

Sustainable Smart Homes in America

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Abstract

Energy saving happens to be a major topic that is led by energy challenges and changes in climate all over the world. People's perception concerning the use of smart technology for saving energy, however, remains within the concept stage. This indicates that individuals always have to talk about the awareness of the environment but will still pay the energy bill given to them. Since electricity is available and significant, modulating consumers' attitudes towards the idea of energy saving can still be difficult. Notably, the current smart home knowledge depends on people's understanding of their behaviors and integrating such knowledge into the smart machinery. Having been involved in the Paris Agreement [concerning climate change](#) in 2015, Americans needed to embrace the idea of smart home technologies to reduce energy intake. The article focuses on the insight of American homes regarding smart technology and its significance to saving energy. The smart home and its sustainability are built on energy, simplicity, water efficiency, flexibility, and environmental friendliness.

Introduction

Climate change has been a global challenge for a decade. Human activities have somehow led to changes in climate around the world. However, The changes have led to the rise of greenhouse emissions in people's accounts (Pachauri and Meyer, 2014). According to the study, greenhouse gases have resulted in extreme changes in weather to humans and natural systems. These [climate changes](#) comprise droughts, floods, and interrupted food production. All these have eventually forced individuals to move to areas that are a bit safer. When people get exposed to heat waves, they are affected health-wise, spreading disease across many territories. Production of heat and electricity has contributed to approximately 25 percent of the premier proportion in regard to greenhouse gas emissions.

Worldwide environmental difficulties have led to global trends, energy-saving demand, and smart home technology to heighten energy consumption efficiency. According to a survey in America, households account for around 20 percent of electricity. This indicates that all electrical appliances such as air conditioners, and refrigerators, are energy-labeled and some people are embracing the idea of the smart home.

The primary role of sustainable smart homes in America is to enable households' energy efficiencies, which is becoming increasingly important. The study has been conducted on consumers' awareness and opinions towards embracing new technologies. A survey has also been conducted on the integral

role of technologies in energy usage and how they can be reduced. Balta-Ozkan et al. (2014) describe the smart home as being a home that has been furnished with connected appliances, sensors and tools also for communication. A smart home can also be controlled tenuously. As a result, smart homes provide people with the flexibility of controlling the consumption of electricity as well as changing their lifestyles to control electricity. Besides, smart homes in America have been noted to have improved security and safety. The \$40 billion smart-home market estimate was a pre-2020 forecast whose target date has passed; it should be treated as historical rather than a current market valuation. Smart home market penetration is high in America followed by Germany and Japan. Smart home metering, home computerization devices, and appliances appear to be among the technologies that have been used to reduce the intake of electricity in many households. This paper aims to find out the households' activities concerning energy use. The paper also attempts to give the implications of smart home technologies implementation and how it can be done to enable its sustainability and success.

Literature Review

This section is relevant to a review of the current knowledge concerning the discussion.

Energy Usage within the Households of America

Kagan's figures describe 2016 adoption and a forecast for 2021. Both dates have passed, so the estimates of more than 15 million U.S. smart homes, 12.5% household penetration and 28% penetration by 2021 should be read as historical evidence of early smart-home adoption rather than current market statistics.

Smart homes have existed for a long time on the power of reality. It is indeed something of a space-age idea that seems to be quite close. However, with smart products full on the shelves of brick-and-mortar and online stocks, the smart home has become real. Sustainable smart home is becoming an essential component of the industry dream of technology in America. The research reports that the current industry vision involved in the IoT-enabled World has to be more convenient regarding intelligence, security, and modified experience. In fact, convenience appears to be an attainable vision in the near future through the IoT reality times seem different. For instance, IoT needs to solve real difficulties not merely connecting many devices to come up with real value. An individual should enter a smart home that intends to establish the goal of creating the exact cost for the consumer. At its best, a sustainable smart home should create new efficiencies, solve problems, and save money.

Smart cities should have a unified infrastructure that can operate optimally through data collection and communication from different connected units. Having been in line with this idea, America and other developing countries have incorporated several technologies to reduce energy consumption. The technology also monitors and collects data from all connected users. The country aims to attain energy efficiency, in which smart and proactive planning can create a safe and comfortable

atmosphere.

