section V:**

5. Testing of Hypotheses

**Section VI:**

6. Booklet on safety Devices and security measures available in market for residences.

## Section I

### 4.1 Background Information of the Respondents

This section deals with the background information of the home-maker regarding safety and security measures adopted by the selected residents of Vadodara city. It covers details such as their age, education, occupation, monthly family income, type of house, number of family members, and type of family.

**Table 1: Frequency and percentage distribution of the respondents according to their Personal Information.**

| Sr. No. | Personal Information of the Respondent | Respondents (n=120) | |
|---|---|---|---|
| | | f | % |
| 1. | **Age (in years)** | | |
| | 25-45 | 80 | 66.67 |
| | 46-65 | 35 | 53.47 |
| | 66-85 | 05 | 04.17 |
| | **Mean** | **42.67 years** | |
| 2. | **Education** | | |
| | S.S.C | 20 | 16.70 |
| | H.S.C | 08 | 06.70 |
| | Graduation | 48 | 40.00 |
| | Post Graduation | 44 | 36.60 |
| 3. | **Occupation** | | |
| | Employed | 50 | 41.60 |
| | Self-employed | 35 | 29.10 |
| | Not employed | 35 | 29.10 |
| 4. | **Monthly Family Income (In ₹)** | | |
| | 30,000–60,000 | 75 | 62.50 |
| | 60,000 - 90,000 | 37 | 30.80 |
| | 90,000- 1,20,000 | 08 | 06.60 |
| 5. | **Type of House** | | |
| | Apartment | 33 | 27.50 |
| | Tenement | 69 | 57.50 |

| | | | |
|---|---|---|---|
| | Bungalow | 18 | 15.00 |
| 6. | **Number of family members** | | |
| | 2-5 | 93 | 77.50 |
| | 6-9 | 20 | 16.70 |
| | 9-12 | 07 | 05.80 |
| 7. | **Type** | | |
| | Nuclear | 72 | 62.50 |
| | Joint family | 45 | 37.50 |

**Age:** It was found that 66.67per cent of the respondents belonged to the age group of 25 to 45 years, and 53.47per cent of the respondents belonged to the age group of 46 to 65 years. and 04.17per cent of the respondents belonged to 66 to 85 years of age group. The Mean age of the respondents was 42.67years.

**Education**: It was found that 40.00per cent of respondents had completed their graduation, 36.60per cent of them were post graduates, and only a few had qualifications up till S.S.C. and H.S.C.

**Occupation:** Out of 120 respondents 41.60per cent were employed, making it the largest group, An equal percentage of respondents 29.10per cent were self-employed and not employed.

**Monthly Family Income (In ₹):** The family monthly income of the respondents shows that 62.50per cent had income ranging from ₹30,000 to ₹60,000, 30.80per cent between ₹60,000 to ₹90,000 and only 06.60per cent had a family monthly income ranging from ₹90,000 to ₹1,20,000.

**Types of House:** The distribution of respondents based on their type of residence depicted that out of 120 respondents, the most common housing types were apartment and Tenement, 27.50per cent of the respondents were residing in apartment, 57.50per cent of the respondents were residing in tenement and 15.00per cent of the respondents were residing in bungalow.

**Number of family members:** The findings related to number of family members of the respondents. depicted that 77.50per cent had 2 to 5 family members, 16.70per cent families had 6 to 9 members, only 05.80per cent had 9 to 12 members in the family.

**Types of family:** The type of family of the respondents was categorized as nuclear family and joint family. The results revealed that 37.50per cent belonged to a joint family, whereas 62.50per cent belonged to a nuclear family.

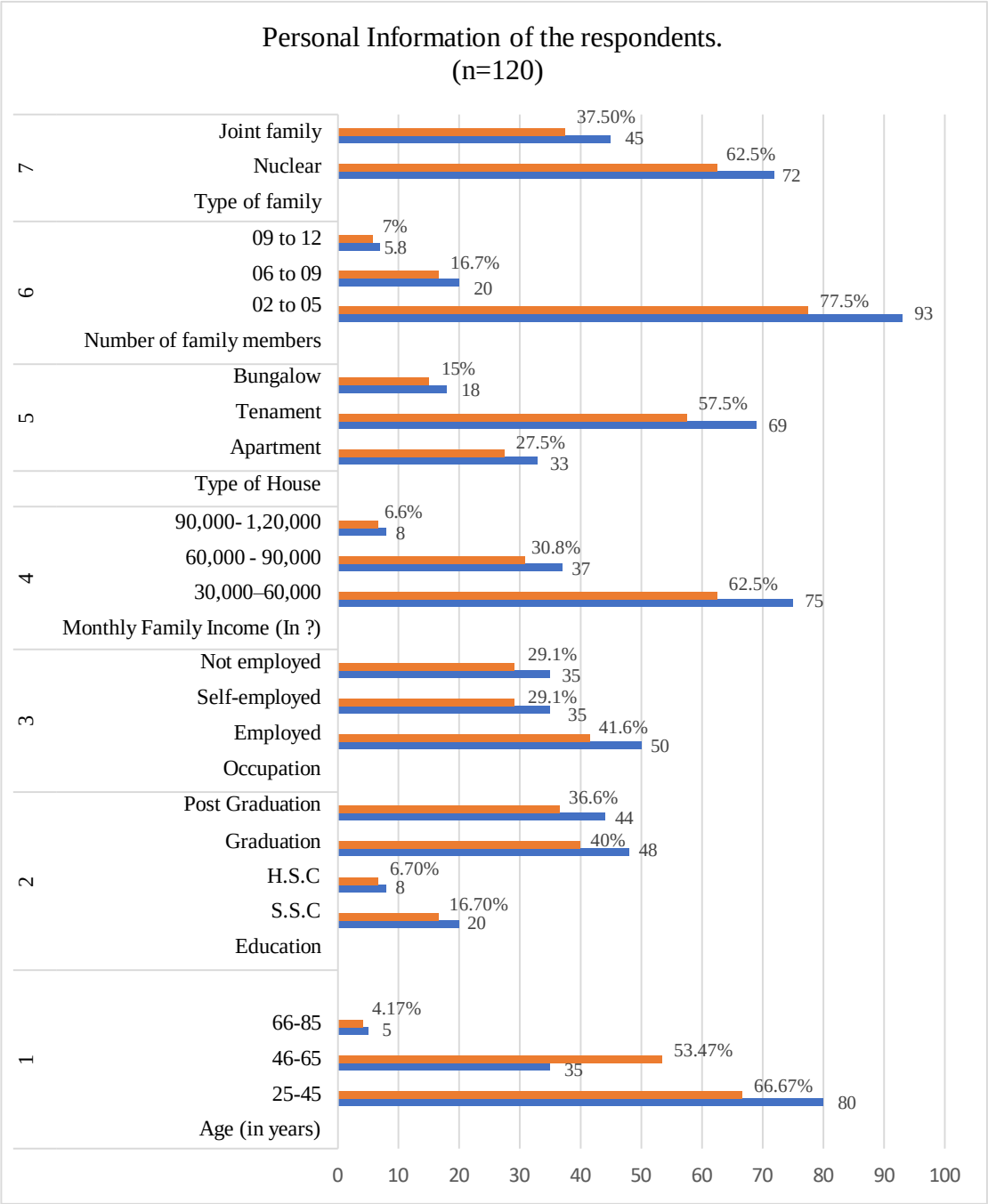


**Figure 3: Percentage distribution of the respondents according to their personal information.**

## Section II

### 4.2 Safety and security measures used by the homemakers for their residences.

This section describes the frequency and percentage of the homemakers using Safety and security measures for their residences.

**Table-2: Frequency and percentage distribution of the homemakers using different CCTV Camera for their residences. (n=120)**

| Sr. no. | Types of C.C.T.V Camera | Used | | Not used | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | IP C.C.T.V Camera | 60 | 50.00 | 60 | 50.00 |
| 2. | Wireless C.C.T.V Camera | 10 | 30.00 | 110 | 91.60 |
| 3. | Dual-lens Camera | 04 | 03.30 | 116 | 96.60 |
| 4. | Weather Resistance/Trumper | 03 | 02.50 | 117 | 97.50 |
| 5. | PTZ camera [Pan-Tilt-Zoom] | - | - | 120 | 100.0 |
| 6. | Door-bell camera | 05 | 04.10 | 115 | 95.80 |
| 7. | Fisheyes Camera | - | - | 120 | 100.0 |
| 8. | Dome camera | 20 | 16.60 | 100 | 83.30 |

It was found that 50.00 per cent used IP CCTV cameras, while 30.00 per cent opted for wireless CCTV cameras, Dual-lens cameras were used by 03.30per cent, and 02.50 per cent utilized weather-resistant cameras or Trumpers, PTZ (Pan-Tilt-Zoom) cameras were not used by the any of the respondents. It was found that Doorbell cameras were used by 04.10per cent of the respondents, Fisheye cameras were not used by any of the respondents and 16.60per cent of the respondents used Dome cameras.

**Table-3: Frequency and percentage distribution of the homemakers using different Door locking system for their residences. (n=120)**

| Sr. no. | Types of Door Lock | Used | | Not used | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Smart Locks | 82 | 68.30 | 38 | 31.60 |
| 2. | Electronic Door locks | - | - | 120 | 100.0 |
| 3. | Audio-Video Camera lock | - | - | 120 | 100.0 |
| 4. | Face-Finger Lock | - | - | 120 | 100.0 |
| 5. | Peep Lock | 25 | 20.80 | 95 | 79.10 |
| 6. | Deadbolt Lock | 40 | 33.30 | 80 | 66.60 |
| 7. | Two-way door Lock | 90 | 75.00 | 30 | 25.00 |

It was found that Smart locks were the most commonly used, with 68.30per cent of respondents adopting them. The electronic door locks, Audio-video camera lock and face-finger locks were not used by any of the respondents. Peep locks were not used by 79.10per cent of the respondents, Deadbolt locks were not used by 66.60per cent of the respondents, and two-way door locks used by 75.00per cent of the respondents.

**Table-4: Frequency and percentage distribution of the homemakers using different types of Safety grills for their residences. (n=120)**

| Sr. no. | Types of Safety Grills | Used | | Not used | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Boundary grill | 98 | 81.60 | 22 | 18.30 |
| 2. | Balcony grill | 99 | 82.50 | 21 | 17.50 |
| 3. | Terrace grill | 82 | 68.30 | 38 | 31.60 |
| 4. | Main-entry safety grill | 87 | 72.50 | 33 | 27.50 |
| 5. | Window mesh/grill | 105 | 87.50 | 15 | 12.50 |

It was found that Safety Grills, Window mesh/grills were the most widely used, with 87.50 per cent of respondents using them, Boundary grills were used by 81.60 per cent and balcony grills were used by 82.50 per cent, terrace grills were used by 68.30 per cent and main-entry safety grills used by 72.50 per cent had slightly lower usage rates of the respondents.

**Table-5: Frequency and percentage distribution of the homemakers using Alarms for their residences. (n=120)**

| Sr. no. | Types of Alarms | Used | | Not used | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Fire-Detector | - | - | 120 | 100 |
| 2. | Smoke Detector | - | - | 120 | 100 |
| 3. | Burner alert stove Reminder | - | - | 120 | 100 |
| 4. | Burglar Alarm | - | - | 120 | 100 |

It was found that alarm systems, fire detectors, Smoke detectors, Burner alert stove reminder and burglar alarm were not used by any of the respondents.

