

# “AN OVERVIEW OF WIRELESS COMMUNICATION TECHNOLOGIES USED IN WIRELESS SENSOR NETWORKS”

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**ABSTRACT:** The main purpose of this research paper is to analyze the utilization of wireless technology in day-to-day life and to analyze the speed of flexibility of wireless technology, to evaluate the usage of wireless technology in different age and to put forward few recommendations in order to improve the user's satisfaction for continuous usage of wireless technology. Wireless sensor network (WSN) is one of the interesting issues in today technological era. It is used in various fields like agriculture, pharmaceutical sector, Information technology, industrial sector basically it helps in our day-to-day activities. Sensor networks are the easiest form of collecting data and information and it also increase the number of organization because it has been using in a world wide range. Wireless sensor network has become one of the technological basic needs in the daily basis to all the people in the world. In olden days we tend to use the traditional form of devices to get the information but now through sensor it takes hardly few minutes to get our information. The method of statistical tools used in this paper is Chi-square, Rank analysis, Weighted Average, percentage method, the flexibility of wireless sensor is also increasing day-by-day and the invention is also getting high even in future it has a huge growth of usage. It also protects from fraudulent and security process is very high. Usage of cables becomes less and wireless sensors play an important role in all the sectors.

**KEYWORDS:** Wireless, Technology, Sensor, Communication, Information, Data.

## INTRODUCTION

The purpose of this research paper is to observe the wireless technology takes part in our lives and to know the manner of processing the usage of wireless technology daily from a viewpoint of the utilization and adoption of this method. Wireless technology shows a way for those who work in physically connected cables (PCC) into the remote sensor networks (RSN). Wireless communication is used in many fields like the military, industries, communication sectors, agriculture, etc. This made the technology quick the way of the process with remarkable flexibility. To improvise the latest technologies, remote sensing or wireless sensing will make it a great possible way. It is a positive way of approaching the delivery of the data from one place to another place without any wires and cables. It is a gateway of the key to the future world and an evolution for the next human generation. Wireless technology connects millions of people together without any physical appearance. In the recent decade,

everything we utilize devices are mostly based on wireless technology or remote sensing method. Information can be sent over both short-range distances and long-range distances in a significant manner.

## REVIEW OF LITERATURE

Bonato (2010) writes that researchers first identified the benefits accruable through field monitoring of patients with Parkinson's disease in the early 1990s. Limitations in technology as at the time inhibited the realization of this potential. Bonato stresses that researchers have continued to work assiduously to develop unobtrusive ways of monitoring vital signs with particular focus on cardiac activity. Their concerted efforts resulted in the design and development of some biomedical sensors such as the ring sensor and the ear sensor. According to Feng (2011), wearable medical sensors are vital for health monitoring. When a group of sensors operate over a confined area such as the body of an individual, the result is a wireless body area network (WBAN) which is

essentially a Personal Area Network (PAN) on a body. Feng advocates the utilization of such technologies in collaboration with telemedicine to provide healthcare and a deviation from the in-hospital model of healthcare delivery considering its associated cost. Work done by Ko et al. (2010), Chin et al. (2012), Alemdar and Ersoy (2010), and Neves et al. (2008), all highlight the applications and challenges of wireless sensor networks in biomedicine and healthcare. On synthesis of these sources, some of the recurring applications of wireless sensor networks in biomedicine include vital signs monitoring in-hospital and at-home, assistance with motor and sensory decline and medical research. On the other hand, some of the recurring challenges of wireless sensor networks include security, privacy, reliability and interoperability. The list is in exhaustive.

**AN ANALYSIS ON WIRELESS COMMUNICATION TECHNOLOGIES USED IN WIRELESS SENSOR**

**OBJECTIVES OF THE STUDY**

**PRIMARY OBJECTIVES**

To study the factors that motivates wireless communication technologies used in wireless sensor networks.

