

**Project Dissertation Report on**

**A STUDY OF FACTORS RELATED TO USER'S  
CONTINUANCE INTENTION OF  
INTERACTION WITH VIRTUAL ASSISTANTS**

**Submitted By**

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## **CERTIFICATE**

This is to certify that **Ms. Medhavi Thakur**, a bonafide student of **Delhi School of Management, Delhi Technological University**, has successfully completed the major research project work in partial fulfilment of the requirement of Master of Business Administration (MBA) program for the academic year 2019-20.

The project work is titled as “**A Study of Factors Related to User’s Continuance Intention of Interaction with Virtual Assistants**”.

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## **DECLARATION**

I hereby declare that the project report entitled “**A Study of Factors Related to User’s Continuance Intention of Interaction with Virtual Assistants**” has been submitted for the Delhi School of Management, Delhi Technological University, in partial fulfilment of the requirements for the award of the degree of Master of Business Administration (MBA) program for the academic year 2019-20, under the guidance and supervision of Dr. Shikha N Khera.

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## **ACKNOWLEDGEMENT**

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Without them the findings and analysis would not be completed.

**Medhavi Thakur**

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## ABSTRACT

This scientific investigation attempts to study the factors that would impact the user's continuance intention of interaction with bots. The study adopts an integrated model and studies technology Interface related variables wherein one set of factors are related to the AI product (a. Ease of use, b. Engagement, c. Utility factor) and the other set of factors are related to the user (a. familiarity with Virtual assistants and technology, b. Amount of trust related to data privacy and c. Personality traits of the user). The study borrows from a number of theoretical constructs while attempting to build a framework of factors related to the usage of virtual assistants. The main theories that it builds its edifice of the proposed model are –

- 1) The expectation conformation theory (ECT)
- 2) The technology acceptance model (TAM)
- 3) The five-factor personality trait model

To find the predictors of the dependent variable (Continuance intention of interaction with virtual assistants) a causal survey-based design would be adopted. A dual approach was used to collect data. Quantitative data were collected with the help of a structured survey (Likert style) questionnaires. One standardized questionnaire was used which was adapted for the Indian context and the reliability and validity was calculated. Qualitative data was collected through interviews of respondents belonging to different demographic backgrounds of a convenient sample. The quantitative data were subjected to bivariate and regression analysis and qualitative data was subjected to content analysis. The results indicate that continuance intention of users to interact with virtual assistants is dependent upon three factors

- 1) Ease of Use
- 2) User's Familiarity of technology
- 3) Personality trait of openness to experience.

The study would have implications for marketers as well as academicians.

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## CHAPTER 1: INTRODUCTION

Artificial intelligence has pervaded our lives with a fervour that is unprecedented. This study has attempted to study the acceptance of one of the products of artificial intelligence (Virtual Assistance) and the factors that lead to the continuance intention of the user to use the product.

The study borrows from literature, case studies, personal experience and intuition to propose relationships in the form of hypotheses between the dependent and the independent variables. These relationships were empirically investigated and recommendations were made for marketers as well as researchers in this area. The reason for choosing a virtual assistant (VA) was because it is one of the most commonly used products of artificial intelligence (Kaplan & Haenlein, 2018). The independent variables that are being studied in conjunction with the dependent variable, are divided into two categories. One set of factors is related to the AI product (a. Ease of use b. Engagement, c. Utility factor) and the second set of factors are related to the user (a. familiarity with VA, b. Amount of trust related to data privacy and c. Personality traits of the user). Research related to these different factors has been gaining ground and has been documented and shared via different academic platforms.

### **Virtual Assistants and their features-**

Artificial intelligence, today, has not only made the life of human-kind easy but also smart. With a click of a button or a voice command, we are able to complete tasks which would often take hours of planning and execution. One product of evolution within artificial intelligence is Virtual Assistants.

With every individual in town owning a smartphone, each of them has access to a virtual assistant, be it Siri in Apple products or Alexa by amazon, or Cortana by Microsoft, or the Google Assistant in Android and many more. Riccardi (2014) describes Virtual assistants “as a software agent that provides professional administrative, technical, or social assistance to a human user”.

The VA gets activated when audio input is made with the use of a particular keyword. The audio is stored, sent to a cloud software, processed, interpreted, and then finally it completes the said command. The software will further then provide the virtual assistant with appropriate

information, which is the output, to be read back to the user and complete the tasks with various connected apps, services and devices.

Amongst various providers of Virtual assistants, Siri is the oldest. It was released in 2010 as a app and then incorporated in the iOS in the year 2011. Cortana was launched in 2013 by Microsoft. Amazon came up with Alexa and Echo in 2014 and Google's Assistant was announced in 2016.

Technological advances in the field of "natural language processing", known as "computational linguistics", allows the virtual assistant to form a meaningful output to a regular input given by the user. Computational Linguistics focuses on the factors like – "computing power, availability of large amounts of linguistic data, successful machine learning methods, and rich understanding of the structure of human language and its deployment in social contexts while developing".

Virtual assistants are able to fulfil commands like Sending or reading texts, making phone calls, reading and typing documents, answer basic questions like, "What time is it? How's the weather". They're capable of setting alarms, making calendar entries, set reminders, make lists, and do basic math, operate media connected to other services and control Internet-of-Things-enabled devices and apps. The virtual assistants are also programmed to have healthy conversations with users. These conversations range from sharing jokes and stories to motivating you and deviating from questions or commands not under its purview with as human response as possible.

Virtual assistants are available on a wide variety of hardware platforms. Amazon and Google both market dedicated home speaker devices for their Virtual assistants. Amazon makes several variations of its Echo product. Google's speaker hardware is called the Home. It comes in mini- and full-size models. Apple also has a home pod available in the market since 2017. Microsoft has built Cortana for Windows. Google's assistant is integrated into Android phones.



## Personality and personality types

Korr & Mathews (2009), define personality as “the characteristic sets of behaviours, cognitions, and emotional patterns that evolve from biological and environmental factors”. This implies that the personality of any individual is a set of character traits which are created due to individuals, upbringing, surroundings, peers, family, society and biological factors like genetics and the cognitive traits and processing.

### Why personality is an important factor within or project?

There are many models of personality. One such model is The Five-Factor theory of personality by McCrae & Costa (1976).

## Five Factor Theory of Personality

According to the big five inventory there are five traits within every individual on a different proportion and ratio. Each of the Big Five personality traits is measured on a scale of polar sub traits. Within the project we try to analyze the continuance behavior keeping these traits of individuals as an essential factor.