**Table-6: Frequency and percentage distribution of the homemakers using Sensors for their residences. (n=120)**

| Sr. no. | Types of Sensors | Used | | Not Used | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Motion Sensor Light | 15 | 12.50 | 105 | 87.50 |
| 2. | Sensor Faucets | - | - | 120 | 100.0 |
| 3. | Smoke Sensor | 05 | 04.10 | 115 | 95.80 |
| 4. | Gas Sensor | 03 | 02.50 | 117 | 97.50 |
| 5. | Door Sensor | 05 | 04.10 | 115 | 95.80 |
| 6. | Glass Breaker Sensor | - | - | 120 | 100.0 |
| 7. | Water Level Sensor | 74 | 61.60 | 46 | 38.30 |

It was found that Water level sensors had the highest usage at 61.60per cent, followed by motion sensor lights 12.50per cent, smoke sensors and door sensors 04.10 per cent. Gas sensors were used by only 02.50 per cent, while glass breaker sensors and sensor faucets were not used by any of the respondents.

**Table-7: Frequency and percentage distribution of the homemakers using different devices used in residences. (n=120)**

| Sr. no. | Different Devices used in residences | Used | | Not Used | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Fire Extinguisher | 68 | 56.60 | 52 | 43.30 |
| 2. | Window Netting | 89 | 74.10 | 31 | 25.80 |
| 3. | Corner Cover | 50 | 41.60 | 70 | 58.30 |
| 4. | Smart lightbulbs | 52 | 43.30 | 68 | 56.60 |
| 5. | MCB [miniature circuit breaker] | 86 | 71.60 | 34 | 28.30 |
| 6. | RCCB [Residual current circuit breaker] | 45 | 37.50 | 75 | 62.50 |
| 7. | ELCB [Earth leakage circuit breaker] | 59 | 49.10 | 61 | 50.80 |
| 8. | Electric Geyser equipment | 50 | 41.60 | 70 | 58.30 |
| 9. | Gas Detector | 02 | 01.60 | 118 | 98.30 |
| 10. | Gas Geyser | 30 | 25.00 | 90 | 75.00 |
| 11. | Grab Bars | 35 | 29.10 | 85 | 70.80 |
| 12. | Remote monitoring Fan/lights | 10 | 08.30 | 110 | 91.60 |
| 13. | Bird net | 40 | 33.30 | 80 | 66.60 |
| 14. | Digital Locker | 55 | 45.80 | 65 | 54.10 |

The most widely used additional safety devices included window netting 74.10per cent, fire extinguishers 56.60per cent and miniature circuit breakers (MCB) 71.60per

cent, corner cover 41.60per cent, Electric geyser equipment was used by 41.60per cent, while gas geysers were used by 25.00per cent. Grab bars were used by 29.10per cent, ELCB used by 49.10per cent, and digital lockers used by 45.80per cent, also had slight lower adoption. However, remote monitoring fans/lights, RCCB, and gas detectors were used by very few respondents.

These findings highlight a clear preference for specific safety measures, especially CCTV cameras, smart locks, and safety grills, while devices like gas detectors and remote monitoring systems are less commonly used.

## Section III

### 4.3 Extent of problems experienced by the homemakers regarding the safety and security measures used in their residences.

**Table-8: Frequency and percentage distribution of the homemakers according to problems experienced regarding CCTV Camera used in their residences. (n=120)**

| Sr. no. | Statements | Always | | Sometime | | Never | | Weighted Mean Score (3-1) |
|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | |
| 1. | Internet connection is needed for operating CCTV camera. | 77 | 64.10 | 34 | 28.30 | 09 | 07.50 | 2.56 |
| 2. | A defect in CCTV camera is costly to repair. | 72 | 60.00 | 37 | 30.80 | 11 | 09.10 | 2.51 |
| 3. | Power supply cutoff causing defect or stop CCTV camera recording. | 97 | 80.80 | 07 | 05.80 | 16 | 13.30 | 2.67 |
| 4. | Maintaining a CCTV camera is expensive. | 98 | 81.60 | 20 | 16.60 | 02 | 01.60 | 2.80 |
| 5. | Hard disk replacement cost is very high. | 89 | 74.10 | 26 | 21.60 | 05 | 04.10 | 2.70 |
| 6. | Hard disk Repairing cost is very high. | 60 | 50.00 | 46 | 38.30 | 14 | 11.60 | 2.38 |
| **Overall Weighted Mean** | | | | | | | | **2.60** |

It was found that 64.10 per cent of respondents always faced issues with the internet connection required for operating CCTV cameras. Additionally, 60.00 per cent of respondents always come across problems with the high cost of repairing CCTV cameras. About 80.80 per cent always faced issues due to power supply cutoffs causing defects or interruptions in CCTV camera recordings, while 81.60 per cent reported that maintaining a CCTV camera was expensive. Furthermore, 74.10 per cent of respondents always faced problems with the high cost of hard disk replacement, and 50.00 per cent always experienced difficulties due to the high cost of hard disk repairs.

**Table-9: Frequency and percentage distribution of the homemakers according to problems experienced regarding Door locking system used in their residences. (n=120)**

| Sr. no. | Statements | Always | | Sometime | | Never | | Weighted Mean score (3-1) |
|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | |
| 1. | Smart lock systems are expensive. | 77 | 64.10 | 36 | 30.00 | 07 | 05.80 | 2.58 |
| 2. | Issues with the video system leads to power outages Problems. | 70 | 58.30 | 40 | 33.30 | 10 | 08.30 | 2.50 |
| 3. | Issues with the video system leads to lens distortion problems. | 70 | 58.30 | 30 | 25.00 | 20 | 16.60 | 2.41 |
| 4. | Issues with the Audio system leads to misconnected cables. | 60 | 50.00 | 41 | 34.10 | 19 | 15.80 | 2.34 |
| 5. | Issues with the Audio system leads to incorrect drivers. | 58 | 48.30 | 44 | 36.60 | 18 | 15.00 | 2.33 |
| 6. | A malfunction in the finger print lock system hinders door access. | 68 | 56.60 | 39 | 32.50 | 13 | 10.80 | 2.46 |
| 7. | Defect in the locking system compromises safety. | 56 | 46.60 | 53 | 44.10 | 11 | 09.10 | 2.37 |
| **Overall Weighted Mean** | | | | | | | | **2.41** |

It was found that 64.10 per cent of respondents reported that smart lock systems were expensive, Problem related to issues with the video system leading to power outages or lens distortion were always faced by 58.30per cent of respondents, 50.00per cent of the respondents always faced issue where audio system problems were caused by misconnected cables, and 48.30per cent faced problems due to incorrect audio drivers. Further it was found that 56.60 per cent respondents always faced issue with malfunctions in the fingerprint lock system that hindered door access and 46.60 per cent respondents felt that safety compromises due to defects in the locking system.

**Table-10: Frequency and percentage distribution of the homemakers according to problems experience regarding Safety grills used in their residences. (n=120)**

| Sr. no. | Statements | Always | | Sometime | | Never | | Weighted Mean score (3-1) |
|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | |
| 1. | Compromise in material due to cost lead to problem of safety. | 63 | 52.50 | 45 | 37.50 | 12 | 10.00 | 2.43 |
| 2. | Regular Maintainance is required for grills. | 60 | 50.00 | 50 | 41.60 | 10 | 08.30 | 2.42 |
| 3. | Defective safety grills lead to affect safety of the users. | 68 | 56.60 | 40 | 33.30 | 12 | 10.00 | 2.46 |
| 4. | Heavy safety grills are difficult to operate. | 80 | 66.60 | 27 | 22.50 | 13 | 10.80 | 2.56 |
| 5. | Rust affects Iron grills. | 62 | 51.60 | 49 | 40.80 | 09 | 07.50 | 2.44 |
| **Overall Weighted Mean** | | | | | | | | **2.46** |

It was found that Compromises in material quality, result in safety concerns, as reported by 52.50per cent of users. Regular maintenance is essential for the proper functioning of grills, acknowledged by 50.00per cent of respondents. Defective safety grills further compromise user safety, which 56.60per cent responded. Additionally, heavy grills pose operational challenges, as highlighted by 66.60per cent of users. Rust, a common issue with iron grills, affects their durability and functionality, as indicated by 51.60per cent of responses.

**Table-11: Frequency and percentage distribution of the homemakers according to problems experience regarding remote monitoring used in their residences. (n=120)**

| Sr. no. | Statements | Always | | Sometime | | Never | | Weighted Mean (3-1) |
|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | |
| 1. | Battery damage affects the operating system. | 64 | 53.30 | 46 | 38.30 | 10 | 08.30 | 2.4 |
| 2. | Defect in remote leads to non-functioning. | 61 | 50.80 | 45 | 37.50 | 14 | 11.60 | 2.3 |
| 3. | Remote monitoring devices are costly which leads to more material cost. | 68 | 56.60 | 40 | 33.30 | 12 | 10.00 | 2.4 |
| 4. | Misplacing of remote affects operating devices. | 60 | 50.00 | 46 | 38.30 | 14 | 11.60 | 2.3 |
| 5. | Remote monitoring devices face challenges due to insufficient network availability. | 60 | 50.00 | 50 | 41.60 | 10 | 08.30 | 2.4 |
| **Overall Weighted Mean** | | | | | | | | **2.36** |

It was found that Battery damage is a significant concern, affecting the operating system's performance, as reported by 53.30per cent of the users. Defects in the remote control can render the system non-functional an issue noted by 50.80per cent of respondents, The high cost of remote monitoring devices, attributed to material expenses, is a concern for 56.60per cent of users, misplacing the remote affects device operations, as indicated by 50.00per cent of respondents. Insufficient network availability further hampers the effectiveness of these devices, as experienced by 50.00per cent of users.

**Table-12: Frequency and percentage distribution of the homemakers according to problems experience regarding Alarm system used in their residences. (n=120)**

| Sr. no. | Statements | Always | | Sometime | | Never | | Weighted Mean (3-1) |
|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | |
| 1. | Defect in alarm system affects safety. | 62 | 51.60 | 52 | 43.30 | 06 | 05.00 | 2.4 |
| 2. | Fire detection and alarm system may be prone to false alarm. | 88 | 73.30 | 25 | 20.80 | 07 | 05.80 | 2.6 |
| 3. | Maintainance is required regularly for alarms. | 68 | 56.60 | 39 | 32.50 | 13 | 10.80 | 2.4 |
| 4. | Installation cost is very high. | 54 | 45.00 | 57 | 47.50 | 09 | 07.50 | 2.3 |
| **Overall Weighted Mean** | | | | | | | | **2.42** |

It was found that Defects in the alarm system significantly impact safety, as noted by 51.60per cent of users. False alarms are a common concern, with 73.30per cent of the respondents highlighting this issue, which can lead to unnecessary disruptions and decreased trust in the system. Regular maintenance is essential for keeping alarm systems functioning effectively, as indicated by 56.60per cent of respondents, the high installation cost of these systems, reported by 45.00per cent poses a financial challenge for many users.

**Table-13: Frequency and percentage distribution of the homemakers according to problems experienced regarding Sensors used in their residences.**

**(n=120)**

| Sr.no. | Statements | Always | | Sometime | | Never | | Weighted Mean (3-1) |
|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | |
| 1. | Testing for continuity and measuring voltage and resistance is required. | 85 | 70.80 | 24 | 25.00 | 11 | 09.10 | 2.6 |
| 2. | A major issue affecting the operation of the sensor are environmental factors. | 90 | 75.00 | 25 | 20.80 | 05 | 04.10 | 2.7 |
| 3. | Mechanical damage in sensors is a big problem. | 55 | 45.80 | 51 | 42.50 | 14 | 11.60 | 2.3 |
| 4. | Sensor may trigger false alarms. | 64 | 53.30 | 44 | 36.60 | 12 | 10.00 | 2.4 |
| 5. | Regular cleaning and maintenance are required to ensure optimal performance. | 55 | 45.80 | 51 | 42.50 | 14 | 11.60 | 2.3 |
| 6. | Improper installation leads to unreliable sensor performance. | 90 | 75.00 | 25 | 20.80 | 05 | 04.10 | 2.7 |
| 7. | Frequently battery replacement is inconvenient. | 60 | 50.00 | 47 | 39.10 | 13 | 10.80 | 2.3 |
| **Overall Weighted Mean** | | | | | | | | **2.47** |

It was found that Testing for continuity and measuring voltage and resistance are critical for ensuring functionality, as indicated by 70.80per cent of users. Environmental factors significantly impact sensor operations, with 75.00per cent identifying this as a major issue. Mechanical damage is another concern, noted by 45.80per cent of respondents, while 53.30per cent reported that sensors may trigger false alarms, compromising reliability. Regular cleaning and maintenance, highlighted by 45.80per cent are essential to maintain optimal performance. Improper installation, identified by 75.00per cent of users, often results in unreliable sensor operation, the inconvenience of frequent battery replacement is a concern for 50.00per cent of respondents.

