

Study on Factor Influencing the use of Telemedicine

By

Ashish Gupta

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Ashish Kumar Gupta**, student of MBA Hospital and Health Management from **The IIHMR University, Jaipur** has undergone internship training at **IVC Advisory LLP, Ahmadabad** from February 5th, 2018 to May 5th, 2018.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



Dr. Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Dr. Charu Mathur
Professor
The IIHMR University, Jaipur



ADVISORY (LLP)

Date: 05/05/2018

To Whomsoever It May Concern

This is to certify that Dr. Ashish Gupta, a student of MBA, Health and Hospital Management at Institute of Health Management Research (The IIHMR University, Jaipur) has successfully completed three months of dissertation from 5th February 2018 to 5th May 2018 at IVC advisory LLP Gandhinagar (M/s MJ Solanki Group).

During his dissertation Dr. Ashish k. Gupta has worked as a **Project Manager** on various projects.

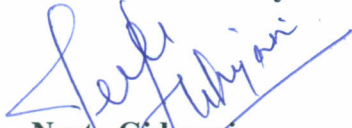
Apart from general understanding of company, he has undertaken following projects:

1. Study on factor Influencing the use of telemedicine
2. Company profile preparation M/s MJ Solanki Group
3. Demonstration and Briefing of Telemedicine kit to ministry under Medireach India Pvt. Ltd.
4. Telemedicine presentation for Various States (Assam, MP, Bihar)
5. Recruitment for "NHRR Project" in collaboration for Quintile IMS
6. Service Audit of various Government hospitals
7. Training **on business presentation** under Senior consultant IMS
8. Leadership and management Training Under Empower School of Health

He was sincere, hardworking, inquisitive and has successfully carried out the assigned task during dissertation.

We wish him success for his future endeavours.

For IVC Advisory LLP


Neeta Gidwani
Managing Director



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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation Study of factors Influencing the use of telemedicine in remote villages in India and submitted by **Dr. Ashish Kumar Gupta** Enrollment No. IIHMR-U/01/216-18/0395 under the supervision of **Dr. Charu Mathur** for award of MBA in Hospital and Health/ of the University carried out during the period from February 5th 2018 to May 5th 2018 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Signature

Ashish
15/5/18

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Introduction

Practice of Information and communication technology (ICT) in healthcare growing, it's making a significant impact on data collection, data analysis and scalability of healthcare. Telemedicine/Telehealth is a ICT based outreach health care facility. Although healthcare access is improving in India, but still there is a wide gap between services availability in rural places of India. India constitute almost 70% rural population and 30 % of urban population, but when it comes to availability of healthcare facility ratio is just inverted 80% of health There are several reasons for this imbalance e.g. less number of qualified doctors, less number of nurses, healthcare infrastructure availability and all.

In developing country telemedicine has an enormous potential. By using innovative technology telemedicine can bring drastic change in health care delivery. It can be considered as a significant service sector at national and global level

According to the five-year plan (12th), telemedicine and consultation support to the at all level (primary and secondary facilities from specialists at tertiary centers) is recommended.

In chapter 2 (National health program) of the plan, telemedicine facility is also recommended for urban slums, so that health associated intervention in urban slum will be easier.

By acknowledging potential of telemedicine in healthcare, it is also recommended that full capacity of telemedicine should be utilized. [2]

Telemedicine may become the fastest, as well as the cost-effective, way to fill the rural–urban healthcare gap. [3]

Considering India's enormous potential in the field of information and communication technology, telemedicine could help to bring specialized healthcare to the remotest corners of the country. [4,5]

Overall, per person out of pocket health expenditure (OOPS) is very high in India, in rural area sometimes patients end up being in debt ridden [6]

In addition, poor Indian villagers spend most of their out-of-pocket health expenses on travel to the specialty hospitals in the city and for staying in the city along with their family members [6].

According to a recent study of Indian Institute of Public, majority 89% of rural Indian travels at least 8 Kms patients must travel to access basic medical services, and the remaining have to travel even farther. [7]

Telecommunication technologies has variety of “advanced, computerized equipment that are allowing physicians, nurses, and other healthcare professionals to provide complex healthcare thousands of miles away from the location of service”[8]

Telemedicine can help to fill this gap by providing healthcare facility to remote location with the help of existing manpower infrastructure.

Earlier Biggest challenge for scalability of Telemedicine was non-availability of data network (Internet), but as 4G technology is expanding this hindrance is no more that much effective.

Govt. of India working on Health for all model and want to Provide healthcare services to all its citizen, even to the remotely located villages.

- Telemedicine programs is in initial phage in India, M/s M J Solanki group is one of the biggest manpower outsourcing groups in healthcare in Indian. Medireach India Pvt. Ltd is a

subsidiary of the Group. Medireach India Pvt Ltd. is developed a kit of telemedicine instrument. A structured questionnaire was developed and distributed to patients of each centres. A total of 200 questionnaires were distributed, of which 172(10 declined) were completed usable for study.

Keywords: telemedicine/telehealth; Factors affecting Telemedicine; Influence of Telemedicine

Literature review

A study done to examine the factors that influence the acceptance of telemedicine service for the enhanced management of diabetes mellitus based on the “Unified Theory of Acceptance and Use of Technology (UTAUT) model”. Research showed that telemedicine service for diabetes mellitus management were enable infrastructure methods such as 24*7 connecting service and real time checkup. Therefore, the volume and efficiency of telemedicine service offers are more important for telemedicine success than the skill of the individuals receiving telemedicine service care. Research also showed that performance expectancy, social influence and effort expectancy are Facilitating factors for the acceptance of telemedicine service for diabetes management. According to research, telemedicine is very important to increase the use of services ”. [9]

An another done for using technology acceptance model (TAM) for finding patient’s perspective on Investigating factors influencing the adoption of e-Health in developing countries. The study determined that perceived ease of use and perceived usefulness and trust were significant factors influencing the intention to adopt e-Health. The findings also revealed that gender was strongly associated with the adoption and use of e-Health services.” [10]

A similar study done on treatment of Military retired with post-traumatic stress disorder with Factors influencing the adoption of telemedicine for found that. “Five various themes surfaced for enablers: accessibility, effectiveness, cost reduction, positive patient perception, and supportive community; and 5 themes for blockades: access to technology, technical complications, physician availability, negative patient perception, and uninformed patients. The association of telemedicine with the treatment of veterans with post-traumatic stress disorder is feasible, beneficial and effective”. [12]

One other study was done in a developing country on “Factors Affecting Adoption, Implementation and Sustainability of Telemedicine Information Systems in Uganda, concluded that key factors affecting telemedicine in Uganda were lack of telemedicine policy, knowledge and skills and resistance to change by members of staff in the hospitals” [13]

Purpose statement

The purpose of this study is to establish the factors that influence use of telemedicine. This study will provide information into how often patient use telemedicine, what are the infrastructure problems they have (if any), it will also look at the competencies of the staff in regard to technical skills.

This study will also try to determine if the patients perceive the telemedicine as a means to improve health. It will help Government, Hospitals, Individual clinician in making decision making.

