

Technology Acceptance Model (TAM) on acceptance and use of Home Blood Collection App - DiagRight by Phlebotomists

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(MBA)

in

Hospital and Health Management

By

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Under the Supervision & Guidance

of

Dr. Sheenu Jain

2022

DECLARATION

I hereby declare that this dissertation titled Technology Acceptance Model (TAM) on acceptance and use of home Blood collection App of DiagRight by Phlebotomists 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Dr. Ashish Panghal

CERTIFICATE



DiagRight

Experience Letter

Date 18/6/2022

This is to certify that Dr. Ashish Panghal was working with DiagRight as Management Trainee for 4 Months starting from 21st Feb 2022 to 18th June 2022 and has completed his dissertation.

During his tenure with DiagRight, we found Dr. Ashish Panghal to be honest, hardworking & responsible.

He has done an exemplary job while working with us & has always maintained professional relations with the team & colleagues.

The decision of moving on is completely Dr. Ashish Panghal own decision. We wish him all the best for his future opportunities.

*Sincerely,
Team HR*

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This is to certify that dissertation titled Technology Acceptance Model (TAM) on acceptance and use of home Blood collection App of DiagRight by Phlebotomists is a record of the research work undertaken by Dr Ashish Panghal in partial fulfillment 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.

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Abstract:

Digital health, technology and home healthcare are the recent trends in the healthcare field which are growing by leap and folds every day. The use of applications based services and home blood collection are also fueled by current COVID-19 pandemic and digital transformation in the country. Drag Right is a current age company, which is disrupting the diagnostic market with its cutting age technology phlebotomist empowerment, affordable and quality services. The current study aims subject phlebotomists to Technology acceptance Model (TAM), a well-accepted psychology based theoretical model, to predict their acceptance level of newly developed "Home Blood collection App Drag Right". Home blood collection app DiagRight is one of the 3 digital properties developed by Diag Right which aims to make the work of phlebotomist convenient, effortless and streamline the process so that it can provide a seamless experience for its customers. This application is available on the Google Play and Apple Store to download for Android as well as iOS based devices. A quantitative research method was used to conduct a survey, by using the original TAM questionnaire to collect data from the phlebotomists using the app. The questionnaire was based on 7 point Likert scale with demographic section in first part of questionnaire. The collected data was first converted to numerical data using MS Excel and then variables were computed using IBM SPSS. The final analysis was carried out using IBM SPSS and results declared that participants perceived "Home Blood collection App Drag Right" easy to use. They also consider this will be useful in their activities. The phlebotomists also showed attitude and intention to use the app. These findings are supported by the Pearson Correlation values at the CI of 99%. The PU, PEOU, ATU and BI are related to each other as per the Pearson Correlation values and proves all the hypothesis mentioned in the study. This study thus proved that TAM to be a useful theoretical model in helping to understand and explain the behavior intention to use the "Home Blood Collection App- DiagRight". Previously, several Literature review showed that TAM is effective in predicting the acceptance of a technology as well as the results of this study indicated that TAM is effective in anticipating the possibility of acceptance of "Home Blood Collection App Drag Right". The percentage tables of the responses of phlebotomists for PEOU, PU, ATU and BI were also analyzed and respondents showed positive response for the application. Based on the verbal communications with the respondents who gave negative response to the application, certain

recommendations were advised. Apart from these there are certain limitations of the study which can be improved in the future researches like increase number of respondents, sampling techniques and effects of various social and demographic partners using the further models like TAM2 or TAM3.

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ABBREVIATIONS

- CAGR – Compound annual growth rate.
- NABL- National Accreditation Board for Testing and Calibration Laboratories.
- TAM- Technology Acceptance Model
- PU- Perceived usefulness
- PEOU- Perceived ease of usefulness
- UTAUT-
- MoHTAM- Mobile health technology acceptance model.
- ATU- Attitude towards usefulness
- BI- Behavioral intention

INTRODUCTION

1.1 Background

An Inc42 report stated that the Indian eHealth market is expected to reach the \$10.6 Bn mark by the year 2025 but that will be just 1.6% of the total addressable healthcare market of country which is expected to reach \$638 Bn by 2025.

One another report by Inc42, India's diagnostic labs market is expected to grow to \$25.66 Bn by 2027 at a CAGR of 11.65% between 2023 and 2027.

An Inc42 analysis also found that India was home to around 5,295 healthtech startups at the end of 2020 and it must have grown manifolds now. The e-diagnostics space in India has many players such as MediBuddy, NetMeds, DiagRight, Flebo, among the big players like pharmany, Tata 1mg etc.

The segment has seen a major rise in the last few years, due to COVID-19 pandemic and increase in demand for home-based sample collection in the country.