## Section IV

### 4.4 Extent of satisfaction of the homemakers regarding safety and security measures used by them.

**Table-14: Frequency and percentage distribution according to Satisfaction of the homemakers regarding safety and security measures. n=120)**

| Sr. no. | Statements | Satisfied | | Undecided | | Dissatisfied | | Weighted Mean (3-1) |
|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | |
| 1. | C.C.T.V Camera is used for monitoring the residences. | 95 | 79.10 | 22 | 18.30 | 03 | 02.50 | 2.77 |
| 2. | Door locking system provides safety to the users. | 76 | 63.30 | 40 | 33.30 | 04 | 03.30 | 2.60 |
| 3. | Alarms helps me to get medical assistance. | - | - | 40 | 33.30 | 80 | 66.60 | 1.33 |
| 4. | Motion sensor lights are best for elderly people. | - | - | 18 | 15.00 | 102 | 85.00 | 1.15 |
| 5. | Safety grills help during night-time to feel secure. | 77 | 64.10 | 37 | 30.80 | 06 | 05.00 | 2.59 |
| 6. | Under Security measures lead to a person safety. | 79 | 65.80 | 37 | 30.80 | 04 | 03.30 | 2.62 |
| 7. | Locks provide protection from thieves. | 77 | 64.10 | 34 | 28.30 | 09 | 07.50 | 2.57 |
| 8. | Remote monitoring system for the residences is useful for employed women to take care of safety of residences. | - | - | 10 | 8.30 | 110 | 91.60 | 1.08 |
| 9. | Stabilizer helps in automatic power off electricity, and hence device is safe. | 69 | 57.5 | 43 | 35.80 | 08 | 06.60 | 2.51 |
| 10. | Window net helps to block the entrance and widens form insects and protect again mosquitoes. | 85 | 70.80 | 32 | 26.60 | 03 | 02.50 | 2.68 |
| 11. | Smart bulb are good for visibility. | - | - | 07 | 05.80 | 113 | 94.10 | 1.06 |
| 12. | MCB (Miniature circuit breaker) helps to protect electrical Overloads. | 82 | 68.30 | 31 | 25.80 | 07 | 05.80 | 2.62 |
| 13. | RCCB (Residual current | 04 | 03.30 | 44 | 36.60 | 72 | 60.00 | 1.43 |

**Conti.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | circuit breaker) helps to prevent electric shocks. | | | | | | | |
| 14. | ECB (Earth leakage circuit breaker) helps to prevent voltage fluctuation. | 78 | 65.00 | 35 | 29.10 | 07 | 05.80 | 2.59 |
| 15. | Grab bars provide a stable support system for old age people. | 07 | 05.80 | 40 | 33.30 | 73 | 60.80 | 1.45 |
| 16. | Digital safe locker helps to protect expensive items in the home. | 06 | 05.00 | 36 | 30.00 | 78 | 65.00 | 1.4 |
| 17. | Corner cover helps to protect children getting hurt from edges. | 04 | 03.30 | 38 | 31.60 | 78 | 65.00 | 1.38 |
| 18. | Bird net protects from bird and other animals. | 77 | 64.10 | 35 | 29.1 | 08 | 06.60 | 2.58 |
| 19. | Two ways door locks helps parents when children lock themselves, from any side of the door. | 78 | 65.00 | 38 | 31.6 | 06 | 05.00 | 2.59 |
| 20. | Remote monitoring fans helps old age people to change the speed of fan as per their convenience. | 05 | 04.10 | 43 | 35.80 | 72 | 60.00 | 2.56 |
| 21. | Water level sensors alert in advance the users regarding water level. | 78 | 65.00 | 38 | 31.60 | 04 | 03.30 | 2.62 |
| 22. | Gas sensors alert the users regarding gas leakage. | 74 | 61.60 | 38 | 31.60 | 08 | 06.60 | 2.55 |
| 23. | Glass sensors provide security to the users by monitoring sound and vibrations on glass surface. | - | - | 70 | 58.30 | 50 | 41.60 | 1.58 |
| 24. | The users feel secure and protected while using safety and security devices install at the residents. | 76 | 63.30 | 40 | 33.30 | 04 | 03.30 | 2.60 |
| **Overall Weighted Mean** | | | | | | | | **2.12** |

It was found that 79.10 per cent of respondents were satisfied with using CCTV cameras for monitoring residences, 63.30 per cent respondents were satisfied with door locking systems for providing safety to the users, Furthermore 64.10 per cent reported feeling secure at night due to safety grills, and 65.80 per cent believed that

overall security measures contributed to personal safety, 61.40per cent of respondents felt that Locks provided protection from thieves.

Additionally, 57.50per cent were satisfied with stabilizers that automatically shut off electricity, ensuring device safety. A significant 70.80 per cent of respondents appreciated window nets for blocking insect entry and protecting against mosquitoes. Regarding electrical safety, 68.30 per cent were satisfied with MCB (Miniature Circuit Breakers) for protecting against electrical overloads and 65.00 per cent were satisfied with ECBs (Earth Leakage Circuit Breakers) for preventing voltage fluctuations. while 64.10 per cent found bird nets useful for keeping out birds and other animals. 65.00 per cent of respondents were satisfied with Two-way door locks enabling parents to open doors from either side when children lock themselves in. 65.00 per cent appreciated water level sensors for alerting users in advance about water levels. The data describe that 63.30 per cent of respondents reported feeling secure and protected while using safety and security devices installed in their residences.

Respondents were dissatisfied with Remote monitoring systems being helpful, particularly for employed women ensuring the safety of their residences, while 66.60per cent of the respondents were strongly dissatisfied with alarms and 85.00per cent respondents were dissatisfied with motion sensor lights which they found particularly beneficial for elderly peoples. while 94.10per cent of the respondents were dissatisfied with smart bulbs being effective for visibility. Sixty per cent respondents were dissatisfied with RCCB (Residual Current Circuit Breakers) for preventing electric shocks. Among other safety features, 60.80 per cent of respondents were dissatisfied with grab bars for providing stable support for elderly individuals, 65.00 per cent of the respondents were dissatisfied with digital safe lockers, 65.00 per cent of respondents were dissatisfied with Corner covers, which prevent children from getting hurt on sharp edges. 60.00 per cent were dissatisfied with remote monitoring fans convenient for elderly people to adjust fan speed, and Gas sensors were considered effective by 61.60per cent of respondents for detecting gas leaks, while 41.60per cent were dissatisfied with glass sensors security by monitoring sound and vibrations on glass surfaces.

## Section V

### 4.5 Testing of Hypotheses:

The present section covers in detail the statistical analysis of hypothesis for the present study.

**$HO_1$: There is no variation in the extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences and their age, education, occupation, monthly family income, type of house, number of family members, and type of family.**

To find out the extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences and their type of family 't test' was computed.

**Table 15: t-test showing the variation in the Extent of Problems experienced by the respondents with their family type.**

| Variables | Mean score of Extent of Problems | t-value | df | Level of significance |
|---|---|---|---|---|
| **Family type** | | | | |
| **Nuclear** | 151.80 | 3.23 | 105 | 0.05 |
| **Joint** | 140 | | | |

For Family type, the t-value was found to be significant at 0.05 level of significance (table 15). Hence, the null hypothesis was rejected. Hence, it can be concluded that the extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences differed with the type of family. It can be concluded that nuclear families experienced high extent of problems as compared to joint families.

To find out the extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences and their age, education, occupation, monthly family income, type of house and number of family members ANOVA was computed.

**Table 16: F-test showing the variation in the extent of Problems experienced by the homemakers regarding the safety and security measures with their Age, education, occupation, monthly family income, type of house and number of family members.**

| Variables | Mean score of Extent of Problems | df | F-value | Level of significance |
|---|---|---|---|---|
| **Age** | | | | |
| Between Groups | 183.56 | 2 | 1.33 | N.S. |
| Within Groups | 59.5116 | 118 | | |
| **Education** | | | | |
| Between Groups | 11.61 | 2 | 0.96 | N.S. |
| Within Groups | 12.11 | 118 | | |
| **Occupation** | | | | |
| Between Groups | 38.3 | 2 | 2.45 | N.S. |
| Within Groups | 21 | 118 | | |
| **Monthly family income** | | | | |
| Between Groups | 39.8 | 2 | 0.78 | N.S. |
| Within Groups | 42 | 118 | | |
| **Type of house** | | | | |
| Between Groups | 29.2 | 2 | 1.95 | N.S. |
| Within Groups | 37 | 118 | | |
| **Number of family members** | | | | |
| Between Groups | 36.3 | 2 | 1.02 | N.S. |
| Within Groups | 48 | 118 | | |

For Age and Occupation, Education, Type of house, monthly family income and Number of family members, ANOVA was not found significant and hence the null hypothesis was accepted. Therefore, it can be concluded that the extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences did not differ with the Age and Occupation, Education, Type of house, monthly family income and Number of family members.

**HO2: There exists no variation in the extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences and their age, education, monthly family income, type of house, number of family members, and type of family.**

To find out the extent of extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences and type of family 't test' was computed.

**Table 17: t-test showing the variation in the Extent of satisfaction experienced by the respondents with their family type.**

| Variables | Mean score of Extent of satisfaction | t-value | df | Level of significance |
|---|---|---|---|---|
| **Family type** | | | | |
| **Nuclear** | 138 | 4.37 | 119 | 0.05 |
| **Joint** | 159 | | | |

For Family type, the t-value was found to be significant at 0.05 level of significance (table). Hence, the null hypothesis was rejected. It can be concluded that the extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences differed with the type of family.

To find out the extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences and their age, education, monthly family income, type of house and number of family members ANOVA was computed.

**Table 18: F-test showing the variation in the extent of satisfaction experienced by the respondents with their age, education, monthly family income, type of house and number of family members**

| Variables | Mean score of satisfaction | F-value | Level of significance |
|---|---|---|---|
| **Age** | | | |
| Between Groups | 105 | 0.45 | N.S. |
| Within Groups | 40.52 | | |
| **Education** | | | |
| Between Groups | 28.3 | 1.97 | N.S. |
| Within Groups | 36.9 | | |
| **Monthly Family income** | | | |
| Between Groups | 46.2 | 2.05 | N.S. |
| Within Groups | 57 | | |
| **Type of house** | | | |
| Between Groups | 31.5 | 0.79 | N.S. |
| Within Groups | 40 | | |
| **Number of family members** | | | |
| Between Groups | 58 | 1.85 | N.S. |
| Within Groups | 41.7 | | |

ANOVA was not found significant Age, Education, Monthly Family income, Type of house and Number of family members and hence the null hypothesis was accepted. Therefore, it can be concluded that the extent of satisfaction experienced by the homemakers regarding the safety and security measures did not differ with Age, Education, Monthly Family income, Type of house and Number of family members.

**HO3: There exists no relationship between extent of problems and extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences.**

Coefficient of correlation was computed to find out the relationship between extent of problems and extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences.