Objectives

To explore factors influencing the use of telemedicine in remote villages in India

The study shall be guided by the following objectives:

1. To Identify influence of 'infrastructure' on the use of telemedicine
2. To assess how 'technical skills' influence use of telemedicine
3. Assess how 'attitude' influence the use of telemedicine

Material and Methods

Study design: Descriptive survey

Setting: Remote telemedicine center of Madurai

(Hospital name can't be disclosed because of some reason)

Duration of study: 3 months (5th February 2018 to 5th May 2018)

Sample size: 200

Sampling

Sampling technique: Convenient sampling

Sample selection: Current patients and potential patients of Telemedicine center

Inclusion criteria: Personnel familiar with telemedicine services

Data Collection

Questionnaire: Questions about person Age, sex, employment status and the main questionnaire

Total 21 main questions were there in my questionnaire based on Likert scale from Strongly Disagree to Strongly Agree.

Questionnaire had been converted in digital/electronic form (Google form) and send these forms to sample population

Questionnaires were distributed to the various Telemedicine centers patient. Therefore, targeted various age groups and most likely targeted telemedicine service user.

Questionnaires were filled with the help of a nurse on mobile and computer.

A total of 200 questionnaires were distributed, of which 172(10 declined) were completed usable for study.

Discussion

Performance Expectancy:

- More than 90% respondents were strongly agreed that telemedicine is useful for consultation
- 63% respondents were strongly agreed and 34% agree that Telemedicine enables them to have faster communication with doctors
- Three fourth survey respondents said that using telemedicine increases their productivity
- Respondent responded positively for the question on the productivity, they had to/ will have to have a chance of getting services at their vicinity, so that, overall opportunity cost will be less for them. In a way this will enhance their productivity.

Effort expectancy

- 73% strongly agreed people strongly agree; Telemedicine team put expected effort, so communication is smooth
- 71% strongly agreed that, it doesn't require special effort

Attitude

- 70% says Telemedicine use is a good idea, 68% says TM makes patient visit more interesting. It means they have a positive attitude towards it.

Social Influence

- Social influence plays an Important role for the use of new service (TM)
- In society influencer as well as important people perspective towards TM is neutral.
- For improvement of this social influence social behavior change communication can play a key role.

Facilitating condition (FC)

- >70% of respondent strongly agreed that they will use TM services if center has all the resources and staff is competent
- 83% of respondent strongly agreed they will use if someone will be there for help in facilitating TM services
- So, facilitating condition plays a key role

Behavioural Intention (BI)

- Respondents behavioral intention of use of telemedicine service is also a crucial factor.
- Our analysis shows that less than 50% respondents strongly agreed that they are intending to use Telemedicine service for in the next six months. Response were neutral for their prediction that they predict that they will use telemedicine in next six months
- Response about future planning of using TM services was also not healthy 28% respondent strongly disagree with it.

Conclusion

This study is basically tried to find out the influence of various factors on the use of telemedicine. Modified form of Unified theory of acceptance and use of technology questionnaire were used. After data analysis with Microsoft excel 2016 Talking about Performance Expectancy, it is concluded that majority of sample population says that telemedicine is useful in consolation, it increases availability of doctor and overall it improves productivity. Research is also found that sample population also say that by use of telemedicine their communication with doctor are clear. Talking about effort expectancy, respondents say that use telemedicine doesn't require any special skills and it is easy to learn Research is found that respondents have positive attitude toward telemedicine and says that it is a good idea to use telemedicine. Social influence always plays a significant role in the use of new service and research. In society influencer as well as important persons perspective towards TM is neutral. For improvement of this social influence social behavior change communication can play a significant role. If all the required resources and staff for support available at the telemedicine centres people will use telemedicine condition. People is still not intended to use telemedicine services in future. They have no planning that they will use telemedicine in near future. It shows that they only use telemedicine services as and when required.

In remote places where healthcare facility is still not available, using telemedicine healthcare facility can be assured and gap can be reduced up to an extent. It is very necessary to change patient's perspective towards telemedicine services before starting any telemedicine service by behavior change communication e.g. Awareness campaign. It will make society aware and change patient's behavior towards healthcare in general and telecare in specifically. If infrastructure in term of equipment and staff, is available patient is agreeing to use telemedicine services.

Although Telemedicine is not the comprehensive solution for rural healthcare, if aggressively deployed, it can help in improving healthcare condition drastically.

In future work, we would try to apply full UTAUT model into the research and study the effects of other factors of the UTAUT model within the setting rural India. To be more precise and substantial, this research work will continue, and results will be published in end

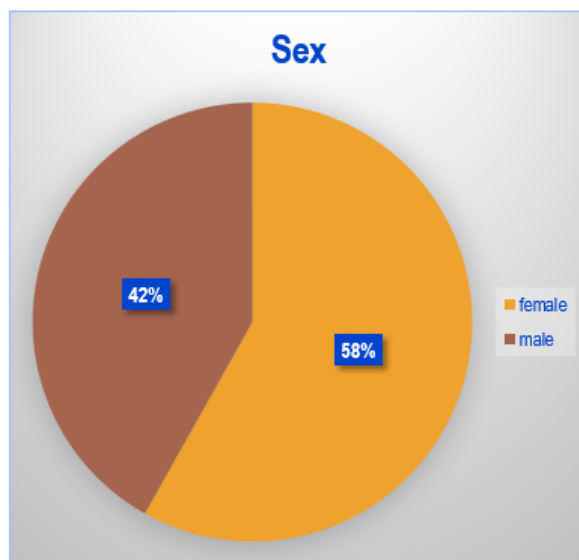
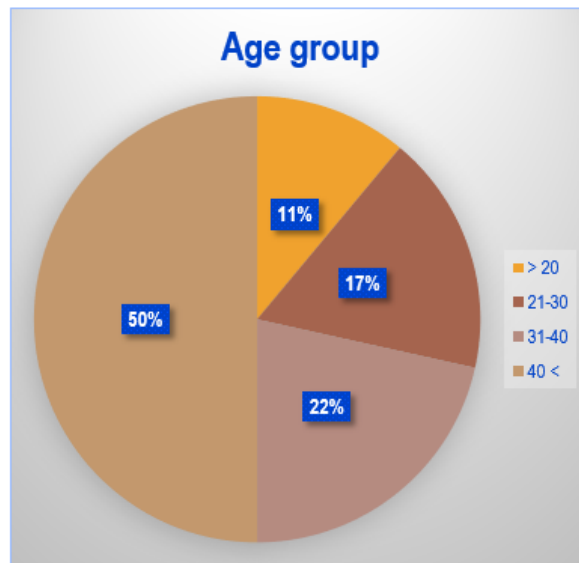
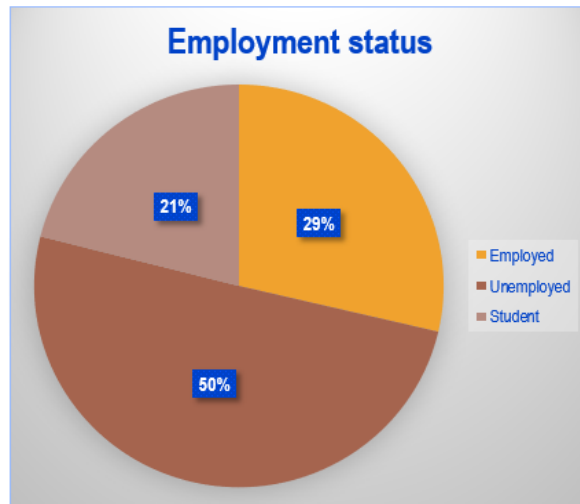
Limitations

Sampling is convenience sampling, so these results can't be generalized, for generalization it should be first carried out at a large population with other better sampling technique