1.2 Introduction-

DiagRight is a healthtech startup working in the diagnostic space in India to bring transparency and visibility in process. Diagright founding team has 15+ years of collective work experience in online diagnostics. DiagRight ensures the most accurate test results by ensuring transparency at each step & strict adherence to NABL (National Accreditation Board of Testing and Calibration Laboratories) India guidelines for quality control right from the sample collection to reporting of results. The unique value proposition of the company is that it provides Temperature monitoring and LIVE tracking, Partner NABL accredited labs, ensures that samples travel time less than 4 hours, Digital (machine) reports of customers, Customer E-health records and Doctor and nutritionist consultation. The company operates from its head office in Gurugram, Haryana with regional offices in Mumbai and excellence center in Lucknow.

Previously, DiagRight used to do all the operations in manual way with google sheets were used to store an process information. The phlebotomists were given orders through the

WhatsApp, where they respond and also shares information and details after collecting samples. There was a lot of manual processing and discrepancies in this method with scope of lot of mistake and information gap. To cater this DiagRight launched Admin portal for operation team and Home blood collection app for phlebotomist to automate the whole manual process. This study basically focusses on the Home blood collection (Phlebotomist) application's acceptance among the phlebotomists using the behavioral psychology model, Technology acceptance model.

This study focuses on the home blood collection (Phlebotomist) applications' acceptance among the phlebotomists using the behavioral psychology model, Technology acceptance model.

The technology acceptance model (TAM) is an systems theory that models how users come to accept and use a technology when it is launched. The actual use of the TAM is at the endpoint where people use the technology. Behavioral intention leads people to use the technology and is influenced by the attitude(A) which is the general impression of technology. The model states that when users are presented with an innovative technology, several factors influence their decision about how and when they will use it. The notable factors are-

- **Perceived usefulness (PU)** – This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance them job performance". It means whether someone perceives that technology to be useful for what they want to do.
- **Perceived ease-of-use (PEOU)** – Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Davis 1989). If the technology is easy to use, then the barriers conquered. If it is not easy to use and the interface is complicated, no one has a positive attitude towards it.
- External variables such as social influence are key factors to determine the attitude. When these things (TAM) are in place, people will have the attitude and intention to use the technology. However, the perception may change depending on age and gender because everyone is different.

Home blood collection app-

Home blood collection app- DiagRight is one of the 3 digital properties developed by DiagRight which aims to make the work of phlebotomist convenient, effortless and streamline the process so that it can provide a seamless experience for its customers. This application is available on the google play and apple store to download for android as well as iOS based devices. The basic steps to register as a phlebotomist are-

- Download the application and register using your phone number and OTP.
- Give the necessary permissions to the application.
- Update your personal information including Name, contact number, e-mail ID and address.
- Update your basic documents- Aadhar card, Driving license, PAN card.
- Update your educational qualification(BSc Nursing, BMLT, DMLT or any other related certification/diploma/degree)

After this the DiagRight's backend team will scrutinize and verify all the documents and approve the same with a specific TAT of 24 hours. Once the documentation is approved by the team, application will give you notifications that you are registered.

Features of app-

- **Home Page-** This is the page opens when you log in the app. This shows orders if there on the map view and your location. This page also have option of “ My availability” which gives the phlebotomist to go offline/online as per their need. Another button on this page is for “APNA DUKAN” where phlebotomist can push their orders.
- **Dashboard-** This page gives all the valuable insights to the phlebotomists on a single click including their service statistics, total earning, total distance travelled, and also navigation to upcoming orders and payment withdraw.
- **Earning-** This page gives the detailed view of the earnings to the phlebotomists including day wise earning on the calendar, payment settlement and monthly earning statistics.
- **Leaderboard-** This page was created to motivate the phlebotomists and shows top 5 phlebotomists of the month on real time basis.
- **Trainings-** This is the learning and development portal of the app which offers various educational tutorials to the phlebotomist to learn and grow. This unique feature have video tutorial from technical(domain knowledge), soft skills, blood collection, laboratory, collection center, blood bank and working in a doctor's clinic. This is a overall service to develop career of the phlebotomist and grow in their field.
- **APNA DUKAN-** This is a unique initiative with potential to higher earning

potential and great incentive. This feature treats them as business partner and gives them special business discounts and offers on these orders.

