Study on TAM (Technology Acceptance Model) of BLE (Bluetooth Low Energy) based Beacon Technology for the Hospital Operations at GCS Hospital, Ahmedabad.

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

Neelaksha Kumar Singh Yaduwanshi

Under the Supervision and Guidance of

Dr. Prashant Sharma

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **"Study on TAM (Technology Acceptance Model) of BLE (Bluetooth Low Energy) based Beacon Technology for the Hospital Operations at GCS Hospital, Ahmedabad"** is the bonafide record of my original researchwork. 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)

Neelaksha Kumar Singh Yaduwanshi

Date

CERTIFICATE

CERTIFICATE

This is to certify that dissertation titled **"Study on TAM (Technology Acceptance Model) of BLE (Bluetooth Low Energy) based Beacon Technology for the Hospital Operations at GCS Hospital, Ahmedabad"** is a record of the research work undertaken by **Neelaksha Kumar Singh Yaduwanshi** 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.

Faculty Guide	School Dean
IIHMR University, Jaipur	IIHMR University, Jaipur
Date	Date

Abstract:

Due to current situation of COVID-19, there is more inclination towards Digital Health in coming future. The use of technology to enhance Hospital and Healthcare operation is regarded as significant among due to continuous improvements of the Healthcare Information Technology. The Gujarat Cancer Society (GCS) Hospital, like many other Hospitals, is undergoing reforms in its Healthcare operations in response to these technological effects on Healthcare environment. The aim of this study was to subject Hospital staff to the Technology Acceptance Model (TAM), a well-established theoretical model, to predict their acceptance level of Bluetooth Low Energy (BLE) based Beacon technology. A quantitative research method was used to conduct the survey with a questionnaire which was used to collect required data from Hospital staff who stepped forward to participate. The results declared that participants perceived Bluetooth Low Energy (BLE) based Beacon technology easy to use Thus consider that it will be useful in their Hospital working environment. This study proved that TAM to be a useful theoretical model in helping to understand and explain behavioral intention to use BLE based Beacon technology. As per several literature reviews it has ensured that TAM is effective in predicting the acceptance of technology, the results of this study indicated that TAM is effective in anticipating the possibility of acceptance of BLE based Beacon technology by GCS Hospital staff.

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Sincerely,

Neelaksha Kumar Singh Yaduwanshi

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List of Abbreviations

COVID-19	Corona Virus Disease 2019
RFID	Radio Frequency Identification
BLE	Bluetooth Low Energy
USB	Universal Serial Bus
GCS	Gujarat Cancer Society
TAM	Technology Acceptance Model
RSS	Received Signal Strength
IPS	Indoor Positioning System
Wi-Fi	Wireless Fidelity
IoT	Internet Of Things
ICU	Intensive Care Unit
TOE	Technology, Organizational and Environmental
HRTLS	Hospital Real-time Location Systems
IT	Information Technology
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
BI	Behavioral Intention to use
ATU	Attitude Toward Using
MS	Micro Soft
SPSS	Statistical Package for the Social Sciences
BUAN	Botswana University of Agriculture and Natural Resources

LIST OF FIGURES AND TABLES

1. Introduction:

This chapter consists of the plan of research, the research problem, background and importance of the problem with aims and objectives of the study.

COVID-19 pandemic has become a hefty Healthcare confrontation among the world. The current critical situation has forced the Hospitals to maximize the use of Digitalization of Healthcare services. The post COVID-19 situations will bystander an increased expends on Digitalization of Healthcare services by Health-care System to ensure patient safety. There are several healthcare solutions which can be used to develop a contactless work flow of Hospital operation which will further support the contact tracing of COVID-19 infection. Hence, RFID and BLE based Beacon technology provides an opportune Digital solution for the Hospitals as per the demanding situation.

In RFID Technology, RFID consists of small tags which include small or miniature sized circuitry that are detectable by radio waves. The size of RFID tags varies as per the requirement it can be similar to the size of Key chain or as thin as paper labels. The number of data string which can be stored and the distance from which it can be read depends upon the size of the tag. RFID can be mainly divided into two types such as active and passive tags. The read distance depends upon the type of RFID tag whereas "RFID tag does not require a "line of sight" for reading the data".

