INNOVATION IN HOME AUTOMATION

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Abstract

This paper talks about innovations taking place in home automation systems. Home automation is an automatic and semiautomatic control and monitoring of household appliances with features like safety doors, remote controller systems etc. A home automation system has been increasing greatly in recent years due to much higher affordability and simplicity through smart phones and tablet connectivity. The concept of “Internet of Things” has tied in closely with the popularization of home automation. Home automation provides increased quality of lives. Automation has made a notable impact in a wide range of highly visible industries beyond manufacturing. Home automation makes our house an active partner in managing your busy life.
AIM

To study the need of home automation and innovations taking place in home automation (namely in the areas of Safety, Home Entertainment, Energy conservation, Remote home control) and changes in consumer lifestyles that show the need and demand for home automation solutions

OBJECTIVE

• To identify currently available low cost, reliable, convenient, simple home automation systems
• To understand the value and need of home automation in today’s scenario

INTRODUCTION

The use of automation is rampant in today’s high-tech modern world. Automation is popular in most industries to optimize the production, productivity, and delivery of services. Other than the original industrial uses related to automation, technology is making appearances in almost every other field of service. Although the convenience offered by technology can be impressive, there are a few disadvantages of automation that can make it questionable. The high cost of initial startup of this type of a system can be overwhelming. In addition, these systems are not foolproof. They can come with risks of making your business vulnerable to security threats. This can make it necessary to employ professionals to maintain the system, possibly costing more than the money saved.

It is now generally recognized that product innovation originates from different sources. Current thought on systemic innovation states that “innovation arises from complex long-term interactions between many individuals”. Nevertheless, for a long time innovation was identified merely with researching new technological solutions. Even today, in most cases, innovation is referred to as introducing new technology into a product or into its manufacturing process in order to improve its performance and usability or to minimize its cost (Baglieri, 2003 and Kotelnikov as cited in Rapino L., 2011).

What home automation can do?

Imagine how helpful it will be to be able to switch on your air conditioning system ten minutes before you get home on a hot afternoon in January. How about having a security system that will detect smoke, excessive electrical power usage, burglar attempts and unauthorized movements in your house and alert you? This is what home automation is about and there is no end to its application. In fact, sophisticated home automation systems are now being developed that can maintain an inventory of household items, record their usage through RFID (Radio Frequency Identification) tags, and prepare a shopping list or automatically order replacements.

Home automation has made it possible to have what is often referred to as a 'Smart home', a home that can detect and identify you, automatically adjust the lighting to your predefined taste, open doors automatically; play your favorite music, water your flowers in the morning, switch on the security lights at night and switch them off in the morning, heat water for bathe and tea, stream to you anywhere in the world via the internet a live video of what is happening in and
around your house. It makes it possible to link lighting, entertainment, security, telecommunications, heating, and air conditioning into one centrally controlled system. This allows you to make your house an active partner in managing your busy life.

Nowadays, you can find home automation in many urban cities which can range from the remote for the television, burglar alarm and hi-tech security gates, to an automated air conditioning system that maintains the temperature at a predefined value.

Home automation is the product that we use at our home like lights, (HVAC) Heating, Ventilation, air conditioners, appliances, security locks of gates and doors and other systems, to provide improved convenience, comfort, energy efficiency and security. Home automation provides an increased quality of lives. Home automation covers a broad field of intelligent electronic or mechanical devices in the home environment. Innovative appliances have made modern life a lot easier. There has been a lot of advancement in home innovations.

Home automation products can make everyday tasks easier to manage by increasing the functionality of your home automation technology and has the capability to help you by relaxing entertaining. Home automation can contribute positively to the health of older people and reduce cost of care. In the past few years, quite a few technologies have been released in the market that allow consumers to easily control assorted features of their properties.

There are many more home automation appliances which are slowly changing lifestyles. Internationally the innovative technology is so advanced that one can operate their home appliances such as washing machine, oven, refrigerator, dish washer to their smartphones and tablets. Currently one can control their home lights from their work place.

**USEFUL APPLICATION OF INNOVATION TECHNOLOGY SEEN IN HOME AUTOMATION**

An innovation is defined as an idea, practice or object that is perceived as new by an individual or other unit of adoptions. According to a research definition of an innovation is defined as a functioning idea, practice or prototype object which is the result of creating new knowledge and generating technical ideas aimed at new and enhanced products, manufacturing process and products (Remy and Johanna, 2009).

The purpose of innovation in technology is to improve life for people and one of the most exciting areas where this is happening is in home automation. The world of automated house gadgets is a young and exciting field with an abundance of promising new products. As home appliances companies continue to focus on sustainability, energy efficiency & impressive design, domestic essentials are becoming more innovative. Due to the tremendous speed at which this industry is advancing there are numerous new and remarkably innovative products that can automate one’s house.

Unlike global markets, home automation is a nascent market in India but the situation is changing and this is creating new opportunities for a wide range of companies and of course home owners.