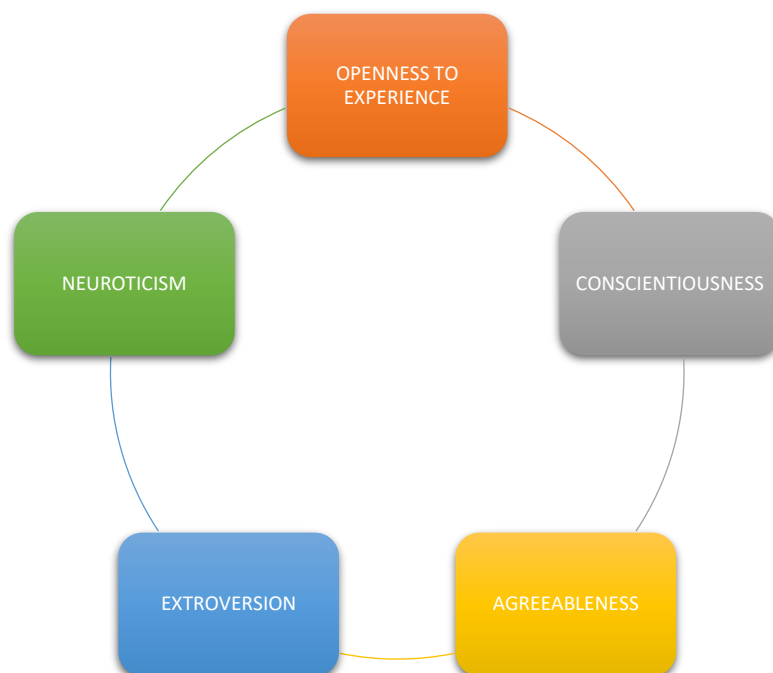


Diagram 1.1: Big Five personality traits

1. **Openness to experience-** Ambridge (2014) defines it as "...a factor within which one has a general appreciation for art, emotion, adventure, unusual ideas, imagination, curiosity, and variety of experience". These are individuals who readily adapt to the idea of engaging with a new occurrence or engagement previously not known to them, naturally predisposed to an attraction to material pulchritude and having a positive inclination towards new interactions and experiences. In a broad comparison to other people, these individuals tend to be intellectual, creative and more capable and actively acquainted with how they are feeling thus making them prone to uncommon beliefs and schools of thought.
  
2. **Conscientiousness-** Toegel and Barsoux (2012) define it as "...a trait which can display self-discipline, act dutifully, and strive for achievement against measures or outside expectations". This trait is related to how people control, regulate, and direct their impulses. High conscientiousness is often perceived as being stubborn and focused. Low conscientiousness is associated with flexibility and spontaneity, but can also appear as sloppiness and lack of reliability. According to Costa and McCrae, a high score in this is indicative of a planner than someone who is spontaneous in nature.
  
3. **Agreeableness-** Rothmann and Coetzer (2003) define it as "...a trait which reflects individual differences in terms of general concern for social harmony. Agreeable individuals consider it important to be able to get along with others. They are considerate, kind, generous, trusting and trustworthy, helpful, and willing to compromise for others".

4. **Extroversion-** Laney believes that “the trait is characterized by breadth of activities (as opposed to depth), surgency from external activity/situations, and energy creation from external means”. This trait takes into account how much an individual is willing to interact with the outside world. Extroverts tend to be vocal, more visible, talkative and plenipotentiary whereas, Introverts tend to have a lower social engagement, tend to be independent and have lower social energy.
  
5. **Neuroticism-** This trait tends to focus onto the degree of emotional instability an individual experiences in and around the time they deal with day to day situations and imbroglios, also relating to how much the thoughts and ideas of the individual are impacted by factors relating to emotions, feeling and often their likeness and scorns.

**Problem Statement:**

The driving query of this scientific enquiry is, “Do the features of virtual assistants’ impact on the decision of the consumer to continue using the artificial intelligence equipped product like virtual assistants, and their features?” In addition to this, the scientific investigation attempts to investigate if the personality trait of the user impacts the decision to interact with non-human assistants.

**Objective of the study:**

1. To find if there a significant relationship between certain features of virtual assistants (AI equipped technical innovations) and the users’ decision or intention towards continuing the usage.
2. To find if there a significant relationship between the personality traits and their propensity (intention) towards continuation of usage of virtual or technical assistants
3. To find if there is a causal relationship between the features of virtual assistants and the characteristics of users and the decision to continue usage.

## CHAPTER 2: LITERATURE REVIEW

This chapter attempts to trace the roots of the relationship between variables in theoretical frameworks and documented literature.

### **Expectation Confirmation Theory (ECT):**

Expectation confirmation theory (alternatively ECT or expectation disconfirmation theory) belongs to a set of cognitive theories. This theory elaborates upon the satisfaction an individual gains after purchase or use of a product or service. The satisfaction is evaluated on grounds of expectations they have, how was the performance perceived, and how it matches or doesn't match to the set of beliefs one held prior to the purchase.

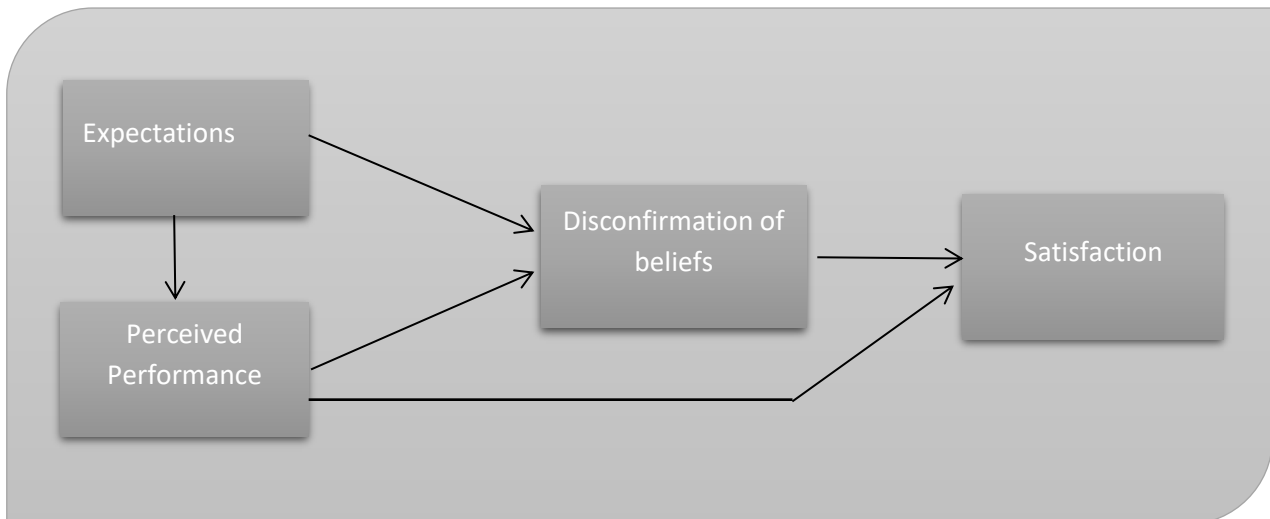
**Expectations** are the opinions or beliefs one holds regarding an event. In the paper, the event being usage of the virtual assistants. These expectations can be with regard to any entity, like- products, services, or any technological artefact. Expectations mold the perceptions and beliefs any individual has. These expectations eventually also impact what the post purchase satisfaction will be like. Pre-purchase or pre-adoption expectations create the ground for the product, service, or technology artefact to ultimately be judged