Questionnaire

Performance Expectancy (PE)	Strongly agree		neutral		Strongly disagree
I find Telemedicine useful for doctor consultation					
Using telemedicine enables me to have faster communication with doctor (PE2)					
Using telemedicine increases my productivity (PE3)					
If, I use telemedicine, it increases my chances of getting a raise (PE4)					
Effort expectancy					
My interaction with Telemedicine was clear and Under stable (EE1)					
It easy for me to become skill needed to use telemedicine (EE2)					
I would find telemedicine easy to use (EE3)					
it would be easy to learn how to operate Telemedicine					
Attitude					
Using Telemedicine will be good idea (AT1)					
Telemedicine would make work more interesting (AT2)					
I would like to work with telemedicine (AT3)					
Social Influence (SI)					
People who influence my behaviour think that I should use telemedicine (SI1)					
People who are important to me think that I should use telemedicine (SI2)					
In general, govt hospital has supported the use of telemedicine (SI3)					
Facilitating condition (FC)					
I have the resources necessary to use telemedicine (FC1) e. g. electricity, Wi-Fi, laptop					
I have the knowledge necessary to use telemedicine (FC2) (basic computer knowledge)					
Telemedicine is not compatible with other aspects of my work (FC3)					
A person or group is available for assistance with telemedicine (FC4)					
Behavioural Intention (BI)					
I intend to use telemedicine in the next six months (BI1)					
I predict I would use telemedicine in the next six months (BI2)					

Population characteristic



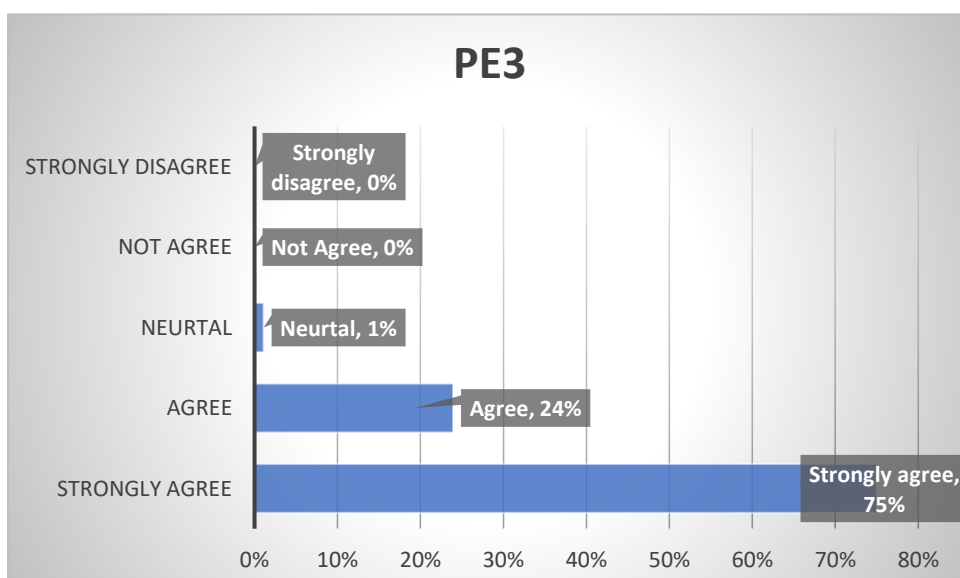
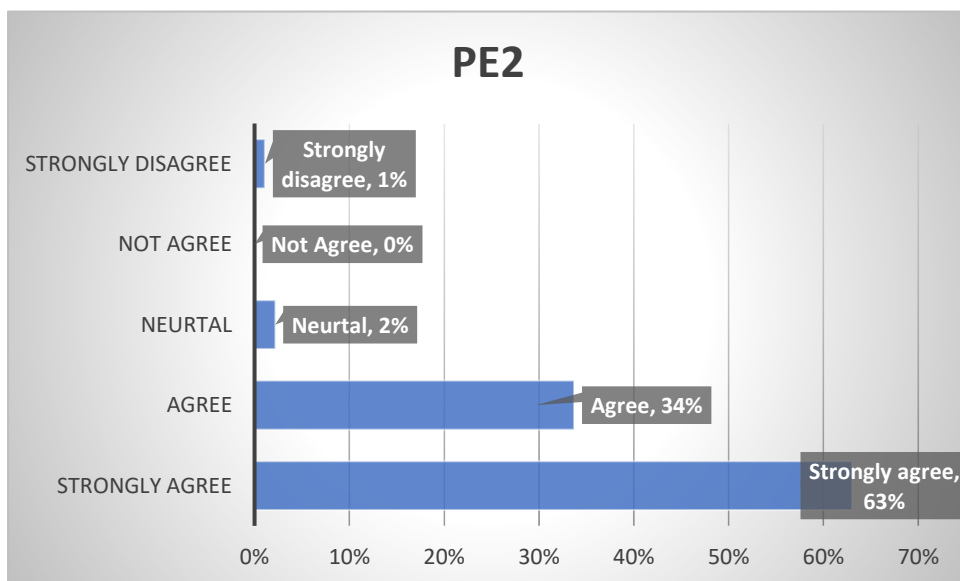
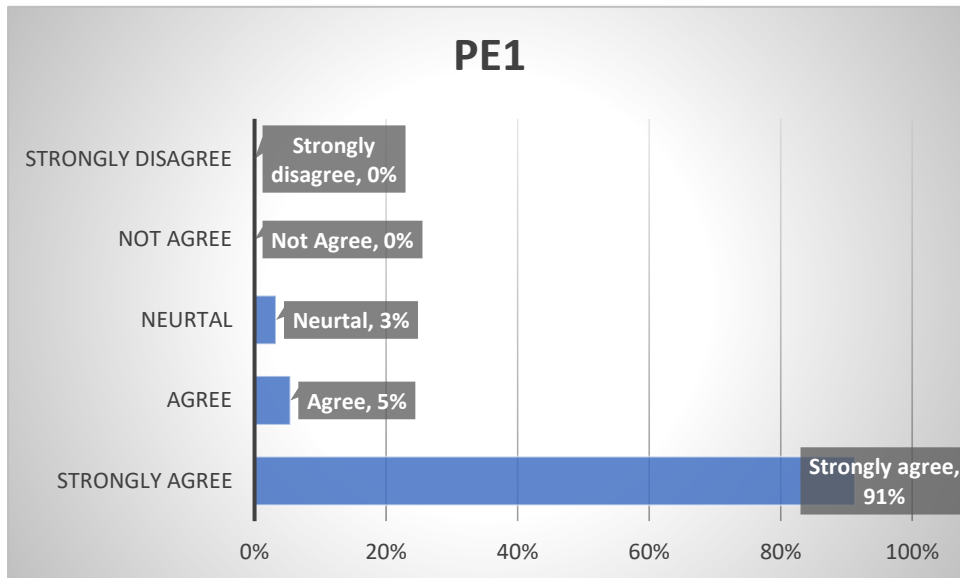
Questionnaire: Based on modified UTAUT Model