**SECONDARY OBJECTIVES**

- To analyze the utilization of wireless technology in day-to-day life.
- To analyze the speed of flexibility of wireless technology.
- To evaluate the usage of wireless technology in different age and to put forward few recommendations in order to improve the users satisfaction for continuous usage of wireless technology.

**SUGGESTION OF THE STUDY**

- The scope of the study deals with the utilization of wireless technology in everyday life.
- It also identified the wireless communication technology level of satisfaction with wireless sensors. It mainly concentrated on people's usage of wireless technology.
- The study is to evaluate the speed and flexibility of wireless technology.
- The users can identify and achieve the efficiency to develop a good work behind wireless technology.

The present study has been conducted among users or respondents to find out the wireless technology

communication. Through this study, users' expectations toward wireless communication technology would be identified.

**METHODS OF STUDY**

To analyze the wireless communication technologies used in wireless sensor a survey was conducted data from public

**SAMPLE AND SAMPLING METHOD**

The present research is purely based on the questionnaire method using Google form which is circulated to different age group through social media platform. The study is conducted on 50 respondents.

**SOURCES OF DATA**

The primary data is collected from the general public by the form of questionnaire and the secondary data is collected from the various websites and journals.

**DATA ANALYSIS AND INTERPRETATIONS**

**TABLE 1: SHOWING GENDER USAGE IN WIRELESS TECHNOLOGY**

OPINIONS	NO.OF PERSONS	PERCENTAGE
MALE	30	60%
FEMALE	20	40%
TOTAL	50	100%

**SOURCE: PRIMARY DATA**

**INFERENCE:** The above table shows that 60% of the respondents are male and 20% are female.

**CHI-SQUARE:**

Objective 1: To find out the association between satisfaction employee and gender.

RESPONSES	GENDER		TOTAL
	MALE	FEMALE	
IN FAVOUR	30	20	50
NOT IN FAVOUR	20	30	50
	50	50	100

**STEP 1:** Ho: There is no evidence of a significant association between response and gender.

H1: There is evidence of a significant association between response and gender.

**STEP 2:** Observed Frequencies

RESPONSE	MALE	FEMALE	TOTAL
IN FAVOUR	30	20	50
NOT IN FAVOUR	20	30	50
<b>TOTAL</b>	<b>50</b>	<b>50</b>	<b>100</b>

**STEP 3: Expected Frequencies**

RESPONSE	MALE	FEMALE	TOTAL
IN FAVOUR	25	25	50
NOT IN FAVOUR	25	25	50
<b>TOTAL</b>	<b>50</b>	<b>50</b>	<b>100</b>

**STEP 4:**

O	E	O-E	(O-E)	(O-E) <sup>2</sup> / E
30	25	-5	25	1
20	25	-5	25	1
20	25	-5	25	1
30	25	-5	25	1
				<b>4</b>

$$x^2 = \sum (O-E)^2 / E$$

$$x^2=4$$

**Degree of freedom = (r-1) (c-1)**  
**=ndf=1**

**Table value of x<sup>2</sup> for 1 df at 5% level = 3.84**

**STEP 5:**

Since the calculated value of x<sup>2</sup> < then the table value of x<sup>2</sup>, Ho is accepted. There is no evidence of significant association between the response and the gender.

**TABLE 2: TABLE SHOWING THE SPEED OF WIRELESS TECHNOLOGY**

OPINIONS	NO.OF RESPONDENTS	PERCENTAGE
SATISFIED	25	50%
VERY SATISFIED	20	40%
NEUTRAL	3	6%
DISSATISFIED	2	4%
VERY DISSATISFIED	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>

**SOURCE: PRIMARY DATA.**

**INFERENCE:** The above table shows that 50% of the respondents are strongly agreeing with the speediness of the wireless technology, 40% are agreeing, 6% are neutral and 4% are disagreeing with the speediness of the wireless technology.

