

**The Technology Acceptance Model: Understanding the New
Landscape in Healthcare**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

By

AKSHITA SHARMA

Under the Supervision and Guidance of

ASHISH BANDHU

2022

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **The Technology Acceptance Model: Understanding the New Landscape in Healthcare** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



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Date: 01-07-2022

INTERNSHIP COMPLETION CERTIFICATE



SAKET HOSPITAL

(A Unit of Saket Medicare & Research Centre Pvt. Ltd.)

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TO WHOM SO EVER IT MAY CONCERN.

This is to certify that **Ms. Akshita Sharma** in partial fulfillment of the requirement for the award of the degree of MBA (Hospital and Health Management) from IIMR University, Jaipur has successfully completed her internship at Saket Hospital Jaipur during March 21 , 2022 to June 19, 2022.

For Saket Hospital, Jaipur


Renu Pareek
Manager - HR



Place: Jaipur
Date: 23rd June, 2022

CERTIFICATE

This is to certify that dissertation titled **The Technology Acceptance Model: Understanding the New Landscape in Healthcare** is a record of the research work undertaken by Dr. Akshita Sharma in partial fulfilment of the requirements for the award of the degree of MBA Hospital and Health Management from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide
IIHMR University, Jaipur
Date

School Dean
IIHMR University, Jaipur
Date

ABSTRACT

1) Background

Digital health is a broad and diverse idea that aims to make healthcare more accessible and affordable to a wider audience. Mobile health (mHealth) apps, electronic health records (EHRs), electronic medical records (EMRs), wearable devices, telehealth and telemedicine, and personalised medicine all fall under the digital health umbrella. It is hoped that it will increase patient access to healthcare, minimise inefficiencies in the healthcare system, improve care quality, lower healthcare costs, and provide more individualised health care.

While we are seeing more digital tools emerge that are improving patient care and efficiency, there is still work to be done in the industry to raise awareness of how these tools can improve healthcare processes. However, the healthcare sector's constant resistance to such ideas means that people in this profession are still falling behind in an era where such futuristic solutions could benefit both providers and patients.

This research looked into the factors that influence and hinder the adoption of new health-care technologies. The Technology Acceptance Model (TAM) has been widely used throughout the years and can provide light on why people choose to adopt or not use a particular innovation. TAM categorises customers as eager or unwilling to adopt high-risk innovations based on their perceived utility and ease of use. Its goal is to learn about users' worries about a particular innovation and how technology may be made more appealing to medical personnel who want to increase adoption rates and obtain greater returns on their time and energy investments.

2) Methodology

This was a three-month quantitative cross-sectional survey study of descriptive type done among hospital employees at Saket Hospital in Jaipur, which started on March 21st, 2022, and finished on June 18th, 2022. To recruit individuals, a nonprobability convenience sampling approach was used. Following the basic sociodemographic information, the questionnaire had roughly 33 items

(questions) that were rated on a 5-point Likert Scale. Because the employees were unfamiliar with Google Forms, the questionnaire was written in both English and Hindi and then printed on a sheet. Microsoft Excel Version 16.59 for Mac was used to analyse all of the data.

3) Results

Gender, age, level of education, profession, and years of experience were among the sociodemographic variables of participants for whom data was collected. A total of 116 replies were collected from participants who were separated into two categories: Clinical and Non-Clinical employees (90 from clinical and 26 from non-clinical). Male respondents (clinical vs non-clinical) were more likely to participate (n=72; 62 percent) in both groups than females (n=44; 38 percent). Clinical workers had an average age of 39 years, while non-clinical staff had an average age of 38 years.

In the clinical staff, 1.11 (n=1) percent completed high school education, 70 (n=63) percent completed college education and were graduates, and the remaining 28.89 (n=26) percent completed post-graduation. In non-clinical personnel, 19.23 (n=5) percent of employees started school but never finished, 11.54 (n=3) percent of employees finished high school, 53.85 (n=14) percent of employees finished college and were graduates, and the remaining 15.38 (n=4) percent completed post-graduation. 74.4 (n=67) percent of clinical personnel had more than 5 years of experience, whereas 50 (n=13) percent of non-clinical staff had more than 5 years of experience.

The usability of these health products was rated somewhat agreeable by 95 percent of the workers. In terms of new technologies, 65.5 percent of hospital employees believe they can function independently without the support of peers, and many of them wish to gain these new skills. 23.3 percent of those same employees, on the other hand, ignore new technology, indicating a lack of enthusiasm in learning. The kicker is that just approximately half of those surveyed are apprehensive about using this tool in a hospital setting since their biggest concern is fear or anxiety.

4) Conclusion

According to the findings, most of hospital staff had a somewhat positive and agreeable attitude toward using these tools in patient care, which was influenced by taking on new challenges at work, learning new skills by taking initiative during training sessions, and expecting the same from their hospital management.

The employees at this hospital believed that it was their obligation to provide the finest possible care to their patients. They agreed that digital health technologies would make their job more efficient and cost-effective, allowing them to stay competitive in their field as well as in the larger market. They also believed that learning these methods will improve their social status with their co-workers and others at conferences and meetings outside of work. The staff, on the other hand, saw these things as highly demanding and strict, which could lead to data loss relating to their patients.

They also mentioned a problem with data breaches and the possibility of getting into trouble if they misused these digital health instruments. It provides a lot of challenges, but it also has the potential to cause data loss or get you into trouble. They voiced the uneasiness that comes with anything that has to do with these technologies. They hoped for stronger infrastructure at their facility, but they complained about a lack of funding and connectivity issues.

5) Keywords

- Technology Acceptance Model
- Behavioural Intention
- Perceived Ease of Use
- Perceived Usefulness
- Electronic Health Records
- Electronic Medical Records

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ABBREVIATIONS

- **WHO** : World Health Organization
- **mHealth** : Mobile Health
- **EHR** : Electronic Health Record
- **EMR** : Electronic Medical Record
- **TAM** : Technology Acceptance Model
- **IPD** : Inpatient Department
- **OPD** : Outpatient Department
- **PPT Framework** : People, Process and Technology Framework
- **GE Healthcare** : General Electric Co.
- **SD** : Standard Deviation
- **CI** : Confidence Interval
- **CAGR** : Compound Annual Growth Rate
- **ARPU** : Average Revenue Per Unit
- **AI** : Artificial Intelligence
- **ICT** : Information and communications technology
- **HMIS** : Health Management Information System
- **SN** : Subjective Norm
- **PU** : Perceived Usefulness
- **PEOU** : Perceived Ease of Use
- **API** : Application Programming Interface
- **BI** : Behavioural Intention
- **eHealth** : Electronic Healthcare

1) Introduction:

In the current healthcare system, where most of the work comes down to the hands of clinical staff, one way that healthcare systems can be more effective and efficient is by implementing digital health tools. Automating and personalizing work related to patient care plans, these digital health tools can help reduce a lot of unnecessary stress. Patients who have chronic diseases or other conditions requiring continued monitoring will typically be assigned a case manager. Case managers might need to spend extra time on paperwork and coordination related to their patients' care plans. This type of additional workload can impact efficiency at a time when there are already more needs for staff in this space due to a demand for more personalized care. By automating the use of digital health tools, the work and communication related to tracking and coordinating patient care plans will be facilitated so that fewer resources are required from care professionals.

Digital Health is a broad and multidisciplinary concept that improves the accessibility and affordability of healthcare to a larger population. Digital health encompasses telehealth and telemedicine, wearable technology, electronic health records (EHRs), electronic medical records (EMRs), mobile health (mHealth) apps, and personalised medicine. It is intended to increase patient access to care, decrease waste in the healthcare system, raise the standard of care, lower the cost of care, and give patients more individualised care.

Digital health technology is steadily expanding and doesn't appear to be slowing down any time soon. While India's revenue is anticipated to grow at a compound annual growth rate (CAGR) of 24.60 percent from 2022 to 2026, the global digital health market will experience a compound annual growth rate (CAGR) of 27.9 percent from 2020 to 2027, with a projected market volume of US\$21.38 billion by 2026. The anticipated average revenue per user (ARPU) will be US\$25.55.^{[1](#)}

Deloitte Insights claims that digital healthcare can be visualised as a pyramid. Its foundation is built on cutting-edge technology and methods that enable people to control their health as they advance toward a healthcare system that is more consumer-focused, proactive, and even cost-effective. Indeed, the environment of digital healthcare is changing dramatically due to advancements in artificial intelligence (AI), big data, robotics, and machine learning.

In recognition of the fact that information and communication technologies have the potential to serve as enablers to achieving all 17 Sustainable Development Goals, there is a global push for an in-depth discussion on how end-users, industry leaders, innovators, and other contributing parties best harness ICTs toward improved health and wellbeing well into the future. The Triple Billion targets included in WHO's Thirteenth General Programme of Work (2019-2023) acknowledge these recent developments and aim to ensure that 1 billion people have access to universal health coverage, 1 billion are safeguarded in the event of a health emergency, and 1 billion enjoy better overall wellbeing.

Stakeholders in digital health include patients, practitioners, researchers, application developers, and producers and sellers of medical equipment. There is a clear need to use technology to solve problems but healthcare seems to be lagging behind other industries when it comes to digital tools in medicine. However, the main question that comes to light as per the available research is whether or not hospitals will be willing to adopt new technologies.

Although more digital tools are emerging that are improving patient care and efficiency, there is still room for improvement in the industry regarding awareness of how these tools can improve healthcare processes. As a result, people in the healthcare sector are still lagging behind in a time when such cutting-edge solutions could be advantageous to both providers and patients! Resistance must be discovered and diminished in order to establish whether innovation benefits these groups. This can be done by raising awareness of the technologies and persuading potential users of the benefits of using them.

The purpose of this study is to pinpoint the factors influencing and impeding the adoption of new medical technologies. The Technology Acceptance Model (TAM), which has been widely applied over time, can shed light on why people decide whether or not to use a certain invention. Based on how beneficial and user-friendly these innovations are viewed, TAM categorises users as likely or unwilling to embrace them⁴. To better understand user concerns about adopting a certain innovation and how to make technology more appealing to medical staff interested in raising adoption rates and receiving greater returns on their time and energy investments

2) Review of literature:

Table 2. 1 : Literature Review

S. no	Year	Research question	Authors	Study location	Sample size	Sampling technique	Salient features
1	2021	Willingness to Use Digital Health Tools in Patient Care Among Health Care Professionals and Students at a University Hospital in Saudi Arabia: Quantitative Cross-sectional Survey	Subash Jesper Abdullah Fatima R Qadri Anja Leppin	Saudi Arabia	218 health care professionals 154 medical students	Convenience sampling	-With acceptance percentages ranging from 87.1 percent to 75.6 percent for supervised digital tools in patient care and 66.1 percent to 80.0 percent for nursing and medical students, nurses and doctors demonstrated the greatest willingness to use them.. 6 -There were no general variations in desire to use eHealth tools due to better collaboration between physicians and nurses. - The above findings suggest that eHealth instructional and promotional activities should follow a broad, inclusive strategy, addressing all health care professionals, regardless of their employment or gender, as they showed no systematic differences between males and females or between age groups.
2	2021	Using an Extended Technology Acceptance Model to	Min Ho An Seng Chan You Rae	South Korea	471	Stratified simple random sampling	The public's acceptance of telehealth in Korea depends on a number of crucial variables, including