Households View of Energy Savings within the Smart Homes

The integration of Smart homes in a Smart Grid environment regarding households' electricity management and consumption happened to be the goal and believed that users could reduce energy consumption (Makovich, 2011). Therefore, it is important to understand the real perception of homes regarding energy saving by embracing smart homes.

In fact, so many studies have indicated that households' primary view of saving energy using smart homes is decreasing the cost of electricity. The findings have been ranging on the same level in households in various countries. Nevertheless, it is worth revealing that many people are concerned with environmental issues and would want to embrace the energy-saving idea.

Methods and Aim

The global demand and trend for smart technology are needed to decrease energy consumption. (Pachauri and Meyer, 2014), mentions that heat production and electricity have led to 25 percent of the biggest share of total GHG emissions. This shows the need for sustainable smart homes in different countries particularly in America so that GHG emissions could be reduced. Although the government of America has been promoting energy-saving programs and policies, only a few empirical studies have been carried out in people's homes. However, some studies show that individuals are willing to use smart home technology. The households have been found to embrace the idea positively for the sake of living a convenient life. The findings should not, however, be generalized to America's context as infrastructure. This is because culture, government support, ecosystem, and other aspects could differ in America. As a result, it is essential to recognize energy saving within American households through smart homes.

Survey Discussion, And Findings

Communication and information technologies are transforming modern lifestyles deeply. In America, people are refining the idea of "space" by changing coffee shops and homes into working areas. This was the research done in a coffee shop whereby people no longer go to the theatre but instead sit in their home areas streaming movies and making themselves comfortable. Shopping has transformed into purchasing groceries, food, and other consumer goods online. Time diary has also been conducted to quantify peoples' lifestyles and trends. Time diary lists individuals' activities from when they wake up until they retire to bed. Along with a colleague, we did the data analysis from 2003-2012 using the American Time Use Survey. The survey is carried out annually by the Bureau of Labor Statistics of the U.S. It has helped gain awareness concerning the digital lifestyle and its impact on energy use.

The recently published findings are shocking. Americans spent nearly all their days at home in 2012 compared to 2003. It was noted that even when energy consumption was displaced such as the required electricity in server farms, individuals still used less energy. This may help me good news, but it also considers the efficiency of energy usage.

Respondents indicated their understanding of how household-connected devices use energy. In fact, washing machines, air-conditioners, and heaters have scores ranging from medium to high. The air conditioners seem to consume too much energy compared to other devices. As a result, many respondents agreed that if individuals consumed energy efficiently, appliances would enable them to save energy. Besides, Government legislation concerning the market available is another factor that the survey respondents lean towards acceptance and agreeableness on its effectiveness. In fact, the Chinese government has also been observed to have policies established to increase household energy efficiency.

Concerning smart homes in America, the survey showed that smart home ideas in appliances will likely save electricity. The survey emphasized consumers' awareness of the need to save energy. Besides, the purchase choice can deeply unfold a user's plans for a long time.

Conclusion

Some people view electricity as a normal service that can be obtained without a struggle. Some of them do not understand that the commodity greatly impacts their lives. Smart homes and smart technology will require the participation of consumers to take action so that they can monitor the devices, hence saving energy. Though some people could be concerned with energy savings and the environment, it is clear that security and comfort greatly impact their lives. The current research indicated a maturity gap and design involving the technology since it does not take individuals' perceptions and behaviors as one of the functionalities of the smart home scheme.

Sustainable smart homes in America and other countries will be successful if the technology is well-made with artificial aptitude modules. The smart home technology should allow the interactions between the consumers and the appliances. To succeed in attaining sustainable smart homes within America, smart home expertise should be intensely incorporated into utility sectors and public amenities, such as health areas and smart grids. For instance, smart meters need to detect behavioral patterns and immediately take the initiative to enable easy management of lights. It is always good to understand when to turn on appliances like the washing machine. Smart meters are said to be in their early stages. However, Americans believe it will be among the top projects designed to improve smart homes in some years to come.

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