- **RATE COMPARISON-** This feature enable the phlebotomist to compare the prices of different tests in different labs. This feature enable them to cross and up-sell.
- **Unique value proposition of Home Blood Collection App- DiagRight-**
- Apart from the above mentioned features, **Home Blood Collection App- DiagRight** have a unique technology inbuilt known as **TrackRight**. It allows the application to fetch data from specially designed IOT device(collection box), which has a specially designed chip. This allows the app to give real time data of sample location and temperature to DiagRight's servers which ultimately shows in customer app. This unique puts the company apart from the other companies and gives a competitive advantage as customer is more satisfied, ensuring customer delight. It also gives sense of responsibility and duty to the phlebotomists to submit the samples on time in the collection center or lab.

Review of literature

The Technology Acceptance Model (TAM) was chosen as the overall theoretical framework in order to shed light on two significant elements that influence users' acceptance of technology (perceived usefulness and ease of use). It was believed that one effective strategy to overcome some of the biggest challenges in the introduction of home blood collection was to employ technology to quickly enable remote connections between patients, clinicians, and the care team.

S n o.	Author	Study location	Sample size	Sampling technique	Findings
1.	<u>Neil Charney</u> , <u>Walter R. Booth</u>	USA and other developed countries		Secondary research	The data in the developed countries shows that the older adults lag in ICT use, including internet use, despite the benefits other products gave. The lag can be seen particularly in digital gaming and social networking. Some theories suggest that this lag can be attributed to the cost benefit factors such as perceived usefulness and perceived ease of use.
2.	<u>Megan Nguyen</u> <u>J Fujioka</u> <u>Kirsten Wentlandt</u> <u>N Onabajo</u> <u>Ivy Wong</u>	Canada	18	Convenient Sampling	Participants were asked about the usefulness of the technology in accordance to improved access and integration of palliative approach into standard care for individuals with life-long illnesses. Responses were also focused on the ease of using health technologies for

	<u>R S Bhatia</u> <u>O</u> <u>Bhattacharya</u> <u>Vess</u> <u>Stamenova</u>				r the patients and the providers as well. Two themes were identified from the analysis: “enabling remote connection” and “information-sharing platform”, while “integration with existing IT systems” and “user-friendly with ready access to technical support” encompassed perceived ease of use.
3.	<u>Bahlol Rahimi</u> <u>Hamed Naderi</u> <u>Hadi Lotfnz</u> <u>had Afshar</u> <u>Toomas Tim</u> <u>pk</u>	Iran	492	Convenient sampling	The review identified three main ICT application areas for TAM in health services: Telemedicine, Health records and mobile applications. The original TAM was tweaked to fit the dynamic nature of healthcare environment for example theory of planned behavior and unified theory of acceptance and use of technology.
4.	<u>Holden, R.</u> <u>Karsh, B.</u>	USA	16 Datasets	Secondary research	The history of using TAM in healthcare goes back into 1990 where researcher tried to identify t

					he usage of TAM in healthcare in Hong Kong the results for the same were disappointing as they suggested that usage of TAM in healthcare was poor. The analysis shows that there is no consistent results for usage, behavioral intention of usage in health care. Some of the studies shows a significant relationship between PU and PEOU and some of them shows insignificant relationship between both.
5.	<u>Pai, F.</u> <u>Huang, K.</u>	Taiwan	Data not available	Secondary research	Development of Health IT has led to the usage of technology in healthcare more and more. This study shows that the proposed factors have influenced intention to use a healthcare-based IT system. Information, service and system quality influence user's intention through the mediating constructs, perceived usefulness and perceived ease-of-use. Managerial impli

					cations are provided accordingly.
6.	<u>Kalayou, M</u> <u>Endehabtu, B.</u> <u>Tilahun, B.</u>	Ethiopia	384	Convenient sampling	This study was aimed to understand the behavioral intentions of the healthcare professionals to use modified technology acceptance in e-health care. The study reveals that there is a variance (56.2%) in the intention to use of e-health, which suggests that the organization needs more trained personnel to use e-health care services.
7.	<u>AlQudah, A.</u> <u>Al-Emran, M.</u> <u>Shaan, A.</u>	UAE	1768 studies	Secondary research	TAM and UTAUT are the most used models in the explaining what are the factors that are affecting the acceptance of various healthcare technologies. Apart from core constructs of TAM and UTAUT there are several other factors which are influencing various healthcare technologies like anxiety, computer self-efficacy, innovativeness, and trust.