		Understand the Factors Influencing Telehealth Utilization After Flattening the COVID-19 Curve in South Korea: Cross-sectional Survey Study	Woong Park				accessibility, better care, usefulness, ease of use, and privacy/protection of personal information. The fear of COVID-19 is not a major barrier to telemedicine adoption in this demographic. Accessibility, convenience of care, and increased telehealth use all contributed to its perceived usefulness. Telehealth adoption was influenced by perceived utility, convenience of use, and privacy/discomfort.8
3	2021	Perceptions of Physicians Regarding Implementation of Hospital Management Information Systems in a Tertiary Setting Hospital of a Developing Country	Rafia Hussain Waqar Ali Memuna Sohaib	Pakistan	145	Convenience sampling	A total of 104 respondents (71.7 percent) said that no formal training was given prior to the installation of HMIS, whereas 89 respondents (61.4 percent) said they were familiar with HMIS. 77.9% of respondents felt that training on how the software worked would have made the system's implementation go more smoothly. The capacity to quickly view a patient's diagnosis was ranked as the most important benefit of HMIS by 37.2 percent of respondents, while

							being paper-free was rated as a substantial benefit by 54.5 percent, with 53.1 percent saying this was especially true for data analysis. 9
4							The World Health Organization (2019) categorised health technology adoption policies into four categories: research and development, health technology assessment, regulation and health technology management.
	2021	Impacts of Healthcare 4.0 digital technologies on the resilience of hospitals	Guilherme Luz Tortorella Tarcísio Abreu Saurin Flavio S. Fogliatto Valentim M. Rosa	Brazil	109	Stratified simple random sampling	According to the study, up to 80% of people are "extremely concerned" about data breaches in healthcare. To this point, they've discovered that the following four digital medicine applications (Health 4.0) are frequently impacted when it comes to the reasons why consumers are so concerned: (1) remote consultations, (2) real-time care plan development, (3) interconnected medical emergency support, and (4) digital platforms for collaborative data sharing among patients. 11
5	2021	Removing barriers for digital health through	Alexander Gleiss Stefanie	Germany	57	Systematic sampling	The level of difficulty is largely determined by whether or not the hospital requires that

		organizing ambidexterity in hospitals	Lewandowski				the data you provide be properly integrated into their existing medical systems, including what types of data structures and other components will be required (syntax), as well as any relevant APIs that must be synchronised with existing medical software (semantics). 13 The effectiveness of an innovation may be hampered by cultural resistance to change, which necessitates the use of appropriate change management techniques. Fear is a significant factor in the lack of communication between medical providers and patients. Fear of losing control of the procedure and what can happen as a result of enhanced transparency in medical processes, in particular. The cost is a barrier since estimating the scope of lifecycle expenses can be difficult, and this makes the entire process relatively short-sighted.
6	2020	To Evaluate the Recent Progress and	Maksut Senbekov Timur Saliev,	Almaty, Kazakhstan	152	Systematic sampling	Big data, big data analytics, artificial intelligence, genomics, statistics, and probability

		Applications of Digital Technologies in Healthcare	Ildar Fakhradiyev				modelling are all covered by the term "digital health" or "e-health."10 The use of many forms of digital technologies has enhanced the quality, effectiveness, affordability, and accessibility of medical treatment in numerous parts of the world. In this context, ethical considerations, social, emotional, and economical elements, as well as digital health technology, should be thoroughly examined and validated. Companies are having difficulty showing their legitimacy to private and public entities when it comes to authenticating an app or programme due to a lack of established restrictions.
7	2020	Using the technology acceptance model to explore health provider and administrator perceptions of the usefulness	M. Nguyen J. Fujioka N. Onabajo I. Wong R. S. Bhatia O. Bhattacharyya	Canada	18	Systematic sampling	Both physicians and administrators see technology meant to address issues like limited access to care and a lack of understanding about palliative care as valuable, and the ease with which they may be utilised is also a factor in deciding how useful

		and ease of using technology in palliative care					people find these technologies. Repeated hands-on interactions with technology, according to participants, were critical for building a sense of comfort, especially among patients who had reservations about using the technology at first.14
8	2019	Adoption of Hospital Information Systems in Public Hospitals in Turkey: An Analysis with the Unified Theory of Acceptance and Use of Technology Model	Melih Engin Fatih Gürses	Turkey	392	Stratified simple random sampling	Researchers discovered that gender had no effect on how social influence and behavioural intention were affected. Even though it was discovered that the age variable had a moderator influence on the mediating effect of facilitating conditions on usage behaviour, this effect was only significantly stronger in older staff members compared to young staff members.5
9	2018	Modified technology acceptance model for hospital information system evaluation	Vembri Noor Helia Vikha Indira Asri, Elisa Kusriani, Suci Miranda	Indonesia	200	Simple Random Sampling	Subjective Norm (SN), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using, and Actual System Usage are some of the elements that may impact a user's decision to use HIS. 12

							The Technology Acceptance Methodology (TAM) is a prediction model that is used to determine how successfully a user absorbs the technology that is offered to them when utilising their product or service. The outcome of a person's entire experience and their decision to utilise a certain technology or concept again in the future can be greatly influenced by how they feel about utilising it.
10	2015	Factors affecting hospital information system acceptance by caregivers of educational hospitals based on technology acceptance model (tam): a study in Iran	Jahanpour Alipour Salahaddin Safari Lafti Hesamedin Askari Majdabadi Azam Yazdiani Ali Valinejadi	Iran	172	Convenience sampling	A high, although not statistically significant, positive association was discovered between respondents' work level and their computer skills. On the poll, there was a moderate but substantial positive association between age and employment level. 7 The voluntariness and perceived usefulness of the hospital information system had a significant impact on the users.

3) Study Methodology:

3.1 Research Question

What significance does the Technology Acceptance Model have for how willing and accepting hospital staff members are to employ digital health tools in patient care?

3.2 Research Objectives

- To identify the elements that might influence hospital staff's technology adoption of digital health solutions.
- To comprehend the underlying motivations for the adoption of digital health tools in patient care.

3.3 Research Design

This is a quantitative cross-sectional survey study of descriptive nature conducted among hospital staff at Saket Hospital, Jaipur.

3.4 Study Setting

Saket Hospital, Jaipur. This study was conducted in both clinical and non-clinical departments of the hospital which are mentioned in the inclusion criteria.

3.5 Study population

- Inclusion Criteria: The entire hospital was divided into clinical and non-clinical departments. Based on what and how these departments directly affect patient care, this was taken into consideration while determining the inclusion criteria.

1. Emergency Department
2. Outpatient Department
3. Inpatient Department
4. ICU
5. Operation Theatre
6. CSSD
7. Dietary Department

8. Pharmacy Department
9. Laboratory Department
10. Radiology Department
11. Nursing Department
12. IT Department
13. Administrative Department/ Quality Assurance
14. Consultants/Doctors
15. MRD
16. Front desk/Reception

- Exclusion Criteria: The entire hospital was divided into clinical and non-clinical departments. These divisions were left out since they don't directly affect patient care when using digital health tools.

1. Linen and Laundry Department
2. Housekeeping Department
3. Biomedical Waste Management Department
4. Engineering Department
5. Hospital Security
6. Central Stores
7. Canteen

3.6 Research procedure/approaches:

Data was collected by using the following approaches:

1. Questionnaire and Interviews
2. Direct Observations
3. Documents (regarding e-health trainings)

3.7 Study approach

- **Study duration:** This study took place over the course of three months, starting on March 21st, 2022, and ending on June 18th, 2022.
- **Sampling technique:** A nonprobability convenience sampling procedure was used to recruit participants through the use of a company's organogram, as well as depending on people's limited availability around their shift times.
- **Sample size:** Participants were divided into two categories i.e., clinical, and non-clinical staff and a total of 116 responses were recorded.
- **Study instrument:** The questionnaire was drafted which had the basic sociodemographic details and contained around 33 items (questions) which were scored on a 5-point Likert Scale with questions marked as the following: 1 - Strongly Disagree, 2 - Somewhat Disagree, 3 - Neutral, 4 – Somewhat Agree and 5 - Strongly Agree. This questionnaire was drafted in both English and Hindi and then printed out on a sheet because the staff was not comfortable with Google Forms.
- **Data Management:** All the data was analysed using Microsoft Excel Version 16.59 for Mac.

3.8 Operational definitions

- 1) **Technology Acceptance :** It can be seen in its simplest form as a user's willingness to utilize a technology for the purposes it was designed to fulfil.
- 2) **Digital Health Tools :** Digital health tools are tools that consist of smart automated tools or web applications which can help to guide the diagnosis and treatment of disease. These innovative technologies allow for complex tasks to be made much easier for both patients and doctors.

- 3) **HMIS :** HMIS is a system specifically designed to help improve health planning, management and decision making processes in health facilities and organisations.
- 4) **Willingness :** Willingness in care is the act of willingly putting an individual's needs, wishes and preferences at the centre.
- 5) **Behavioural Intentions :** The stronger the intention to carry out the behaviour, the more probable it is that the behaviour will be carried out. This is referring to the motivational elements that influence a certain behaviour.
- 6) **Patient care:** The services provided to a patient by members of the medical community.
- 7) **Technology Acceptance Model (TAM) :** An information systems theory called the Technology Acceptance Model analyses how consumers come to accept and use a technology. The point at which people really utilise a system is the end-user. Users, behavioural intention, actual system use, and technology make up the four components of the technology acceptance paradigm.

4) Study Findings:

4.1 Identification

The "relatively persistent cognitive and affective perceptual orientation of an individual" is how one would define a consumer behaviour. Therefore, the degree to which a person is accepting of new advances or technology is largely dependent upon the expected benefits versus the amount of effort it may take for them to adopt it. Researching these psychological processes associated with people and their tendency toward a certain behaviour has led to multiple models being developed in order to explain technology acceptance and usage by individuals.

The Technology Acceptance Model is a method for determining how likely the average consumer or user will be to voluntarily accept and adopt a technology based on relevance, perceived usefulness and ease of use. It is determined by beliefs about the target behaviour

and whether or not performing it will result in perceived benefit directly related to attributes like an impact on personal productivity, efficiency as well as satisfaction. The beliefs are determined by an individual's personality traits (characteristics) gathered through interviews or questionnaires. These beliefs can either be internal psychological variables including values and self-efficacy, or external behavioural variables like peer pressure.

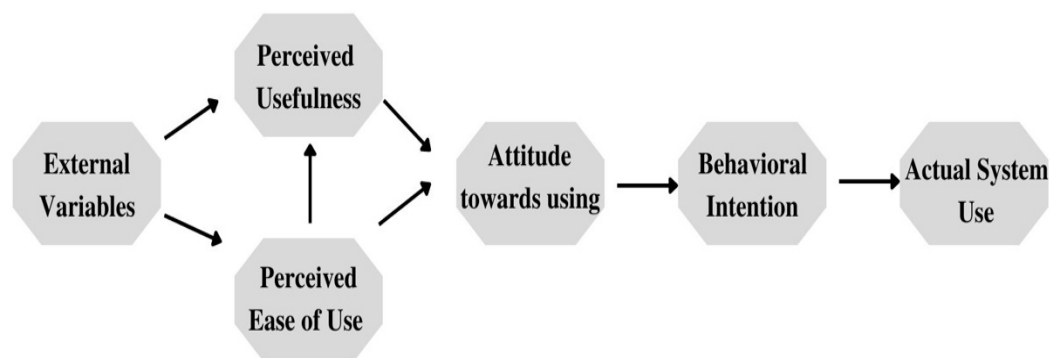


Fig : 4.1

The Technology Acceptance Model (TAM) is based on the two beliefs of Perceived Usefulness (PU) and Perceived Ease Of Use (PEOU). "Usefulness" is known better as the practical aspects of how useful a product is to the person, whilst "Ease of Use" reflects more on how easy it is to use a product or service effectively.

They reflect an individual's motivation and willingness to even adopt innovation in the first place. This willingness then directly changes into motivational constructs which lead to actual system usage after being in contact with an innovation for a sufficient period of time. Over time this willingness will be built either increasing or decreasing depending on the situational context and characteristics at different points along the TAM adoption curve.

Determinants of Perceived Usefulness

Perceived Usefulness can be influenced by five main things: Subjective Norm, Image, Job Relevance, Output Quality and Result Demonstrability. Cognitive processes are at the heart of these factors as they help us understand what we need to do and how we can achieve it.