**Table 19: Co-efficient of correlation showing relationship between the extent of problems and extent of satisfaction experienced by the homemakers regarding the safety and security measures.**

| | Selected variables | n | r-value | Level of significance |
|---|---|---|---|---|
| I. | Extent of problems | 120 | 0.58 | 0.05 |
| | Extent of satisfaction | | | |

The Correlation coefficient (r) was found significant at $\alpha$=0.05 (level of significance) between the extent of problems and extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences (Table 19). Hence, the null hypothesis was rejected and it was conducted that there is a relationship between extent of problems & extent of satisfaction experienced by the homemakers.

## Section VI

### 4.6 Booklet on Safety Devices and Security measures available in market for residences

Nowadays, a lot of women work, and they frequently have to leave the house for work, which means that their elderly parents and children need to be taken care off. In this technological era, smart appliances and gadgets are available in the market for safety and security reasons and the homemakers need to have knowledge regarding these devices to make use of it. Because of this, women who are not at home may still observe what goes on inside their home. The women are able to know the status of their homes and keep a track of the elderly residents of the home as well as their children. Feeling of security is cultivated when their safety is ensured, and this leads to the general stability and harmony of society. Homemakers can benefit from home security systems that provide safety and security for their household as well as for their residents. Fire Alert features and surveillance cameras offer reassurance in emergencies, enabling access to help and ensuring timely intervention in potentially dangerous situations.

The booklet was prepared on the safety devices and security measures available in the market for the residences in Vadodara city. The content in the booklet included information of the safety devices and security measures available in market and information about the safety and security measures.

# SUMMARY AND CONCLUSION

# CHAPTER V

## SUMMARY AND CONCLUSION

In modern times, as individuals increasingly invest in larger living spaces such as villas and bungalows, there is a heightened expectation for safety, comfort, and luxury in their residences. To fulfil these needs, a wide range of safety and security measures are being adopted. Safety and security are fundamental human requirements, and when effectively ensured, they contribute significantly to societal stability and harmony. For homemakers, in particular, home security systems provide peace of mind by safeguarding not only their households but also their family members, especially in their absence. Features such as fire alerts, surveillance cameras, and remote monitoring systems are crucial in offering reassurance during emergencies, enabling timely intervention, and ensuring the protection of vulnerable family members like children and the elderly.

Although various studies have explored the use of smart home technologies, automation systems, and Bluetooth-based solutions for improving security and functionality, limited research has focused on the challenges and satisfaction levels regarding the implementation of these measures in contemporary homes. While some studies have addressed home security systems specifically designed for elderly individuals, they often overlook broader issues or fail to focus on the satisfaction and concerns of homemakers regarding safety and security measures in modern residences.

With many homemakers now working outside the home, they often rely on these security systems to ensure the well-being of their children and elderly parents. The availability of advanced smart appliances and gadgets for safety and security purposes enables homemakers to remotely monitor the status of their homes, offering peace of mind while they are away. These technologies help them track the safety of their households, ensuring the protection of their loved ones even in their absence. The present study was undertaken to investigate the extent of problems and satisfaction regarding safety and security measures adopted by the selected residents of Vadodara city.

**Statement of the Problem**

The present study aims to assess the extent of problems and satisfaction of home makers regarding safety and security measures adopted by the selected residences of Vadodara City.

**Objectives**

1. To find out the types of safety and security measures used by the home makers for their residences.
2. To find out the extent of problems experienced by the homemakers regarding the safety and security measures used in their residences.
3. To assess the extent of satisfaction of the homemakers regarding safety and security measures used by them.
4. To prepare an educational booklet on the different safety and security measures available in the market for the residences.

**Delimitations of the Study**

1. The study was limited to 120 homemakers residing in Vadodara city.
2. The study was limited to homemakers using safety and security measures since past 2 years.

**Hypotheses of the Study**

1. The extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences varies according to their selected personal and family variables.
2. The extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences varies according to their selected personal and family variables.
3. There exists a relationship between extent of problems and extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences.

**Methodology**

The present study was undertaken to investigate the extent of problems and satisfaction regarding safety and security measures adopted by the selected residents of Vadodara city.

For the present study, purposive Sampling technique was used to select residences having safety and security devices and measures since past two years, and snowball technique was used to select homemakers from Vadodara city, 120 homemakers selected should be residing in Baroda. and should be the owner of the house, The selected residents should be using safety and security devices and measures since past two years.

The prime objective of the present investigation was to assess the extent of problems and extent of satisfaction of the homemakers regarding safety and security measures used in their residences. the investigator collected the data from the respondents of the specified area through online questionnaire method and then synthesized the collected data. The questionnaire was divided into three sections, Section I Background Information of the Respondents, this included two parts, A-Personal Information of the respondents and B-Safety and security devices and measures used by the home makers for their residences, The responses were recorded on 2 points scale i.e.; Yes or No.**,** Section II Extent of problems experienced by the homemakers regarding the safety and security devices and measures used in their residences.**,** the respondents were asked to respond on a 3-point continuum scale in terms of "Always", "Sometimes" and, "Never" and the scores from 3 through 1 were given to the respondents respectively., Section III Extent of satisfaction of the homemakers regarding safety and security devices and measures used by them., the respondents were asked to respond on a 3-point continuum scale in terms of "Satisfied", "Un-decided" and, "Dissatisfied" and the scores from 3 through 1 were given to the respondents respectively.

For establishment of the reliability and content validity of the prepared tools, the tools were given to a panel of judges containing experts from Family and Community Resource Management.

Collected data was analysed through categorizing all the data, then coding it, tabulating it and lastly perform statistical analysis on it through its mean, frequency and percentage.

**Major findings of the study**

**Section I Background Information of the Respondents**

Data regarding the background information of the respondents revealed that the largest percentage i.e. 66.67 per cent of the respondents belonged to the age group of 25 to 45 years, mean age was 42.67 years, 40 per cent had received their graduation and 41.6 per cent were employed.

Family related information revealed that 62.50 per cent had Monthly family income ranging from ₹30,000 to ₹60,000., 57.50 per cent of the respondents were residing in tenement, and 77.50 per cent of the respondents had 2-5 members in their family and 62.50 per cent of the respondents stayed in Nuclear family.

**Section II Safety and Security measures used by the Homemakers for their Residences.**

It was found that 50.00 per cent of the respondents used IP CCTV cameras, 68.30 per cent of respondents adopting Smart locks systems and 75.00 per cent of the respondents using two-way door locks in their residences.

It was found that Safety Window mesh/grills were the most widely used, with 87.50 per cent of respondents using them, Boundary grills were used by 81.60 per cent and balcony grills were used by 82.50 per cent, terrace grills were used by 68.30 per cent and main-entry safety grills used by 72.50 per cent had slightly lower usage rates of the respondents.

It was found that fire detectors, Smoke detectors, Burner alert stove reminder and burglar alarm were not used by any of the respondents.

It was found that Water level sensors had the highest usage at 61.60 per cent of the respondents used in their residences, the most widely used additional safety devices included 74.10 per cent window netting, 56.60 per cent fire extinguishers, 71.60 per cent miniature circuit breakers (MCB), 41.60 per cent of the respondents used corner cover and Electric geyser equipment adopting in their residences.

**Section III: Extent of problems experienced by the homemakers regarding the safety and Security measures used in their residences.**

The findings of the study revealed several significant challenges encountered by residents concerning the safety and security measures implemented in Vadodara City. A substantial 81.60 per cent of respondents indicated that the maintenance of CCTV cameras incurs high costs, making it a financial burden for many. Additionally, 64.10 per cent of the respondents experienced that smart lock system are expensive.

The data also revealed that 66.60 per cent of the respondents experienced heavy safety grills are difficult to operate in their residences. Furthermore, 56.60 per cent of the respondents consistently experienced issues with remote monitoring devices, as they are costly which leads to more material cost.

The study regarding fire safety measures revealed that 73.30 per cent of the respondents experienced fire detection and alarm systems are prone to false alarms, 75.00 per cent of the respondents' experienced improper installation as a significant issue affecting the performance of security sensors, with environmental factors.

**Section IV: Extent of satisfaction of the homemakers regarding safety and Security measures used by them.**

The respondents, 57.50 per cent were satisfied with stabilizers that automatically shut off electricity, ensuring device safety. A significant 70.80 per cent of respondents appreciated window nets for blocking insect entry and protecting against mosquitoes. Regarding electrical safety, 68.30 per cent were satisfied with MCB (Miniature Circuit Breakers) for protecting against electrical overloads and 65.00 per cent were satisfied with ECBs (Earth Leakage Circuit Breakers) for preventing voltage fluctuations. While 64.10 per cent found bird nets useful for keeping out birds and other animals. 65.00 per cent of respondents were satisfied with Two-way door locks enabling parents to open doors from either side when children lock themselves in. 65.00 per cent appreciated water level sensors for alerting users in advance about water levels. The data describe that 63.30 per cent of respondents reported feeling secure and protected while using safety and security devices installed in their residences.

**Section V: Testing of Hypotheses.**

To find out the extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences and their type of family 't test' was computed. For Age and Occupation, Education, Type of house, monthly family income and Number of family members, ANOVA was not found significant and hence the null hypothesis was accepted. Therefore, it can be concluded that the extent of Problems experienced by the homemakers regarding the safety and security measures used in their residences did not differ with the Age and Occupation, Education, Type of house, monthly family income and Number of family members. For Family type, the t-value was found to be significant at 0.05 level of significance and it was concluded that the extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences differed with the type of family. The Correlation coefficient computed was found significant at $\alpha$=0.05 (level of significance) between the extent of problems and extent of satisfaction experienced by the homemakers regarding the safety and security measures used in their residences.

**Conclusion**

In recent years, people purchase lots of land and construct houses and farmhouses. People install safety and security measures in their residences because they expect comfort, luxury, and safety. Security and safety are essential for people to live. Today, many women are managing dual career. Women need to take care of their families as well as they need safety and security measures in their residences for the protection of family members especially the children and old age people. Also, in today's era, crime rates are increasing day by day, so at this time, women prefer on installing safety measures for their residences. They involve safeguarding the inhabitants, property, and valuables. This safety and security measures aims at preventing accidents, mitigating risks, and enhancing the overall well-being of occupants. Some problems that may come up are technical failures, false alarms, integration challenges, installation issues, maintenance issues, hacker vulnerability, financial concerns, and a lack of instinctive user interfaces.

The assessment of safety and security measures adopted in Vadodara city reveals a nuanced understanding of the challenges and levels of satisfaction experienced by residents. While a majority of residents express satisfaction with safety initiatives

such as surveillance systems, issues like inadequate and insufficient public awareness about available security resources continue to affect residents' perceptions of safety. These findings suggest that although safety measures are at their place, there is considerable scope for improvement, particularly in enhancing infrastructure and response time. A more comprehensive and collaborative approach involving both local authorities and residents is necessary to address these gaps. Regular monitoring and adaptation of safety measures will be essential to better align with the evolving needs of the community, ultimately fostering a higher level of security and satisfaction among residents.

**Implications of the study**

The finding of the study has the following implications:

1. **For the field of Family and Community Resource Management:**

   The information collected from the study, such as the problems faced by the homemakers and satisfaction level of the users about safety and security measures used in the residences will be guiding information for developing their subjective knowledge in the field of Resource management. The information related to various safety and security devices will be useful for them to develop designs under various subjects offered in Interior Designing.

2. **For the Respondents:**

   The research regarding Safety and security measures used in the residences, will make more people aware about the safety and security measures which can be used in their residences. The booklet developed can be used as a reference material for better understanding of the measures to be taken for safety and security at the residence.

3. **For Manufacturers of the safety and security devices:**

   Findings of the study would be beneficial to the manufacturers of the various safety devices and security devices. On the basis of the feedback of the study they can make improvement in the product; wherever possible. The extent of problems and satisfaction of the users will help them to make improvements in their product if any dissatisfaction is observed.

