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TITLE IN LITHUANIAN	TITLE IN ENGLISH
"Veiksniai, įtakojantys norą atskleisti asmeninę informaciją Alexa Lietuvoje ir Pakistane"	"Factors influencing willingness to disclose personal information to Alexa in Lithuania and Pakistan"

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INTRODUCTION

In today's world, the development in technology is at its peak and the purpose of this advancement is only to enhance convenience for the users. Every day, innovative devices and software are introduced to enhance our lives, including the rise of personal smart assistants, which have revolutionized how we interact with the technology. Among all these smart personal assistants (SPA's), most popular are Alexa, developed by Amazon, and Siri which was created by Apple. These intelligent smart personal assistants allow users to interact using natural language, offering personalized services that make everyday activities more manageable and efficient. These intelligent devices and applications interpret user instructions in natural language, process them efficiently, and execute the tasks as directed. This enhances user convenience, as operations can be performed using voice commands alone, without the need for typing instructions or any type of complex programming code. To facilitate user's needs and increase productivity Smart Personal Assistants (SPAs) have shown promising results in fulfilling customers' needs (McLean & Osei-Frimpong, 2019). Users are increasingly adopting smart technology due to its benefits in enhancing work productivity, comprehending user emotions, and delivering personalized and effective services (Liu & Tao, 2022; Mishra *et al*, 2022). In 2024, approximately 8.4 billion smart personal assistants were used worldwide, and this growth is exponential if we compare it with past years (Statista, 2024).

To fully utilize the capabilities of personal voice assistants, users must provide certain personal details. For instance, online shopping requires disclosing one's address and banking information, weather forecasts need access to one's current location, and email notifications necessitates access to one's email account. By sharing this information, users enable voice assistants to offer tailored and efficient services, enhancing the overall user experience. Despite providing several benefits and convenience, sharing personal information with these devices somehow affects users' confidence in using them. A study confirmed that users are not confident to use personal smart assistants because of privacy concerns (Easwara Moorthy & Vu, 2015). Previous findings suggests that elements that influence willingness to disclose personal data is crucial in the tech industry (Al-Jabri *et al*., 2019; Kim & Kim, 2018). Perceived privacy risks and trust in IoT services significantly influence the readiness of users to share information. (Pal *et al*., 2021). Design techniques that enhance perceived customer benefits through personalised service

or incentives for information disclosure without compromising security (Anderson & Agarwal, 2011).

This study utilises the Technology Acceptance Model (TAM) to establish a comprehensive adoption framework for Smart Personal Assistants (SPAs). It investigates the influence of perceived usefulness (PU), Perceived ease of use (PEOU), Perceived enjoyment (PE), trust, Privacy concerns, Privacy cynicism and perceived lack of control over the personal data on disclosure of personal information. Previous research found that PEOU and PU are important factors for the acceptance of any technology (Lu *et al*., 2005). However, PE has also significant influence, occasionally surpassing utilitarian attributes in influencing users' perceptions and adoption of SPAs (Dogra & Kaushal, 2021; Jackson *et al*., 2010; Wu & Chen, 2017). This indicates that users seek not only enhanced efficiencies but also the devices that provide enjoyment and satisfactory. Moreover, trust may be considered as a significant factor, since it mitigates privacy-related concerns and enhances users' willingness to engage with SPAs (Hassan *et al*., 2022; Lee *et al*., 2021; Liao *et al*., 2019). Understanding these elements is essential for creating initiatives that enhance user trust and address privacy concerns in achieving optimal SPA adoption and user happiness (Dogra & Kaushal, 2021; Jackson *et al*., 2010; Wu & Chen, 2017).

The research problem is to find the significant factors influencing consumers' willingness to disclose personal information to smart personal assistants such as Alexa in Lithuania and Pakistan.

The aim of this thesis is to identify the elements that most significantly influence users' willingness to disclose personal information to smart personal assistants.

Objectives:

- To identify and summarize the main factors that influence user's WTD personal information to devices like Alexa.
- To develop a research methodology that would help find what factors have the strongest influence over people's willingness to share their personal information with smart personal assistants and to compare this across two countries.
- To collect data from individuals in Lithuania and Pakistan, analysing how cultural and privacy regulations differences influence their WTD personal information with Alexa.

- To assess which identified factors have the greatest impact on WTD personal information to smart personal assistants.
- To draw conclusions based on the literature review and empirical findings from the study.