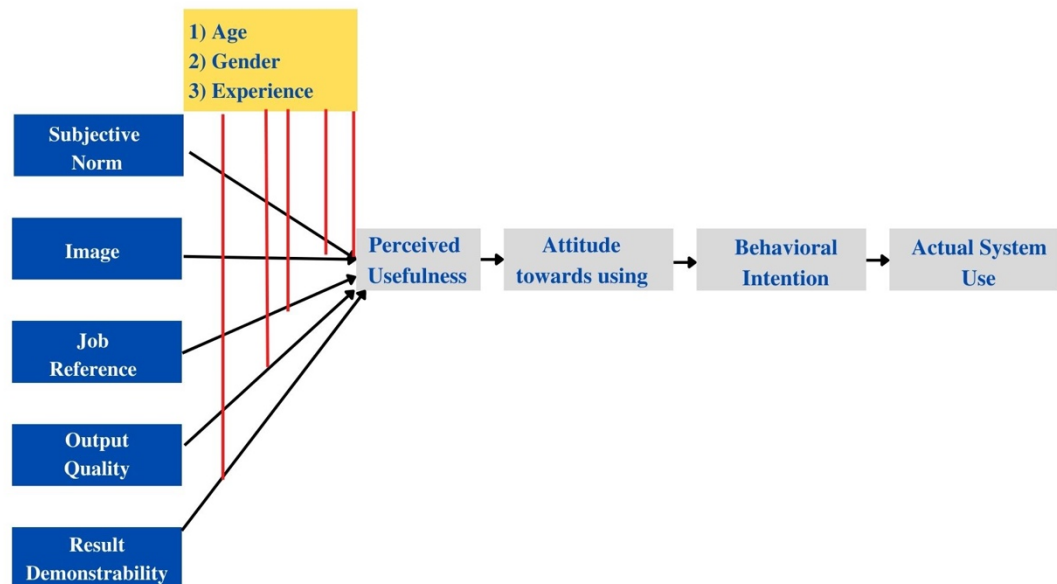


Fig : 4.2

- 1) **Subjective Norm** : The extent to which a person is aware that he is being encouraged, dissuaded or influenced in his decision to use a system by people who matter to him.
- 2) **Image** : The extent to which a person believes that using a new technology will raise their standing inside their social order.
- 3) **Job Relevance**: The extent to which a person thinks the intended system can meet their own requirements.
- 4) **Output Quality**: The extent to which an individual understands how well their activities are completed at work.
- 5) **Result Demonstrability**: The extent to which a person thinks that a system's outcomes are observable, communicative, and tactile.

Determinants of Perceived Ease of Use

The variables that influence perceived ease of use are divided into two groups: anchor factors and adjustment factors. The user's baseline was determined by their overall ideas about technology and its application, known as anchor determinants. It would establish the fundamental perspective on the in question technology. They are technological anxiety, playfulness, perception of external control, and self-efficacy.

The Adjustment determinants are used to "adjust" the user's attitude toward the technology and are based on first-hand experience with the relevant technology. They are Objective Usability and Perceived Enjoyment..

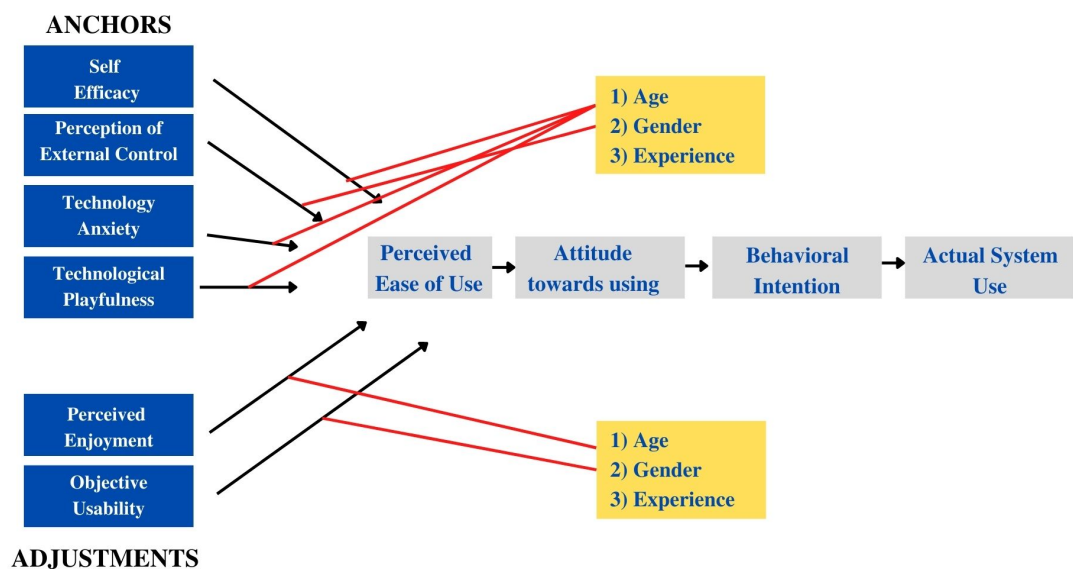


Fig : 4.3

- 1) **Self-Efficacy** : The extent to which a person believes they can consider use of the technology.
- 2) **Perception of External Control** : The extent to which an employee thinks that their employer has the technical and organisational resources necessary to support the use of the technology.
- 3) **Technology Anxiety** : The level of uncertainty, fear, or anxiety that a person may feel when given the option of utilizing technology.

- 4) **Technology Playfulness** : The level of cognitive flexibility in encounters with technology.
- 5) **Perceived Enjoyment**: The extent to which the activity of a specific system is perceived to be fun, especially when it comes down to use.
- 6) **Objective Usability** : A system comparison based on a precise assessment of the amount of work needed to execute operations

4.2 Data Analysis

- **General Characteristics of the Hospital Staff**

Gender, Age, Level of Education, Profession, and Years of Experience were the participants' sociodemographic characteristics from which the data was gathered.

Participants were divided into two categories i.e., clinical, and non-clinical staff and a total of 116 responses were recorded which included both Clinical (n=90, 77.6%) and Non-Clinical Staff (n=26, 22.4%). Participation was more from the side of male respondents (clinical Vs non-clinical) (n=72; 62%) for both the categories as compared to females (n=44; 38%).

The average age of clinical staff was observed to be 39 years whereas for non-clinical staff it was 38 years. In clinical staff 1.11 (n=1) percent of staff completed school education, 70 percent (n=63) participants completed their college education and were graduates and among the other remaining 28.89 percent (n=26) completed post-graduation.

In non-clinical staff 19.23 percent (n=5) of staff attended school, but never completed it, 11.54 percent (n=3) staff completed school education, 53.85 percent (n=14) participants completed their college education and were graduate and among the other remaining 15.38 percent (n=4) completed post-graduation.

74.4 percent (n=67) of clinical staff had an overall experience of more than 5 years and in non-clinical 50 percent (n=13) were there who had the experience of more than 5 years.

Table 2.2 : Socio-Demographic Characteristics of Hospital Staff

	Clinical		Non-Clinical	
	Frequency	Percent	Frequency	Percent
Gender				
Female	32	35.56	12	46.15
Male	58	64.44	14	53.85
Total	90	100	26	100
Age (in completed years)				
15–47 years old (young group)	64	71.11	20	76.92
48–63 years old (middle age group)	26	28.89	6	23.08
≥ 64 years old (elderly group)	0	0	0	0
Total	90	100	26	100
Level of education				
Attended school, did not finish.	0	0.00	5	19.23
Finished school	1	1.11	3	11.54
Finished college, graduate	63	70.00	14	53.85
Post-graduate or higher	26	28.89	4	15.38
Total	90	100	26	100
Total years of experience				
Less than 1 year	3	3.33	0	0.00
1-2 years	5	5.56	2	7.69
2-3 years	7	7.78	5	19.23
3-4 years	5	5.56	3	11.54
4-5 years	3	3.33	3	11.54
More than 5 years	67	74.44	13	50
Total	90	100	26	100

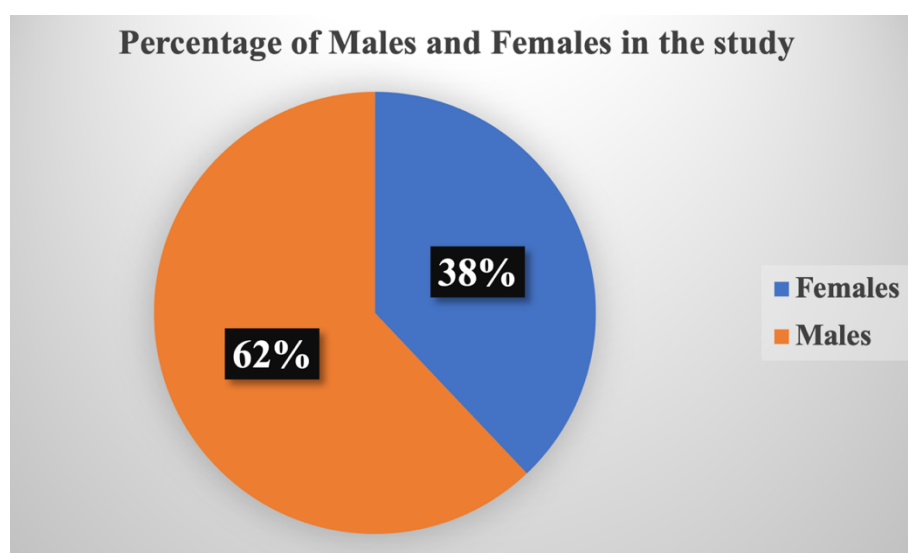


Fig : 4.4

Fig 4.4 shows that a sample size of 116 was considered for this study, which included both Clinical (n=90, 77.6%) and Non-Clinical Staff (n=26, 22.4%). These 116 respondents filled the questionnaire which included female (44, 38%) and male (72, 62%) staff amongst both clinical and non-clinical staff.

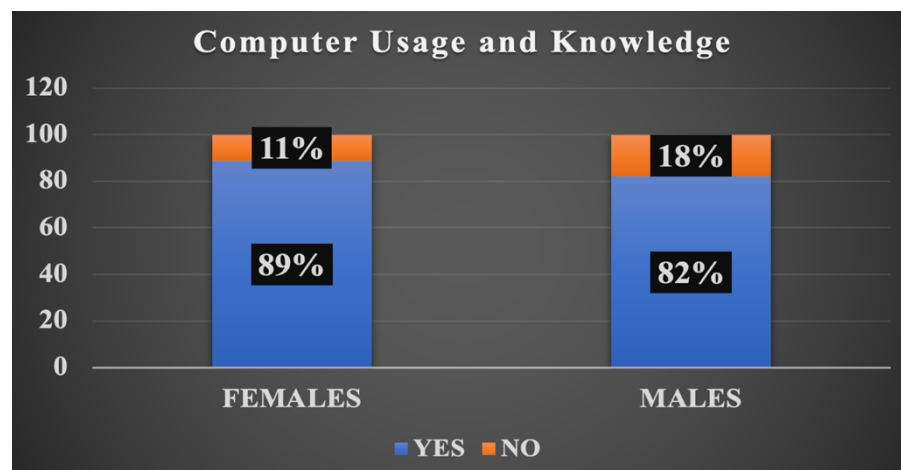


Fig : 4.5

Fig 4.5 shows that in terms of computer knowledge, 89 (n=39) percent of females agreed that they have a theoretical understanding about using a computer while only 11 (n=5) percent disagreed with this statement. As for the males there is an almost equivalent split between those admitting to knowing this stuff and those who do not. 82 (n=59) percent of them agreed with the same statement whereas 18 (n=13) percent disagreed with it. In order to test for independence between two variables, some basic statistics were applied via a Chi-Square Test. It was hypothesized that computer usage knowledge would somehow be related to gender among the clinical and non-clinical staff but this hypothesis was proven wrong with a $p > 0.05$ ($p = 0.3341$) which concluded that gender and computer usage knowledge wasn't correlated in any way.