**Perceived performance** is one's perceptions of the performance of the event of usage. As per ECT, perceived performance is directly influenced by the pre-purchase expectations the user holds. These further on impact the disconfirmation of beliefs and the post-purchase or adoption satisfaction. Perceived performance, further, indirectly impacts the post-purchase and adoption satisfaction through a mediational relationship as per the disconfirmation construct.

**Disconfirmation of beliefs** refers to the conclusions or deductions of the judgments or evaluation that a person makes about the product, service, or technology artefact. These evaluations are drawn against the pre-existing idea which they had. When a product, service, or technology artefact outperforms the person's original expectations, the disconfirmation is positive, which is posited to increase post-purchase or post-adoption satisfaction. When a product, service, or technology artefact underperforms the person's original expectations, the disconfirmation is negative, which is posited to decrease post-purchase or post-adoption satisfaction (i.e., to increase dissatisfaction) .

Post-purchase or post-adoption satisfaction refers to the extent to which a person is pleased or contented with a product, service, or technology artefact after having gained direct experience with the product, service, or artefact. Expectation confirmation theory posits that satisfaction is directly influenced by disconfirmation of beliefs and perceived performance, and is indirectly influenced by both expectations and perceived performance by means of a mediational relationship which passes through the disconfirmation construct .

*Diagram2.1: Expectation Confirmation Theory*



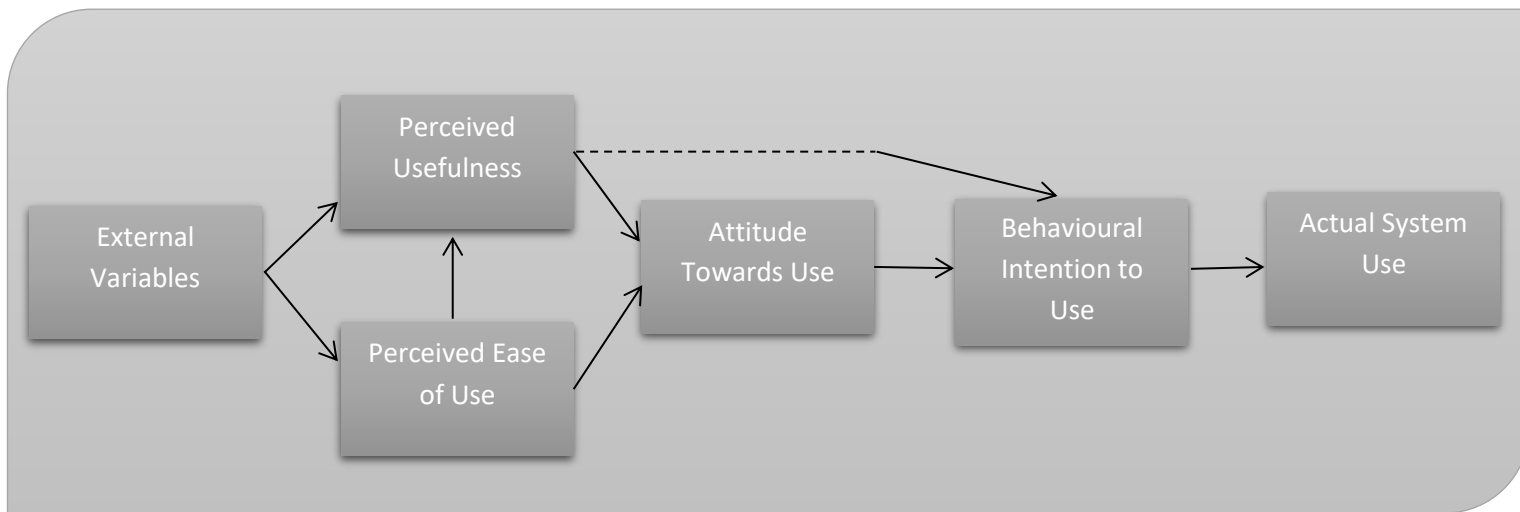
## **Technology Acceptance Model (TAM):**

TAM suggests that, that when an individual interacts with a new form of technology, various number of factors impact the likeliness and usability of it-

**1. Perceived usefulness (PU)** – As defined by Fred Davis "the degree to which a person believes that using a particular system would enhance his or her job performance". This factor implies whether the intention of usage matches the use that the user is finally able to make out of it.

**2. Perceived ease-of-use (PEOU)** – As Davis defines, "It is the degree to which a person believes that using a particular system would be free from effort" (Davis 1989). David postulates that the consumer seeks convenience and attempts to judge the ease of usage of the particular technology. The more user-friendly the technology is more would be the propensity of the user to use it and spend more and more time with it.

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.



*Diagram 2.2: Technology Acceptance Model*

This study draws upon a technology acceptance model (TAM) from the information systems literature (Davis, 1989; 1993; Davis, Bagozzi, and Warshaw, 1989) developed to understand workplace adoption of new technology. Childer’s et al (2001) in their work on online shopping throw light on the application of TAM model in understanding consumer behavior. Tech acceptance model stresses on the importance of various factors impacting the behavior of the user and their tendency to adapt and adopt the technology. One of the primary factors is “Perceived usefulness” of technology by the user which is an independent judgement of the consumer. This perception is impacted by various characteristics of the user. The other important factor proposed by TAM is the ease of technology in the eyes of the consumer. A more recent addition to the TAM model is the enjoyment construct or the extent to which the activity of using the technology is perceived to provide reinforcement in its own right, apart from any performance consequences that may be anticipated (Davis et al. 1989). Childers et al (2001) point out that “Enjoyment has been reported to affect technology adoption for specific word processing and graphics programs” (Davis, Bagozzi, and Warshaw, 1992) “and for microcomputer usage” (Igbaria, Schiffman, and Wieckowski, 1995; Igbaria, Parasuranan, and Baroudi, 1996).