8.	<u>Nadal, C.</u> <u>Sas, C.</u> <u>Doherty, G.</u>	Ireland	Data not available	Secondary research	There are three terms related to m-health and usage of technology “acceptance, acceptability and adoption”. The study shows that acceptability is mainly understood as usefulness, adoption is usually associated with readiness to adopt the technology, whereas acceptability and acceptance can be perceived as Feasibility.
9.	<u>Mohamed Abdul Hakim</u> <u>Tawfik, H.</u> <u>Al-Jumeily</u> <u>Obe,</u> <u>Dhiya</u> <u>Norton, Lin.</u>	Liverpool	229	Convenient sampling	This paper explores and analysis the technology acceptance of the use of smart mobile phones from users’ perceptions, viewpoint, and experience. The paper will focus on studies of the factors affecting the intention to use the smart mobile phone in the medical domain. This paper explores and analysis the technology acceptance of the use of smart mobile phones from users’ perceptions, viewpoint, and exp

					erience. The paper will focus on studies of the factors affecting the intention to use the smart mobile phone in the medical domain. This paper introduces a technology acceptance model for smart mobile phones (MoHTAM), which is intended to be used in the medical domain, specifically patient's medical information management, such as medical health record access, appointment management, and prescription management using mobile devices. This paper introduces a technology acceptance model for mobile phones (MoHTAM), which is intended to be used in health domain specifically by patients' medical information management, such as medical health record access, appointment management and prescription management using mobile phones.
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10.	<u>Nunes, A.Limpo T. Castro, S.</u>	Europe	394 adults	Convenient sampling	The study shows the moderating role of age, gender, and experience on the intention to use mHealth apps. The findings showed that the UTAUT model is a useful tool to test the behavioral intention to use mHealth apps and provided additional support to extant literature on the role of age, gender, and experience as significant moderators. This knowledge is an asset for the development of new health-related ICT.
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METHODOLOGY

3.1. Type of study: Cross-sectional descriptive study

3.2 Research question: What is the acceptance of “Home Blood collection App- DiagRight” amongst the phlebotomists using TAM?

3.3 Research objective:

- To understand the relations between PEOU and PU.
- To understand the relationship between PEOU and ATU.
- To understand the relationship between PEOU and BI.
- To understand the relationship between PU and ATU
- To understand the relationship between PU and BI.
- To understand the relationship between ATU and BI.

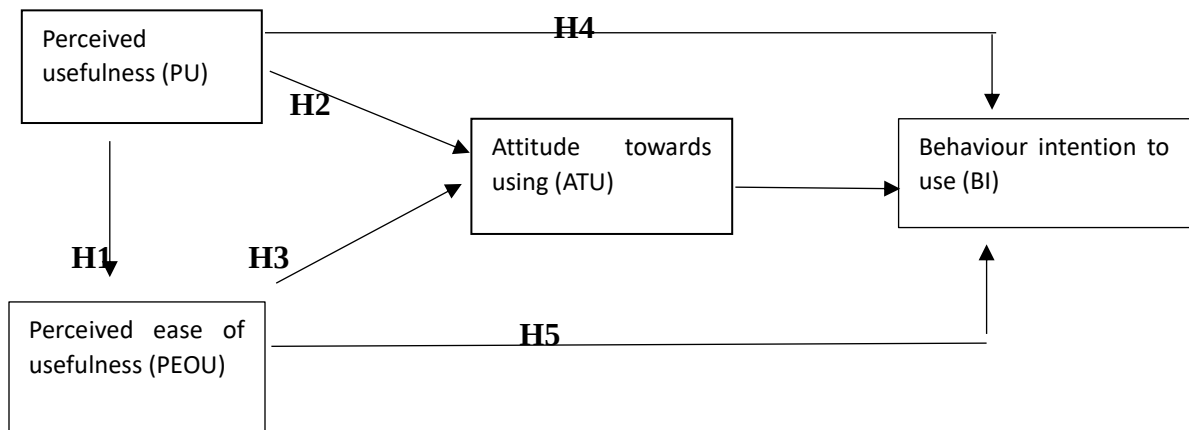


Figure 3.1 Hypothesis for TAM

Technology acceptance model is well known for checking the possible acceptance of the technology. It was developed by Fred Davis and Richard Bagizzi. It shows the factors behind people's thinking to adopt a technology. TAM states that People adopt a technology because they find the new technology useful for their daily work and easy to use.

The various concepts of TAM are-

- Perceived usefulness(PU)- It is the degree to which a potential user believes that using the technology would enhance his or her work performance.
- Perceived ease of usefulness- It states that how effortless or easy will be the use of newly developed technology.
- ATU- It is the potential user's positive or negative feeling associated with performing a specific behaviour.
- BI- It is the degree to which a potential user has formulated conscious plans to perform or not perform some specific future behaviour.