Study Structure - This research consists of total 3 chapters, in chapter 1 the scientific literature analysis of the study is covered, the chapter 2 and 3 the research methodology, empirical research and discussion is covered respectively, and afterward research conclusions, recommendations, limitations, references, and annexes are stated. In both chapters, previous scientific literature and research findings related to this thesis variables are collected, compared, analysed, and summarized. The 1st chapter contains a detail about the factors that effects willingness to disclose personal information to personal smart assistant's platforms using the and about technology acceptance theory. This study includes the variable like perceived usefulness, ease of use, perceived enjoyment, trust and attitudes which are the important variable of TAM and the main factors which influences the user's willingness to disclose information to smart personal assistants. Some other variables are also analysed in the study which includes privacy concerns, privacy cynicism and perceived lack of control on information and their impact on willingness of user to disclose personal information and on attitude towards Alexa. Moreover, it is also studied that what is the difference of the above discussed factors in two countries specially in Pakistan and Lithuania. In 2nd chapter the methodology, based on the detailed literature analysis the research model is presented, which consists of 20 hypotheses. All hypotheses are supported by the relevant studies. The data collection method and research instruments used in this study are described. A one-shot case study experimental design is applied. Questionnaire constructs are justified based on the previous studies. Sample size has been determined by taking the average of 7 previous studies which were somehow most related to this research as a good practice. In the last chapter, the empirical data analysis and summarization of the factors that effects user's willingness to disclose personal information to Alexa are presented. This section also contains the demographical data and screening questions along with the analysis of the relations between variables using IBM SPSS 27.00 software. The reliability test using Cronbach's Alpha scale has been also calculated. To determine the relations between these variables multiple analyses were applied which includes multiple regression, independent T-Test. To prepare this thesis 186 sources were used, this study contains 16 tables and 2 figure.

Methods Applied: Scientific literature analysis, one close-ended questionnaire based on a one-shot design experiment, statistical data analysis, and conclusions.

Study Limitations: This study was more focused on Alexa which is well known smart personal assistant. It is possible that for other smart personal assistants the results vary. Also, more factors like influence of marketing promotions and the effect of peers can also be analysed which were not added in this study.

1. UNDERSTANDING THE DYNAMICS OF TECHNOLOGY ACCEPTANCE AND INFORMATION DISCLOSURE

1.1. Factors Influencing Willingness to Disclose Personal Information Using Tam

The Technology Acceptance Model, or TAM, is rich model for describing factors influencing persons' adoption of technology and intentions to disclose personal information in emerging technologies such as voice assistants. There are numerous studies on these relationships, some of which comprise key determinants such as perceived usefulness, perceived ease of use, trust, and privacy concerns. (Pal & Arpnikanondt, 2021; Pal *et al*., 2020). There are two key factors under TAM that are perceived usefulness and ease of use from users' perspective, and these together greatly influence attitudes towards technology, which ultimately influence users' willingness to disclose private information about themselves while a study of voice assistants like Amazon's Alexa found that usefulness and ease of use perceived by the user made a positive influence on such users' attitudes, it corresponded with his behavioural intention to use these devices. (Buteau & Lee, 2021). Also, study on mobile social platforms (e.g., WeChat) to analyse the willingness to disclose information (Wang Peng, 2019). This shows that the users are more willing to share personal information when a technology is both useful and easy to use.

The trust is also a major factor in the willingness in persons to disclose some information. It is found to be one of the determinants of the willingness of the elderly to share private health information as a result of AI enabled care robotics. Such trust is shaped by the perceived easy use, perceived usefulness, and recognized benefits since all these are attributes of TAM (Amin *et al*., 2024). In a like manner, trust in internet if thing services eventually potentially leads the users to share personal information with only those services which they find useful and easy to use; it, thus, underlines the importance of trust in technology acceptance. (Pal *et al*., 2021). The willingness to share personal information can be adversely influenced by privacy concerns. Indeed, it is stated that privacy concern is negatively correlated with the willingness to share voice data. This is because they fear privacy risks, watchdogs, and abuse. (Buteau & Lee, 2021; Pal *et al*., 2020). This aligns with the privacy calculus framework, which posits that users weigh the perceived benefits against the perceived risks before deciding to disclose personal information. Thus, Technology Acceptance Model continues to be an excellent model in understanding the variables leading to the individual's willingness to use a personal information-sharing technology.

Relevant constructs perceived usefulness, perceived ease of use, trust, and privacy concern enable us to see how those together shape users' attitude and intentions toward technology use.

1.2. Application of the Technology Acceptance Model in Smart Personal Assistants

Consequently, the Technology Acceptance Model (TAM), which has been proven to be accurate and impactful in explaining the behaviour surrounding the use of technology in different contexts of information systems, is adopted as the underlying theory. Acceptance behaviours that have arisen in the current theoretical models with respect to smart personal assistants have often been based on the original TAM (Kwon & Sohn, 2020). De La Cruz Lui *et al.* (2022) explored TAM's utility in understanding the usability of intelligent personal assistants, emphasizing the influence of innovativeness and user perception. According to TAM, the likelihood of individuals using an information system is influenced by two primary factors: its perceived usefulness by the actors and its ease of use (Davis, 1989). Perceived behavioural control has also been widely used to measure the acceptability of the technology in previous academic research, admitted as one of the key indexes of actual use behaviour toward a particular technology among people (Taherdoost, 2018; Acikgoz &Vega, 2021). In this context, the term "behavioural intention" regard as a person's propensity to employ smart personal assistants for personal smart tasks.