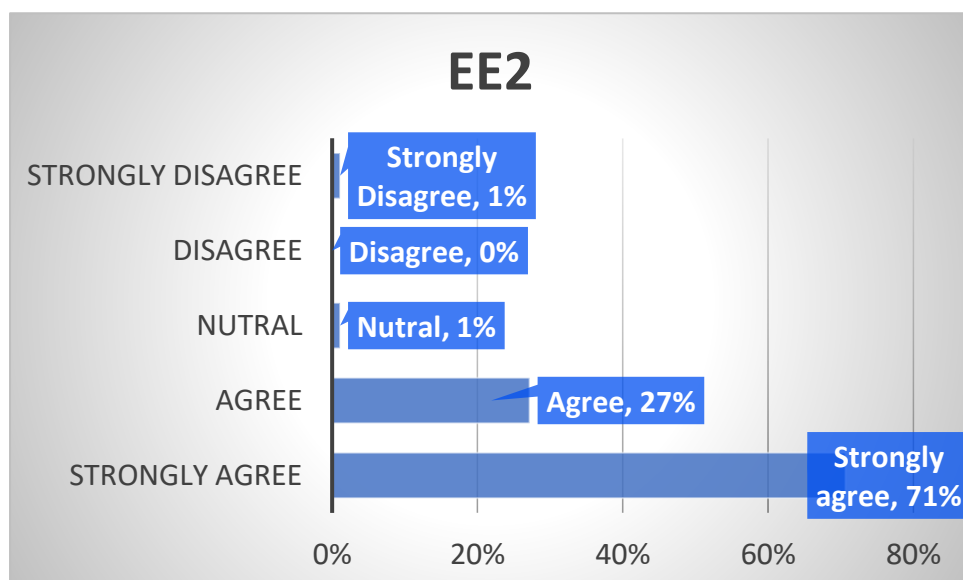
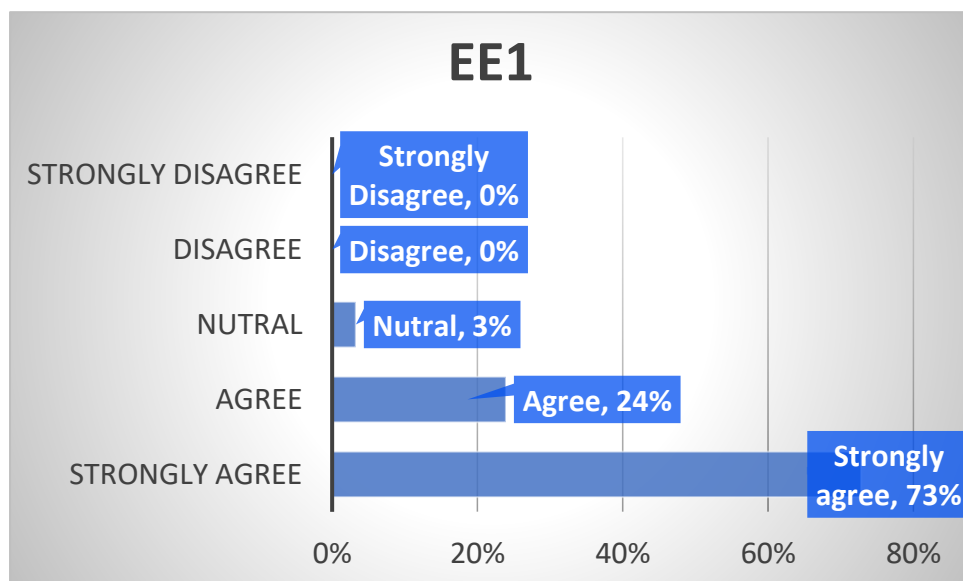
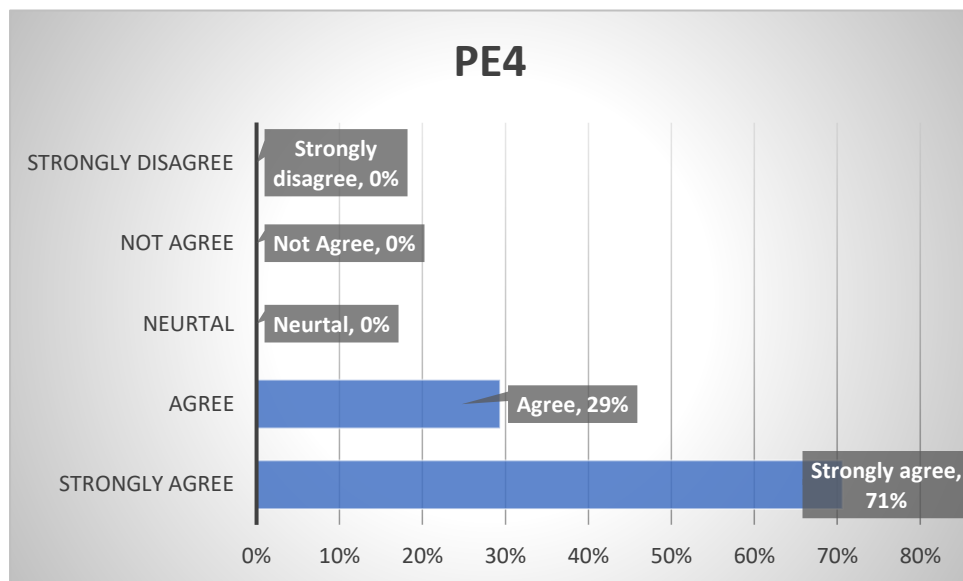
	Strongly agree	Agree	Neutral	Not Agree	Strongly disagree	sum
Performance Expectancy (PE)						
I find Telemedicine useful for doctor consultation	91%	5%	3%	0%	0%	100%
Using telemedicine enables me to have faster communication with doctor (PE2)	63%	34%	2%	0%	1%	100%
Using telemedicine increases my productivity (PE3)	75%	24%	1%	0%	0%	100%
Patient use telemedicine, it increases patient chances of becoming more productive	71%	29%	0%	0%	0%	100%
Effort expectancy						
I will use telemedicine if My interaction with Telemedicine will be clear and Under stable (EE1)	73%	24%	3%	0%	0%	100%
I will use telemedicine if it doesn't require any special skill	71%	27%	1%	0%	1%	100%
I would use TM if it is easy to use (EE3)	74%	25%	1%	0%	0%	100%
I will use Telemedicine if it is easy to learn	70%	26%	4%	0%	0%	100%
Attitude						
Using Telemedicine will be good idea (AT1)	72%	25%	3%	0%	0%	100%
Telemedicine would make work more interesting (AT2)	68%	20%	11%	0%	1%	100%
I would like to work with telemedicine (AT3)	79%	20%	0%	1%	0%	100%