Several studies shows that there is an association between perceived usefulness (PU) and perceived ease of use (PEOU), several hypotheses are presented to prove the same:

- H1: There is a significant relationship between perceived ease of use and perceived usefulness among the phlebotomists.
- H2: There is a significant relationship between perceived usefulness and phlebotomists' attitude towards using the home blood collection application.
- H3: There is a significant between PEOU and phlebotomists' attitude towards using the home blood collection application.
- H4: There is a significant relationship between perceived usefulness and phlebotomists' intention to use the home blood collection application.
- H5: There is a significant relationship between perceived ease of usefulness (PEOU) and phlebotomists' intention of use the home blood collection application.
- H6: There is a relationship between Attitude towards using and phlebotomists' intention to use app.

3.3 Sampling technique and size: Convenient sampling and 108 sample size.

3.4 Type of study: Cross- sectional analytical study.

3.5 Data collection method: A semi structured questionnaire was circulated amongst the phlebotomists' which had questions to assess the acceptance, ease of using the app, and behavioral intentions to use the app with the help of five pointers Likert's scale.

3.6 Inclusion criteria: Phlebotomists' who are using the home blood collection application in the region of

- o Delhi NCR
- o Chandigarh tri-city
- o Dehradun

o Jaipur

3.7 Exclusion criteria: Phlebotomists' who are not using the "Home Blood collection App- DiagRight" and are not working in these areas.

3.8.1. STEP 1(Data cleaning and conversion)- The questionnaire had 2 parts as follows-

- Part A contains questions about the demographic data of the participants.
- Part B of the questionnaire had 17 questions(6 for PU, 6 for PEOU, 3 for ATU, 2 questions for BI). The Likert scale responses were converted to the numerical format using MS Excel The all of these questions were coded in the following way-
 1. **Perceived usefulness-** Total 6 questions coded, as PU1, PU2, PU3, PU4, PU5, PU6.
 2. **Perceived ease of use-** Total 6 question coded, as PEOU1, PEOU2, PEOU3, PEOU4, PEOU5, PEOU6.
 3. **Attitude to use-** Total 3 questions, coded as ATU1, ATU2, ATU3.
 4. **Behavioral intention-** Total 2 questions, coded as BI1 and BI2.

3.8.2 STEP 2(Computation of variable)-

To analyses the data collected in multiple questions(Multiple questions for 1 parameters), new variables were computed using SPSS. Total 4 variables namely PU, PEOU, ATU, BI were calculated for the existing questions.

Perceived Usefulness(PU)=MEAN(PU1,PU2, PU3, PU4, PU5, PU6)

Perceived ease of use(PEOU)=MEAN(PEOU1, PEOU2, PEOU3, PEOU4, PEOU5, PEOU6)

Attitude to use(ATU)=MEAN(ATU1, ATU2, ATU3)

Behavioral intention(BI)-MEAN(BI1,BI2)

3.8.3 STEP 3(Analysis using MS Excel and IBM SPSS)-

To analyze the collected data, 2 analysis software MS Excel and IBM SPSS were used.

- Part A which has demography data, analyzed using MS Excel by making Pivot tables for different variables. Frequency and percentage is calculated in each variable.
- Part B which has the calculated variables namely PU, PEOU, ATU, BI were analyzed for the correlation using Pearson correlation with 2 tailed test against the hypothesis. Mean score were also calculated.

RESULTS

This chapter demonstrates the demographic characteristics, results from analysis and Pearson's correlation results and hypothesis testing based on the research study.

4.1 Demographic Characteristics

When we talk about demographic details which is shown in Table 4.1, it shows that out of total 108 participants, 79 males and 29 females were there, this making the ratio of 66% and 34% respectively. These participants were from different age groups, 26(24%) in age group of 18 to 25, 52(48%) in the age group of 25-35, 18(17%) were from age group 35-45 years and 12(11%) were from the age group of above 45 years.

Phlebotomists who have valid degrees only were included in the study, out of total 108, 67(62%) had diploma, 39(36%) were graduates and 2(2%) had post graduate degrees. All the phlebotomists included in the study were experienced, 23(21%) had 0-2 years of experience, 53(49%) had 2-5 years of experience, 16(15%) had 5-10 years of experience and 16(15%) had experience of more than 10 years.