The passive RFID tag does not include any battery whereas they capture the "incoming power from the radio waves" emitted by the reader and send them back to the reader. As soon as the reflected wave is grabbed by the reader, the tag along with its parameters is identified by the reader. The major drawback of passive RFID tags is that they are unable to provide real-time location and complex to set up. Hence, the reading range is typically less than twenty feet.

Active RFID tags incorporates a battery which results in increase read range of RFID tags up to hundred feet. The high read range of active RFID overcomes the drawback of passive RFID tags. In Hospitals, RFID found its application when it came to monitoring of Hospital assets. There are several drawbacks of passive RFID tags such as inability to provide real time location due to power consumption, prohibitive cost and complexity in setting up. On the contrary, RFID tags are less preferred when the tracking needs to be done using a mobile phone.

BLE based Beacons are a small sized radio transmitter that sends BLE signals to the nearby Bluetooth/mobile device and works on wireless technology. BLE based Beacon are majorly constructed for short range communications. It connects with a mobile application installed on the Bluetooth/mobile device and generates specific actions as per the requirement. Hence, BLE based Beacon devices are miniature in size and can be mounted across various locations, to broadcast low energy Bluetooth signals in a given specified range. BLE based Beacon mainly works on two Beacon protocols such as Eddystone and iBeacon. Eddystone is a Google based protocol released in 2015. It is an open format designed for complete freedom and transparency to develop creative projects whereas iBeacon is a Apple based protocol that broadcasts “their identifier to nearby portable electronic devices”. The identifier and the several bytes sent are used in various real time applications like determining device's physical location, track customers, push notifications and many more. There are several types of BLE based Beacon such as small beacon, standard beacon, parent beacon, USB beacon and special beacon. Hence, in Hospital Beacons can used for Patient tracking, Asset tracking, Easy navigation, Optimized Operations, Analytics, Analytics, Digital Access Control and Digital marketing.

In patient tracking, the patient vital signs can be tracked by integrating the beacon devices with wearable such as wristbands or accessories which forms a two-way communication and also “captures location data to the level of a Hospital bed”. In Asset Tracking, the chances of misplaced assets are minimized which further result in reduced purchase of repeat asset. As a result, considering the active nature of Healthcare

operations, there is a risk of Hospital theft and a possibility for Hospital assets or equipment to be inaccessible when really required. In case of easy navigation, the BLE based Beacon application provides the real time status of Doctor Appointments to patients while waiting at a Healthcare center and navigate them through a right path to the assigned Doctors chamber. The beacon also helps the patients to guide them to in house Hospital departments as per their need and requirement. Beacons also provide Digital Access Control by initiating Bluetooth tags at each access point which enable record or identity management & requisite availability of data. Hence, Beacons works as a catalyst in Healthcare and Hospital operations in various ways such as by using beacon technology, the Nursing staff gets the information related to type of medication the patient has been prescribed. The Emergency notifications are sent out easily to gain fastest possible attention from nearby medical staff. The Doctor can also use beacon technology to refer information related to patient's course of treatment. The Hospital staff gets notifications as per their assigned duties and other emergency duties on their cell phones when they reach their workplace or work area.

This study investigates the acceptance level of GCS Hospital staff in infusing BLE based Beacon technology in their Hospital. In order to achieve this, “Technology TAM is used as a theoretical basis for predicting Hospital staff acceptance of this BLE based Beacon technology”. The research discussed in this paper was carried using the following question such as: “If BLE based Beacon technology was to be introduced at GCS Hospital; will Hospital staff accept and subsequently use it?” i.e., do “Hospital staff attitudinal beliefs such as perceived ease of use and perceived usefulness of BLE based Beacon technology predict its adoption?” This question is explored with the use of TAM. Hence the main purpose of this study was to use “TAM to assess the possibility of acceptance of BLE based Beacon technology by GCS Hospital staff, and provide a well-supported prediction of whether it will be utilized in the Hospital environment at GCS Hospital”.

2. Review of Literature:

This chapter includes past studies that are relevant to the selected research topic. The literature review consists of Title of the study (Authors, year) and salient features of the study.