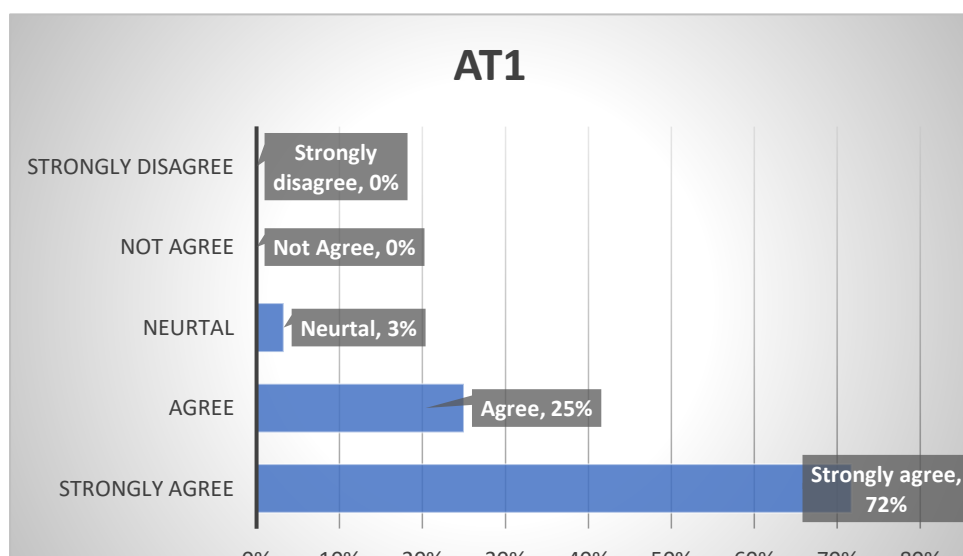
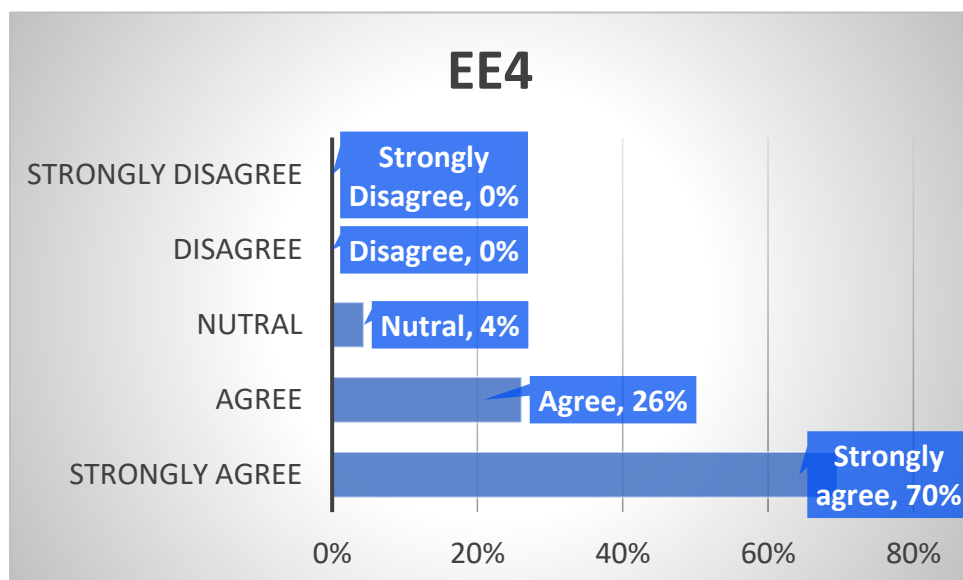
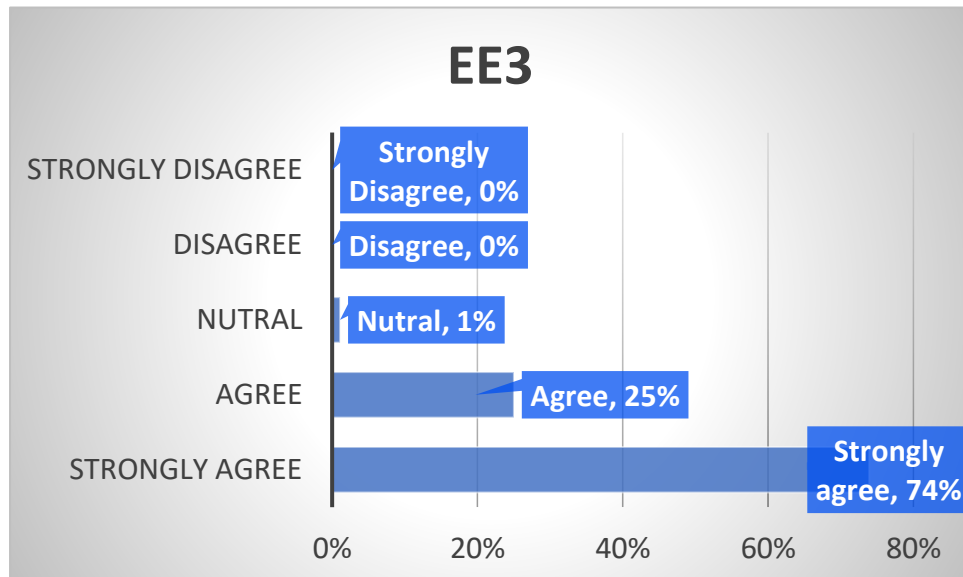
	Strongly agree	Agree	Neutral	Not Agree	Strongly disagree	sum
Social Influence (SI)						
People who influence my behavior think that I should use telemedicine (SI1)	55%	32%	9%	3%	1%	100%
People who are important to me think that I should use telemedicine (SI2)	50%	35%	12%	2%	1%	100%
In general, govt hospital has supported the use of telemedicine (SI3)	3%	7%	5%	8%	77%	100%
Facilitating condition (FC)						
I will use telemedicine, if TM center has resources necessary to use telemedicine (FC1) e. g. electricity, Wi-Fi, laptop	72%	23%	4%	0%	1%	100%
I will use telemedicine, If TM staff has the knowledge necessary to use telemedicine (FC2) (basic computer knowledge)	74%	21%	3%	0%	2%	100%
I think, Telemedicine is not compatible with other aspects of my work (FC3)	17%	7%	1%	3%	72%	100%
I will use telemedicine, if staff is available for assistance with telemedicine (FC4)	83%	16%	0%	0%	1%	100%