**Recommendations for future researches**

1. A comparative study can be conducted on the same topic in different cities of India.
2. A similar study can be undertaken on larger sample.
3. In-depth research can be done for the individual safety devices and security measures.
4. A comparative study can be taken up on the commercial and residential spaces.
5. Similar research can be conducted for the institutional spaces; such as hospitals, schools, hostels.

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# APPENDICES

# APPENDIX 1

# QUESTIONNAIRE

**Section-I Demographic Profile of the Respondents.**

**Kindly provide the information.**

1. Name:
2. Age:
3. Educational Qualification:
   - S.S.C
   - H.S.C
   - Graduation
   - Post Graduation
4. Occupation:
5. Monthly Income (in rupees):
6. Type of house:
   - Apartment
   - Tenament
   - Bungalow
7. Number of the family members:
   - 2-5
   - 6-9
   - 9-12
8. Type of family:
   - Nuclear
   - Joint family

## Section-II

**Below is the list of safety and security measures, kindly put a tick mark for the use of particular devices by you:**

| Sr. no. | Safety and Security measures | Yes | No |
|---|---|---|---|
| **i.** | **C.C.T.V Camera** | | |
| 1. | IP C.C.T.V Camera | | |
| 2. | Wireless C.C.T.V Camera | | |
| 3. | Dual-lens Camera | | |
| 4. | Weather Resistance/Trumper | | |
| 5. | PTZ camera [Pan-Tilt-Zoom] | | |
| 6. | Door-bell camera | | |
| 7. | Fisheyes Camera | | |
| 8. | Dome camera | | |
| | | | |
| **ii.** | **Door Lock** | | |
| 1. | Smart Locks | | |
| 2. | Electronic Door locks | | |
| 3. | Audio-Video Camera lock | | |
| 4. | Face-Finger Lock | | |
| 5. | Peep Lock | | |
| 6. | Deadbolt Lock | | |
| 7. | Two-way door Lock | | |
| | | | |
| **iii.** | **Safety Grills** | | |
| 1. | Boundary grill | | |
| 2. | Balcony grill | | |
| 3. | Terrace grill | | |
| 4. | Main-entry safety grill | | |
| 5. | Window mesh/grill | | |
| | | | |
| **iv.** | **Alarms** | | |
| 1. | Fire-Detector | | |
| 2. | Smoke Detector | | |
| 3. | Burner alert stove Reminder | | |
| 4. | Burglar Alarm | | |

| Sr. no. | Safety and Security measures | Yes | No |
|---|---|---|---|
| **v.** | **Sensors** | | |
| 1. | Motion Sensor Light | | |
| 2. | Sensor Faucets | | |
| 3. | Smoke Sensor | | |
| 4. | Gas Sensor | | |
| 5. | Door Sensor | | |
| 6. | Glass Breaker Sensor | | |
| 7. | Water level Sensor | | |
| | | | |
| **vi.** | **Other devices & measures** | | |
| 1. | Fire Extinguisher | | |
| 2. | Window Netting | | |
| 3. | Corner Cover | | |
| 4. | Smart lightbulbs | | |
| 5. | MCB [miniature circuit breaker] | | |
| 6. | RCCB [Residual current circuit breaker] | | |
| 7. | ELCB [Earth leakage circuit breaker] | | |
| 8. | Electric Geyser equipment | | |
| 9. | Gas Detector | | |
| 10. | Gas Geyser | | |
| 11. | Grab Bars | | |
| 12. | Remote monitoring Fan/lights | | |
| 13. | Bird net | | |
| 14. | Digital Locker | | |

## Section-III Problem Scale

**Below given are certain statements regarding the problems experienced by the homemakers regarding safety and security measures used in residences. Kindly put tick mark in the appropriate column.**

| Sr. No. | Statements | Always | Some times | Never |
|---|---|---|---|---|
| **i.** | **C.C.T.V Camera** | | | |
| 1. | Internet connection is needed for operating CCTV camera. | | | |
| 2. | A defect in CCTV camera is costly to repair. | | | |
| 3. | Power supply cutoff causing defect or stop CCTV camera recording. | | | |
| 4. | Maintaining a CCTV camera is expensive. | | | |
| 5. | Hard disk replacement cost is very high. | | | |
| 6. | Hard disk Repairing cost is very high. | | | |
| | | | | |
| **ii.** | **Door Locking** | | | |
| 1. | Smart locks system are expensive. | | | |
| 2. | Issues with the video system leads to power outages Problems. | | | |
| 3. | Issues with the video system leads to lens distortion problems. | | | |
| 4. | Issues with the Audio system leads to misconnected cables. | | | |
| 5. | Issues with the Audio system leads to incorrect drivers. | | | |
| 6. | A malfunction in the finger print lock system hinder door access. | | | |
| 7. | Defect in the locking system compromises safety. | | | |
| | | | | |
| **iii.** | **Safety grills** | | | |
| 1. | Compromise in material due to cost lead to problem of safety. | | | |
| 2. | Regular Maintainance is required for grills. | | | |
| 3. | Defective safety grills lead to affect safety of the users. | | | |
| 4. | Heavy safety grills are difficult to operate. | | | |
| 5. | Rust affects Iron grills. | | | |
| | | | | |

| Sr. No. | Statements | Always | Some times | Never |
|---|---|---|---|---|
| **iv.** | **Remote monitoring** | | | |
| 1. | Battery damage affects the operating system. | | | |
| 2. | Defect in remote leads to non-functioning. | | | |
| 3. | Remote monitoring devices are costly which leads to more material cost. | | | |
| 4. | Misplacing of remote affects operating devices. | | | |
| 5. | Remote monitoring devices face challenges due to insufficient network availability. | | | |
| | | | | |
| **v.** | **Alarms** | | | |
| 1. | Defect in alarm system affects safety. | | | |
| 2. | Fire detection and alarm system may be prone to false alarm. | | | |
| 3. | Maintainance is required regularly for alarms. | | | |
| 4. | Installation cost is very high. | | | |
| | | | | |
| **vi.** | **Sensor** | | | |
| 1. | Testing for continuity and measuring voltage and resistance is required. | | | |
| 2. | A major issue affecting the operation of the sensor are environmental factors. | | | |
| 3. | Mechanical damage in sensors is a big problem. | | | |
| 4. | Sensor may trigger false alarms. | | | |
| 5. | Regular cleaning and maintenance are required to ensure optimal performance. | | | |
| 6. | Improper installation leads to unreliable sensor performance. | | | |
| 7. | Frequently battery replacement is inconvenient. | | | |
| | | | | |

## Section-IV Satisfaction Scale

**Below listed are certain statements depicting the satisfaction of the users by using the safety and security devices. Kindly put a tick-mark in the appropriate column.**

| Sr. No. | Statements | Satisfied | Undecided | Dissatisfied |
|---|---|---|---|---|
| 1. | C.C.T.V Camera is used for monitoring the residences. | | | |
| 2. | Door locking system provides safety to the users. | | | |
| 3. | Alarms helps me to get medical assistance. | | | |
| 4. | Motion sensor lights are best for elderly people. | | | |
| 5. | Safety grills help during night-time to feel secure. | | | |
| 6. | Under Security measures lead to a person safety. | | | |
| 7. | Locks provide protection from thieves. | | | |
| 8. | Remote monitoring system for the residences is useful for employed women to take care of safety of residences. | | | |
| 9. | Stabilizer helps in automatic power off electricity, and hence device is safe. | | | |
| 10. | Window net helps to block the entrance and widens form insects and protect again mosquitoes. | | | |
| 11. | Smart bulb are good for visibility. | | | |
| 12. | MCB (Miniature circuit breaker) helps to protect electrical Overloads. | | | |
| 13. | RCCB (Residual current circuit breaker) helps to prevent electric shocks. | | | |
| 14. | ECB (Earth leakage circuit breaker) helps to prevent voltage fluctuation. | | | |
| 15. | Grab bars provide a stable support system for old age people. | | | |
| 16. | Digital safe locker helps to protect expensive items in the home. | | | |

| | | | | |
|---|---|---|---|---|
| 17. | Corner cover helps to protect children getting hurt from edges. | | | |
| 18. | Bird net protects from bird and other animals. | | | |
| 19. | Two ways door locks helps parents when children lock themselves, from any side of the door. | | | |
| 20. | Remote monitoring fans helps old age people to change the speed of fan as per their convenience. | | | |
| 21. | Water sensors alerts in advance the users regarding water level. | | | |
| 22. | Gas sensors alert the users regarding gas leakage. | | | |
| 23. | Glass sensors provide security to the users by monitoring sound and vibrations on glass surface. | | | |
| 24. | The users feel secure and protected while using safety and security devices install at the residents. | | | |

## APPENDIX 2

## Ethical Certificate

Institutional Ethics
Committee for Human
Research
(IECHR)

**FACULTY OF FAMILY AND COMMUNITY SCIENCES**
**THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA**

### Ethical Compliance Certificate 2024-2025

This is to certify Ms. Isha Pandya study titled; "Extent of Problems and Satisfaction experienced regarding Safety and Security measures adopted by the selected residents of Vadodara city." from Department of Family and Community Resource Management has been approved by the Institutional Ethics Committee for Human Research (IECHR), Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda. The study has been allotted the ethical approval number IECHR/FCSc/M.Sc./10/2024/28.

Komal

Prof. Komal Chauhan
Member Secretary
IECHR

Prof. Mini Sheth
Chairperson
IECHR

Chair Person
IECHR
Faculty of Family & Community Sciences
The Maharaja Sayajirao University of Baroda

## APPENDIX 3

### Consent Form

**Date: 20/09/2024**

Dear Respondent,

I am Isha Pandya Sr. M.Sc. 2nd year student of Department of Family and CommunityResource Management at The Maharaja Sayajirao University of Baroda, Gujarat. For the partialfulfilment of my master's degree, I am conducting research on "Extent of Problems and Satisfaction Experienced regarding Safety and Security Measures adopted by the Selected Residents of Vadodara City." with the following objectives:

1. To find out the types of safety and security measures used by the home makers for their residences.
2. To find out the extent of problems experienced by the homemakers regarding the safety and security measures used in their residences.
3. To assess the extent of satisfaction of the homemakers regarding safety and security measures used by them.
4. To prepare an educational booklet on the different safety and security measures available in the market for the residences.

I am highly interested to know your opinion regarding the designed and developed functional and aesthetical elements. If you are agreeing to participate in this research study, you will be asked to complete a questionnaire.

Prior to that, I want to stress that your participation in this study will be completely voluntary and all efforts will be taken to protect your identity and keep the information confidential. Only the researcher will have access to the responses. Your personal information will only be used to contact you and your name will not be revealed with any research findings. If for any reasonduring this study you do not feel comfortable, you may leave the study immediately.

If you have any further questions concerning this study, please feel free to contact me through:To participate, please put (/) tick mark on "I Agree" to complete the feedback form for the research study.

Your participation will be greatly appreciated.