However it was also hypothesized that computer usage knowledge would be associated with work they perform in the hospital (non-clinical or clinical) but even this hypothesis was proven wrong with a $p > 0.05$ ($p = 0.6821$) which concluded that even these two variables were not correlated.

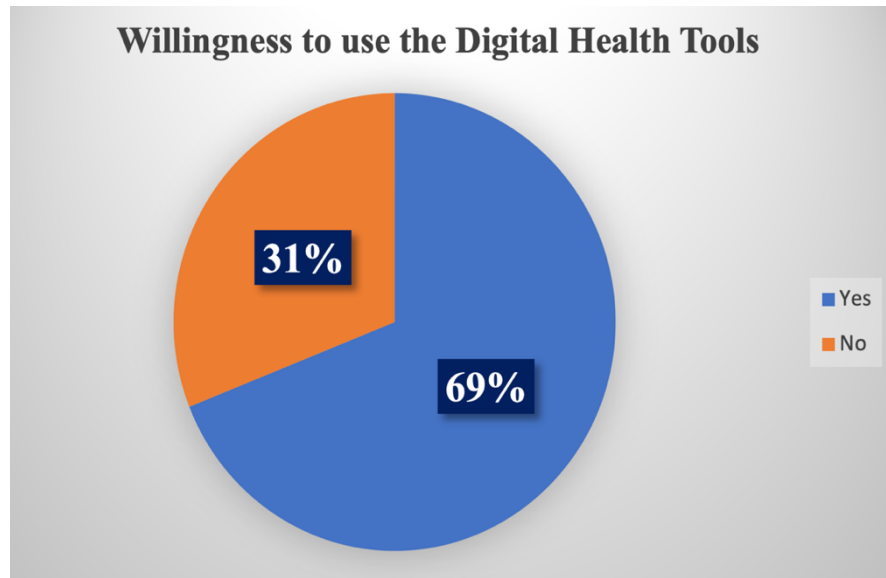


Fig : 4.6

Figure 4.6 shows that the hospital staff (clinical & non-clinical) had a surprising level of acceptance for the digital healthcare tools based on their knowledge and experiences in the matter. 31 (n=36) percent of them declined using said tools ever but 69 (n=80) percent were open to using the tools.

The questionnaire after the basic sociodemographic details contained around 33 items (questions) which were scored on a 5-point Likert Scale with questions marked as the following: 1 - Strongly Disagree, 2 - Somewhat Disagree, 3 - Neutral, 4 – Somewhat Agree and 5 - Strongly Agree.

This questionnaire was drafted in both English and Hindi and then printed out on a sheet because the staff was not comfortable with Google Forms. This survey was then conducted personally and took around 15 minutes to complete. We personally distributed the questionnaire and conducted mini-interviews with those who expressed an interest in giving their opinions, which helped us better understand their perspective.

The data was manually entered into MS Excel when the questionnaire was finished, and the mean, standard deviation, confidence interval, and Chi-Square independence test for the data were calculated.

As one will observe the mean of an individual item is coloured, and it signifies the following:

- | | |
|-----------------------|---|
| 1) Neutral |  |
| 2) Somewhat Agreeable |  |
| 3) Strongly Agreeable |  |

Table 2.3 : Mean and Standard Deviation of the Individual Study Tool Items

		Mean	Standard Deviation
	<u>Perceived Usefulness</u> : The extent to which a person thinks using a certain technology would enhance his or her capacity for work.		
1	Subjective Norm : The extent to which a person is aware that he is being encouraged, dissuaded or influenced in his decision to use a system by people who matter to him.		
a	I have personally witnessed the utilization of digital health tools used for patient care.	3.83	0.87
b	I'm curious about new digital health tools that can help patients throughout their treatment.	3.81	0.99
c	My peers feel I should hone my skills in digital health tools.	3.82	0.96
d	People will support me through training in using the new digital health tools.	3.86	0.74
2	Image : The extent to which a person believes that using a new technology will raise their standing inside their social order.		
a	Learning new digital health tools will give me something new and special to talk about with my peers at a networking event.	3.98	0.8
b	Learning new digital health tools will help me thrive in my career both personally and professionally.	4.02	0.66

c	Digital health tools will help me improve my overall rating online because of my efficiency and effectiveness at work.	4.15	0.62
3	Job Relevance: The extent to which a person thinks the intended system can meet their own requirements.		
a	Digital health tools can be very helpful in learning new ways that will support certain aspects of my job.	4.02	0.81
b	Digital health tools will help me achieve my objectives in patient care.	3.97	0.77
c	I'll feel in control with my work when it comes to patient handling and treatment.	4.04	0.84
4	Output Quality: The extent to which an individual understands how well their activities are completed at work.		
a	It will reduce my time on unnecessary activities and help me focus more on my tasks in patient care.	4.08	0.66
b	Using digital health tools can help improve my job performance.	4.03	0.73
c	My job will be difficult to perform if I do not have the right Digital Health tools.	3.91	0.79
d	Digital health tools will help me build confidence when it comes to handling patients and providing them with the right level of care.	4.02	0.66
5	Result Demonstrability: The extent to which a person thinks that a system's outcomes are observable, communicative, and tactile.		
a	Digital health tools will address my job related health needs	3.92	0.76
b	It will result in more effective, efficient care for my patients.	4.08	0.79
c	I would advise others to learn and use digital health tools.	4.32	0.67

	<u>Perceived Ease of Use :</u> The extent to which a person thinks that using a specific system would be effortless and require no special training or administration of upgrades.		
1	Self-Efficacy : The extent to which a person believes they can consider use of the technology.		
a	I find it easy to use the technology.	3.94	0.86
b	I can use technology, but it is much easier when someone gives me step by step instructions.	3.95	0.86
2	Perception of External Control : The extent to which an employee thinks that their employer has the technical and organisational resources necessary to support the use of the technology.		
a	With a little training, I can learn new technology and use it in patient care.	3.9	0.8
b	We have a strong hospital information system that is at the heart of our operations.	3.22	1.13
c	We have better internet connectivity at the hospital where I work with patients and that allows me to use digital tools.	2.89	1.22
3	Technology Anxiety : The level of uncertainty, fear, or anxiety that a person may feel when given the option of utilizing technology.		
a	Learning technical aspects give me anxiety. I get performance pressure at work and it's affecting my overall productivity.	3.73	0.98
b	I feel that not every technology out there is easy to use and user friendly.	3.75	0.92
c	I have a fear of losing the patients' data or of coming under a data breach	3.72	1.02
4	Technology Playfulness : The level of cognitive flexibility in encounters with technology.		
a	I am a curious person when it comes to learning new things.	4.02	0.73

b	I actively participate in trainings and take initiatives by offering innovative methods within my department.	3.95	0.76
5	Perceived Enjoyment: The extent to which the activity of a specific system is perceived to be fun, especially when it comes down to use.		
a	I take training courses as an enjoyable learning experience.	3.99	0.76
b	I am always willing to attend training programs conducted by the organization.	3.98	0.75
6	Objective Usability : A system comparison based on a precise assessment of the amount of work needed to execute operations.		
a	I find it easy to recover from errors when I use technology in patient care.	3.65	0.88
b	Technology is a tricky runner. It doesn't always do as you want it to.	3.79	0.88
c	Technologies can be challenging and rigid but having support from your team is invaluable.	3.85	0.89
d	Interacting with technology can be mentally draining and needs regular training.	3.95	0.85

After calculating the mean and standard deviation for each item individually, it was important to calculate the mean, standard deviation, variance and 95% confidence interval according to the different variable groups.

Table 2.4 : Mean, Standard Deviation and CI of the Determinants of TAM

		Mean	SD	95% CI	Range	
					Lower Limit	Higher Limit
Perceived Ease of Use	Self Efficacy	3.94	0.6	3.94 ± 0.10	3.83	4.05
	Perception of External Control	3.34	0.72	3.34 ± 0.13	3.21	3.47
	Technological Anxiety	3.73	0.71	3.73 ± 0.12	3.60	3.86
	Technology Playfulness	3.98	0.58	3.98 ± 0.10	3.87	4.09
	Perceived Enjoyment	3.99	0.64	3.99 ± 0.11	3.87	4.11
	Objective Usability	3.81	0.54	3.81 ± 0.09	3.71	3.91
Perceived Usefulness	Subjective Norm	3.83	0.6	3.83 ± 0.10	3.72	3.94
	Image	4.05	0.48	4.05 ± 0.08	3.96	4.14
	Job Relevance	4.01	0.58	4.01 ± 0.10	3.90	4.12
	Output Quality	4.01	0.47	4.01 ± 0.08	3.92	4.10
	Result Demonstrability	4.1	0.53	4.1 ± 0.09	4.00	4.20

Table 2.4 shows that the **Standard Deviation** is **less than 1**, which means the data has a **low variance** in case of both Perceived Usefulness and Perceived Ease Of Use.

It also shows that we are **95% confident that sample parameter about Perceived Ease of Use is between 3.21 (lower bound) to 4.11 (upper bound)** and for Perceived Usefulness it is **between 3.83 (lower bound) to 4.20 (upper bound)**.

This shows an **overall positive attitude towards the usability of the digital health tools**. The staff agreed with the usefulness of the tools. The survey from the staff is however somewhat agreeable as they don't use the devices on a daily basis, they use the devices not too frequently or they do not have specific tasks to do using the tools.

This could be an explanation of their attitude towards the digital health tools. The staff agreed with the usefulness of the tools but were quick to note that since they only occasionally use them or aren't quite sure how to assess if they are useful it was difficult to understand why they needed the tools in general.

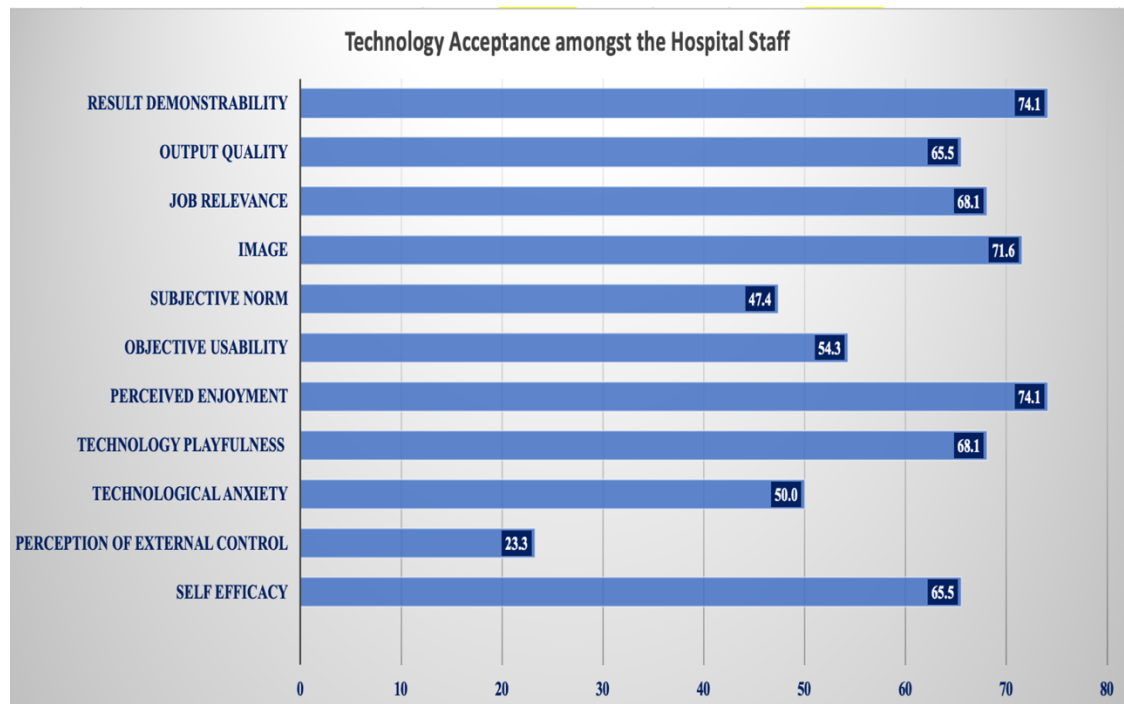


Fig : 4.7

Fig 4.7 shows the result of the Applicability of the Technology Acceptance Model which in turn will give us the idea or external moderators affecting the behavioural intention of the hospital staff behind using the digital health tools.