Characteristics		Frequency	Percentage
Gender	Male	79	73%
	Female	29	27%
City	Chandigarh Tri-city	14	13%
	Dehradun	14	13%
	Delhi NCR	28	26%
	Jaipur	19	18%

	Lucknow	33	31%
Age	Above 45	12	11%
	Between 25 to 35	52	48%
	Between 18 to 25	26	24%
	Between 35 to 45	18	17%
Qualification	Diploma	67	62%
	Graduate	39	36%
	Post-graduate	2	2%
Experience	2 to 5 years	53	49%
	5 to 10 years	16	15%
	More than 10 years	16	15%
	up to 2 years	23	21%

Table 4.1 Demographic characteristics of the participants

4.2 TAM Correlation Analysis on Hypothesis testing- Correlations

		PU	PEOU	BI	ATU
PU	Pearson Correlation	1	.894	.723	.801
	Sig. (2-tailed)		.000	.000	.000
	N	108	108	108	108
PEOU	Pearson Correlation	.894	1	.818	.864
	Sig. (2-tailed)	.000		.000	.000
	N	108	108	108	108
BI	Pearson Correlation	.723	.818	1	.926
	Sig. (2-tailed)	.000	.000		.000
	N	108	108	108	108

ATU	Pearson Correlation	.801	.864	.926	1
	Sig. (2-tailed)	.000	.000	.000	
	N	108	108	108	108

Table 4.2 Pearson's correlation

	Mean	N
PU	2.9105	108
PEOU	2.9580	108
BI	2.8565	108
ATU	2.8719	108

Table 4.3 Mean and total participants

The above table shows the summary of Pearson Correlation whereas it also provides the strength of relationship among the given variables.

A significant relationship was found between PEOU and PU, and this reinforce the hypothesis H1 (significant level = 0.894).

- H1: There is a significant relationship between perceived ease of use and perceived usefulness among the phlebotomists.

The results also indicate that there is statistically sufficient evidence regarding the impact of PU on the attitude of Phlebotomists to use Home Blood collection app. This is shown by reinforce for H2 (correlation coefficient = 0.801).

- H2: There is a significant relationship between perceived usefulness and phlebotomists' attitude towards using the home blood collection application.

The results also reinforce for a significant relationship between PEOU and Phlebotomist's attitude towards using "Home Blood collection App- DiagRight". This means the results reinforce hypothesis H3 (correlation coefficient =0.864).

- H3: There is a significant between PEOU and phlebotomists' attitude towards using the "Home Blood collection App- DiagRight".

Hypothesis H4 is also reinforced by the results as they show a statistically significant relationship between PU and Phlebotomist's intention to use "Home Blood collection App- DiagRight". This is at a 0.723 correlation coefficient.

- H4: There is a significant relationship between perceived usefulness and phlebotomists' intention to use the "Home Blood collection App- DiagRight".

The data also indicate reinforce for hypothesis H5. The results show a significant positive relationship between PEOU and Phlebotomist's intention to use Home blood collection app. Hence, this is at a 0.818 correlation coefficient.

- H5: There is a significant relationship between perceived ease of usefulness (PEOU) and phlebotomists' intention of use the home blood collection application.

At last, there is statistical proof to reinforce hypothesis H6. The results show a significant relationship between Phlebotomist's attitude to use Home blood collection app, and their intentions to use Home blood collection app. This reinforce of hypothesis H6 is shown by a 0.926 correlation coefficient.

- H6: There is a relationship between Attitude towards using and phlebotomists' intention to use app.

Discussion:

An information systems theory called the technology acceptance model (TAM) analyses how people come to accept and employ a technology. The point at which people really utilize a system is the end-user. A element that influences people's decision to use technology is their behavioral intention.

In order to shed light on two crucial factors that affect users' acceptance of technology, the Technology Acceptance Model (TAM) was adopted as the overarching theoretical framework (perceived usefulness and ease of use). It was thought that using technology to swiftly enable remote connections between patients, clinicians, and the care team could be a useful way to get over some of the major obstacles in the implementation of home blood collection.

When it comes to home blood collection services, where routine symptom control is a top goal, being able to quickly interact with patients was thought to be very crucial. Phlebotomists who recognized the potential burden of introducing new technology as an addition to already time-consuming documentation/charting processes in home blood collection found this to be especially crucial.

The tables below shows the results from the questionnaire which was filled by the phlebotomists in regards to their perception of usefulness of the home blood collection app Diag-right.

Perceived Usefulness (PU)

- In terms of completion of work faster- 82% of the participants responded that the application will enable them to complete their work faster than usual.
- Performance enhancement: 74% of the total participants responded that their performance will improved by using the application
- Productivity: Out of the total participants 79% of them responded that their productivity was improved before using this application
- Effectiveness of work: 77% of the participants responded that their effectiveness in work will increase.
- Make work easy: 68% of the participants suggested that this application will make

their work easier.

- Usefulness in work: out of the total 83% participants responded that this application will make their work easier.

According to TAM, perceived usefulness refers to how much employing a technology will improve effectiveness, productivity, etc. of an employee. According to the trend in this particular survey, 60–80% of the participants think that using this technology (the home-based blood collection app DiagRight) will increase their productivity, effectiveness, and performance as well as lighten their workload by making it easier for them to complete their tasks. The external aspect that most often has a direct impact on a person's attitude toward using any new technology is typically its perceived usefulness. Phlebotomists have a favorable perception of using the application in this situation.