“Perceived ease of use has been shown in prior research to be an important factor influencing attitude towards a behavior Psychographics, personality and Technology acceptance Many researchers believe that customer personalization is a key to the success of virtual e-commerce



organizations”, according to Barkhi and Wallace (2007) “users seem to be receptive towards personalized content and find it useful in decision making. In an attempt to cater to their customers many organizations have begun to implement customer relationship management (CRM) systems, hoping to gain more insight into customer tastes and needs. CRM applications allow companies to learn about customers by analyzing their behavior, discovering hidden patterns, and customizing their offerings for each customer” .(Barkhi, Wallace,2007)

Amongst the Virtual assistant literature in the area, Hoy’s (2018) work on “Alexa, Siri, Cortana, and More: An Introduction to Voice Assistants” talks in depth about how Virtual assistants’ function, what all are they capable of achieving and working on. The article briefly talks about the privacy concerns one can have with these Bots and what vulnerabilities do the bots server have (Hoy, 2018). Kaplan and Haenlein elaborate upon the scope of Artificial intelligence and talk about its potential and areas which are susceptible to risk, in turn creating a model for organizations so that they can evaluate the usage of AI and plan. Researchers have worked on how Virtual assistants and the technology has been put to use in the education system and how compatible students are with the introduction of such technology in the traditional way of education (Pirkko, Currie, Daryanani and Augusto, 2016). The usage of Virtual assistants not only targets to make the regular mans life easy, but also tackles and makes life convenient for the abled. Ballati, Corno and Luigi De Russis worked on patients of Dysarthria and analysed how the leaders of VA are performing, when it comes to comprehending the speech, the element of touch and tasks and the fulfilment of the tasks. The bots were, to a large extent able to comprehend the speech. They have interacted with the individuals with exchange of dialogue, humor, information, commands and much more (Ballati, Corno ,Luigi De Russis, 2016).

Furthermore, research has been done comprising of technology adoption and their relation with personalities. Barkhi and Wallace (2007), had worked on personality types and how those are willing to experiment with the concept of virtual stores. The work was done at the beginning of the phase when the idea of virtual stores was new and growing a foothold in the system of market space (Barkhi, Wallace, 2007).

Garcia, Saffon and Donis (2018) have contributed in the domain by studying the trends of usage of Virtual assistants related to demographic variables (like gender, age, generation, location of usage of device, time frame and frequency).

There is a plethora of research studying relationships between VA usage and factors related to technology and the user but there is no comprehensive research that studies all the factors in one succinct and comprehensive model. To address this gap in literature, this study proposes the following hypotheses.

This way you can discuss all hypotheses

**H1:** Features related to the VA have a significant relationship with user continuance intention.

**H1a:** Ease of usage of VA has a significant relationship with user continuance intention.

**H1b:** The enjoyment component of VA has a significant relationship with user continuance intention.

**H1c:** The utility component of VA has a significant relationship with user continuance intention.

**H2:** Factors related to user have a significant relationship with user continuance intention.

**H2a:** Familiarity with technology of VA has a significant relationship with user continuance intention.

**H2b:** Trust related to data privacy in VA interaction has a significant relationship with user continuance intention.

**H3:** Personality traits of user have a significant relationship with user continuance intention.

**H3a:** Openness to experience has a significant relationship with user continuance intention.

**H3b:** Extraversion has a significant relationship with user continuance intention.

**H3c:** Agreeableness has a significant relationship with user continuance intention.

**H3d:** Neuroticism has a significant relationship with user continuance intention.

## **CHAPTER 3: RESEARCH METHODOLOGY**

### **Research design**

Research design is the combination of methods, steps and procedures used in collecting and analyzing the variables of research (Creswell, 2014).

The research design followed in this study was that of a causal survey-based design. The quantitative data was collected through surveys, Likert type, and qualitative data were collected through interviews of the select sample

### **Variables**

The dependent variable under study was 'User Continuance Intention'. "Continuance intention is one's intention to continue using or to have a long term use intention of a particular technology" (Bhattacharjee, 2001). The independent variables were virtual assistant related factors of a. Ease of use, b. engagement factor, c. Utility factor. The second independent variable was user-related factors- a. Familiarity with technology and the service, Trust with data privacy and safety, c. Personality traits of the user, i. Openness to experience, ii agreeableness, iii neuroticism, iv extraversion, v. Conscientiousness.

### **Tools of Assessment /Questionnaires**

A questionnaire was constructed with 30 items out of which technology-related factors had 15 questions, user-related factors had 2 questions. An adapted standardized questionnaire was used for personality traits which had 10 questions and one user continuance intention question. The reliability for features related questionnaire was 0.87 Cronbach alpha, reliability for user-related factors was 0.86 Cronbach alpha, and for personality trait was 0.86 Cronbach alpha. The validity of the questionnaire was assessed by 3 experts.

### **Qualitative interview schedule**

An open-ended structured interview schedule was created to seek in depth information from people belonging to different categories of the demographic factors which were taken. The interview questions were based on review literature and grounded research.

Q1- Do you use VA and what do you like about it?

Q2- Is there any difficulty or negative aspect related to VA that you face?

Q3- What recommendations would you propose to improve Virtual assistants

Ten people were interviewed via phone.

### **Sampling**

Sampling method- The method was convenience sampling.

Sample size- 128 questionnaires were received out of which 9 were rejected due to incomplete entries. For the qualitative interviews, ten people were interviewed, selected on a convenience sampling basis.

### **Statistics used**

The quantitative data was subjected to descriptive and inferential statistics. The Bivariate correlations (Pearson Correlation ) were calculated, descriptive statistics were calculated and stepwise regression analysis was done.

The qualitative data of the interviews were subjected to content analysis. Themes and categories were constructed to analyze the data.