65.5% of hospital staff show self-efficacy towards digital health tools. This displays their tremendous desire to learn new things and become tech-savvy, regardless of the position in which they would use these new talents. It denotes a person's confidence in their capacity to achieve goals, overcome obstacles, and shape outcomes that will eventually be advantageous to their own lives.

There are **23.3% hospital staff members who don't show a good level of perception for external control.** This shows that the hospital needs to be more lenient on training them with digital health tools or bring in new resources that can help provide better training opportunities. Some of the staff commented on how the internet connection in hospitals isn't strong enough to readily upload and backup huge data for digital health too often and thus rejecting it as an option altogether.

In hospital, **50% of the staff expresses concern related to fear and anxiety with using technology.** The fear is that information will be lost due to only being stored online or in the cloud rather than offline. They also have concerns about data breach and patient information confidentiality as well as a fear of learning new skills and not properly implementing them for risk of replacement at the hospital.

68.1% showed positive attitude towards technology playfulness. Hospital staff feel they have an important role when it comes to helping deliver health care services and technology is essential for them when it comes down to their decision making. They are eager to learn new tools that will be useful in helping them perform their job functions easier and more efficiently. It's obvious this is one of the main reasons why hospital staff embraces new digital health tools so willingly. Hospital personnel like having the ability to adopt new technologies as quickly as possible so they can better execute the duties required of them on a daily basis, especially ones that relate specifically with keeping their patients safe and healthy by maintaining organized patient charts, accurate records, and vital data linked to the right members in the team (such as patient symptoms, allergies, drug interactions etc).

74.1% perceived enjoyment towards using these digital health tools. They believed that training with these digital health tools would be an enjoyable experience, because they will enhance their skill sets, allow them to do their tasks faster and end up being improved professionally. Those surveyed recognized how repetitive the job can get doing paperwork. Since utilizing digital health tools lessens the workload and makes it easier for them to complete their tasks, it in turn makes an enjoyable experience for all those involved from employees, patients etc.

54.3% of hospital staff reflected on their experience using the digital health tools, believing this would make them more effective and efficient in their day-to-day tasks which are directly related to patient care.

The staff members felt secure knowing that the error rates were low due to computerised calculations, rather than having a human make these decisions with the potential for being biased or making an error. This shows a positive reflection towards **objective usability** expressed individually.

47.4% of hospital staff believed the subjective norms affect their acceptance in a way that they must adopt the digital health tools regardless of their will because peer pressure will make them by kicking and screaming into compliance. This can actually be a positive or negative force. Employees who are feisty and want to evolve their careers can benefit from this type of motivation! It is a fantastic way for learning new skills, advancing ones career, and working harder on things others deem as important but might not be your thing at all.

71.6% of the hospital staff believed that improving their image in the social standing in their respective professional standings can be achieved by training new skills. Gaining new skills will not only make them stand out via improved online ratings during patient handling events, but will also see them gain an edge over their co-worker associates by showcasing superior knowledge and a refined ability to communicate.

68.1% of all members of the hospital staff believe that using Digital Health Tools will make a better difference than not using them. Not only do they think it will make their job easier, but they also think that it will help them achieve their objectives in patient care making them **job relevant**.

65.5% of hospital staff believe that digital health tools will give better output quality by helping them better serve and assist their patients, allowing them to focus more on the main tasks they need to get done during work hours. Digital health tools will give them the support they need to get through scheduling, as well as paperwork that might otherwise distract them in attending to their patients and their needs. It saves them time from doing unnecessary work, builds their confidence , and ensures they are always well-resourced when handling patients.

74.1% of hospital staff believe that digital health tools would help **advance their demonstrability** by improving how they act and do their job at the hospital through making them more efficient and they would advise others to learn new skills when it comes down to using these tools in order to achieve better performance.

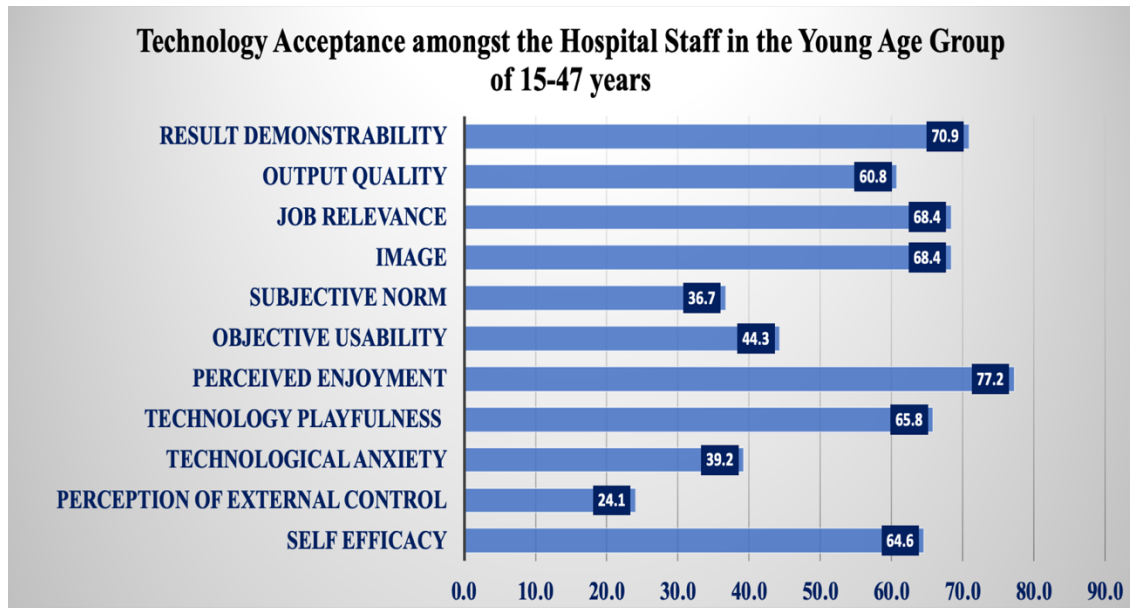


Fig : 4.8



Fig : 4.9

From figures 4.8 & 4.9 we can observe that the hospital staff in both young age group and middle age group somewhat agreed on the same levels when it comes to three skills in particular. Both groups had a similar level of agreement regarding **Demonstrability of Results** (70.9%, 71.9%), **Relevance of their Job** (68.4%, 62.5%), **Career Growth Potential or Image** (68.4%, 71.9%) and **Self Efficacy** (64.6%, 68.8%).

One can observe a huge difference when it comes to **Subjective Norm (36.7%, 68.8%)**, **Objective Usability (44.3%, 68.8%)** and **Perception of External Control (24.1%, 12.5%)**.

We can observe a significant difference between the subjectively perceived norms of young and middle age hospital staff when it comes to using digital health tools. This is perhaps because different people feel differently about adopting new technologies at work. Younger staff members feel less motivated to use digital health tools than the older ones because they worry about peer pressure, but also feel that sometime in the future they could be more motivated to use them once the senior members of their teams start using them too and offer some motivation in this regard.

The young age group felt less open than the middle age group, believing these tools will make them more efficient and effective at work and save them time by reducing paperwork. However, they felt that hospital management would provide them with pieces of training if they wanted to learn these tools and that the resources were available at the hospital for these tools. They also expressed that yes there is better internet connectivity for that in comparison to the middle age group. Even though the middle age group was more motivated towards using these tools, feeling it would increase their efficiency, they felt that hospital management did not have those kind of resources for training or having better access to connectivity.

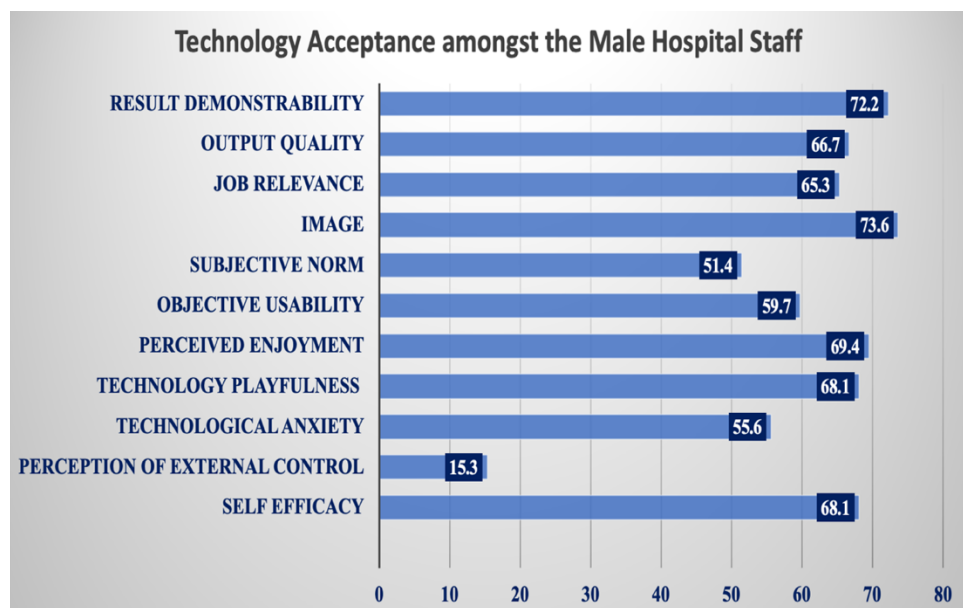


Fig : 4.10

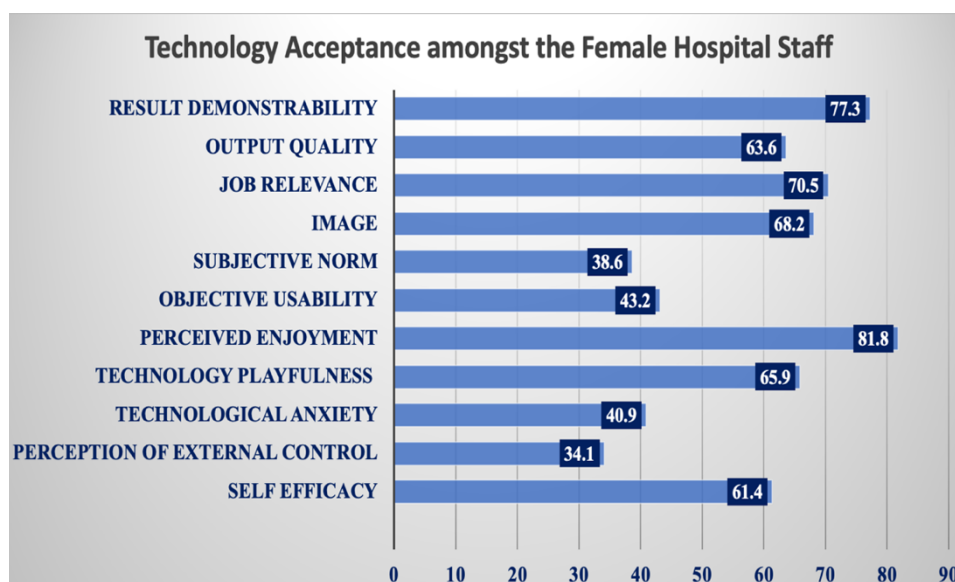


Fig : 4.11

Figures 4.10 & 4.11 show that males and females have different perceptions when it comes to **Subjective Norm** (51.4%, 38.6%), **Objective Usability** (59.7%, 43.2%), **Perceived Enjoyment** (69.4%, 81.8%), **Perception to External Control** (15.3%, 34.1%) and **Technological Anxiety** (55.6%, 40.9).