There is no doubt that the home automation is one of the most developing areas of technology today. Already its capabilities are improving the lives of families and individuals and there is lot of room to grow.
NEED FOR HOME AUTOMATION

With the advancement of technology we are provided with solutions that save our time while solving most of our common dilemmas. Automating the daily chorus can save most of our time. Automation can be defined as the process of having a machine or machines to accomplish tasks hitherto performed wholly or partly by humans. If there exists a system which can save our time while taking care of our other responsibilities such as securing our belongings, then it will further improve the quality of our lives and also increase the standard of living. An area of concern is theft. There have been recent incidents of thieves targeting homes where elderly couples live alone or where women are alone at homes in the afternoon. In this situation home automation systems like door locks are very necessary that can be controlled through sensors, remotes etc. In today’s generation we see that after marriage both partners go to work making it impossible for them to have a look at their house; making food in an elaborate, traditional manner is also a difficult for them. So to overcome these problems they could opt for a home automation system that would make their life easier. Old people or house wives are sometimes are not able to put in too much physical labour manner due to with age as with age comes health problems. Therefore these people can also take the help of home automation system which would make their routine in a proper way.

Due to many towers coming up in urban cities like Mumbai there is less contact with the neighbours and people are not aware about the person who is living next to them. This is because of a busy and stressful life. They do not get time to interact with many people in their premises and therefore even if an anonymous person enters their premises they are not aware about the opposite party. This can lead to severe problems. Hence home automation systems like door sensors can help to overcome such adverse situations.

**Some current products**

Richard Gray’s Power Company Products offer a unique solution to deliver failsafe AC power protection to your beautiful AV equipment. Their clever design provides non-sacrificial surge protection and excellent AC line noise removal while still providing just the right amount of high current on demand your gear needs to perform optimally. Using the correct RGPC product in any system will result in a measurable improvement in audio-video quality for you to see, hear and enjoy.

Sit down in your theater, press a button; the shades go down and the lights dim to a preset level automatically. Need to get up for a second? Press another button and just enough light comes on to safely walk without disturbing the other viewers. At bedtime, turn off all or selected lights in the home remotely with the touch of a button. World leading Lutron lighting control can do all of this and more. And Lutron is also a green solution for your home by allowing you to use just the amount of light you need which uses less energy.

Universal Remote Control products are the top selling remote in the US and for good reason; a wide ranging product line for all budgets, quality build, and innovative designs. Universal makes remotes that are great for controlling a single system on up to their flagship models that will control your entire home, connect to the web wirelessly and also are compatible with Lutron lighting products. *(Theater Design Northwest 2010)*
WHY HOME AUTOMATION IS GROWING?

The market for home automation is segmented into various sectors like security control, entertainment control, outdoor control etc.

In countries like Germany the stringent regulations being imposed by government for the conservation of energy have also played a substantial role in the growth of the home automation market, especially, in the European region. Asian region is expected to grow at a relatively higher rate due to the presence of developing countries such as China and India.

Off late, the home automation and controls have not only led to power savings but have also enhanced the living standards, in turn, offering a convenient life (Home Automation & Controls Market by Product & Geography, 2013).

CONSUMER AWARENESS AND INTEREST

In U.S we see the people are very educated in the area of home automation. This is because this home automation techniques are often first experimented in U.S markets and then launched to Indian markets. This helps the U.S people to work first on the home automation equipment’s than we Indian people. Regardless of age, consumers are most interested in home automation capabilities that allow them to be alerted about changes at home, remotely. Therefore, to know more on home automation the consumer must have an interest on this subject.

PURCHASING BEHAVIOURS

Every consumer possesses different buying behaviour. Consumers do have their own psychology, their way of thinking in every product that they go for. In home automation, there are consumers who would prefer only one kind of products that is easy for them to handle, use and that would maintain safety. Therefore, home automation systems make their life easy for examples Equipment’s like censors, door locks, Rotimatic, washing machines etc. As stated in Kotler’s book of Marketing Management, A South Asian Perspective, consumers change their behaviour according to their psychology and possess different characteristics.
People’s thoughts about Home Automation

Most people’s first thought about home automation is that it is too expensive. Several years ago, we would have agreed. But today it is possible to automate simple tasks in your home for a fraction of the cost. This is made possible by advancing technology, especially in the field of wireless communication and radio frequency tech. Many of today’s products are wireless and reliable. Second thought about home automation is that it is not reliable or consistent. This can definitely be true if the wrong product was installed or if the control system was not programmed well. Thirdly, most people feel it is gimmicky or wonder why they would ever use it. First let’s start with a basic system. This would be a family room set up with a Bluray player, satellite or cable box, TV, and possibly a stereo receiver for 5.1 surround sound. With these 4 components you have 4 remotes. What if we can combine all of the these remotes into one remote, and lets go one step further and combine the 4-5 button presses it takes to turn on the equipment into one button press. And then let’s top it off by hiding all the equipment into a cabinet or closet, because the remote works with a RF signal so there is no need to point it at the TV.

(Nick Picklo, CGB, March 26, 2013)

IS HOME AUTOMATION A BIG THING?