## CHAPTER 4: RESULTS AND ANALYSIS

### Demographic data

Diagram 4.1: Gender

Gender  
120 responses

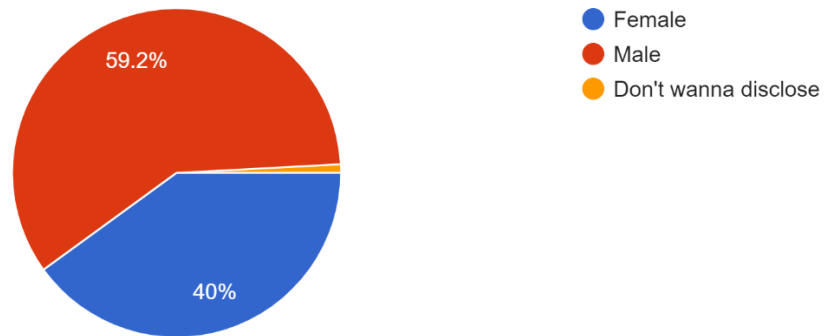


Diagram: 4.2 Education pie chart

Education  
120 responses

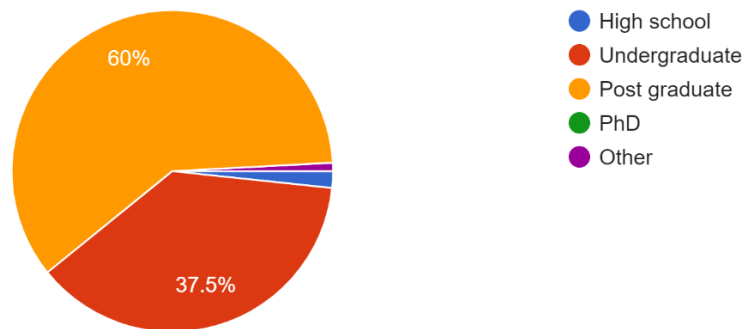


Diagram 4.3: Town they reside in

Town  
120 responses

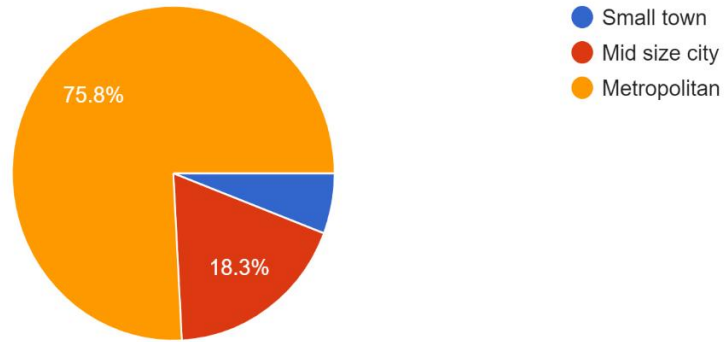
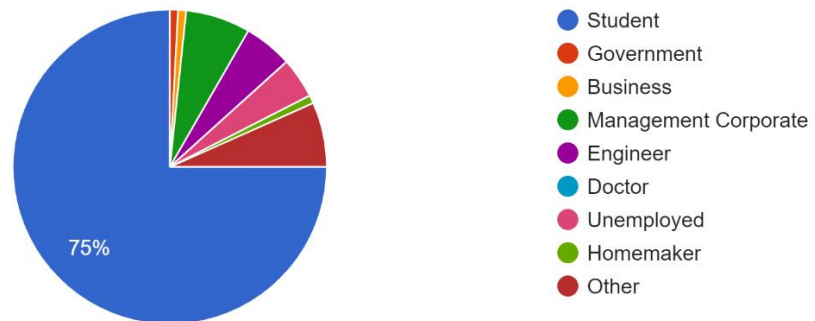


Diagram 4.4: Professions they have

Profession  
120 responses



## Analysis

Table 4.1 Shows that the dependent variable, Continuance intention has an above average score (3.41/4).

*Table 4.1: Showing descriptive statistics (Mean) of the variables*

<b>Descriptive Statistics</b>					
	N	Minimum	Maximum	Mean	Std. Deviation
Continuance_Intention	119	1	4	3.41	.764
Ease_of_Tech_Usage	119	1	4	3.00	.626
Engagement	119	1	4	2.53	.602
Trust	119	1	4	2.26	1.069
Utility	119	1	4	2.78	.544
Familiarity	119	1	4	3.35	.777
Valid N (listwise)	119				



Table 4.2: Showing the correlation between the dependent and independent variables.

Correlations		Continuance_Intention
Ease_of_Tech_Usage	Pearson Correlation	.468**
	Sig. (2-tailed)	.000
	N	119
Engagement	Pearson Correlation	.162
	Sig. (2-tailed)	.079
	N	119
Trust	Pearson Correlation	-.091
	Sig. (2-tailed)	.325
	N	119
Utility	Pearson Correlation	.337**
	Sig. (2-tailed)	.000
	N	119
Familiarity	Pearson Correlation	.667**
	Sig. (2-tailed)	.000
	N	119
Neuroticism	Pearson Correlation	.178
	Sig. (2-tailed)	.052
	N	119
Extraversion	Pearson Correlation	.330**
	Sig. (2-tailed)	.000
	N	119
Conscientiousness	Pearson Correlation	.491**
	Sig. (2-tailed)	.000
	N	119
Agreeableness	Pearson Correlation	.369**
	Sig. (2-tailed)	.000
	N	119
Openness_to_exp	Pearson Correlation	.304**
	Sig. (2-tailed)	.001
	N	119
Continuance_Intention	Pearson Correlation	1
	Sig. (2-tailed)	
	N	119
**. Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

From Table 4.2, it is visible that Continuance intention has a significant relationship with ease of technology ( $r=0.468, p<0.01$ ), thus H1a was accepted; Continuance intention has a significant relationship with utility ( $r=0.337, p<0.01$ ) H1c was accepted, Continuance intention has a significant relationship with familiarity ( $r=0.667, p<0.01$ ) H2a was accepted, Continuance intention has a significant relationship with extraversion ( $r=0.330, p<0.01$ ) H3b was accepted, Continuance intention has a significant relationship with conscientiousness ( $r=0.491, p<0.01$ ), Continuance intention has a significant relationship with agreeableness ( $r=0.369, p, 0.01$ ) H3c Continuance intention has a significant relationship with and Openness to experience ( $r=0.304, p<0.01$ ) H3a.

*Table 4.3: Showing coefficient of regression in regression analysis of dependent and independent variable*

**Model Summary**

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.667 <sup>a</sup>	.445	.441		.571
2	.696 <sup>b</sup>	.485	.476		.553
3	.709 <sup>c</sup>	.502	.489		.546

a. Predictors: (Constant), Familiarity

b. Predictors: (Constant), Familiarity, Ease\_of\_Tech\_Usage

c. Predictors: (Constant), Familiarity, Ease\_of\_Tech\_Usage, Openness\_to\_exp

The regression analysis shows that 48.9% of the variance in continuance intention of the user can be explained by three predictors - Familiarity with technology, Ease of usage and openness to experience. The objective of this study was to identify and analyze technology-related variables and user-related variables that impact usage continuance. As can be seen from the result, though usage continuance has many correlates like- Ease of technological usage, engagement, trust in the service regarding data privacy, utility, familiarity with technology and

the interface, and the five personality types, but only a causal relationship exists only with three variables under study. The three being- Familiarity with technology and the interface, ease of technology usage and the personality type, openness to experience. Out of these three, two are user-related (familiarity with technology and the personality trait of openness towards experience) and one factor or variable is technology-related - 'ease of usage'. The results find support in previous research. The results can be explained by ECT theory and TAM model. According to ECT theory, the user expects certain things and when a gadget or technical equipment confirms the expectation, the propensity of the user continuing to use it increases. The Technology Acceptance Model (TAM) also suggests that the willingness of an individual to use a particular form of technology depends on the use and usefulness of it and further gets influenced by their attitude and behavior.