- [x] I AGREE
- [ ] I DISAGREE

Name & Signature of the respondent:

Phone no.: 6353036711
Email ID: ishapandya1002@gmail.com

**Researcher**
Ms. Isha Pandya
M.Sc. Student
FCRM Department

**Research Guide**
Dr. Sarjoo Patel
Assistant Professor
FCRM Department

# ABSTRACT

## ABSTRACT

With many homemakers now working outside the home, they often rely on the security systems to ensure the well-being of their children and elderly parents. The availability of advanced smart appliances and gadgets for safety and security purposes enables homemakers to remotely monitor the status of their homes, offering peace of mind while they are away. These technologies help them track the safety of their households, ensuring the protection of their loved ones even in their absence. This research aims to assess how effectively these security systems meet the needs of modern residents, particularly homemakers, and to explore the challenges and satisfaction levels they experience with the current safety measures in place.The present study was undertaken to investigate the extent of problems and satisfaction regarding safety and security measures adopted by the selected residents of Vadodara city. For the present study, purposive Sampling technique was used to select residences having safety and security devices and measures since past two years, and snowball technique was used to select homemakers from Vadodara city, 120 homemakers selected should be residing in Baroda. and should be the owner of the house. The investigator collected the data from the respondents of the specified area through online questionnaire method and then synthesized the collected data. Collected data was analysed through categorizing all the data, then coding it, tabulating it and lastly perform statistical analysis on it through its mean, frequency and percentage and various tests. Data regarding the background information of the respondents revealed that the largest percentage i.e. 66.67 per cent of the respondents belonged to the age group of 25 to 45 years, mean age was 42.67 years, 40 per cent had received their graduation and 41.6 per cent were employed. Family related information revealed that 62.50 per cent had Monthly family income ranging from ₹30,000 to ₹60,000., 57.50 per cent of the respondents were residing in tenement, and 77.50 per cent of the respondents had 2-5 members in their family and 62.50 per cent of the respondents stayed in Nuclear family. It was found that 50.00 per cent of the respondents used IP CCTV cameras, 68.30 per cent of respondents adopting Smart locks systems and 75.00 per cent of the respondents using two-way door locks in their residences. It was found that Safety Window mesh/grills were the most widely used, with 87.50 per cent of respondents using them, Boundary grills were used by 81.60 per cent and balcony grills were used by 82.50 per cent, terrace grills were used by 68.30 per cent and main-entry safety grills used by 72.50 per cent had slightly lower usage rates of the respondents. It was found that fire detectors, Smoke detectors, Burner alert stove reminder and burglar alarm were not used

by any of the respondents. It was found that Water level sensors had the highest usage at 61.60 per cent of the respondents used in their residences, the most widely used additional safety devices included 74.10 per cent window netting, 56.60 per cent fire extinguishers, 71.60 per cent miniature circuit breakers (MCB), 41.60 per cent of the respondents used corner cover and Electric geyser equipment adopting in their residences. The findings of the study revealed several significant challenges encountered by residents concerning the safety and security measures implemented in Vadodara City. A substantial 81.60 per cent of respondents indicated that the maintenance of CCTV cameras incurs high costs, making it a financial burden for many. Additionally, 64.10 per cent of the respondents experienced that smart lock system are expensive. The data also revealed that 66.60 per cent of the respondents experienced heavy safety grills are difficult to operate in their residences. Furthermore, 56.60 per cent of the respondents consistently experienced issues with remote monitoring devices, as they are costly which leads to more material cost. The study regarding fire safety measures revealed that 73.30 per cent of the respondents experienced fire detection and alarm systems are prone to false alarms, 75.00 per cent of the respondents' experienced improper installation as a significant issue affecting the performance of security sensors, with environmental factors. The respondents, 57.50 per cent were satisfied with stabilizers that automatically shut off electricity, ensuring device safety. A significant 70.80 per cent of respondents appreciated window nets for blocking insect entry and protecting against mosquitoes. Regarding electrical safety, 68.30 per cent were satisfied with MCB (Miniature Circuit Breakers) for protecting against electrical overloads and 65.00 per cent were satisfied with ECBs (Earth Leakage Circuit Breakers) for preventing voltage fluctuations. While 64.10 per cent found bird nets useful for keeping out birds and other animals. 65.00 per cent of respondents were satisfied with Two-way door locks enabling parents to open doors from either side when children lock themselves in. 65.00 per cent appreciated water level sensors for alerting users in advance about water levels. The booklet was prepared on the safety devices and security measures available in the market for the residences in Vadodara city. The content in the booklet included information of the safety devices and security measures available in market and information about the safety and security measures for enhancing awareness of the homemakers.

# Devices and Measures for Homes

## A Safety Guide

# PREFACE

A home is a place of comfort and care, where your family's safety and well-being are priorities. In an ever-changing world, taking proactive steps to safeguard your Family members and home is essential. With the right measures in place, one can create a secure environment that protects loved ones and our belongings.

This booklet, " Safety Guide: Devices and measures for Homes" is designed to provide the safety and security devices and measures available in the market along with special features and usage.

Isha pandya
Research Student

Dr. Sarjoo Patel
Guide

# *CONTENTS*

# ACE PRO SECURITY CAMERAS

- Type: Indoor.
- Features: Night vision, 480-hour recording.
- Price: ₹1,850*.
- The ACE PRO Security Camera is a top-tier choice for residential security, offering high-definition video quality and advanced features like motion detection and night vision for 24/7 protection. Its durable build ensures reliable outdoor use, while the mobile app connectivity allows remote monitoring and real-time alerts. Easy to install and user-friendly, it provides homeowners with enhanced safety and peace of mind.

# SPOTLIGHT PAN TILT SMART WI-FI CAMERA

- Type: Wireless
- Features: 360° rotation, 2MP Full HD, 2-way talk, motion tracking.
- Price: ₹5,999*.
- Spotlight Pan Tilt Smart Wi-Fi Camera enhances residential security with its 360° coverage and full HD video quality, ensuring no blind spots. Its smart Wi-Fi connectivity allows remote monitoring via a smartphone app, while motion detection and two-way audio add convenience and safety. Easy to install, it offers night vision for round-the-clock surveillance, making it an ideal choice for modern homes.

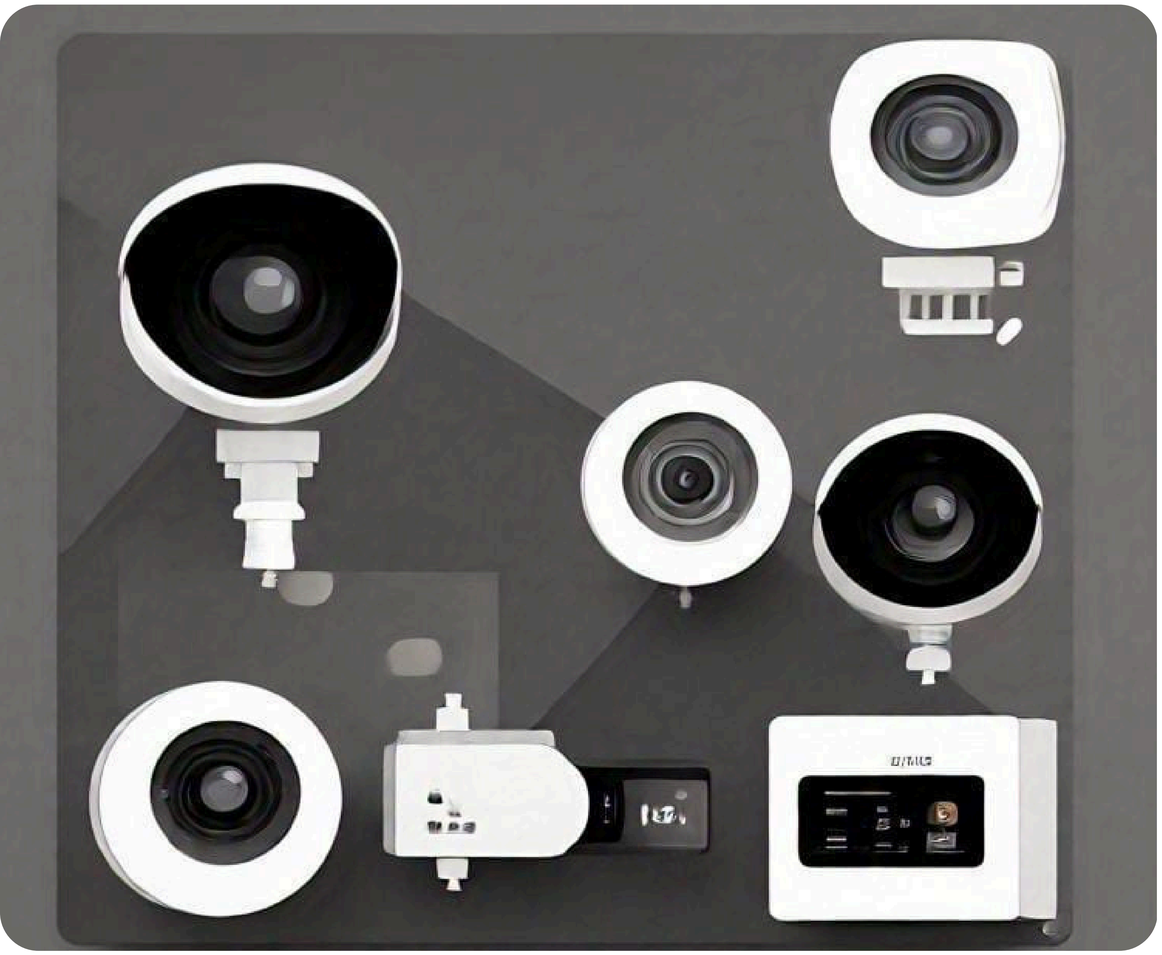
# WIRELESS BULLET CAMERAS

- Type: Weather-resistant outdoor.
- Features: Coloured night vision, durable design.
- Price: ₹1,849*.
- ECO 2MP Wireless Bullet Camera is perfect for residential security, offering high-definition video quality and wireless connectivity for hassle-free installation.
- Its durable design is ideal for outdoor use, and the infrared night vision ensures 24/7 monitoring.
- With features like remote viewing and motion detection alerts, it provides real-time updates and peace of mind for homeowners.

# DOME CAMERA

- Type: Wired dome camera.
- Features: Digital noise reduction, backlight compensation, night vision.
- Price: ₹1,599*.
- The Godrej See Thru Lite 2MP Dome Camera offers reliable residential security with its high-definition video quality, ensuring clear footage for monitoring activities.
- Its compact dome design blends seamlessly into home interiors, while the infrared night vision provides round-the-clock surveillance.
- Easy to install and maintain, this camera is ideal for enhancing safety and deterring potential intruders in residential spaces.

# CCTV COMBO KIT



- Type: Combo Kit with Dome and Bullet cameras.
- Price: ₹15,258*.
- The Godrej 2MP Full HD CCTV Combo Kit in residences provides enhanced security with clear, high-definition video monitoring.
- It helps deter intruders, enables real-time surveillance, and supports night vision for 24/7 protection.
- Easy to install and suitable for both indoor and outdoor use, it ensures peace of mind ·by safeguarding loved ones and property.

# PAN TILT CAMERA

- Type: Wireless, Pan-Tilt-Zoom (PTZ).
- Features: 5MP resolution, 2-way audio, 350° coverage.
- Price: ₹4,679*.
- ACE PRO Pan Tilt Camera offers enhanced surveillance for residential areas with its 360-degree pan and tilt functionality, allowing full coverage of the surroundings.
- It provides high-definition video quality and real-time monitoring, offering peace of mind with clear visuals of any activity. The camera is equipped with motion detection, two-way audio, and night vision, ensuring round-the-clock security.
- It's easy to install and integrates with mobile devices for remote access, making it a valuable tool for modern home protection.

# SMART DIGITAL LOCKS - ENTRY LEVEL


- Features: 2-in-1 access (PIN code and RFID card), Suitable for budget-conscious users.
- Price: ₹8,194–₹8,999*.
- Godrej Smart Digital Locks offer enhanced security and convenience for residential areas. These entry-level locks eliminate the need for traditional keys, using PIN, RFID cards, or biometric access for better control.
- They provide advanced safety features like auto-locking and tamper alerts, ensuring peace of mind.
- Easy to use and install, they enhance the modern aesthetic of homes while improving overall security.