S.No.	Title of the study (Authors , year)	Salient features
1.	"Beacon-Related Parameters of Bluetooth Low Energy: Development of a Semi-Automatic System to Study Their Impact on Indoor Positioning Systems. (Gabriele Salvatore de Blasio, José Carlos Rodríguez-Rodríguez, Carmelo R. García, and Alexis Quesada-Arencibia, 2019)"	• The purpose of this study is to develop a "BLE based fingerprinting based upon IPS" to reduce the data collection process and further streamline the data analysis process which will further result in accurate configuration of required parameters of this study. , • The parameters used in this study are the advertising interval, transmission power, with their appropriate number and geometric distribution. • There are several technologies used for IPS such as "Zigbee, Wi-Fi and BLE". • BLE is the preferred technology over others as it is widely used in most of the Iot applications as it has various advantages such as

		small and portable in nature, low cost and energy consumption with high accuracy and more battery life.
2.	"An Interactive Real-Time Locating System Based on Bluetooth Low-Energy Beacon Network. (You-Wei Lin and Chi-Yi Lin, 2018)"	• In this study the researchers designed an interactive communication system using a BLE technology. • Researchers developed a mesh network which provides real time location using a smartphone. • By using this method the real time specific location can be accessed using a application server by combining different beacon devices. • This technology can be used for tracking of patients with specific disease in the nearby area.
3.	"Simultaneous Indoor Pedestrian Localization and House Mapping Based on Inertial Measurement Unit and Bluetooth Low-Energy Beacon Data. (David C Schwebel, Ragib Hasan, Russell Griffin, 2020)"	• In this research, BLE beacon was used to track person real time location which was used for "simultaneous indoor pedestrian localization and house mapping". • "The person's and beacons' localization is performed simultaneously using a combination of particle and

		Kalman Filters". • This method was used to build a geographical map of the indoor movement of a person by installing the BLE based beacons as per the requirement. • For future reference, the size and dimensions of the place will be would be directly proportional to the number of beacons being used for the required area. • As a result, the proposed study can also be used to produce roadmap for concurrent home mapping and localization system based upon BLE based beacons.
4.	"A TAM-Based Study of the Attitude towards Use Intention of Multimedia among School Teachers. (Fumei Weng, Rong-Jou Yang, Hann-Jang Ho, Hui-Mei Su, 2018)"	• This study used TAM to analyze the outcome of IT environment on the "PU, PEOU, and attitude towards using multimedia, and the relevance and influence of these attitudes on BI". • The results of this study proved that "ease of use of the multimedia material would enhance the intention to use. The attitude toward use also influences the intention to use".

5.	"RFID analytics for hospital ward management. (Chun-Hung Cheng, Yong-Hong Kuo, 2016)"	• This study was done for "Hospital ward management for real time tracking of Hospital staff, patients and biomedical equipment within a ward". • This allows the user to trace the "physical contacts in case of any infectious disease like COVID-19". • In this study researchers also developed a platform for Digital analytics. • At last, the pilot test was performed in two medical wards of "ICU of one of the largest public general hospitals in Hong Kong".
6.	"Impact of RFID Technologies on the Hospital Supply Chain: A Literature Review. (Alberto Coustasse, Shane Tomblin, Chelsea Slack,2013)"	• This review study is basically done to find the current supply chain benefits and hurdle of adoption of RFID technology in Hospital to minimize the cost and improve the service quality. • This study suggests that the effectiveness of supply chain management can be improved by tracking the Hospital assets and

		monitoring theft prevention using RFID technology.
7	"Hospital Real-Time Location System (A Practical Approach in Healthcare): A Narrative Review Article. (Leila GHOLAMHOSSEINI, Farahn SADOUGHI, Aliasghar SAFAEI, 2019)"	• This study was carried out in Iran using HRTLS to monitor Hospital staff and patients along with biomedical equipment in emergency situation. • This study reveals that HRTLS is reliable and efficient mode of technology for Hospitals. • As a result, In Iranian Healthcare centers the organization requirements can be met using technologies such as Iot and cloud computing.
8	"Using a Modified Technology Acceptance Model to Evaluate Healthcare Professionals' Adoption of a New Tele-monitoring System. (Marie Pierre Gagnon, Estibalitz Orruño, José Asua, Anis Ben Abdeljelil, José Emparanza, 2012)"	• This study suggests that Telemonitoring is an cost effective and efficient method for improving patient safety. • Telemonitoring will also increase the efficiency of clinical outcomes as per the requirement. • This study had proved that the major factor that influence acceptance of Telemonitoring among healthcare professionals' is the "perception of appropriate organizational infrastructure,

