

HOME AUTOMATION SYSTEM IN INDIA: A STUDY

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ABSTRACT

Home automation has greatly redoubled in quality over the past many years. Home Automation makes good Home management simple from Amusement and Media to Lighting, Climate, Security and more. The control can be through elegant Keypads or Touch Panels, Remotes, Smart Phone or Tablets, Hands Free Voice Control, Sensor based operations and much more. The smart home is in a constant state of change. Home automation is no longer the stuff of science fiction. In the recent survey smart home market size trends and projections suggest this is no passing fad. Ubiquitous home automation via IoT and M2M is our future. This paper consist following sections: (I) Introduction (II) Background (III) Working (IV) Features (V) Benefits (VI) Resource Requirement (VII) Conclusion and Future.

Keywords:

Home Automation, Voice control, IoT and M2M.

INTRODUCTION

Home automation (also known as domestics) refers to the automatic and electronic control of household features, activity, and appliances. Various control systems are utilized in this residential extension of building automation. Some components of an automated home may include the centralized control of security locks on doors and gates, appliances, windows, lighting, surveillance cameras and HVAC systems (heating, ventilation and air conditioning). Few years ago, there was a global installed base of only 4 million smart home devices such as garage door operators, electronic locks, thermostats, light bulbs and appliances. Today, the installed base of smart home devices is estimated to be around 165 million devices worldwide. The Smart Homes market is fast evolving in the Indian context. Initially Smart Homes were marketed primarily as homes with advanced security features.[1 4] It is estimated that the Smart Homes solutions market in India is growing in India at a rate of 30 percent YOY. At this rate, the market will double in revenue every 3 years. The market is therefore, likely to explode over the next few year.

A smart home, or smart house, is a home that incorporates advanced automation systems to provide the inhabitants with sophisticated monitoring and control over the building's functions. For example a smart home may control lighting, temperature, multi-media, security, window and door operations, as well as many other functions like:

Lights

Today's home automation systems make it easy for you to use your smart phone or tablet to control the lights in your home. You can switch on your lights and set them to an appropriate brightness, all while you're away or lounging on your couch.

Locks and security systems

A home automation system will allow you to check—and change, if necessary—the status of your locks and security system remotely. Also, many systems allow remote monitoring of your home security cameras.

Appliances

With home automation, you can easily change the oven temperature, for example, while you're relaxing in the back yard or watching a movie in the den thanks to wireless technology, smart outlets, and a smart phone app.

Entertainment systems

Some home automation systems also integrate entertainment. Set your TV's recording schedule, manage your stored programs, and decide where to watch them, all from your smart phone, tablet, or laptop.

Temperature and indoor climate

Use your home automation app to raise the temperature in the house a few degrees so you can stay comfy. Not only will you feel more comfortable, but you'll also enjoy the pleasure of a lower energy bill.

Carbon Monoxide Detection

Your home automation system can detect increased levels of carbon monoxide in the air and set off an alarm if you're in danger. It's a far more reliable method than the old, standalone detectors from the hardware store.

BACKGROUND OF HOME AUTOMATION SYSTEM

The idea of managing all the functions of a home with a centralized control system dates back to at least the beginning of the 20th century. The earliest working prototypes of automated houses debuted in the 1930s at World's Fairs in Chicago and New York City, but those homes were never intended to be commercially available. [1] It wasn't until the invention of the microcontroller during the 1970s that marketing a fully-wired, "smart" home automation system became economically feasible. With the growth of computer technology over the last fifteen years or so, the home automation industry has taken off. In 2012, the estimated value of the home-automation market was around \$3.6 billion. [2] Smart-home device sales doubled the following year, [3] with 1.8 million new system installations nationwide.[4] Some analysts expect 12 million new residential system installations in 2016 [4] and an estimated overall market value of as much as \$16.4 billion by 2019. [2]

WORKING OF HOW DOES HOME AUTOMATION SYSTEM

Home automation systems are composed of hardware, communication and electronic interfaces that work to integrate electrical devices with one another. Domestic activities can then be regulated with the touch of a button. From any remote location, users can adjust the controls on home entertainment systems, limit the amount of sunlight given to houseplants, or change the temperatures in certain rooms. Home automation software is often connected through computer networks so that users can adjust settings on their personal devices [6].

The three main elements of a home security system are sensors, controllers and actuators. Sensors can monitor changes in daylight, temperature or motion detection; home automation systems can then adjust settings to the preferred levels of a user. Controllers refer to the devices—personal computers, tablets or smart phones—used to send and receive messages about the status of automated features in users' homes. Actuators may be light switches, motors or motorized valves that control a mechanism or function of a home automation system.