SATISFACTION LEVEL	NUMBER OF RESPONDENTS
SATISFIED	25
VERY SATISFIED	10
NEUTRAL	5
DISSATISFIED	5
VERY DISSATISFIED	5
<b>TOTAL</b>	<b>50</b>

X	Y	XY
25	5	125
10	4	40
5	3	15
5	2	10
5	1	5
<b>ΣX=50</b>		<b>ΣXY=195</b>

X= Observed frequencies

Y= Weight frequency

$$X = \frac{\sum XY}{\sum X} = \frac{195}{50} = 3.9$$

**The average weight is 3.9. It lies between 3&4 hence the satisfaction level in the speediness of wireless technology is satisfied.**

**TABLE SHOWING THE IMPROVEMENTS MADE IN WIRELESS TECHNOLOGY**

OPINIONS	NO.OF RESPONDENTS	PERCENTAGE	RANK
WI-FI	28	56%	□
5G	12	24%	□
WIRELESS SENSING	8	16%	□
ENHANCED WIRELESS LOCATION TRACKING( GPS)	2	4%	□
<b>TOTAL</b>	<b>50</b>	<b>100%</b>	

**SOURCE: PRIMARY DATA**

**INFERENCE:** The above table shows that 56% of the respondents say that WI-FI has an improvement in wireless technology, 24% say that 5G, 16% say that wireless sensing, 4% say that GPS has an improvement in wireless technology.

**TABLE SHOWS THAT WIRELESS TECHNOLOGY TENDS TO ECO-FRIENDLY**

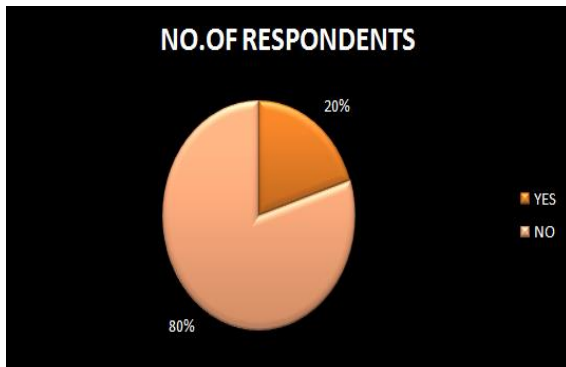
OPINIONS	NO.OF RESPONDENTS	PERCENTAGE
YES	10	20%
NO	40	80%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>



**SOURCE: PRIMARY DATA**

**INFERENCE :** The above table shows that 20% of the respondents say that wireless technology tends to eco-friendly and 80% say that there is no tends to eco-friendly.

**FIGURE SHOWING THAT WIRELESS TECHNOLOGY TENDS TO ECO-FRIENDLY**

**FINDINGS OF THE STUDY:**

- There is no evidence between gender and usage of wireless technology.
- 50% of the respondents are highly satisfied with the speed of the wireless technology.
- 56% of the respondents say that WI-FI has improvement in wireless technology.
- 80% of the respondents that wireless technology tends to eco-friendly.

**RECOMMENDATIONS**

- In remote areas still more awareness and programs has to be create by the government authorities to make our nation completely digitalized and the technological transformation will be huge.
- The customers should get alerts and notifications if any fraudulent happened each and every people have to know about the process of recovering the information.
- While making sensing from one device to another there must be guidelines or helpdesk to guide that person. So, it will easy to use the wireless communication technologies.
- Individual awareness has to be given to all the customers so that they can be aware of cyber attack in wireless sensing networks.

**CONCLUSION:**

Therefore the wireless technology had reached the lots of people especially in pandemic period. The growth of the wireless communication technologies used in wireless sensor networks has an enormous change as we have seen in this research paper the respondents also agreed with the growth and even in future the growth will be high. The more utilization, flexibility, speed of the technology, usage of the wireless communication gives work in an easy way. Sensing is the type of collecting the information from the device so it is an absolute man made invention. Therefore the flexibility of the wireless sensing is very handy and easy to carry. More than disadvantages there is a lots of advantages placed in it. So, people from teenage to old age all can use it mainly it will not take heavy to carry. Throughout the research it is an important and useful technology of manmade inventions.

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