		training, and support".
9	"RFID application in patient and medical asset operations management: A TOE perspective into key enablers and impediments. (Mohamed Aboelmaged, Gharib Hashem, 2018)"	• This study reveals the effect of organizational capacity and technical advantages on asset as well as the patient management. • The results of this study provide "negative influence of technical complexity and environmental uncertainty on both asset as well as the patient management". • Hence this study suggests that Hospitals must opt for RFID for Hospital operations for appropriate management of assets as well as patients.
10	"Using TAM to Predict Lecturers' Acceptance of Moodle: Case of Botswana University of Agriculture and Natural Resources. (Mohamed Aboelmaged, Gharib Hashem, 2018)"	• In this study the researcher has used "TAM for introducing e-learning management systems in BUAN". • The purpose of this study was to test the acceptance level of Moodle by BUAN lecturers. • As a result the study revealed that BUAN lecturers "perceived Moodle easy to use hence consider that it will be useful in their working environment".

Research Gap- There is no research conducted to study the TAM (Technology Acceptance Model) of BLE (Bluetooth Low Energy) based Beacon Technology for the Hospital Operations.

3. Materials and Methods:

This chapter describes the TAM and research methodology and hypothesis used in this study.

3.1.TAM –

'TAM model' is known for checking possible acceptance of technology. Fred Davis and Richard Bagozzi created it first. It shows the reason behind peoples thinking to choose a technology. "TAM states that they do so because they find the technology useful for their work and easy to use."

'TAM' concepts are:

• PU – "the degree to which a potential user believes that using the technology would enhance his or her work performance".

• PEOU – "how effortless a potential user believes using the technology will be".

• ATU – "a potential user's positive or negative feeling associated with performing a specific behavior", and

• BI – "the degree to which a potential user has formulated conscious plans to perform or not perform some specified future behavior".

3.2.Research Model –

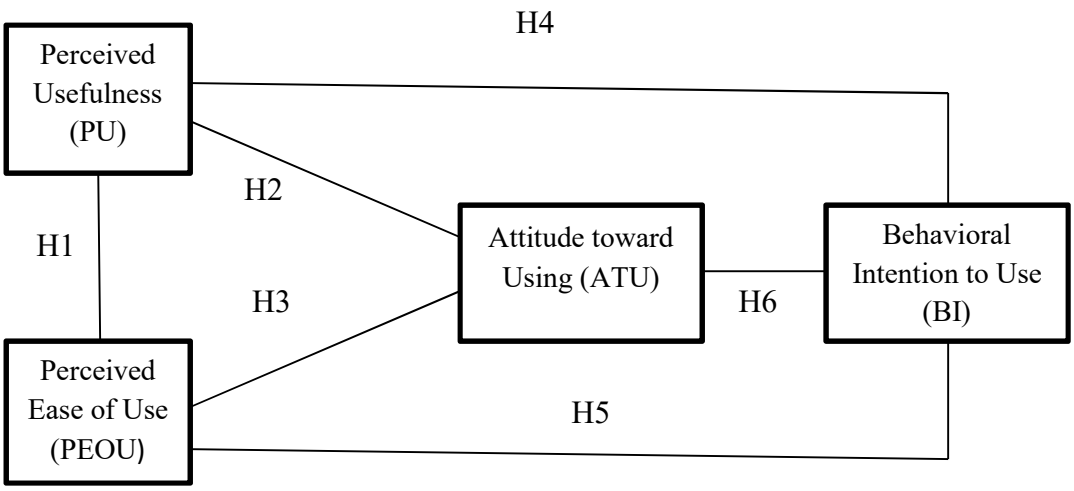

Figure 3.2: The Research Model

Hence, "several existing literature shows that PEOU is a positive determinant of PU", therefore the following hypothesis is proposed:

H1: There is a significant relationship between PEOU and PU.