# RIMTRONICDIGITAL LOCK

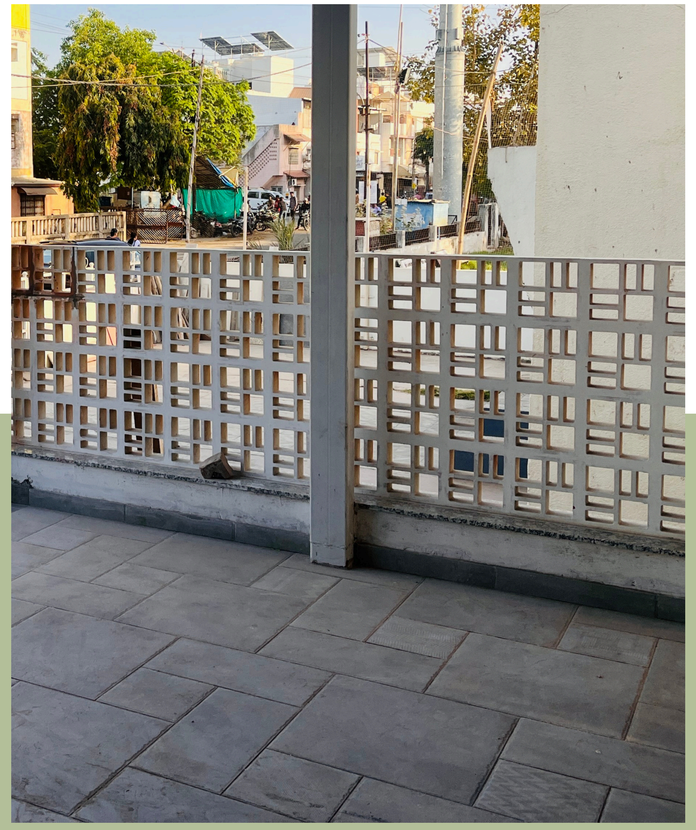
- Features: Fingerprint and PIN code access, RFID card compatibility, Remote compatibility with video door phones.
- Use Case: For added security on main doors.
- Price: ₹10,114–₹18,999*.
- Rimtronic Digital Lock offers advanced security for residential areas with its keyless entry options, including biometric fingerprint recognition, PIN, and RFID card access.
- It features a sleek design, robust tamper alerts, and auto-lock functionality, ensuring both convenience and +safety.
- The lock provides peace of mind by eliminating the need for physical keys while offering enhanced protection against unauthorized access.

# TOUCH PLUS LOCK


- Features: 4-in-1 access (fingerprint, PIN, RFID card, mechanical key), Low battery and privacy indications.
- Ideal For: Smart homes with enhanced access control.
- Price: ₹12,495–₹12,735*.
- The Godrej Cetus Touch Plus Lock offers advanced security and convenience for residential areas with its biometric fingerprint access, PIN, and RFID card options.
- It features a robust design with auto-locking, low-battery alerts, and tamper protection for added safety.
- Easy to install and use, it eliminates the hassle of traditional keys while enhancing the modern look of your home.

# BOUNDARY GRILL

- Typically starts at ₹150*per square foot and can go up to ₹500*per square foot for modern and rust-proof designs.
- A boundary grill enhances security in residential areas by creating a strong perimeter that deters unauthorized access and intrusions.
- It defines property boundaries clearly while adding aesthetic appeal to the home.
- Additionally, it provides safety for children and pets by keeping them within the property limits, ensuring a secure and private living environment.

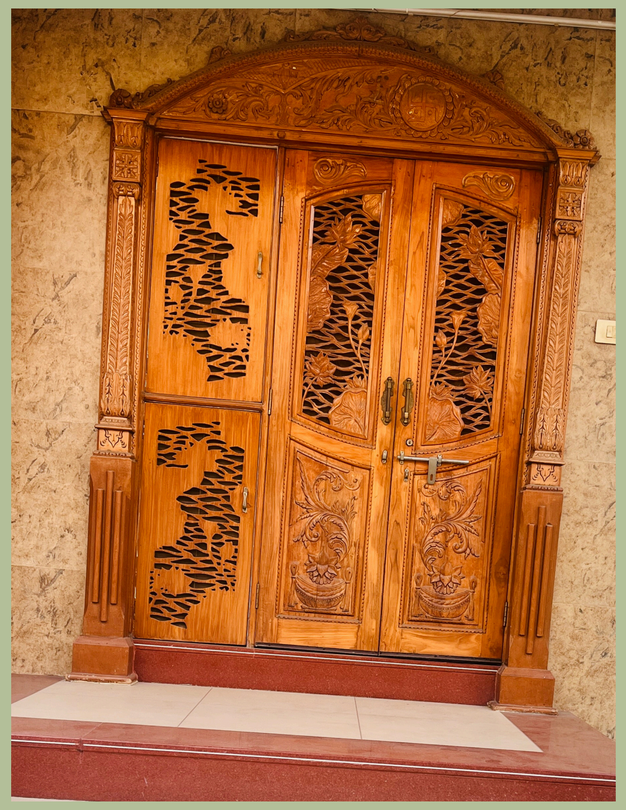


# BALCONY GRILL

- Aluminium balcony safety grills are available starting at ₹200*per square foot.
- Rust-proof versions may cost ₹2,000*per piece depending on design.
- A balcony grill improves safety in residential areas by preventing accidental falls, especially for children and pets.
- It enhances security by deterring unauthorized entry through the balcony.
- Additionally, it provides peace of mind while allowing residents to enjoy fresh air and outdoor views without compromising safety.

# TERRACE GRILL

- Custom-designed terrace grills range from ₹250 to ₹800 per square foot for durable and eco-friendly models.
- A terrace grill enhances safety in residential areas by preventing accidental falls, especially for children and pets.
- It adds an extra layer of security by deterring unauthorized access through the terrace.
- Additionally, it allows residents to use the terrace more freely and comfortably, providing peace of mind while maintaining ventilation and an open view.



# MAIN-ENTRY SAFETY GRILL

- Safety door grills are priced between ₹800 to ₹8,000*depending on material (steel or iron) and design.
- A main-entry safety grill enhances security in residential areas by acting as a strong physical barrier against unauthorized access while allowing ventilation and visibility.
- It provides added protection without compromising the aesthetic of the home. Additionally, it offers peace of mind, especially for families and elderly residents, by reducing the risk of break-ins and ensuring a safer living environment.

# WINDOW MESH/GRILL

- Window safety grills start at ₹190*per square foot.
- Options include invisible safety grills and corrosion-resistant steel designs.
- The materials vary from polished steel to rust-proof aluminium and iron, with designs ranging from sleek vertical bars to intricate floral and geometric patterns, all set in an elegant residential environment.

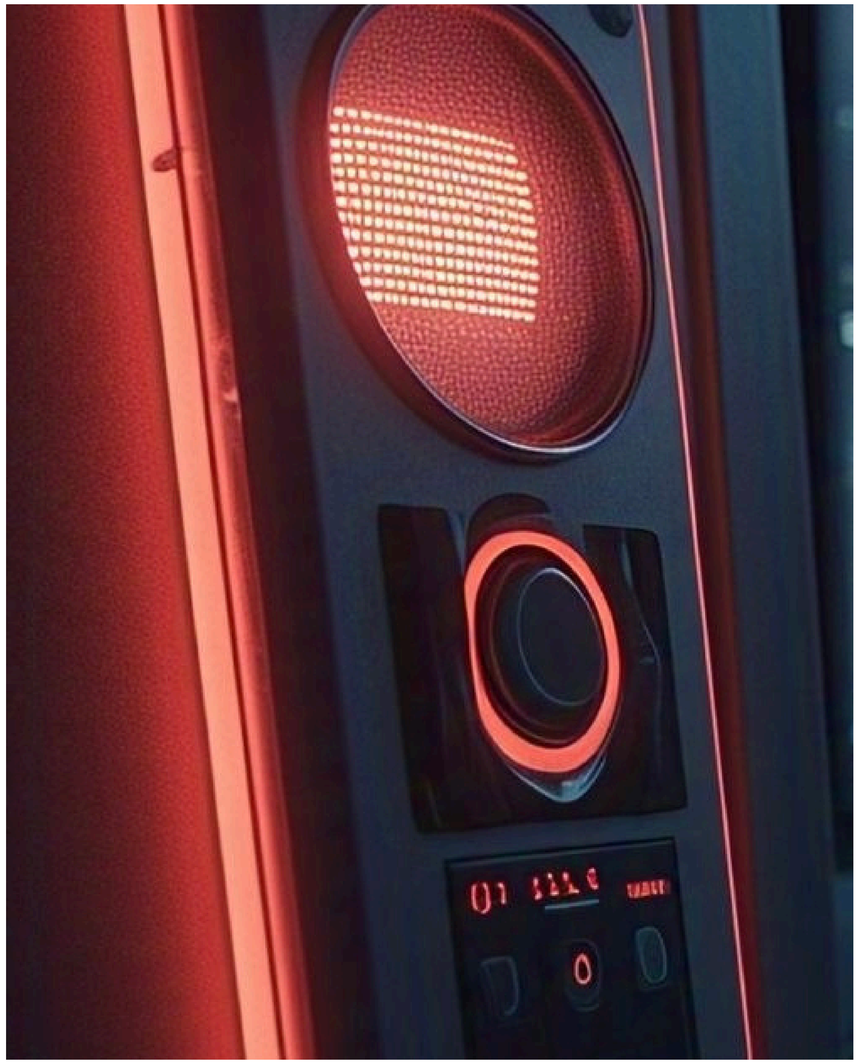
# FIRE AND SMOKE DETECTORS

- Wireless Smoke Detector: Suitable for confined areas like corridors or basements. Features include a 20 ft detection range and audible alarm at 40 db.
- Approximate price: ₹3,000 - ₹4,000*.
- Fire and smoke detectors are essential for residential safety, providing early warnings of fire or smoke to prevent severe damage and loss of life. They offer peace of mind by continuously monitoring for hazards, even when residents are asleep or away.
- These devices are cost-effective, easy to install, and significantly reduce the risk of injuries by allowing more time for evacuation and emergency response.

# BURGLAR ALARM

- Security Alarm System: Comes with remote monitoring, SMS alerts, and a 100 dB siren.
- Supports up to 50 wireless sensors.
- Approximate price: ₹14,999* to ₹15,000* (discounted from ₹25,999).
- A burglar alarm enhances security in residential areas by detecting unauthorized access and alerting homeowners or authorities, deterring potential intruders.
- It provides peace of mind, especially when residents are away, by safeguarding valuable possessions and loved ones.
- Additionally, many systems integrate with smart devices for remote monitoring, offering convenience and an added layer of protection.

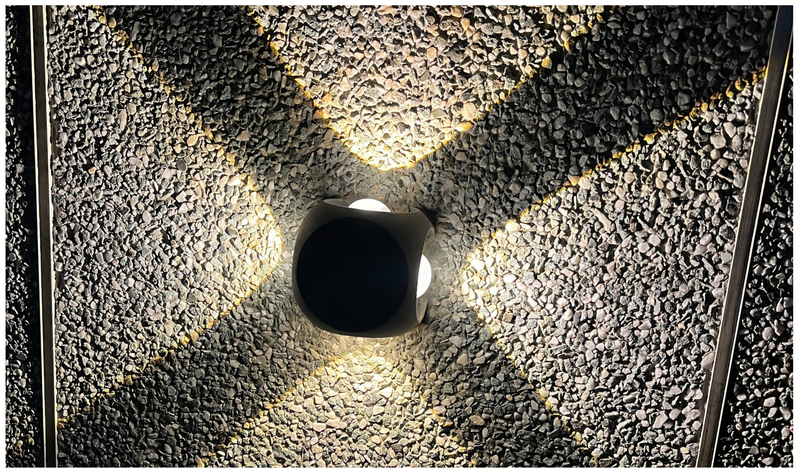
# BURNER ALERT/REMINDER



- Specific burner alert systems weren't listed for compatible add-ons for existing alarm systems might include timers and alerts.
- Approximate price: ₹16,999*.
- A burner alert or reminder is a valuable safety feature for residential areas, helping prevent kitchen accidents and fire hazards by notifying users if a stove or burner is left on.
- It enhances energy efficiency by reducing unnecessary gas or electricity usage.
- Additionally, it provides peace of mind, especially for busy households or elderly individuals, ensuring safer cooking practices and minimizing the risk of unattended cooking.