Male staff were more likely to accept new technology when they see others doing the same, and felt that the learning curve was more challenging and rigid than their female colleagues. Female staff took more initiatives than their male counterpart during training. They perceived usage of these digital health tools as less dangerous than their male counterparts, who saw more danger in handling patient data and data security.

Males also perceived less enjoyment when learning new skills than their female counterparts and also took less initiatives at the trainings. Male staff was found to be more laid back when it comes to accepting new digital health tools at work. Male staff seem to perceive usage of these health tools less dangerous when it comes to data security and data breach. They felt that will not make any mistakes in handling patient data however female staff perceived more danger when it comes to data security. They felt that they might lose patients' data and therefore they need more training when it comes to handling these digital health tools. Female staff also believed that the digital tools will make them more effective and efficient and will decrease their unnecessary time on paperwork.

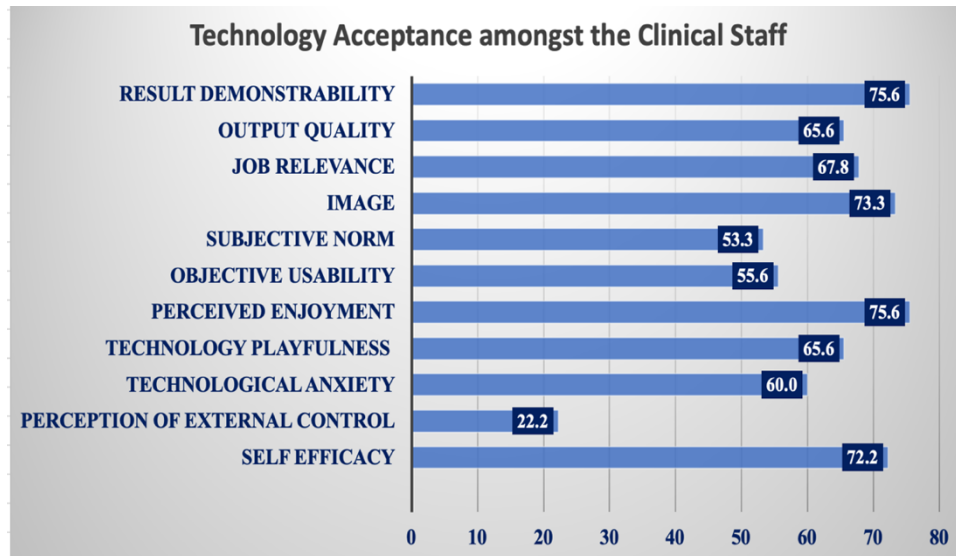


Fig : 4.12

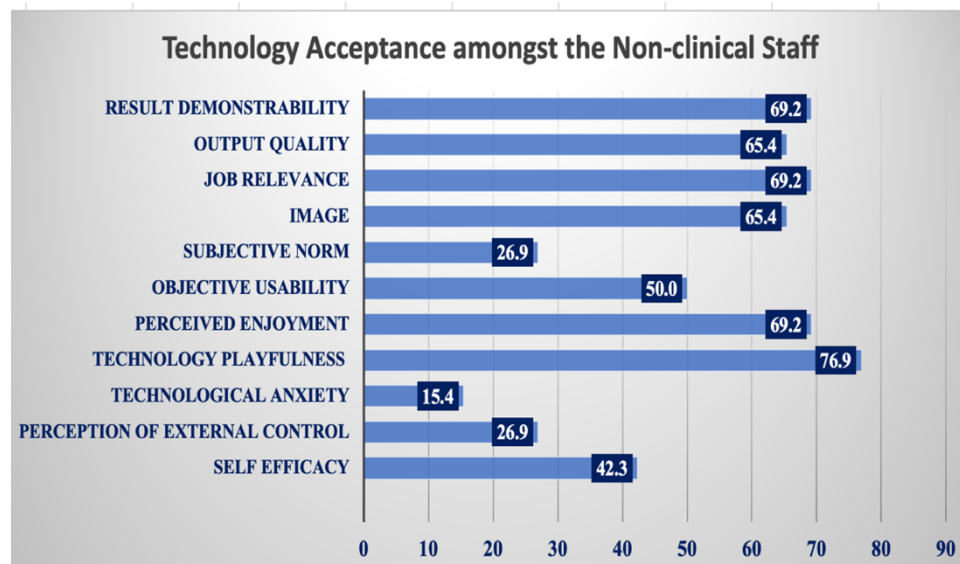


Fig : 4.13

Figure 4.12 & 4.13 show that The clinical staff is more accepting towards using digital health tools than the non-clinical staff. They seem to be more motivated and know their intentions right when it comes to using these tools in the patient care. They seem to perceive more usefulness of these tools in achieving their patient care objectives. The non-clinical staff is also somewhat similar when it comes to their perception of the usefulness of these tools, however they feel that they will use it only because of their peers using it.

The clinical staff has a greater perception of their utilization of these tools in achieving their patient care objectives, as well as feeling more satisfied with this utilization. The non-clinical staff seems to have similar motivations behind their use of these tools, however they feel less motivated when it comes to using these tools on a day-to-day basis as there is more risk involved with using them.

The clinical staff views digital health tools as more beneficial in achieving their patient care objectives, thus making them more willing to use these tools. The non-clinical staff also seemingly view digital health tools as having greater potential in achieving their patient care objectives but they were not as motivated and knowledgeable about these tools which may have contributed to their lack of motivation to use them.

However even though non clinical staff is less motivated than the clinical staff, they have less technological anxiety (60%,15.4%) than the clinical staff maybe because clinical staff is more closer to patients when it comes to handling their data and they fear more challenge at work while handling data and want to save themselves from the data breaches and challenges that come with handling these digital health tools. Non Clinical staff seem to have less perception to ease of using these tools than Clinical staff.

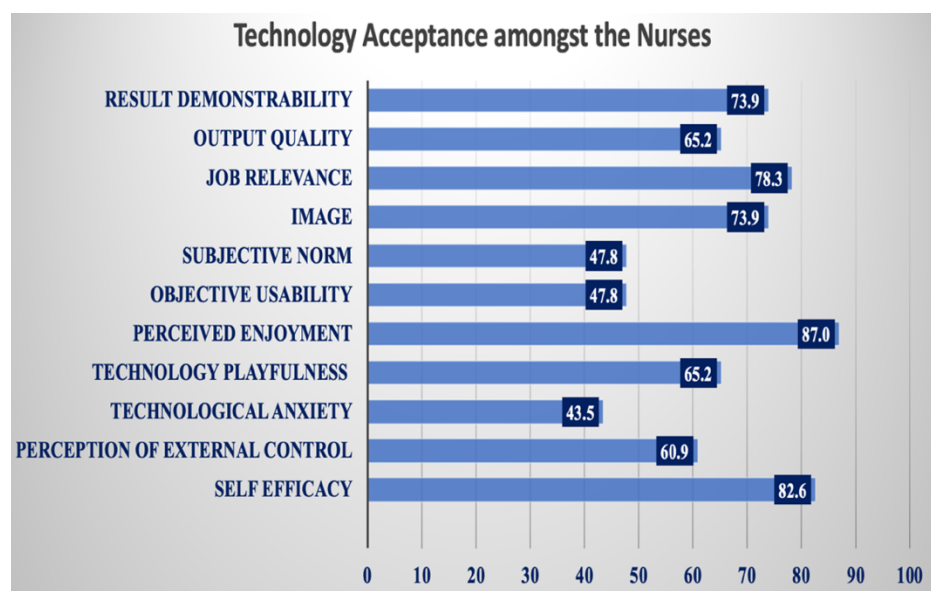


Fig : 4.14

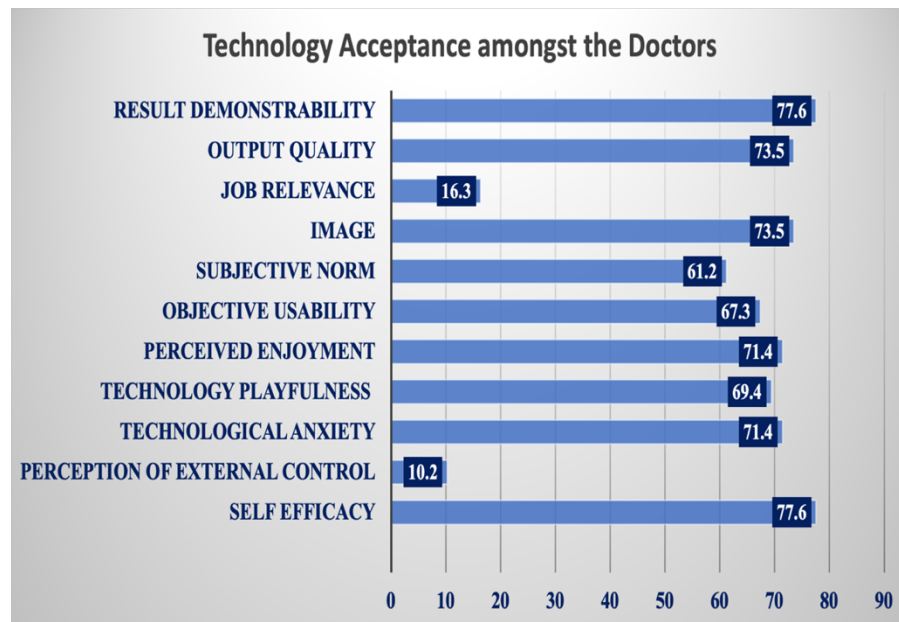


Fig : 4.15

Figure 4.14& 4.15 show that doctors and nurses are both medical professionals, but when it comes to using tools in order to aid in treating patients and diagnosing health-related problems, doctors seem to need a little more time to come around. The doctors feel that technology hasn't yet arrived at a point that it can be as effective as them.

This could be due to years of training and experience, and the way they are wired neurologically that allows them to gauge human emotion beyond just the natural human desire for human touch. Perhaps all of the top-notch technology in the world is no match for experience, intuition and all around "know how" when it comes to caring for patients.

When it comes to patient care, doctors believe that patients still require a human touch and rely more on them than merely data. A doctor's experience, years of training, and years of practise provide them the ability to know in a more comprehensive way than just the list of symptoms.

Doctors appear to be more concerned about technology (71.4 percent , 43.5 percent). Technological apprehension can cause resistance to change due to uncertainty and unanticipated technological mistakes. However, compared to nurses, who are aware that management will provide them with better tools if they need them but who also trust themselves to improve their behaviour, doctors' impressions of external control (10.2 percent, 60.9 percent) appear to be less favourable.

4.3 Discussion

This research intended to understand why the hospital staff were resistant to change. The major objective was to understand the behavioural intentions that lead users to either accept or reject technology. And finally how these people can develop confidence and trust in digital health tools. There are many factors when it comes to technology acceptance. For example, the hospital staff may have a fear of using the technology. They may not feel that the technology is capable of helping them do their jobs better, or they don't feel the need for new things at work. Attitudes can also be an obstacle when it comes to digital health tools; one might embrace something new if one admires it. Concerns like these must be addressed for it to succeed where other similar attempts have failed.

The actual system use is the point of personal interaction with the technology where a person uses a product that someone else has made. The TAM (Technology Acceptance Model) component of cognitive beliefs is determined by surveying individuals via interviews or questionnaires for their beliefs about internal psychological variables like values as well as external behavioural variables such as peer pressure. Beliefs can either be intrinsic to an individual's personality traits (characteristics) like self-efficacy or other factors including perceptions of others' attitudes towards using the same said product.