FEATURES ARE AVAILABLE THROUGH HOME AUTOMATION SYSTEMS

Different home automation systems offer a variety of services and functions. Some of the common features available through these platforms may include fire and carbon monoxide monitoring, remote lighting control, thermostat control, appliance control, live video surveillance, security cameras, alarm systems and real-time text and email alerts. Homeowners can save on energy bills by reducing the length of time that lights stay on or lowering temperatures when they have left a room.

BENEFITS OF HOME AUTOMATION

One of the greatest advantages of home automation systems is that users can protect against break-ins and fires, while enjoying automations for lights, temperature, and more. The automation of features in one's home helps to promote security, comfort, energy efficiency, and convenience. Another benefit of home automation systems is the amount of labor, time, energy and materials that is saved.

Home automation systems are becoming more and more affordable. Not only are prices decreasing, but operating systems are also become less complex so that users can readily master all the controls associated with their safety and security devices. Home automation commands can now be given through smart phones, tablets, and televisions, in addition to computers [5, 6].

Whether you have a large family or are a household of one, home automation is an attainable solution to your safety and security concerns. After the professional installation of a home automation system, you can begin to enjoy the benefits of leaving or returning to a safer and smarter home.

Here are some of the biggest benefits that home automation provides

Savings

Smart thermostats and smart light bulbs save energy, cutting utility costs over time. Some home automation technologies monitor water usage, too, helping to prevent exorbitant water bills. Certain devices even offer rebates

Safety

Many home automation technologies fall under the umbrella of home security. Consumers purchase these devices because they want to make their homes safer and more secure. Automated lighting thwarts would-be burglars, and motion sensors help people enter doors and walk hallways late at night. Security cameras offer benefits through either remote monitoring of package deliveries or real-time video of home inhabitants or unwanted visitors.

Convenience

Because home automation technology performs rote tasks automatically, end users experience great convenience. Lots of smart gadgets are compatible with one another, and you can set different triggers between devices to automate regular home processes. For instance, you could set your smart locks to turn on your smart lighting when you unlock the front door.

Control

Consumers also choose smart home devices to better control functions within the home. With home automation technology, you can know what's happening inside your home at all times

Comfort

Some people use smart technology to record shows or to play music throughout the home. Connected devices can also help create a comfortable atmosphere—they provide intelligent and adaptive lighting, sound, and temperature, which can all help create an inviting environment.

Peace of Mind

Finally, many consumers invest in home automation technology for peace of mind. A new mom or dad can check on their little one thanks to smart cameras and other technologies. Or, if you can't remember whether you closed the garage after you left, you can verify remotely with an app.

Despite these benefits, it could still take some work to convince people of how great home automation can be. Plenty of people want the perks of home automation, but they feel uncertain that smart home technologies will provide them.

RESOURCE REQUIREMENTS FOR HOME AUTOMATION

But hold on a minute—automating your home isn't as simple as just downloading an app. It'll take a little more than that to get started.

For one thing, you'll need a controller

Today's home automation systems can usually be managed straight from your tablet or smart phone, but some do still require the installation of a centralized control panel somewhere in your home.

You'll also need access to a network in order to send messages from your controller to your home's devices

Most home automation systems either use Wi-Fi or a simple Bluetooth connection. This, of course, depends on how you plan to use your system. For example, if you think you'll want to interact with your devices while at work, a Bluetooth connection won't cut it.

Finally, your devices will need some way to receive your instructions

For some, this isn't an issue: today's home entertainment systems often have Wi-Fi connectivity built right in before the components leave the factory. But for others—like, say, lights—you'll need either smart outlets or smart light bulbs to integrate them into your home's automation system.

That may seem like a lot of work, but honestly, it isn't. The bottom line is that if you've got Wi-Fi in your home and a smart phone in your pocket, you're already most of the way there.

CONCLUSION AND FUTURE OF HOME AUTOMATION

Home automation has greatly increased in popularity over the past several years. The functionality of automated home can be managed on an array of devices: desktop, laptop, tablet or smart phone. The home automation market-place currently growing at around 15-20% CAGR is set to grow further in near future as companies are aggressively working towards the development of products for budget consumers as well. The future of home automation talk can't complete without mentioning the Internet of Things (IoT). That's the catch-all phrase for the trend toward

embedding sensors and microchips in everyday objects in a way that allows them to be connected to a network—like, say, the Internet. With the Internet of Things, washing machine, for example, can send an alert to phone when it's time to move clothes over to the dryer.

Analysts expect the number of devices connected to the Internet of Things to reach between 26 billion⁵ and 30 billion⁶ by 2020. And the more IoT-ready devices you have access to in your home, the more you'll be able to accomplish with even the most basic home automation system.

In just 40 years, complete home automation systems have gone from high-tech curiosities to affordable and accessible modern home conveniences. They're so simple now that just about anyone can take advantage of home automation to simplify their lives and enjoy what was once a luxury of the wealthy and tech-savvy. In another 40 years, we'll wonder how we ever lived without them.

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