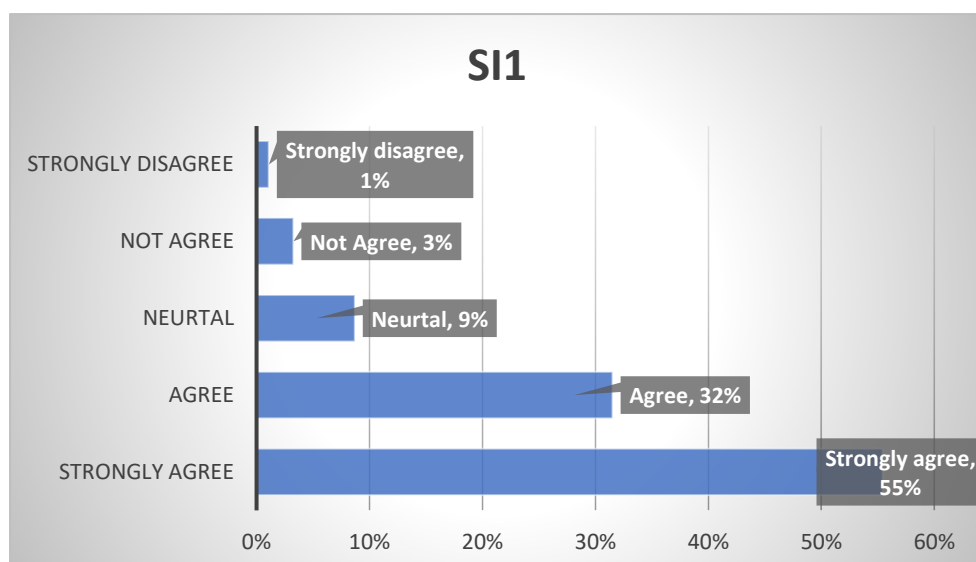
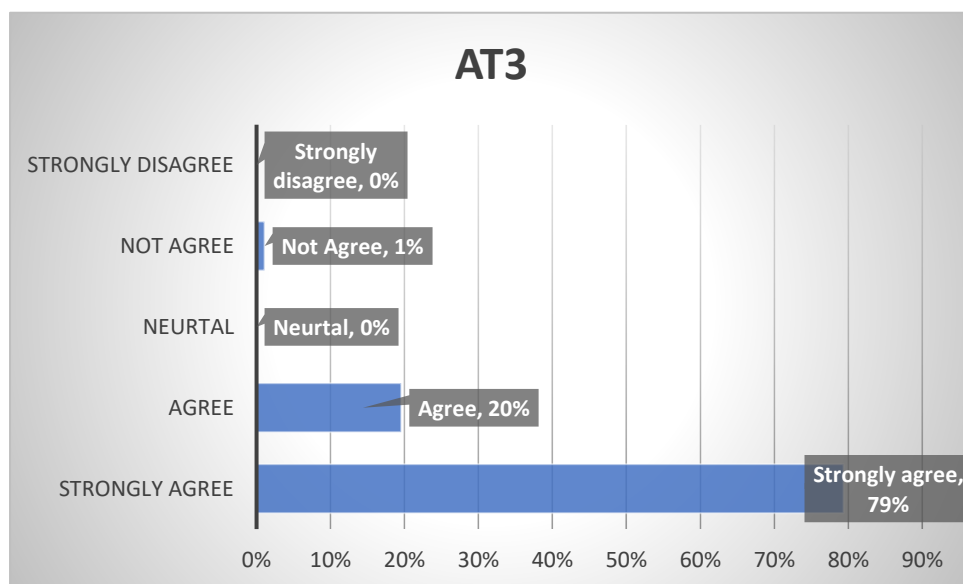
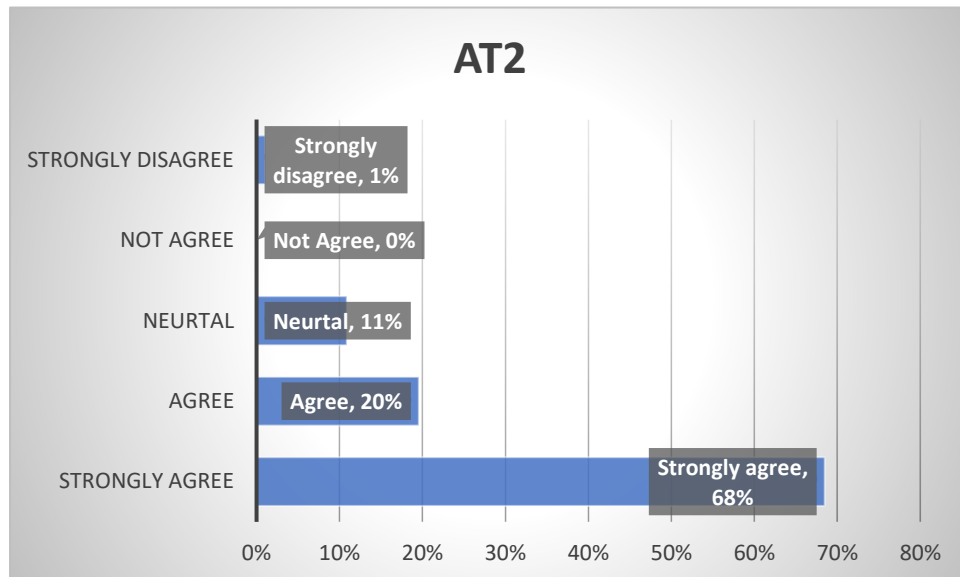
	Strongly agree	Agree	Neutral	Not Agree	Strongly disagree	sum
Behavioural Intention (BI)						
I intend, I would use telemedicine in the next six months (BI1)	45%	33%	22%	1%	0%	100%
I predict I would use telemedicine in the next six months (BI2)	18%	24%	40%	10%	8%	100%
I plan to use telemedicine in the next six months (BI3)	16%	10%	43%	2%	28%	100%

