# DIGITAL PENETRATION AND INTERNET OF THINGS: PROSPECTS, ISSUES & CHALLENGES

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*Abstract:*  With the passage of time in twenty first century technology is intruding in our lives unnoticeably. In the last seventeen years lifestyle has witnessed major changes on account of use of gadgets and instruments. There have been diverse causes for such transformation and transition in the lifestyle. While, technology is penetrating from workshop into our home, this brings forth serious threats as well as untapped pool of resources and opportunities for well-being of life of normal consumer. There is probability of absolute smart home technology penetration in Asia. For instance as per approximation in a report by 'Essence' Asia Pacific will be accounting for more than 25 percent of the global smart market in 2030, when sales will reach nearly US$120 billion and that Asia will gradually assume a dominant market position, driven by China's strong growth1. For all those who are looking for opportunities to grow as a smart home focused business, Asia-Pacific would be the place to be flying to, but keeping always in mind that each country has its own needs.

The launch of devices based on Internet and other similar technology are putting more comforts in the living room at the huge risk of economic, health and social hazards. The sole objective of the study is to bring out in the front the main issues related to the use of these tech systems and associated hazards and to search the remedies in the situation of indispensability of these utility based tech systems. There is significant relationship between the raising comfort level and innovations but not at the cost of health, security, environment and society.

The launch of any new technology brings with many untold challenges and risk. Institutions lack preparedness to address these issues according to their nature rather mess with them treating on the basis of obsolete rules and techniques. Therefore adequate preparedness at the Institutional, Administrative, Legal, Social and Economy Level is always desirable. Institutional framework comprising regulator, service provider, legal, administrative and economic aspects needed to be established taking IoT and similar Systems in its ambit. Government Agencies are at present seldom aware about any matter related to IoT and similar Systems. There can be multiple ways of accessing important information through IoT Systems or reaching to individuals in the family and office with the malafide intention.

*Index Terms: Internet of Things (IoT), Preparedness, Innovation, Security, Hazards.*

## I. INTRODUCTION

With the passage of time in twenty first century technology is intruding in our lives unnoticeably. In the last seventeen years lifestyle has witnessed major changes on account of use of gadgets and instruments. There have been diverse causes for such transformation and transition in the lifestyle. While, technology is penetrating from workshop into our home, this brings forth serious threats as well as untapped pool of resources and opportunities for well-being of life of normal consumer. There is probability of absolute smart home technology penetration in Asia. For instance as per approximation in a report by 'Essence' Asia Pacific will be accounting for more than 25 percent of the global smart market in 2030, when sales will reach nearly US$120 billion and that Asia will gradually assume a dominant market position, driven by China's strong growth[1]. For all those who are looking for opportunities to grow as a smart home focused business, Asia-Pacific would be the place to be flying to, but keeping always in mind that each country has its own needs.

The blend of traditional techniques and modern technology has always been great source of innovation in the entire contemporary sectors across various economies of the world. The emerging economies and several other similar terms are coined on account of probability of blending traditional techniques with modern technology through various possible ways. The digital penetration into our lives and industry in the last decade is now pivotal force for change in services led consumer market economies. The awareness of the technology among masses has always been the considerable part of analysis when this comes to describe the lessons learnt from the use of technological systems. People never shows any obvious willingness for emerging technologies but researchers, thinkers, policy makers and Professionals try to search for innovations and inventions. Still Inventions have happened since advent of civilization on the Earth and human settlements have witnessed the change in their livings systems followed by beliefs, customs, religion and society. One can dare just to imagine the life during river valley civilizations but not to practice it today.

The possibility of invention & innovations are rooted and routed through different ways in the ongoing time span. Sometimes, Innovations emerge to better the living pattern and economic activities such as irrigation, transport, communication etc and desired by masses, while some other time changes are oblivion. However, the tools and techniques keep on repeating but with little change after every attempt.

### Objective and Hypothesis

The launch of devices based on Internet and other similar technology are putting more comforts in the living room at the huge risk of economic, health and social hazards. The sole objective of the study is to bring out in the front the main issues related to the use of these tech systems and associated hazards and to search the remedies in the situation of indispensability of these utility based tech systems. There is significant relationship between the raising comfort level and innovations but not at the cost of health, security, environment and society.

The survey was conducted among 50 students, 30 professionals and 10 Women managing household on the utility and security threats of IoT and similar systems using structured open-ended questionnaire focusing on life with IoT in Household & offices and responses.

## Need & Emergence of Inventions and Innovations

With the passage of life societal systems emerges, create and recreate them to accommodate the change-The inevitable thing. Incidentally, this becomes phenomena and technologies emerge accordingly. As there is an urge and need of raising the level of living to withstand the challenges to overcome natural and man-made threats, innovations and inventions are bound to happen. However, innovations are observed after the application of invention, especially in the processes.

## The Emerging Technologies and Internet of Things (IoT)

In simple terms the Internet of Things is the concept of connecting any device equipped with ON or OFF switches to the Internet directly and to other connected devices in the vicinity. The IoT may be considered as a giant network of connected things and people – all of which share, utilize and forward data about the way they are being used and about the proximal environment around them.

That includes significant number of objects of all shapes and sizes across all possible areas connecting to human beings ranging from gadgets, appliances, Automobiles, and Equipment, smart microwaves, which automatically cook your food for the right length of time, to self-driving cars, whose complex sensors detect objects in their path, to wearable fitness devices that measure your heart rate and the number of steps you've taken that day, then use that information to suggest exercise plans tailored to you. There are even connected footfalls that can track how far and fast they are thrown and record those statistics via an app for future training purposes.