"Many studies also show that both PU and PEOU are significant determinants of attitude to use a system", so the researchers propose the following hypotheses:

H2: There is a significant relationship between PU and Hospital Staff attitudes towards using BLE based Beacon Technology

H3: There is a significant relationship between PEOU and Hospital Staff attitudes towards using BLE based Beacon Technology

"PU is the most important predictor of intention to use a system. PEOU has also influenced intention to use a technology". Therefore, the following hypotheses are proposed:

H4: There is a significant relationship between PU and Hospital Staff intention to use BLE based Beacon Technology.

H5: There is a significant relationship between PEOU and Hospital Staff intention to use BLE based Beacon Technology.

"Several other studies have demonstrated that attitude towards using a system is a direct determinant of behavioral intention to use technology". Therefore, the following hypothesis is proposed:

H6: There is a significant relationship between ATU and Hospital Staff intention to use BLE based Beacon Technology

.

"Pearson's correlation method is conducted to evaluate the strength of the relationships between these variables".

3.3.Methodology:

Sampling Technique – Probability sampling (Simple Random sampling)

Sample size Formula –

For unlimited population:

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$$

For Finite population:

$$n' = \frac{n}{1+\frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2 N}}$$

where-

"z" is the Z score

"E" is the margin of error

"N" is population size

"p^" is the population proportion

"This is a cross-sectional, descriptive and correlational study based upon TAM of BLE based Beacon technology" on 100 Hospital staff from GCS Hospital, Ahmedabad. A paper based as well as "an online semi-structured questionnaire" was formed with the platform of "Google forms, with a consent form" affixed to it which was used to "collect data from the study's test subjects", i.e. the Hospital staff. "The questionnaire was developed on the basis of the literature review".

The link of the questionnaire as well as the "Hard copy of questionnaire" was sent through "e-mails and Whats App, among the Hospital staff of GCS Hospital". When received, following link should be clicked mentioning- "the participants got auto directed to the information about the study and informed consent". "Set of several questions" gets appeared after this, which the "participants need to answer". It was an "online/offline study".

The "socio-demographic variables" included "age, gender and education". "The online self-reported questionnaire developed by the investigators contained the sections related to the TAM constructs of PEOU, PU, ATU and BI", "adapted in the context" of BLE based Beacon technology. "Questions in sections B were structured using a seven-point Likert-type scale designed as follows: 1 = Extremely Agree, 2 = Quite Agree, 3 = Slightly Agree, 4 = Neutral, 5 = Slightly Disagree, 6 = Quite Disagree and 7 = Extremely Disagree". Participants were requested to rate their "level of agreement" using this scale in closed questions. A "simple random sampling without replacement", was used to select the 100 participants in this study.

For the purpose of "data analysis", a "MS-Excel spreadsheet" was came in use for "database elaboration, and afterwards the SPSS software version 22.0", for analysis of correlation and descriptive analysis. Parameters of "mean and standard deviation" were utilized for "descriptive analysis", "Pearson Correlation Test between PEOU, PU, ATU and BI" with "test's descriptive level" for "$p < 0.05$".

4. Results:

This chapter includes the demographic characteristic results and Pearson correlation analysis and hypothesis testing based upon this research study.

4.1.Demographic Characteristics:

When we talk about demographic details which is shown in Table 4.1, it shows that 66 males and 34 females' responses were received making the ratio of 66% and 34% respectively having 18+ age with understanding of English. 'An online survey, related to TAM for BLE based beacon technology was conducted in GCS Hospital, Ahmedabad. Total 100 responses were 100, out of which higher educated people were chosen. So, only participants with higher level of education were included in the study. 'The lowest educational level" of participants was 12^{th} and around 80% of participants were graduated and above.

Table 4.1: Socio- Demographic details of Participants

CHARACTERISTICS		FREQUENCY	PERCENTAGE
Age	Less than 25	4	4
	25 – 30	16	16
	30 – 40	46	46
	40 – 50	19	19
	Above 50 years old	15	15
Gender	Male	66	66
	Female	34	34
Education Level	Did not attend school	0	0
	Primary	0	0
	Secondary	20	20
	Graduation	42	42
	Post-Graduation	38	38

4.2.TAM Correlation Analysis on Hypotheses Testing:

The Table 4.2 shown below serves the summary of Pearson Correlation analysis 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 = 0.415).