ITEM	Extremely disagree	Quite disagree	Slightly Disagree	Neither	Slightly agree	Quite agree	Extremely agree
PU 1	2%	0%	16%	0%	39%	38%	6%
PU 2	0%	4%	11%	11%	23%	37%	14%
PU 3	2%	4%	7%	8%	36%	26%	17%
PU 4	2%	2%	19%	0%	37%	33%	7%
PU 5	0%	4%	15%	13%	31%	26%	11%
PU 6	2%	0%	15%	0%	43%	31%	9%

Table 4.4 PU of “Home Blood collection App- DiagRight”.

Perceived ease of usefulness: It is the degree to which a person believes that using and understanding the technology will be of least efforts. The findings of our survey

- Learning to use: 82 percent of the participants overall said it would be simple to learn how to use the application.
- Practical application: This indicates that the participants believed using this programme would be simple. The fact that 74% of participants said using this programme will make it simple for them to complete their tasks demonstrates that

they see its usefulness.

- Interaction: Seventy-four percent of the participants said that using the programme was simple and clear.
- Simple interaction: Seventy-nine percent of the participants overall said that using the app will be easy.
- Skillful: Participants who said this app would help them become more skilled made up 83% of the sample.
- Easy to use: 77 percent of the participants said that they expected the app to be simple to use.

Any new technology that is made available to people will have a direct impact on PU due to the PEOU. PEOU argues that people's perceptions or cognitive reactions to how simple it is to use technology. In our situation, the PEOU has a positive inclination, suggesting that the survey respondents believe utilizing this specific software will be simple, will make their work simple, and will simultaneously make them skilled.

Combining PU and PEOU provides insight into the ATU (attitude towards using the technology). Both perceived utility and perceived ease of usefulness have positive results in the study we did, which will directly impact how people feel about using the application.

ITEM	Extremel y Disagree	Quite disagree d	Slightly Disagre e	Neithe r	Slightl y agree	Quite agree	Extremel y agree
PEOU 1	2%	2%	15%	0%	57%	19%	6%
PEOU 2	0%	4%	9%	13%	15%	46%	13%
PEOU 3	2%	2%	7%	15%	49%	19%	6%
PEOU 4	0%	2%	11%	8%	38%	39%	2%
PEOU 5	0%	2%	10%	6%	42%	30%	11%
PEOU 6	2%	0%	17%	4%	47%	23%	7%

Table 4.5 PEOU of “Home Blood collection App- DiagRight”.

ATU (attitude towards using)

It speaks about a user's evaluation of whether employing a particular information system application is desirable. PEOU and PU both affects the Attitude towards using any technology. PU and PEOU are both external factors.

- Use of the app is a good idea, according to 81% of respondents. Using an app to draw blood at home is a good idea.
- Liking the idea: 81 percent of the respondents stated that they enjoy the notion of using home blood collection.
- The majority of participants (84%) thought that employing a home blood collection application was a good idea.

The ATU results are in line with the replies to PU and PEOU, indicating that positive PEOU and positive PU will both have a good impact on attitude toward adopting technology.

ITEM	Extremel y Disagree	Quite disagree d	Slightly Disagre e	Neithe r	Slightl y agree	Quite agree	Extremel y agree
ATU 1	0%	4%	15%	0%	57%	17%	7%
ATU 2	0%	6%	2%	11%	15%	59%	7%
ATU 3	2%	0%	11%	4%	50%	28%	6%

Table 4.6 ATU “Home Blood collection App- DiagRight”.

Behavioral intention to use the application : It suggests that the stronger the intention to conduct the behavior, the more probable it is to be carried out, according to the motivational elements that impact a particular behavior.

- Planning on using the application: The application will likely be used in the future, according to 78% of the respondents.
- If company provides access: If the employer gave them access, 76 percent of the participants said they would utilize the application.

The attitude about adopting technology directly affects behavioural intention.

In this case, we can see that the participants' attitude toward utilizing the application had a favorable influence on the behaviour that would be developed in them based on their perceptual and cognitive reactions to the arrival of a new technology in their workplace.

ITEM	Extremel y Disagree	Quite disagree d	Slightly Disagre e	Neithe r	Slightl y agree	Quite agree	Extremel y agree
BI 1	0%	2%	19%	2%	50%	22%	6%
BI 2	2%	2%	11%	9%	8%	51%	17%

Table 4.7 BI of “Home Blood collection App- DiagRight”.