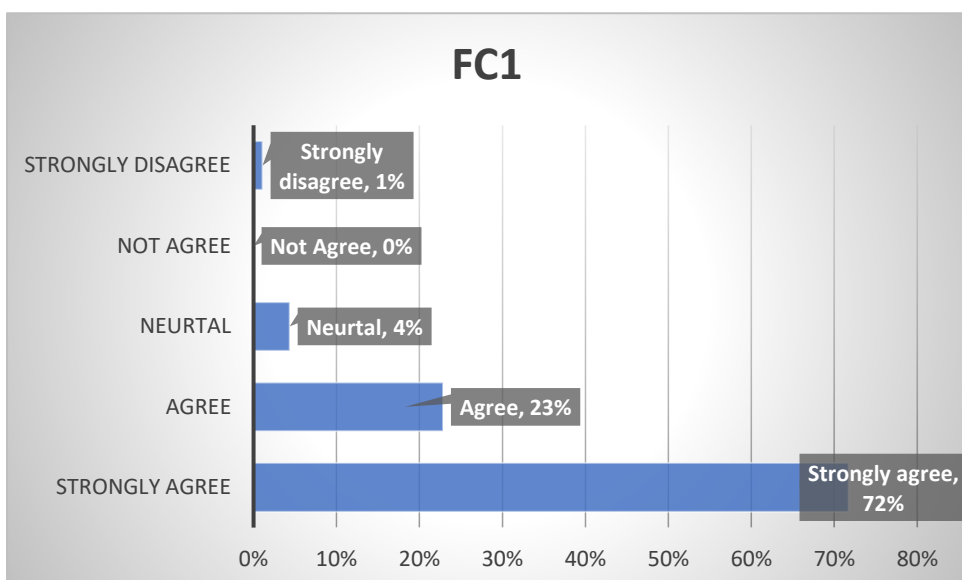
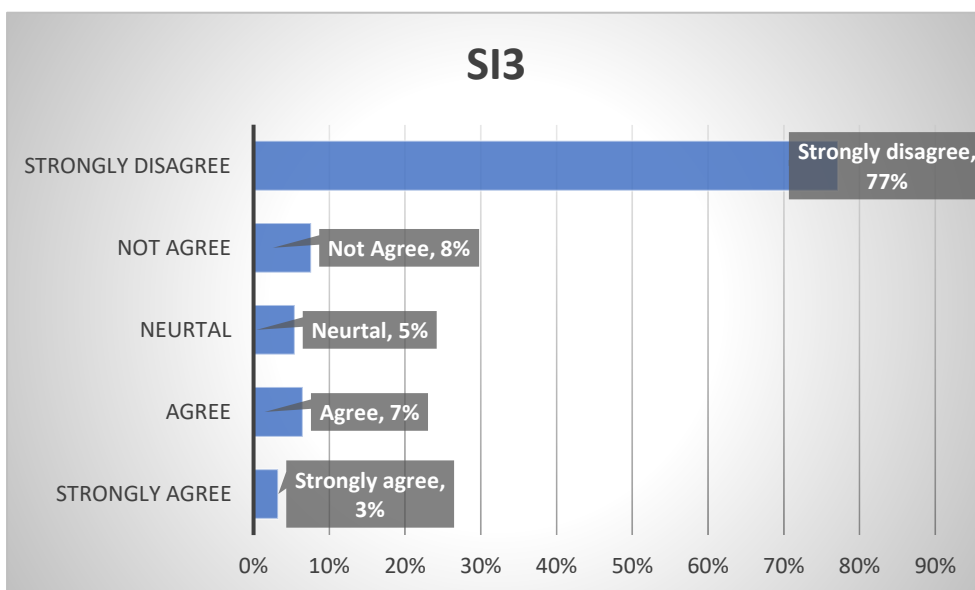
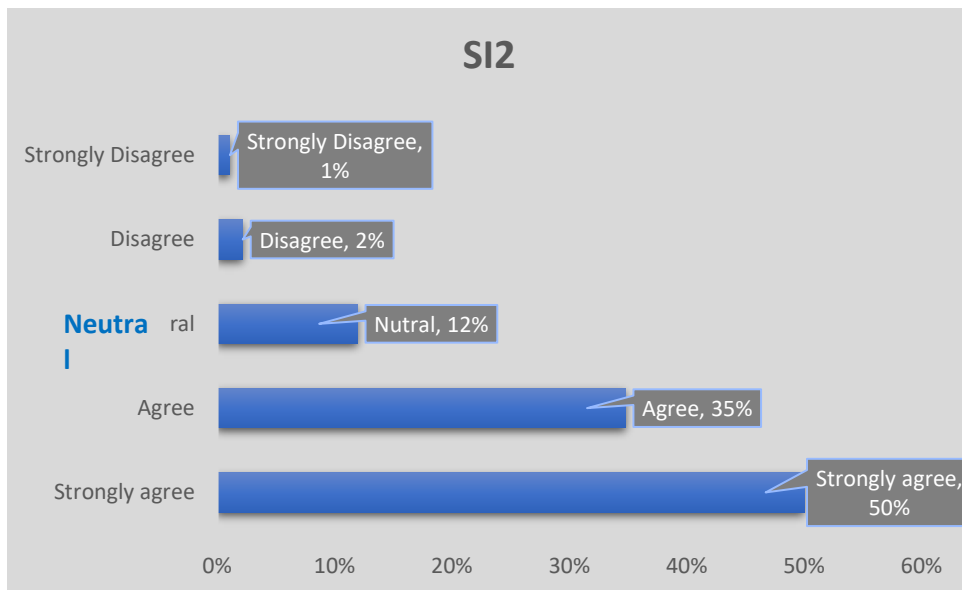
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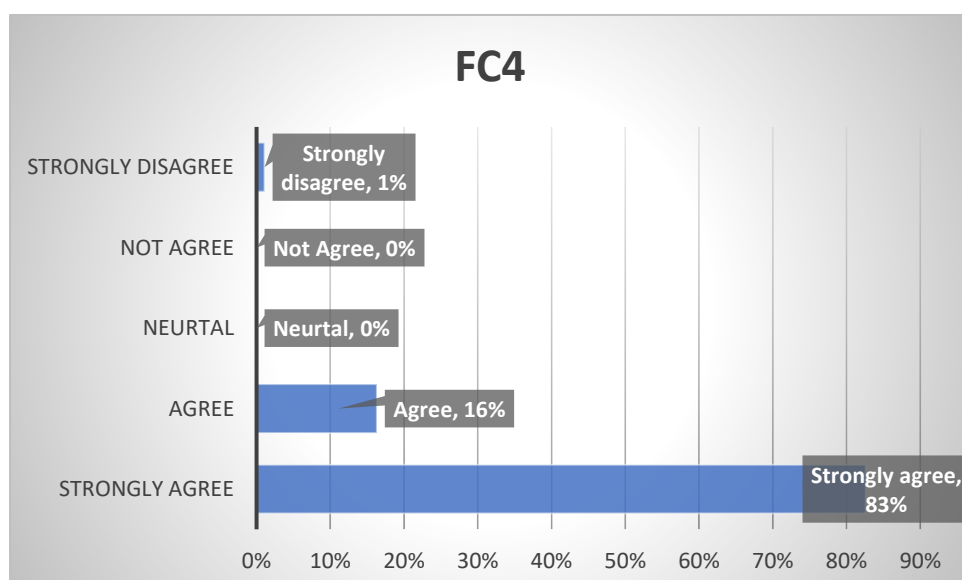
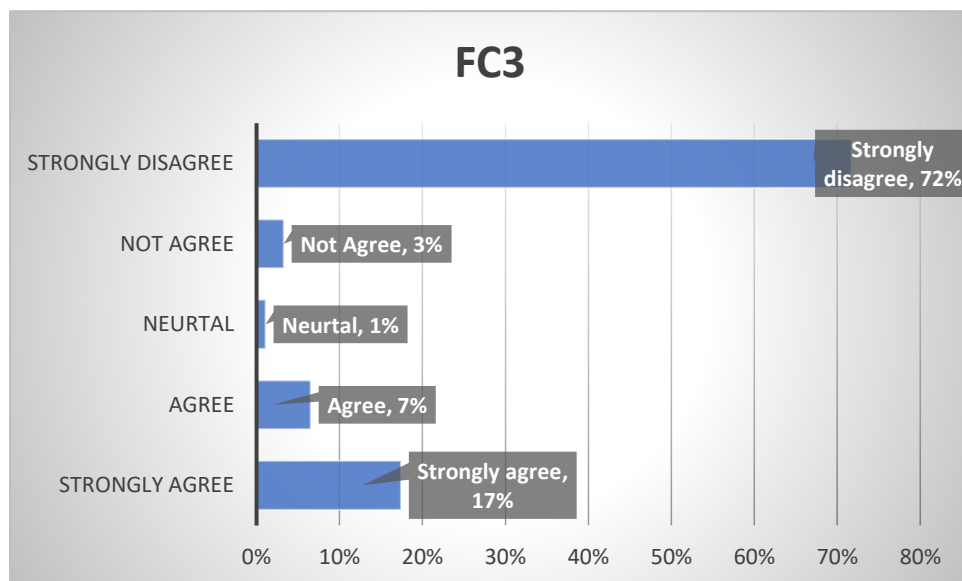
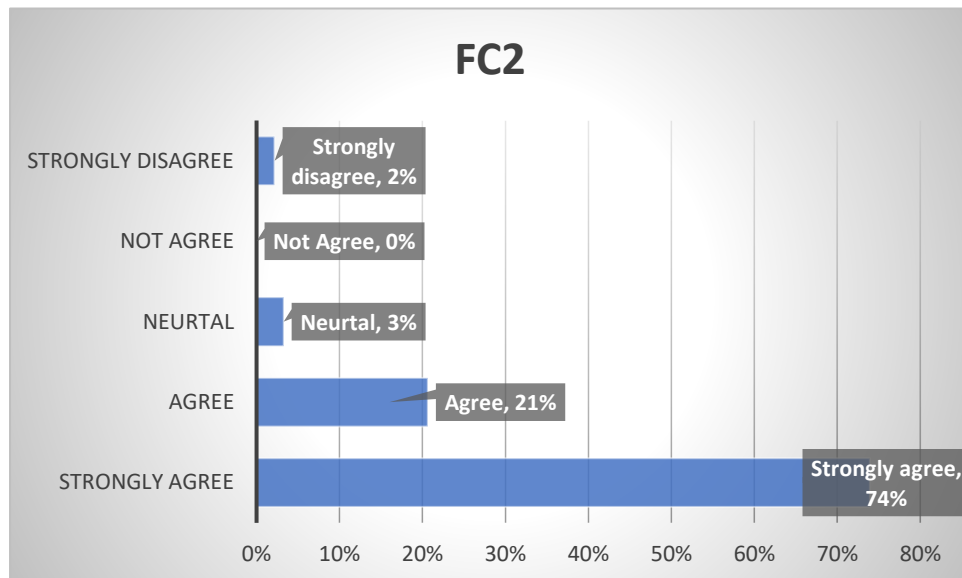