A product's usefulness is known as the practical aspects of how useful a product is to the person. Ease of use, on the other hand, is more focused on how easy it is for a product or service to be used effectively by someone. Both of these factors reflect an individual's motivation and willingness to even adopt innovation in terms of using it, which later will directly change into motivational constructs which eventually will lead to actual system usage after being in contact with an innovation for a sufficient period.

It was found that the Sociodemographic characteristics of participants on which the data was collected consisted of Gender, Age, Level of Education, Profession and Years of Experience. Participants were divided into two categories – "Clinical" and "Non-Clinical" staff – and **116 responses were recorded (90 from Clinical, 26 from Nonclinical)**. The questionnaire given to all the people who participated in this study covered 33 items (questions) which were scored on a **5-point Likert Scale** with questions marked as the following: **1** - Strongly Disagree, **2** - Somewhat Disagree, **3** - Neutral, **4** – Somewhat Agree and **5** - Strongly Agree.

This questionnaire was drafted firstly in English language and secondly in Hindi because some employees do not know English as much but they are comfortable reading it in Hindi. When I spoke to a range of staff, it seemed as though they were eager to give me their thoughts and opinions on the usability of our digital tools specifically if they looked in depth at how to assess whether particular functions are useful or not.

After analysing the results it turned out that most staff were seemingly positive. However, after calculating the mean and standard deviation for each item individually, it was important to calculate the mean standard deviation as well as the variance for each group/variable that needed to be analysed led me to conclude that 95% of the staff showed an overall positive attitude towards the usability of these health tools. **65.5%** of hospital staff members believe that they can work independently as far as new technology goes, and many of them want to learn these new skills.

However, **23.3%** of those same employees avoid new technology and it shows a lack of interest in learning somewhat. Here is the kicker - only about **50%** are concerned about implementing this tool into the hospital setting because their main concern is either fear or anxiety.

68.1% of staff believe using these technologies is valuable to their jobs and roles. They are happy to be a part of this innovation and growth concerning patient care by improving their performance.

Staff perceive that it is an enjoyable process: **54.3%** felt these technologies would help them perform day-to-day tasks more effectively and with greater efficiency, which is directly related to patient care as hospital staff have a vital role when it comes down to delivering health care services. **71.6%** of the hospital staff believe that investing their time in bettering themselves will improve their position among other colleagues and it shows through in their eventual professional growth too.

Digital health tools are no exception with **68.1%** believing that using such technology can help them fulfil their specific goals in patient care as well as improve upon their job satisfaction and encourage personal growth over time. **65.5%** of hospital staff believe that digital health tools will give them better output quality by helping them better serve and assist their patients, allowing them to focus more on the main tasks they need to get done

during work hours. **74.1%** of hospital staff believe that by using digital health tools to improve how they act and do their job at the hospital, they would advise others to learn new skills when it comes down to using these tools to achieve better performance.

4.4 Conclusion

This approach employs the Technology Acceptance Model to determine patient acceptance and willingness to use digital health solutions. I explored the possible factors behind health staff behaviour towards using these tools. From their perspective the results showed that most of them had a somewhat positive and agreeable attitude towards using these tools in the patient care, which was majorly influenced by taking up new challenges at work, learning new skills by taking initiatives during training sessions and expecting the same from their hospital management.

The staff of this hospital believed that they had a responsibility to their patients in providing them the best possible care. They agreed that digital health tools would make their work more efficient and cost effective and allow them to remain competitive within their area as well as across broader market standards.

They also saw these tools as relevant within their jobs, and after some learning, would increase their productivity, streamline paperwork, and would allow for better disease surveillance. They perceived using these tools an enjoyable experience as well; after just a short adjustment period, they felt motivated at work because they could notice themselves becoming more efficient with what they were doing while working with these tools.

They also believed that learning these tools will give them a higher social standing with their peers at the hospital and other people in the conferences and meetings outside of work. However, our group did perceive these things as being quite challenging and rigid, which could possibly make them lose data related to their patients. They expressed an associated problem regarding data breaches and potentially getting themselves into trouble if they misused these digital health tools. It does challenge a lot, but might lead to lose of data or get one into trouble. They expressed the associated anxiety which comes along with everything related to these technologies. They hoped that their hospital would provide better infrastructure, but

noted insufficient availability of resources or connectivity problems when using these digital health tools.

Apart from this, they perceived that the peer pressure which comes from using these technologies by one member can induce a certain level of motivation in an individual for learning these new skills as well. They expressed it is not just easy but also useful to use these digital health tools. In all they had a strong and positive perception towards the usefulness and ease of using these digital health tools. The hospital staff in general was accepting and expressed willingness towards using these digital health tools in patient care.

4.5 Recommendations

In light of my results, the following suggestions were made to the management:-

- 1) The hospital's staff exhibited a neutral to somewhat agreeable attitude despite having digital EMR and EHR capabilities in place. They refused to reply when asked if a pre-survey was done before these tools were used in the hospital or if it was run as a trial programme before a survey was taken. Additionally, they didn't conduct any follow-up questionnaires to assess how things were progressing after the use of these digital tools. The hospital was advised to handle these changes responsibly and look for staff behaviour changes after implementing these digital health technologies.

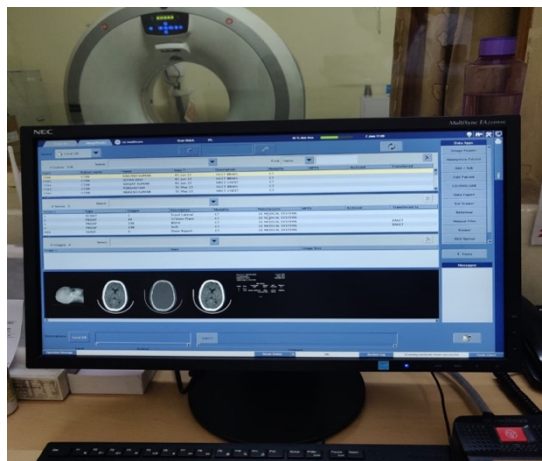


Fig: 4.16

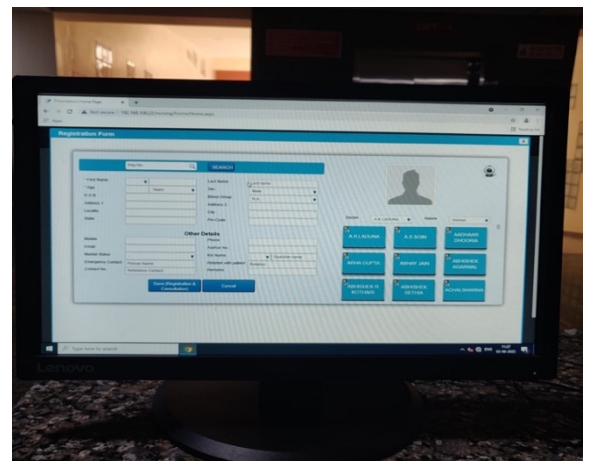


Fig: 4.17

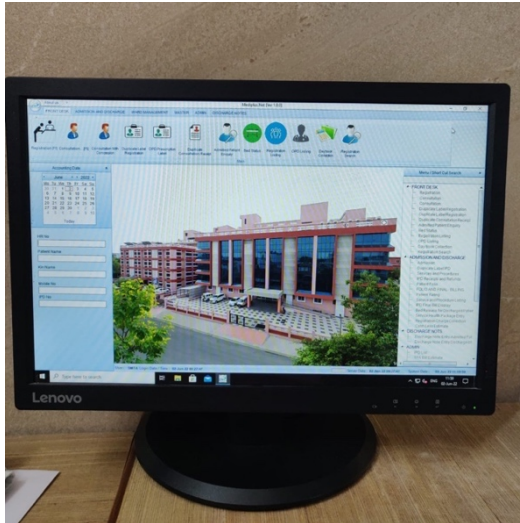


Fig: 4.18

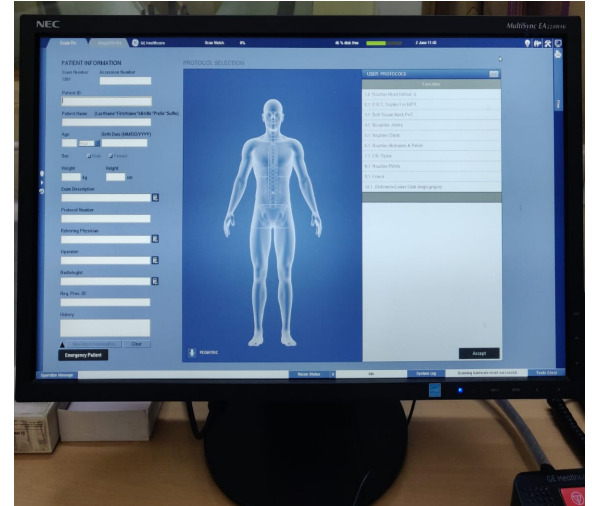


Fig: 4.19

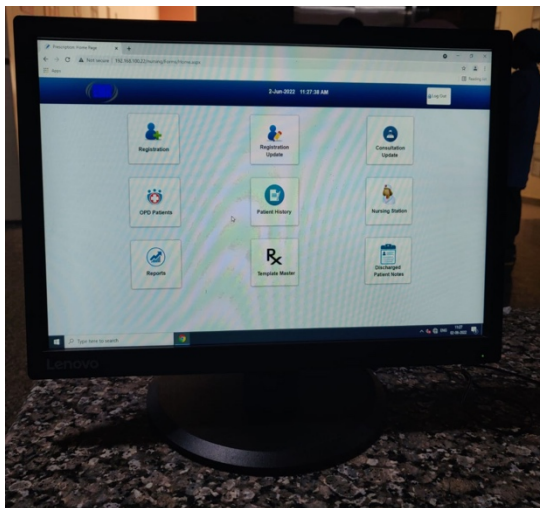


Fig: 4.20

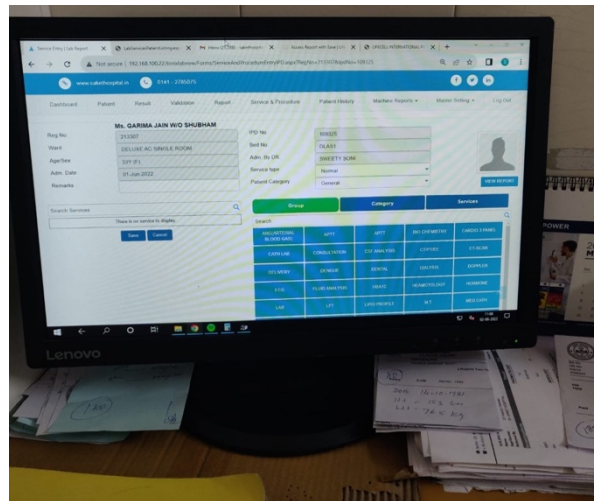


Fig: 4.21

- 2) The hospital must regularly upgrade its resource base in order to accommodate the patients' continually changing needs. This process is known as change management. In incorporating new technology in the hospital, management must involve everyone at all levels of the organisation and not just the top or middle management. To get their opinions, a survey needs to be done. Staff members are already aware of their tasks and may easily assist management in realising how they might be carried out more effectively and efficiently while still adhering to their duties and obligations at work. [15](#)

- 3) The "People, Process, and Technology (PPT) Framework", which consists of three pillars, must be taken into account to enable the successful adoption of newly introduced systems at the hospital. The first pillar focuses on the hospital's employees, including managers, shareholders, and both clinical and non-clinical staff. The second pillar relates to changes at the process level, such as switching from paper forms to electronic automation systems, like those used in medical records, for example. These changes call for the establishment of written and properly implemented goals that are periodically reviewed to allow for improvement where it is necessary. The third pillar is technology, which means that the organization's infrastructure, including its gear and software, should be in line with the objectives and goals it has for its patient care.[16](#)