CONCLUSION

A quantitative research method was used to conduct a survey, by using the original TAM questionnaire to collect data from the phlebotomists using the app. The questionnaire was based on 7 point Likert scale with demographic section in first part of questionnaire. The collected data was first converted to numerical data using MS Excel and then variables were computed using IBM SPSS. The final analysis was carried out using IBM SPSS and results declared that participants perceived “Home Blood collection App-DiagRight” easy to use . They also consider this will be useful in their activities. The phlebotomists also showed attitude and intention to use the app. Pearson correlation showed significant relationship between PEOU and PU, PEOU and ATU, PEOU and BI, PU and ATU, PU and BI, ATU and BI. This study thus proved that TAM to be a useful theoretical model in helping to understand and explain the behaviour intention to use the “Home Blood Collection App- DiagRight” Previously, several Literature review showed that TAM is effective in predicting the acceptance of a technology, as well as the results of this study indicated that TAM is effective in anticipating the possibility of acceptance of “Home Blood Collection App- DiagRight”.

Recommendations

The Home Blood Collection App- DiagRight is a great improvement on the manual excel and WhatsApp model of the operations. This study shows a greater satisfaction and intention to use the application in the phlebotomists but some phlebotomists gave suggestions to improve certain things about the application. Based on these, following recommendations can be given to the company-

- App sometimes crashes or hangs which is issue with the technology team, it needs to be resolved as soon as possible.
- Documentation verification process can be make more faster as some phlebotomists were faced issue with long waiting periods to verify documents.
- Some specific smartphone brands shows difficulty in installing and starting the application.

- The order notification can not be disabled by the phlebotomists even while they are not available(offline), causing discomfort in non-working hours.
- A video tutorial to use the app and it's features can be created and added to app as that will help the phlebotomists to use the app more efficiently.

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Annexures

Annexure A

Study for the acceptance of current version of Home blood collection app of DiagRight using TAM

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* Required

I have been told about the study and completely understood this. I am willing to * participate in the study

☐ Yes

☐ No

Gender *

☐ Male

☐ Female

☐ Prefer not to say

Age- *

- ☐ Between 18 to 25
- ☐ Between 25 to 35
- ☐ Between 35 to 45
- ☐ Above 45

Educational qualification- *

- ☐ Diploma
- ☐ Graduate
- ☐ Post-graduate

City- *

- ☐ Delhi NCR
- ☐ Chandigarh Tricity
- ☐ Dehradun
- ☐ Jaipur
- ☐ Lucknow

Experience as a phlebotomist- *

- ☐ upto 2 years
- ☐ 2 to 5 years
- ☐ 5 to 10 years
- ☐ More than 10 years

Define you experience of using the Home Blood collection App with these questions-

	Extremely Agree	Quite Agree	Slightly Agree	Neither	Slightly Disagree	Quite Disagree	Extremely Disagree
This app enables me to accomplish my work more quickly	☐	☐	☐	☐	☐	☐	☐
This app will increase my work performance	☐	☐	☐	☐	☐	☐	☐
This app will increase my work productivity	☐	☐	☐	☐	☐	☐	☐

This app will increase my work productivity	☐	☐	☐	☐	☐	☐	☐
This app will enhances my effectiveness in my work	☐	☐	☐	☐	☐	☐	☐
This apps makes my work easier	☐	☐	☐	☐	☐	☐	☐
This app is usefull in my work	☐	☐	☐	☐	☐	☐	☐

Define you experience of using the Home Blood collection App with these questions-

	Extremely agree	Quite Agree	Slightly Agree	Neither	Slightly Disagree	Quite Disagree	Extremely Disagree
learning to use this app is easy	☐	☐	☐	☐	☐	☐	☐
I find it easy to get in the app to do what i want to do	☐	☐	☐	☐	☐	☐	☐

Define your experience of using the Home Blood collection App with these questions(ATU)- *

	Extremely agree	Quite Agree	Slightly Agree	Neither	Slightly Disagree	Quite Disagree	Extremely Disagree
I believe it is a good idea to use home blood collection app	☐	☐	☐	☐	☐	☐	☐
I like the idea of using this home blood collection app	☐	☐	☐	☐	☐	☐	☐
Using the home blood collection app is a positive idea	☐	☐	☐	☐	☐	☐	☐

Define your experience of using the Home Blood collection App with these questions(BI)- *

Define your experience of using the Home Blood collection App with these questions(BI)- *

	Extremely agree	Quite Agree	Slightly Agree	Neither	Slightly Disagree	Quite Disagree	Extremely Disagree
I plan to use a home blood collection app in the future	☐	☐	☐	☐	☐	☐	☐
If company provides access to the app, I intend to use the app	☐	☐	☐	☐	☐	☐	☐