## Working of IoT Systems

Devices and objects with built in sensors are connected to an Internet of Things platform, which integrates data from the different devices and applies analytics to share the most valuable information with applications built to address specific needs. These powerful IoT platforms can pinpoint exactly what information is useful and what can safely be ignored. This information can be used to detect patterns, make recommendations, and detect possible problems before they occur.

## Job Prospects

This is well understood fact that launch of IoT has changed market dynamics with the creation and recreation of various economic activities, which were earlier seldom visible such as Mobile Application Handling being manned by a person paid reasonably higher salary than a computer operator, hardware manufacturing etc. There are various job opportunities are to be created on account of IoT such as Business intelligence, Data security, Application design, Mobile applications, IoT hardware, Networks and Integration with other domains and systems.

## The level of preparedness to launch IoT

The launch of any new technology brings with many untold challenges and risk. Institutions lack preparedness to address these issues according to their nature rather mess with them treating on the basis of obsolete rules and techniques. Therefore adequate preparedness at the Institutional, Administrative, Legal, Social and Economy Level is always desirable. Institutional framework comprising regulator, service provider, legal, administrative and economic aspects needed to be established taking IoT and similar Systems in its ambit. Government Agencies are at present seldom aware about any matter related to IoT and similar Systems. There can be multiple ways of accessing important information through IoT Systems or reaching to individuals in the family and office with the malafide intention.

## The common apprehensions of people

As per the responses obtained from group of people ranging from students to Professionals and Women at Home, most of them (approx. 60 percent) are worried about the multiple risks comprising Cyber Threats, Security Issues, Job Crisis, and Health Hazards. Moreover there significant apprehension is about the inactive social life leading to cause severe psychological and crime related issues.

**Table 1: Effects of IoT & Similar gadgets (figures in percentage)**

| Respondents/Type of Effects) | Multiple effects | Health Hazards | Social Effect | Job Crisis | Security Risk |
|---|---|---|---|---|---|
| Students | 25 | 60 | 56 | 56 | 45 |
| Professionals | 30 | 70 | 70 | 27 | 51 |
| Housewives | 30 | 90 | 50 | 60 | 90 |
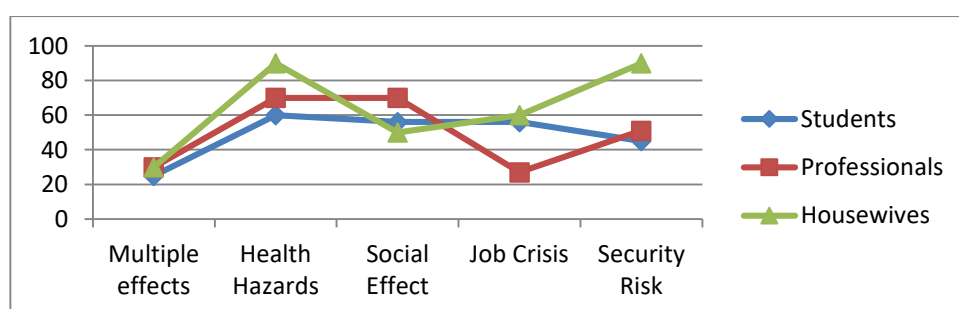
People are also concerned about the household expenditure and budget as they are aware about the market tactics regarding the low-penetration pricing followed by premium pricing strategy. As per the responses sought there is huge probability of individuals seeking extension of these devices into their daily chores.

**More than 80 percent professionals and women at home acknowledge the possibility of extension of IoT services in the time to come followed by 60 percent students. Incidentally the group was more scared about the cravings of the use of IoT. About 70 percent students followed by 90 and 75 percent professionals and women at home confirmed about their restlessness of using gadgets.**

**Table 2: Frequency of using Iot & Similar Gadgets (figures in percentage)**

| Respondents/Type of Effects) | All the time | Daily | Rarely |
|:---:|:---:|:---:|:---:|
| Students | 16 | 68 | 16 |
| Professionals | 40 | 50 | 10 |
| Housewives | 10 | 60 | 30 |
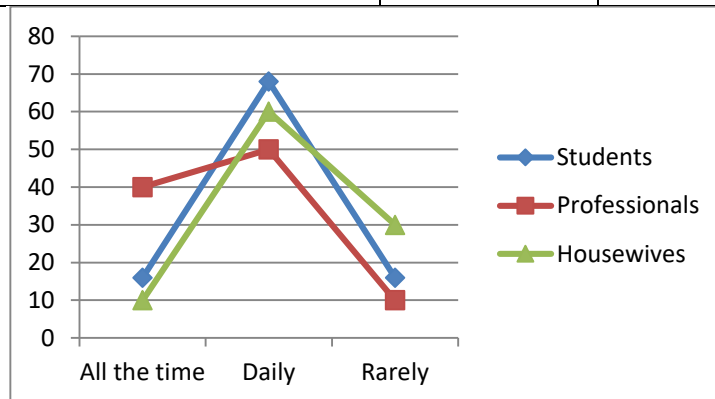


**Descriptive Statistics and Significance**

For the total sample size 90 z-Test is applied to test the significance of sample mean 60 against population mean and found significant. Most of the people in present scenario are scared of the various categories of risks associated with the IoT Devices and other similar gadgets.

**Results and Interpretation**

Results of the analysis clearly reveal the lack of preparedness of Government, Industry and administration. Since technological advancement and its flow are rapidly taking all sectors in its grip, results may reach to their higher side.

**Conclusion**

To sustain the ecological balance with technological advancement is the top priority of development. Even Sustainable Development Goals also supports the view 'Grow with Nature'. IoT in the prima facie happens to be risky and hazardous for mankind if not treated with caution and preparedness.

**Notes:**

1. According to Lou Lutostanski on Tech Asia Wire Internet of Things and related technologies going to play a key role in Singapore's digitalization push and smart nation plan[1].

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