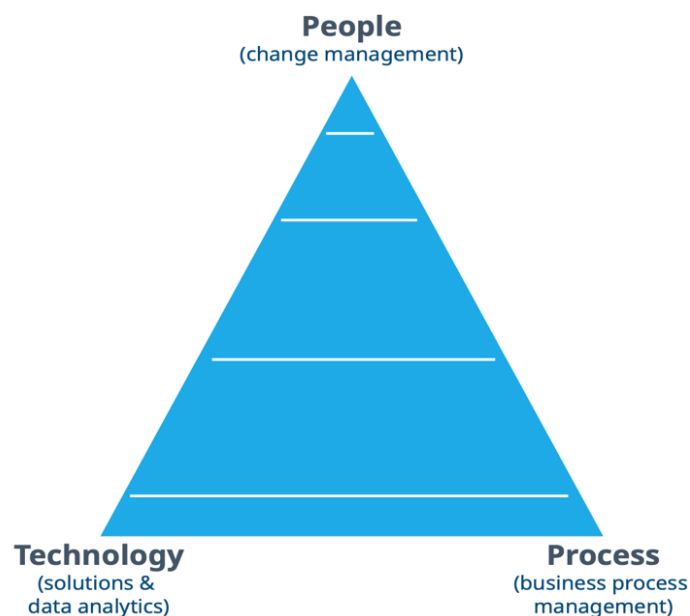


Fig : 4.22

- 4) The hospital staff believes that employing digital health technologies requires additional knowledge and abilities. Regular training sessions should be conducted to address this. This will help them become more capable and self-assured when using these technological tools. Additionally, they believe that for learning to be effective, peer support is crucial throughout class. They also have a lot of worries about the possibility that their training may have left their patients' data vulnerable. With immediate help and instruction provided by the hospital administration, these worries can be overcome.

4.6 Limitations

The questionnaire was developed in accordance with the Technology Acceptance Model's extensive list of determinants. The questionnaire was printed out on paper because the workforce was unfamiliar with online forms. Because there were so many factors, the questionnaire was lengthy and took each participant roughly 15-20 minutes to complete.

Although the employees were assured that their answers would remain anonymous once management had reviewed the data, it is unlikely that they did. The only possible interpretation of the results is "full willingness" against "uncertain about use plus no willingness."

The potential influence of regional factors on the decision made by healthcare professionals to use particular digital technologies could not be taken into consideration, to sum up. This study was not intended to examine context variables (such as cultural and social characteristics), expectations placed on hospital staff, or their level of eHealth literacy.

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6) ANNEXURES

1) Informed Consent

Dear Friends,
I am a student of MBA Hospital and Health Management at IIHMR University, Jaipur, Rajasthan. Presently I am working on my Dissertation Project under the guidance of my university mentor Mr Ashish Bandhu, Assistant Professor, IIHMR University, Jaipur and Industry Mentor Mrs Akshita Shah, Quality and Operations Manager at Saket Hospital, Jaipur. This study attempts to understand your acceptance and willingness towards using the Digital Health Tools in patient care. We request you 10-15 minutes to participate in this survey. We assure you that all your responses will be kept confidential and anonymous. Only the aggregated findings will be presented.

Thank you for your participation.

-
1. Please read the below statement carefully. Providing consent is a mandatory requirement for enrollment in the study.
- Informed Consent: I hereby give my consent for participation in the survey that is aimed at knowing the acceptance and willingness of the hospital staff towards the Digital Health Tools in patient care. I understand that my responses are likely to be used for the generation of data and its analysis and possible publication. I understand that I will be guaranteed anonymity and that any personal information that I provide will be kept confidential.
- ☐ Yes
- ☐ No

Fig : 6.1

2) Study Tool

Table 6.1 : Sociodemographic details in the Study Tool

Name :
Age :
0–14 years
15–47 years
48–63 years
≥ 64 years
Gender:
Female
Male
Can't Say
Department:
Level of Education:
Attended school, did not finish.
Finished school
Finished college, graduate
Post-graduate or higher
Total Years of Experience
Less than 1 year
1-2 years
2-3 years
3-4 years
4-5 years
More than 5 years
Are you willing to use the Digital Health Tools?
Yes
No
Do you know how to use the computer?
Yes
No

Table 6.2 : Perceived Ease of Use Items in Study Tool

Perceived Ease of Use : The degree to which a person believes that using a particular system would come without the need for training or managing developments.		5- Point Likert's Scale				
		Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree. 5
1	Self Efficacy : The degree to which an individual believes that he or she is able to use the technology					
a	I find it easy to use the technology.					
b	I can use technology, but it is much easier when someone gives me step by step instructions.					
2	Perception of External Control : The degree to which a person believes that organizational and technical resources are available from their employer to support the use of the technology					
a	With a little training, I can learn new technology and use it in patient care.					
b	We have a strong hospital information system that is at the heart of our operations.					
c	We have better internet connectivity at the hospital where I work with patients and that allows me to use digital tools.					
3	Technology Anxiety : The degree of apprehension or anxiety or fear a person may have when she/he is presented with the possibility of using technology					
a	Learning technical aspects give me anxiety. I get performance pressure at work and it's affecting my overall productivity.					
b	I feel that not every technology out there is easy to use and user friendly.					
c	I have a fear of losing the patients' data or of coming under a data breach					
4	Technology Playfulness : The degree of cognitive spontaneity in technological interactions					
a	I am a curious person when it comes to learning new things.					
b	I actively participate in trainings and take initiatives by offering innovative methods within my department.					
5	Perceived Enjoyment: The extent to which the activity of a specific system is perceived to be fun, especially when it comes down to use.					
a	I take training courses as an enjoyable learning experience.					
b	I am always willing to attend training programs conducted by the organization.					
6	Objective Usability : A comparison of systems based on an accurate estimation of the level of effort required to complete tasks.					
a	I find it easy to recover from errors when I use technology in patient care.					
b	Technology is a tricky runner. It doesn't always do as you want it to.					
c	Technologies can be challenging and rigid but having support from your team is invaluable.					
d	Interacting with technology can be mentally draining and needs regular training.					

Table 6.3 : Perceived Usefulness Items in Study Tool

Perceived Usefulness : The degree to which a person believes that using a particular system would improve his or her job performance.		5- Point Likert's Scale				
		Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree. 5
1	Subjective Norm : The extent to which a person is aware that he is being encouraged, dissuaded or influenced in his decision to use a system by people who matter to him.					
	a I have personally witnessed the utilization of digital health tools used for patient care.					
	b I'm curious about new digital health tools that can help patients throughout their treatment.					
	c My peers feel I should hone my skills in digital health tools.					
	d People will support me through training in using the new digital health tools.					
2	Image : The degree to which an individual perceives that the use of an innovation will enhance their status within their social system.					
	a Learning new digital health tools will give me something new and special to talk about with my peers at a networking event.					
	b Learning new digital health tools will help me thrive in my career both personally and professionally.					
	c Digital health tools will help me improve my overall rating online because of my efficiency and effectiveness at work.					
3	Job Relevance: The degree to which an individual believes that the target system is applicable to their specific needs.					
	a Digital health tools can be very helpful in learning new ways that will support certain aspects of my job.					
	b Digital health tools will help me achieve my objectives in patient care.					
	c I'll feel in control with my work when it comes to patient handling and treatment.					
4	Output Quality: The degree to which a person realizes their jobs tasks are carried out effectively.					
	a It will reduce my time on unnecessary activities and help me focus more on my tasks in patient care.					
	b Using digital health tools can help improve my job performance.					
	c My job will be difficult to perform if I do not have the right Digital Health tools.					
	d Digital health tools will help me build confidence when it comes to handling patients and providing them with the right level of care.					
5	Result Demonstrability: The degree to which a person believes that the results of using a system are tangible, observable, and communicable.					
	a Digital health tools will address my job related health needs					
	b It will result in more effective, efficient care for my patients.					
	c I would advise others to learn and use digital health tools.					

3) Plagiarism Report

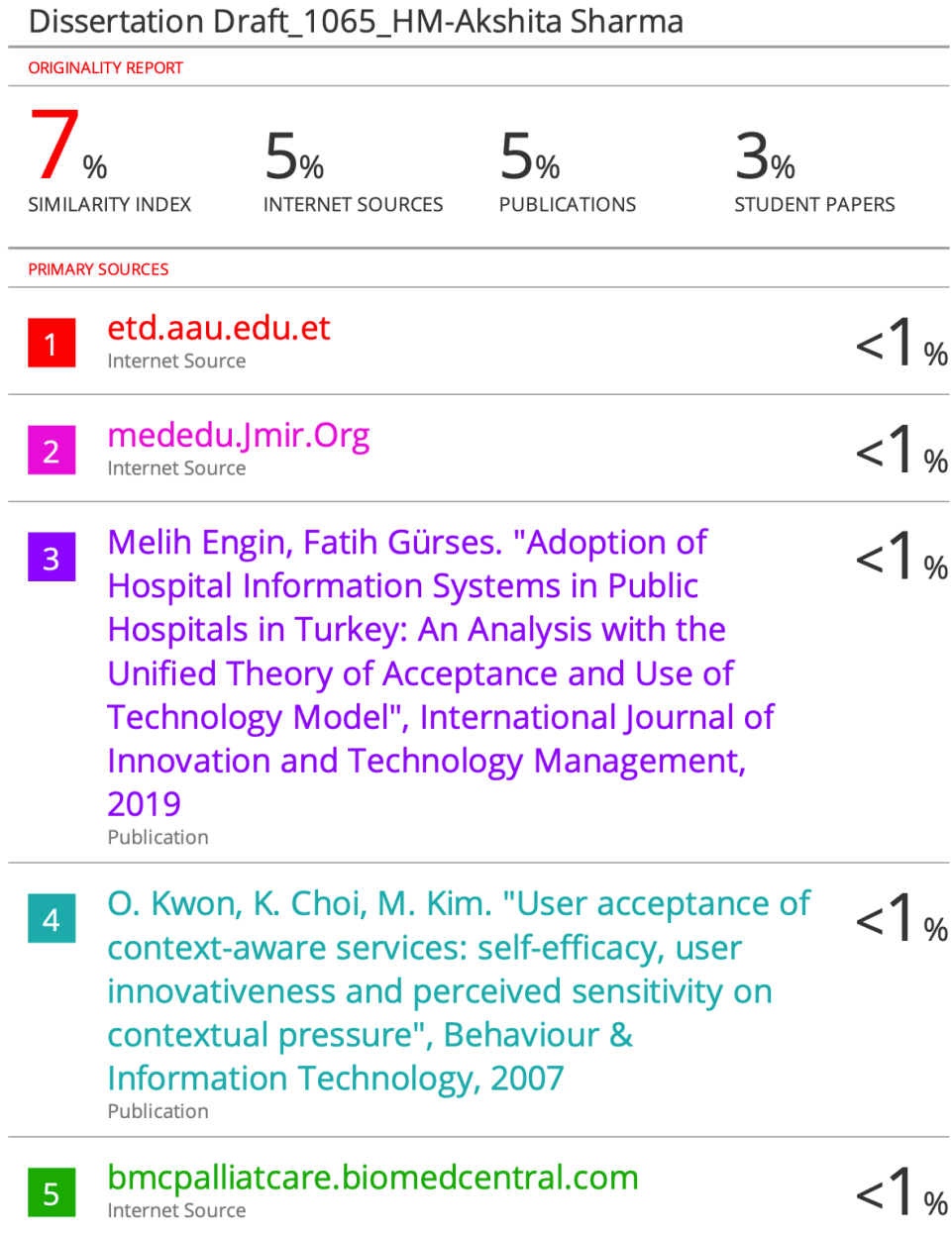


Fig : 6.2