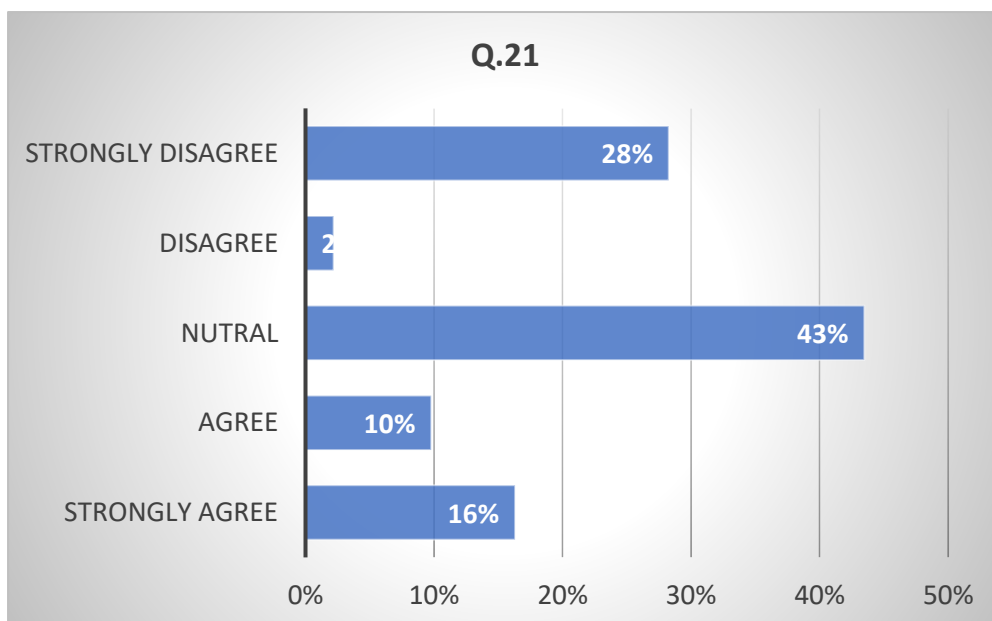
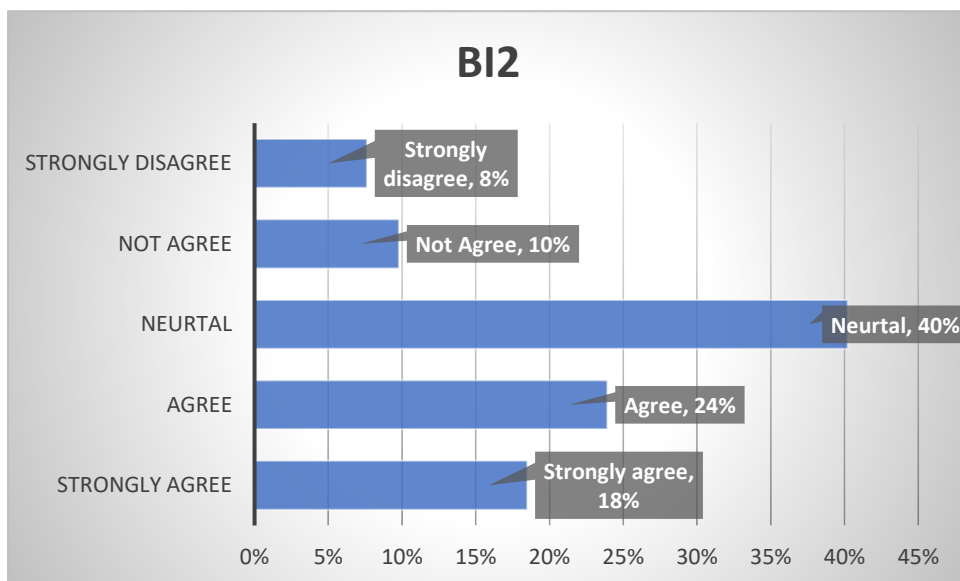
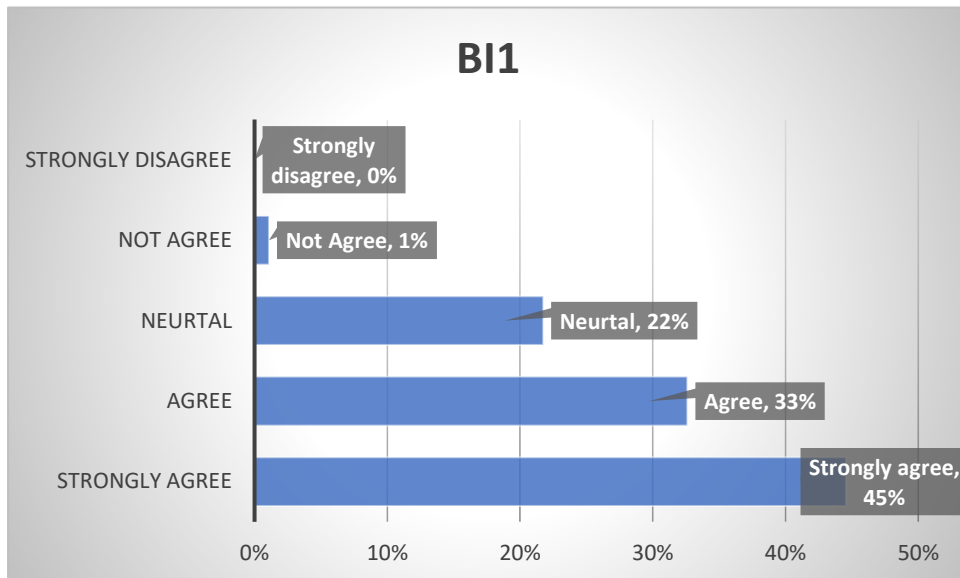




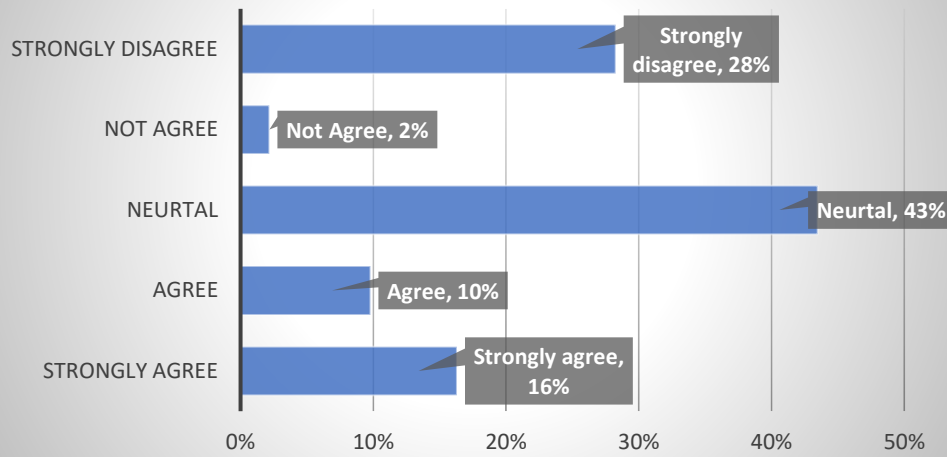








BI3



Permission

Medireach, India Pvt. Ltd. Is a subsidiary of M/s M J Solanki group.
Medireach India Partnered with Neurosynaptic Communications Private
Limited for Telemedicine project.

I have taken permission for my research, for conducting Interviews of from
Medireach India Pvt Ltd.

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