"We may have seen sci-fi movies where the characters come home, walk in the front door, and their lights turn on for them. Perhaps they tell the house to switch on the TV or bring up the video phone with its wall-sized screen to call a friend. Unfortunately, we're not quite "there" in the Indian market yet with regard to commercially-available home automation technology. But you might be surprised at how much can be achieved by the enthusiast looking to advance his home into the 21st century.

Pros

Convenience

For office going people, children’s use of home automation system would be more convenient as today the world is changing people are going for work and has no time to spend at home. So this would be best solution for them to have some contact with their house.

Safety

Today in rural areas, the major issue is the theft where there is everyday news talking about pizza hut boy enters an old women’s house in the day time and behaves very badly and due to this it’s very unsafe for any person to stay at home. So a door lock home automation system can help to overcome such things easily.

Saves time and human energy

As in the last Times of India newspaper there is a company that has come up with a product called “Rotimatic”. This is a product which would help the housewives, working people to save time making rotis for dinner, lunch and will also help them to save energy and would help them to do other work.
Comfort
A comfortable home automation system would be where it allows people use complicated unit of systems: ventilation, cooling, heating, safety and communication are only a few examples. All these systems will become much simpler and extra fast.

Future oriented
Once we are use to a product even though the same is being updated the consumers and they have not been use to such a technology or up gradation, they can still use the product by the use of home automation.

User friendly
Home automation systems allow controlling the home through a sensor which is a remote controller through which the consumer can control their home in their own. Therefore, they are very easy to carry and provide full control at your home.

Cons

High Cost
The start-up cost of any home automation system may be very heavy. But the benefits that one would get are more that would make their lives easy.

Dependability
Due to technology up gradation, machines are demanded on a large scale. This would decrease the man-power and man will be dependable on machines. One day if the machine gets stopped the man himself would stop his work and will get techno- savvy.

Adverse health effects
Too much use of home automation systems might cause adverse health effects because of the infrared rays that pass on or the electric wires may get shock circuited due to usage in an improper manner.

There is basic difference between Advantage and Benefit. An advantage is a feature that surpasses the competition where the seller has assumed that the buyer has a need or requirement. A benefit is how that feature impacts buyer where the buyer has expressed a specific need or requirement. So these are some benefits that can be drawn from home automation

Benefits of home automation systems

Increasing safety System
Safety and Security is a huge issue in today’s humanity. Home automation systems like the CCTV cameras that are put up at big multiplex malls, theatres, huge buildings help in the security of the premises.

Centralized Telephone System
Home automation system as like intercom system. In a big residence, a Centralized Telephone System or intercom system brings required area to area phone call.

Lighting Control (Centralized):
Lighting control is one of the majority accepted aspects of home automation. A lighting control system allows the proprietor to manage a glow or group of light beginning keypads and dimmers well install all the way through the home.
**Sound System or Home theater systems**

Your Sound System or Home Theater system has a lot of workings. Each division of your Home Theater system performs very exact role to enclose you in audio and visual heaven. Home automation can control on exact mechanism and choose which input and output to button for each one starting one remote and everyone from one switch.

**Video Surveillance System**

Observe your residence at all time, keeping track of unpredicted guests, wild animal etc. Video surveillance system moreover act as an main element in the occasion of a theft, natural tragedy or household argument.

**Heat and Cool Control system**

Mainly Heating Ventilation and Air Conditioning (HVAC) System work with confined thermostats install by the HVAC supplier. At the same time as this technique is enough for many home, a home automation system allows the consumer to look for the temperature and manage their system as of local remote controls, touch panels or mobile devices.

**Remote access control**

Home automation systems are a remote access system allows logging addicted to a technology as an allowed consumer not including being actually there. Your house can be controlled through a remote access control from where ever you are.

**KEY PLAYERS IN HOME AUTOMATION IN INDIA**

- Leelavati Automation Pvt Ltd., Mumbai
- Star Catalyst, New Delhi
- Rax-Tech International, Chennai
- Allwind Technologies, Mumbai
- Signet, Mumbai
- Technosoft Consultance and Services, Kolkata
- Krishna Textile, Gujrat
- Pacific Security Solution, Chandigarh
- Hatric Products, Jammu-Kashmir
- K.T.Automation Gujarat
- FORBIX SEMICON, Gujrat

**CURRENT NEWS**

The Rotimatic product is developed by the company “Zimplistic”. The Rotimatic is the product which is giving rotis at a time. Here, this product is useful for the house wives, offices going women’s where they need to do is put the wheat flour in 1st compartment and in 2nd compartment the water and in the last compartment the oil and start the machine. Now, this would automatically make the dough and rolls in rotis and would give you hot rotis. It allows the women from go away from the traditional way of cooking and makes the women to work quickly without the use of gas and tawa (Bagchi S.2013)
CONCLUSION

To summarize, today’s home automation is less expensive and more affordable than systems years ago, it is as reliable as the programmer, and can simplify the most everyday tasks. So we can conclude by saying that home automation appliances can help every age group of people, if used safely. Thus, it will reduce the work pressure and make life easier. Hence home automation should be implemented in every area of concern.

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