H1: There is a significant relationship between PEOU and PU.

The results also indicate that there is statistically sufficient evidence regarding the impact of PU on the attitude of Hospital staff to use BLE based Beacon technology. This is shown by reinforce for H2 (correlation coefficient = 0.272).

H2: There is a significant relationship between PU and Hospital staff attitudes towards using BLE based beacon technology.

The results also reinforce for a significant relationship between PEOU and Hospital staff attitude towards using BLE based Beacon technology. This means the results reinforce hypothesis H3 (correlation coefficient = 0.377).

H3: There is a significant relationship between PEOU and Hospital staff attitudes towards using BLE based Beacon technology

Hypothesis H4 is also reinforced by the results as they show a statistically significant relationship between PU and Hospital staff intention to use BLE based Beacon technology. This is at a 0.181 correlation coefficient.

H4: There is a significant relationship between PU and Hospital staff intention to use BLE based Beacon technology.

The data also indicate reinforce for hypothesis H5. The results show a significant positive relationship between PEOU and Hospital staff intention to use BLE based Beacon technology. Hence, this is at a 0.439 correlation coefficient.

H5: There is a significant relationship between PEOU and Hospital staff intention to use BLE based Beacon technology.

At last, there is statistical proof to reinforce hypothesis H6. The results show a significant relationship between Hospital staff attitude to use BLE based Beacon technology, and their intentions to use BLE based Beacon technology. This reinforce of hypothesis H6 is shown by a 0.170 correlation coefficient.

H6: There is significant relationship between ATU and Hospital staff intention to use BLE based Beacon technology.

Table 4.2: Pearson Correlation Analysis

Correlations

		PEOU	PU	BI	ATUB
PEOU	Pearson Correlation	1	.415	.439	.377
	Sig. (2-tailed)		<.001	<.001	<.001
	N	100	100	100	100
PU	Pearson Correlation	.415	1	.181	.272
	Sig. (2-tailed)	<.001		.071	.006
	N	100	100	100	100
BI	Pearson Correlation	.439	.181	1	.170
	Sig. (2-tailed)	<.001	.071		.092
	N	100	100	100	100
ATUB	Pearson Correlation	.377	.272	.170	1
	Sig. (2-tailed)	<.001	.006	.092	
	N	100	100	100	100

For a improved understanding of participants' on the usefulness, effortlessness, attitude and intention to use BLE based Beacon technology, a detailed analysis base upon percentages is shown in Table 4.3, Table4.4 and Table 4.5 below.

Table 4.3: PEOU of BLE based technology

Item	Response percentage						
	Extremely .Agree	Quite Agree	Slightly Agree	Neither	Slightly Disagree	Quite Disagree	Extremely Disagree
PEOU 1	20	25	30	24	1	0	0
PEOU 2	26	34	16	20	3	1	0
PEOU 3	30	28	15	27	0	0	0
PEOU 4	28	28	23	19	2	0	0
PEOU 5	10	34	17	38	1	0	0
PEOU 6	30	25	15	28	2	0	0

Table 4.4: PU of BLE based technology

Item	Response percentage						
	Extremely Agree	Quite Agree	Slightly Agree	Neither	Slightly Disagree	Quite Disagree	Extremely Disagree
PU 1	30	36	19	15	0	0	0
PU 2	32	29	20	19	0	0	0
PU 3	27	36	16	17	2	2	0
PU 4	36	29	14	19	6	0	0
PU 5	30	35	21	14	0	0	0
PU 6	28	39	16	16	1	0	0

Table 4.5: ATU and BI to use BLE based technology

Item	Response percentage						
	Extremely Agree	Quite Agree	Slightly Agree	Neither	Slightly Disagree	Quite Disagree	Extremely Disagree
ATUB 1	37	35	10	16	2	0	0
ATUB 2	36	37	9	14	2	2	0
BI 1	29	41	20	9	1	0	0
BI 2	35	24	26	14	1	0	0
BI 3	34	40	16	9	1	0	0

On the contrary, it was possible to perform the Pearson Correlation test amongst the variables. During the analysis of correlations, as mentioned in above table the correlations show that the entire hypothesis was retained.

5. Conclusion:

The conclusion includes the findings and their implications. In addition to this the chapter also includes recommendations.