# MOTION SENSOR LIGHT

- Ceiling Mount Motion Sensor: Designed for home security, this sensor detects human motion and triggers alarms.
- It has a range of 20 ft and is ceiling-mountable.
- Approximate price: ₹1,800 to ₹2,500 depending on the seller.
- Motion sensor lights are highly beneficial for residential areas as they enhance security by deterring intruders with sudden illumination.
- They also save energy by only turning on when movement is detected, reducing electricity costs.
- Additionally, these lights improve convenience and safety by automatically lighting pathways, driveways, or entryways at night, making it easier to navigate in the dark.



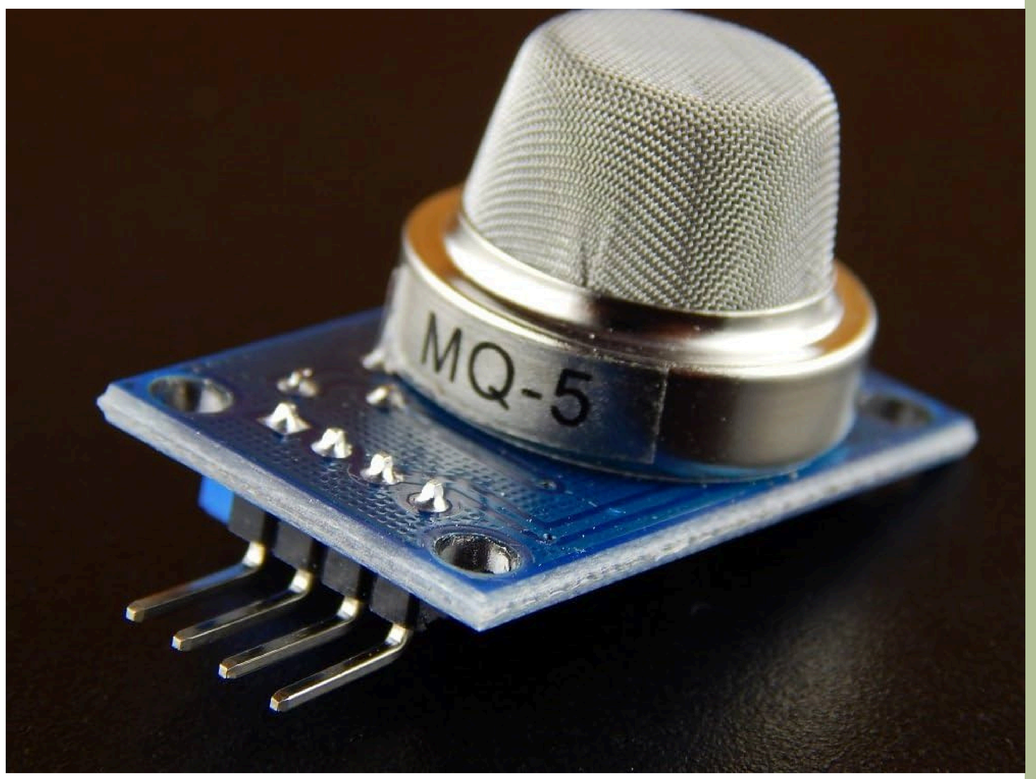
# SENSOR FAUCETS

- Specific models of sensor faucets were not highlighted in the search. These are generally available from ₹3,000 upwards, depending on features and design.
- It’s advisable to check with local dealers for availability.
- Sensor faucets offer several benefits for residential use.
- They provide hands-free operation, promoting better hygiene by reducing the spread of germs.
- These faucets also conserve water by automatically turning off when not in use, lowering utility bills. Their modern design adds a sleek, high-tech touch to bathrooms and kitchens.
- Additionally, they are convenient for children and individuals with limited mobility, enhancing accessibility in the home.

- Wireless Smoke Detector: Features wireless functionality, 20 ft detection range, and audible alarms.
- Suggested for corridors or confined spaces.
- Approximate price: ₹2,500* to ₹3,500*.
- Smoke sensors are essential for residential safety, providing early detection of fires and emitting alarms to alert occupants.
- They help save lives by allowing quick evacuation and minimizing property damage. Integrated with smart systems, they can send notifications to smartphones and trigger emergency responses.
- Easy to install and cost-effective, smoke sensors ensure a safer living environment, offering peace of mind for homeowners.

# SMOKE SENSOR

# GAS SENSOR




- Godrej does manufacture gas sensors as part of its safety range.
- These are typically priced around ₹2,000–₹4,000 depending on the model and features.
- Confirm with local dealers for the latest models.
- Gas sensors are crucial for residential safety, as they detect harmful gases like carbon monoxide, methane, or propane and provide early warnings to prevent accidents.
- They help protect against fire hazards, gas leaks, and health risks by triggering alarms or notifications for quick action.
- Integrated with smart home systems, they offer remote monitoring and automatic shut-off features. Gas sensors are easy to install and provide peace of mind, ensuring a safe living environment for residents.

# DOOR SENSOR

- Wireless Door Sensor: This sensor detects unauthorized door openings and can be part of a larger security system.
- Prices range around ₹1,500 to ₹2,000*.
- Door sensors enhance residential security by detecting unauthorized openings and alerting homeowners in real time.
- They provide peace of mind by securing entry points and integrating with smart home systems to trigger alarms or send notifications.
- Door sensors also improve convenience, allowing homeowners to monitor doors remotely and ensure they are closed.
- Additionally, they can be used for child safety, alerting parents if a door is opened unexpectedly.
- Easy to install and cost-effective, door sensors are a practical way to boost home security and safety.

# GLASS BREAKER SENSOR

- Often integrated into advanced security kits, these sensors can detect glass shattering.
- Prices for compatible systems start at ₹12,000*, including sensors.
- Glass breaker sensors provide vital security for residential areas by detecting the sound of breaking glass, alerting homeowners to potential intrusions.
- They enhance home safety by acting as an early warning system against burglaries, ensuring quick response to threats.
- Integrated with smart home systems, they can trigger alarms or notify homeowners remotely, offering peace of mind.
- These sensors are cost-effective, easy to install, and protect vulnerable entry points like windows and glass doors, making them a valuable addition to any home security setup.

# WATER SENSOR

- Such sensors are generally priced between ₹2,000and ₹4,000*.
- Water sensors are essential for residential areas, offering early leak detection to prevent costly damage and flooding.
- They help conserve water by identifying issues like dripping taps, reducing waste and bills. By minimizing excess moisture, they prevent Mold and improve indoor air quality.
- Integrated with smart systems, they send alerts for quick action, even remotely, providing peace of mind.
- Additionally, they enhance home safety and value, making them a cost-effective solution for protecting homes and conserving resources.


# FIRE EXTINGUISHER

- Price of Fire Extinguishers starts at around ₹1,000 for smaller models like the 1kg ABC powder type.
- Fire extinguishers (spray type or powder).
- Price Range: ₹1,500 to ₹5,000+*.
- Fire extinguishers are essential for quickly controlling small fires, preventing them from spreading and causing major damage.
- Easy to use and effective, they provide immediate response during emergencies, ensuring safety for people and property.

- Smoke detectors usually cost between ₹1,000 and ₹3,000* depending on the model.
- Smoke detectors provide early warning of fire hazards, allowing quick action to prevent damage and save lives.
- They are easy to install, reliable, and essential for ensuring safety in homes and offices.
- Acting as a critical alert system, they enhance preparedness and peace of mind.

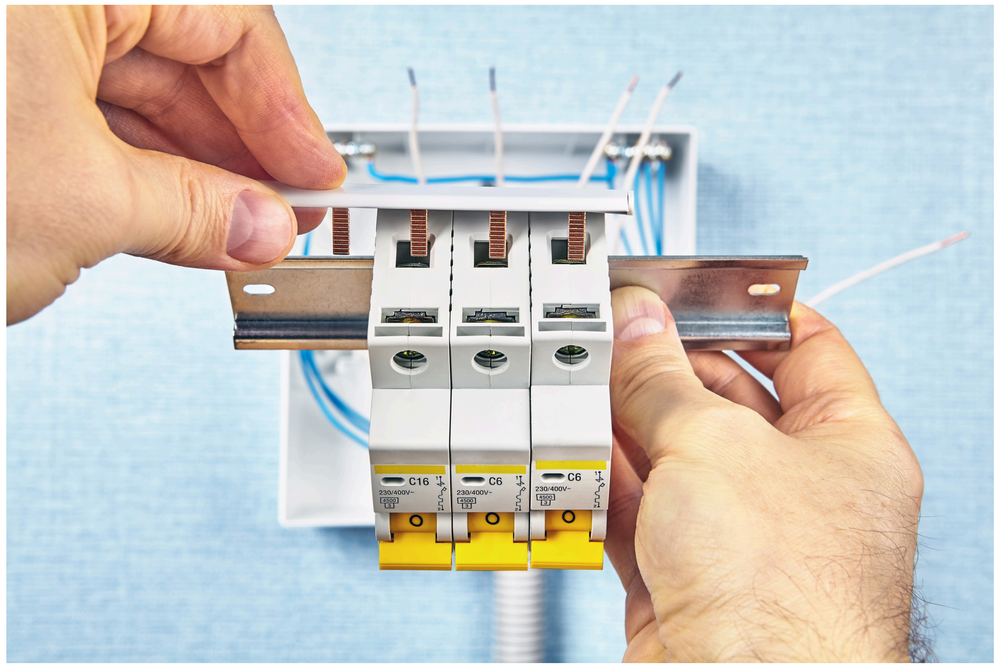
# SMOKE DETECTOR

# HOME LOCKERS


- Models: Mechanical and electronic lockers, biometric safes.
- ₹3,000 to ₹1,00,000+*(based on size, fire resistance, and features), Safire 20L mechanical key lock home locker is priced at approximately ₹12,000*.
- (e.g., Safire 20L Ultra Key Lock)
- Home lockers offer a safe place to keep valuables like cash, jewellery, and papers safe from damage or theft. They have featured such enhanced biometric security, mechanical or electronic locks, and fire resistance.
- Home lockers provide peace of mind and are perfect for protecting household necessities because they are long-lasting and simple to use.

# MCB, RCCB, ELCB (FOR ELECTRICAL SAFETY)

- MCB from Godrej are priced starting from ₹250*, while RCCBs and ELCBs may range from ₹600 to ₹2,500* depending on capacity.
- MCB, RCCB, and ELCB ensure electrical safety by preventing overloading, short circuits, and leakage currents.
- They protect appliances, reduce fire risks, and safeguard against electric shocks. Compact and reliable, they are essential for homes and industries.



# DIGITAL LOCKER


- The Digital Locker, are available starting from ₹15,000+*.
- Digital lockers include enhanced security features including tamper warnings, PIN/password protection, and long-lasting, fire and water-resistant designs.
- It is perfect for protecting valuables like documents, cash, and jewellery because of its small size and contemporary style, which agreements comfort of use.
- An affordable and dependable option for safe storage.

# GAS DETECTOR

- These are typically priced around ₹2,000* to ₹3,500*.
- A gas detector improves safety by identifying dangerous gas leaks early on and averting accidents like explosions or fires.
- With its real-time surveillance, it guarantees a secure atmosphere in residences, workplaces, and industrial areas.
- It is small, simple to use, and efficient at protecting people and property.

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