*Table 4.4: Showing qualitative responses along the themes and categories*

<b>Theme</b>				
<b>Positive aspects</b>	Fun (3)	Useful (6)	Fashionable and in trend (2)	Easy to use (8)
<b>Problems</b>	Accent (5)	Communication (3)	Specificity (3)	
<b>Recommendations</b>	Complementary device to make it convenient (1)	Dialect can be more vernacular (2)	The sync with other apps can be better (4)	

Table 4 shows the qualitative responses to the themes of the interview schedule. Results show that more people use VA because of utility and the main issue is regarding communication noise or accent. The results of the qualitative analysis support the result of the quantitative analysis. As seen from the feedback of the interview schedule, respondents mostly used VA because of its utility factor. Ease of use was one of the predictors in the quantitative analysis

too. The problems brought forth were mostly related to language or accent issues. And 3 people out of 10 reported that VA often gives generic answers and thus has specificity issues. Only 7 people came up with recommendations, were related to communication and to make it more easy to use.

The results of the study find support in previous research on related. Researchers (Child et al 2004; Zinak and Marvel, 2008; Reese and Demmer, 2009) point towards the characteristics of technology and usage by consumer and the results of this study corroborate earlier research.

Openness to experience was found to be a predictor of user continuance of intention which finds support in TAM model and Bohlen, Beal and Rogers diffusion model. Research related to Personality throws light on the role of personality traits on technology acceptance and usage. For example, sociologists, Bohlen, Beal and Rogers gave the diffusion model of product adoption in 1957 which was modified to technology adoption model. Research related to TAM and psychographics show that personality traits example openness to experience was found to be related to the early adoption of technology and other products (Bohlen, Beal and Rogers, 1957)

## CHAPTER 5: CONCLUSION

The results of this scientific study highlight the fact that technology and human interface creates a dynamic platform of interconnections which impact each other- Technology features impact the human brain and the human brain understands, perceives and accepts technology on the basis of its experience as well as its own preferences. As seen in this study, Virtual assistants have their own unique advantages that impact the propensity of the user to continue using them and the users own unique characteristics and history of usage and familiarity impacts the decision to continue using. Amongst the many variables studied in the study, three variables were found to be the predictors of usage continuation. The coefficient of regression (adjusted R square= 0.489) shows that 48.9% of the variants in continuance intention can be attributed to these three factors of a) -Familiarity with virtual assistance, b) the ease with technological usage and c) personality trait of openness to experience. The implications of the study for marketers are that they need to offer advantages like free access for a limited period to foster familiarity which is a very important factor for customers to keep using a gadget or an app. With technical up-gradation, the ease of use should be improved to make it more user friendly and advertising for the app and gadgets should be done in such a way that it stimulates the openness to experience trait of the users' personality.

Hypothesis – H1, H2 and H3 were partially accepted. H1a was accepted, H1b was rejected and H1c was accepted. H2a was accepted, H2b was rejected. H3a, H3b, H3c, were accepted, H3d was rejected.

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## ANNEXURE

### Annexure 1: Questionnaire

## Academic Survey

Dear all,  
I request you to please fill the academic survey. It is confidential and solely for academic purposes. I'll be grateful if you could take some time and help me complete this assignment.

**\*Required**

Gender \*

- Female
- Male
- Other: \_\_\_\_\_

Education \*

- High school
- Undergraduate
- Post graduate
- PhD
- Other

Town \*

- Small town
- Mid size city
- Metropolitan





Profession \*

- Student
- Government
- Business
- Management Corporate
- Engineer
- Doctor
- Unemployed
- Homemaker
- Other

**Instructions**

Kindly rate the following parameters related to your favourite virtual assistant (Siri, Alexa, Cortana etc) on a 4 point rating scale. Virtual Assistant is also used as VA in the questions.

- 4- Strongly Agree
- 3- Somewhat Agree
- 2- Agree very little
- 1- don't agree at all

I find My virtual assistant (Siri/ Alexa/ Whichever you use) easy to use \*

- |                       |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 1                     | 2                     | 3                     | 4                     |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

I'm able to understand the language/accent that my VA uses \*

- |                       |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 1                     | 2                     | 3                     | 4                     |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |



I like the friendly tone of my VA \*

1

2

3

4

While interacting with my VA I am not worried about conversation and data leakage \*

1

2

3

4

I enjoy my interactions with my VA because they are engaging \*

1

2

3

4

My VA gives me reliable information \*

1

2

3

4

My VA gives me answers I want \*

1

2

3

4



My VA doesn't make me feel lonely and is truly a companion \*

1

2

3

4

I like the fact that my VA is able to efficiently coordinate with other apps and do the tasks \*

1

2

3

4

I feel comfortable using my VA and will continue using it \*

1

2

3

4

I would love to use an even more updated version of my VA \*

1

2

3

4

I like the fact that my VA gives me updated information (like weather reports, news, sales, blogs relevant to me, etc) \*

1

2

3

4



I would continue to use my VA \*

1

2

3

4

I feel comfortable with advancements in technology in instruments I use in daily life \*

1

2

3

4

I see myself as someone who is talkative \*

1

2

3

4

I see myself as someone who is full of energy and enthusiasm \*

1

2

3

4

I see myself as someone has a forgiving nature \*

1

2

3

4



I see myself as someone who is generally trusting \*

1

2

3

4

I see myself as someone who is considerate and kind to almost everyone \*

1

2

3

4

I see myself as someone who likes to cooperate with others \*

1

2

3

4

I see myself as someone who does a thorough job \*

1

2

3

4

I see myself as someone who is a reliable worker \*

1

2

3

4



I see myself as someone who can be moody \*

1

2

3

4

I see myself as someone who worries a lot \*

1

2

3

4

I see myself as someone who is curious to try new things \*

1

2

3

4

I see myself as someone who is open to new experiences \*

1

2

3

4

I enjoy my interactions with my VA \*

1

2

3

4



My interactions with my VA are super fun \*

1

2

3

4

I consult my VA as it is useful \*

1

2

3

4

I believe VA has high utility for me \*

1

2

3

4

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## Annexure 2: Cumulative data of the response

Diagram 1:

I find My virtual assistant (Siri/ Alexa/ Whichever you use) easy to use  
120 responses

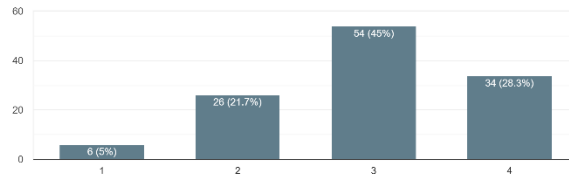


Diagram 6:

My VA gives me reliable information  
120 responses

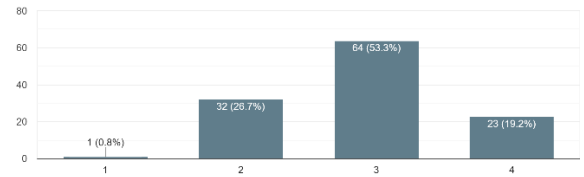


Diagram 2:

I'm able to understand the language/accent that my VA uses  
120 responses

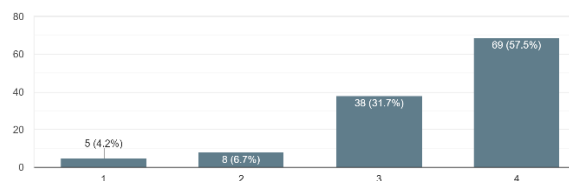


Diagram 7:

My VA gives me answers I want  
120 responses

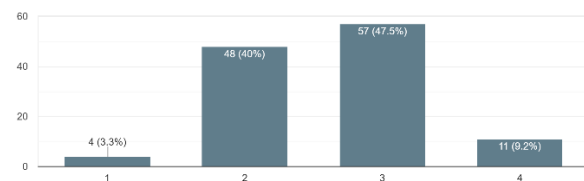


Diagram 3:

I like the friendly tone of my VA  
120 responses

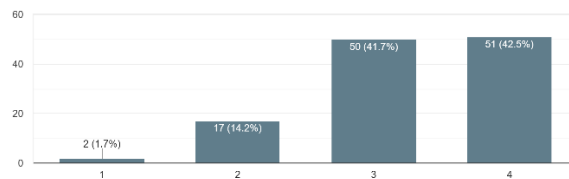


Diagram 8:

My VA doesn't make me feel lonely and is truly a companion  
120 responses

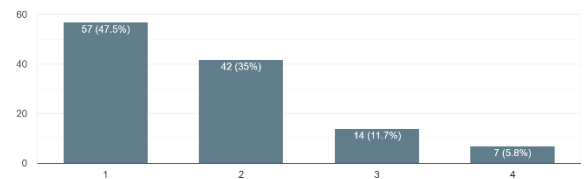


Diagram 4:

While interacting with my VA I am not worried about conversation and data leakage  
120 responses

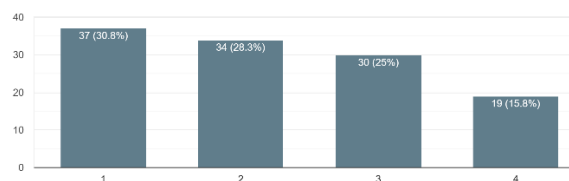


Diagram 9:

I like the fact that my VA is able to efficiently coordinate with other apps and do the tasks  
120 responses

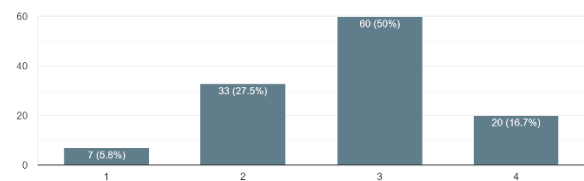


Diagram 5:

I enjoy my interactions with my VA because they are entertaining  
120 responses

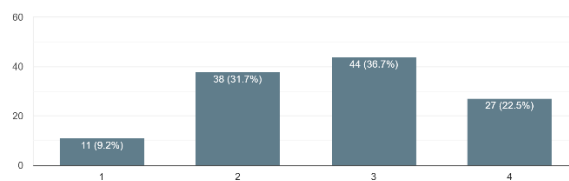




Diagram 10:

My VA often surprises me with some engagement, when I'm not expecting it  
120 responses

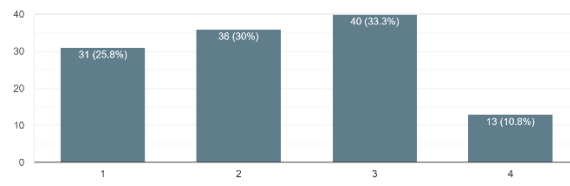


Diagram 14:

I feel comfortable with advancements in technology in instruments I use in daily life  
120 responses

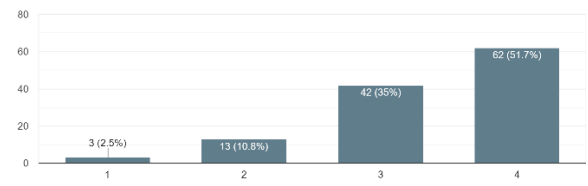


Diagram 11:

My VA is an easy to use, one-stop service  
120 responses

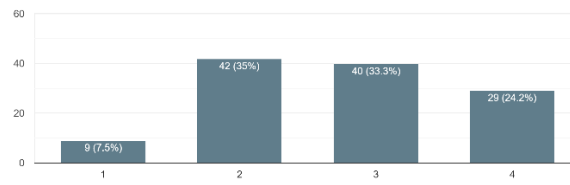


Diagram 15:

I see myself as someone who is talkative  
120 responses

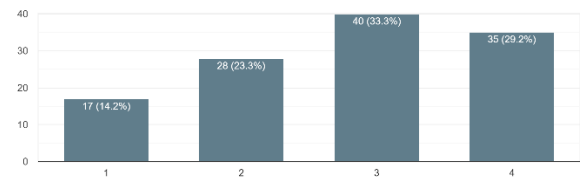


Diagram 12:

I like the fact that my VA gives me updated information (like weather reports, news, sales, blogs relevant to me, etc)  
120 responses

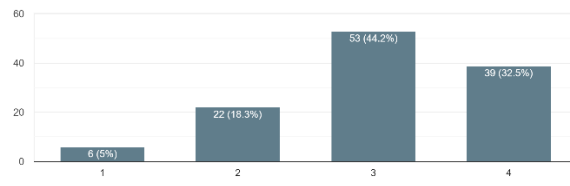


Diagram 16:

I see myself as someone who is full of energy and enthusiasm  
120 responses

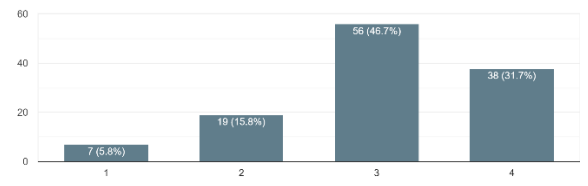


Diagram 13:

I feel comfortable using technical devices (Contemporary apps and software)  
120 responses

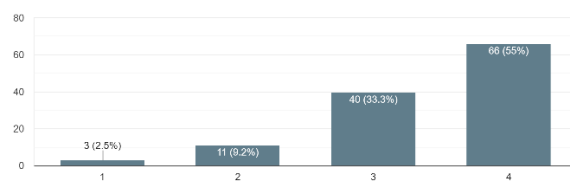


Diagram 17:

I see myself as someone has a forgiving nature  
120 responses

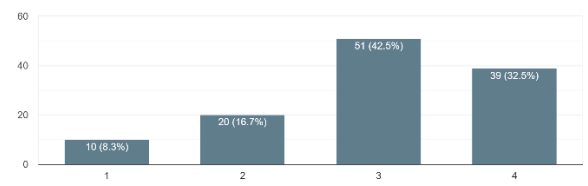


Diagram 18:

I see myself as someone who is generally trusting  
120 responses

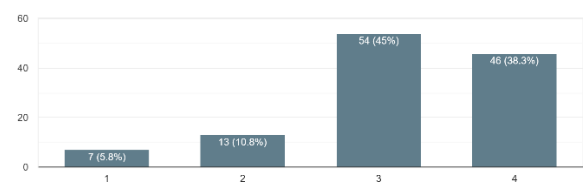


Diagram 19:

I see myself as someone who is considerate and kind to almost everyone  
120 responses

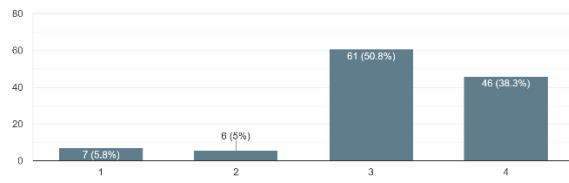


Diagram 24:

I see myself as someone who worries a lot  
120 responses

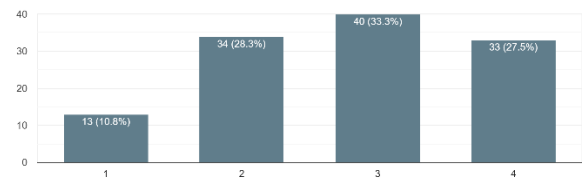


Diagram 20:

I see myself as someone who likes to cooperate with others  
120 responses

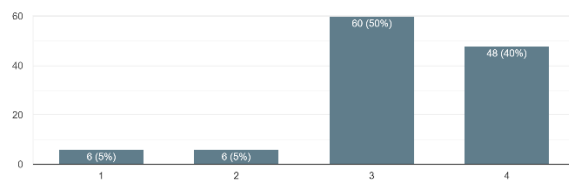


Diagram 25:

I see myself as someone who is curious to try new things  
120 responses

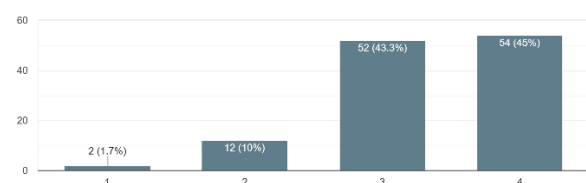


Diagram 21:

I see myself as someone who does a thorough job  
120 responses

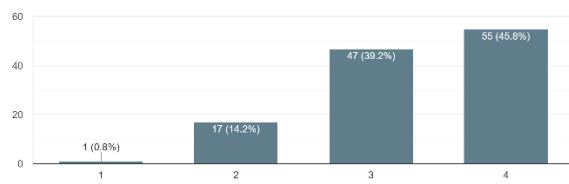


Diagram 26:

I see myself as someone who is open to new experiences  
120 responses

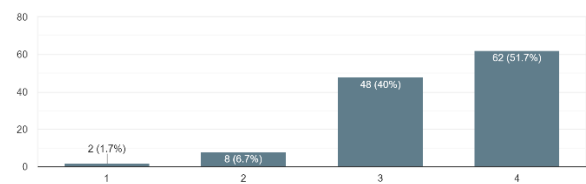


Diagram 22:

I see myself as someone who is a reliable worker  
120 responses

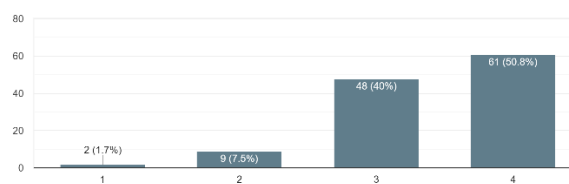


Diagram 27:

I enjoy my interactions with my VA  
120 responses

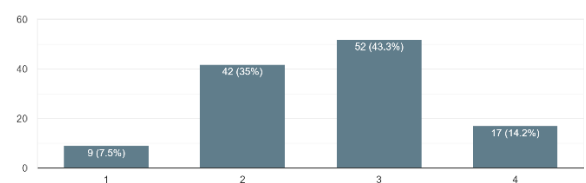


Diagram 23:

I see myself as someone who can be moody  
120 responses

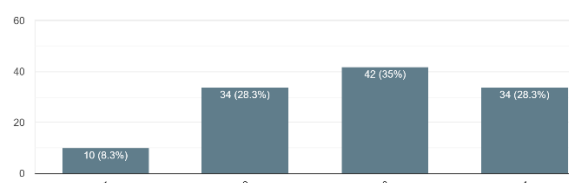
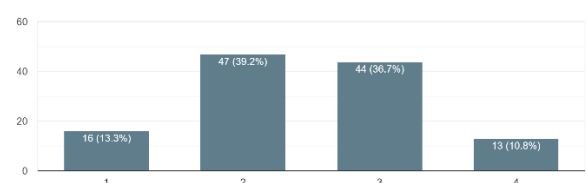


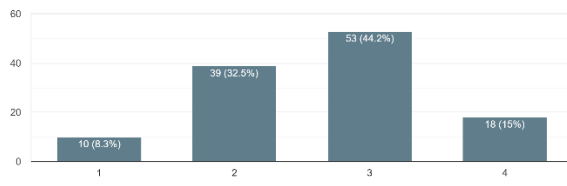
Diagram 28:

My interactions with my VA are super fun  
120 responses



*Diagram 29:*

I consult my VA as it is useful  
120 responses



*Diagram 30:*

I believe VA has high utility for me  
120 responses