This study proves that PEOU and PU are significantly related with attitude of people towards using a BLE based beacon technology. So PEOU is direct determinant of PU. BLE based beacon technology is useful when we talk about opinion of hospital staff, although formed plans are there. With respect to this study the Behavior of staff also shows their intentions to use the BLE based Beacon technology. This is also in agreement with TAM that meets with the criteria even with other literature too, which "influence behavioral intention to use that technology". This study also proves that PEOU is not a direct determinant of BI whereas "PEOU is a critical driver of BI". If the Hospital staff found BLE based Beacon technology to be easy to handle, along with other benefits then they will form positive behaviors of integrating it into Hospital environment at GCS Hospital, Ahmedabad. Studies show that "demographic characteristics such as age, gender and educational qualifications can influence a

person's acceptance of a new technology", which will help to investigate if Hospital staff demographic factors do indeed influence their "acceptance of BLE based Beacon technology". As is the case with all "empirical research", this study has some limitations that should be considered when "interpreting the results". Participants were from "top and mid-level Hospital staff", that is, the "managerial staff of Hospital". GCS Hospital is a private Hospital, and the fact that "this study does not survey the Hospital staff from lower-level staff" which might not be fully representative of Hospital staff in GCS Hospital. Nevertheless, the results of "this study should be a positive starting point for research on acceptance of BLE based Beacon technology by Hospitals in India".

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Annexure:

Name of the employee? *

Your answer

Employee Id ? *

Your answer

Gender *

- Female
- Male
- Prefer not to say
- Other:

Age *

- Less than 25
- 25-30
- 30-40
- 40-50
- Above 50 years old

Education Level *

- Did not attend the school
- Primary
- Secondary
- Graduation
- Post graduation

Perceived Usefulness

It is "the degree to which a person believes that using a particular system would enhance his/her job performance"

Please indicate your level of agreement with the following statements. *

	Extremely agree	Quite agree	Slightly agree	Neither	Slightly disagree	Quite disagree	Extremely disagree
Using Beacon in my job would enable me to accomplish tasks more quickly.	○	○	○	○	○	○	○
Using Beacon would improve my job performance.	○	○	○	○	○	○	○
Using Beacon in my job would increase my productivity.	○	○	○	○	○	○	○
Using Beacon would enhance my effectiveness on the job.	○	○	○	○	○	○	○
Using beacon would make it easier to do my job.	○	○	○	○	○	○	○
I would find Beacon useful in my job.	○	○	○	○	○	○	○

Perceived Ease-of-Use

It is defined as "the degree to which a person believes that using a particular system would be free of effort"

Please indicate your level of agreement with the following statements. *

	Extremely agree	Quite agree	Slightly agree	Neither	Slightly disagree	Quite disagree	Extremely disagree
Learning to operate Beacon would be easy for me.	○	○	○	○	○	○	○
I would find it easy to get to do what I want to do using Beacon.	○	○	○	○	○	○	○
My interaction with Beacon would be clear and understandable.	○	○	○	○	○	○	○
I would find Beacon would be clear and understandable.	○	○	○	○	○	○	○
It would be easy for me to become skillful at using Beacon.	○	○	○	○	○	○	○
I would find Beacon easy to use.	○	○	○	○	○	○	○

Attitude towards using Beacon

Please indicate your level of agreement with the following statements. *

	Extremely agree	Quite agree	Slightly agree	Neither	Slightly disagree	Quite disagree	Extremely disagree
My attitude towards using Beacon make my intend to use it.	○	○	○	○	○	○	○
My attitude towards using Beacon make me accept to use it.	○	○	○	○	○	○	○

Behavioral Intention

According to TAM, Behavioral intention (BI) defines the actual use of a given Information system and therefore determines
technology acceptance

Please indicate your level of agreement with the following statements. *

	Extremely agree	Quite agree	Slightly agree	Neither	Slightly disagree	Quite disagree	Extremely disagree
I intend to use Beacon in the near future.	○	○	○	○	○	○	○
I believe my interest towards using Beacon will increase in the future.	○	○	○	○	○	○	○
I intend to use Beacon as much as possible.	○	○	○	○	○	○	○
I recommend others to utilize Beacon.	○	○	○	○	○	○	○