The Technology Acceptance Model provides a strong theoretical foundation for analysing technology usage behaviour related to smart personal assistants (SPAs). TAM posits that individuals' behavioural intention to use technology is chiefly determined by two key factors: namely perceived usefulness (PU) and perceived ease of use (PEOU). PU is the level of perceived benefits a person has about using a personal information system, for instance, about engaging the services of SPAs, in improving their activities, Interaction, entertainment and even access the internet (Fernandes & Oliveira, 2021). This perceived value is important in the adoption of SPAs. PEOU relates to the user's perceived ease of using the technology because it determines their approval of the technology and attitude towards using it. This factor affects the usage of SPA and its adoption within users this implies that, there is need to design relevant and easy to use gadgets that seeks to be adopted frequently by the users having in mind the aspect of sharing of personal data (Basak *et al.*, 2015; Karahanna & Straub, 1999; Parry *et al.*, 2012). Moreover, there is a close link between perceived ease of use aspect and perceived usefulness where it forms positive feedback that aids acceptance and usage (Venkatesh & Davis, 2000; Özbek *et al.*, 2014; Cai *et al.*,

2022). Knowledge of these variables is crucial in formulating measures that increase user confidence, tackle issues to do with privacy, and consequently the take up and satisfaction of users with SPAs. Integrating these insights into SPA development can ensure their successful adoption and effective utilization across various personal and professional contexts.

1.3. Perceived usefulness

Davis (1989) defined perceived usefulness (PU) as the extent to which an individual believes that smart personal assistants will enhance their productivity in completing specified tasks. Previous study in personal informatics found that individuals who consider a personal information system to be useful are more likely to use this technology (Chau & Hu, 2001; Taherdoost, 2018).

TAM additionally evaluates the perceived value, measuring how much a person appears a technology will improve their profession or life (Yılmaz and Rızvanoğlu, 2021). The growing number of SPAs like Alexa, Google Assistant, and Siri lends support to this concept (McLean *et al.*, 2020). SPAs' appreciate is determined by how effectively they assist consumers with scheduling, information retrieval, entertainment, or home automation (Acikgoz & Vega, 2023). To investigate SPAs, perceived utility is essential since it affects the willingness of consumers to embrace and employ these technologies (Pridmore and Mols, 2020). Useful SPAs increase technology thinking, which promotes adoption and integration into life at home and at work. User constancy is greater if an SPA provides calendar management, smart home device control, or timely information (Pridmore and Mols, 2020). Perceived value determines users' willingness to provide SPAs personal information. A lot of people assess privacy concerns against quick, customised assistance (Balakrishnan *et al.,* 2021). Individuals are noted more willing to share personal data if the perceived benefits convenience, time savings, or enhanced capabilities outweigh the risks associated with privacy to maximise the SPA's potential (Ashrafi and Easmin, 2023).

In addition to direct benefits PU includes indirect benefits including interaction with others, entertainment, and internet access (Pal, Babakerkhell and Zhang, 2021). These greater advantages boost the SPA's perceived value, affecting the acceptance of users. In general, perceived value is important to acceptance of technology, especially for SPAs (Burbach *et al.,* 2019). It influences the acceptance by customers of such gadgets, their integration into everyday

activities, and how much private information users reveal (Mishra *et al*, 2022). Understanding and boosting SPAs' perceived value could boost customer happiness, loyalty, and trust (Liu and Tao, 2022), encouraging their widespread acceptance and responsible use (Vimalkumar *et al.,* 2021).

The use and adoption of smart personal assistants, such as Alexa, Siri, and Google Assistant, in activities are minimal in terms of usefulness and value (Dasgupta *et al*., 2009; Fernandes & Oliveira, 2021; Jackson *et al*., 2010). Consequently, understanding the immediate and indirect advantages of these technologies enhances the acceptance rate. However, if privacy concerns are solved and the benefits of using SPAs highlighted, users are likely to build greater trust and, as a result, exhibit loyalty towards the SPAs (Dogra & Kaushal, 2021; Liao *et al*., 2019; Vimalkumar *et al*., 2021). Ultimately, enhancing the perceived value of SPAs may not only raise customer satisfaction but also inform customers about their proper use and integration into daily scenarios. (Hassan *et al*., 2022; Hu *et al*., 1999; Perry, 2016)

1.4. Perceived ease of use

Davis (1989) examined the direct association between Perceived Ease of Use (PEOU) and real effort, which refers to an individual's belief in the simplicity of using smart personal assistant services. In healthcare study, it was identified as significant in forecasting behavioural intentions. comprising PU (Kang *et al*., 2024; Arfi *et al*., 2021). This suggests that if individuals thinks that a technology is simple to use, they are more likely to adopt it and perceived it as beneficial for them. As a result, the following theories were put forward.

The TAM explains PEOU as a user's expectation of a technology's ease. This idea is essential to understanding user-technology interactions as it affects approval and attitude. Usability counts for smart assistants like (Brill *et al*., 2019). Digital assistants corresponded to into routine through setting reminders and managing smart home gadgets using voice commands (McLean and Osei-Frimpong, 2019). The effect it has on user engagement and adoption of these technologies makes the perceived simplicity of use essential to our research. Satisfaction with clients could be impacted by smart personal assistant convenience (Ashrafi & Easmin, 2022). If technology is straightforward, those are going to utilise it every day to transmit more personal information. User interface design and technology's capacity to understand natural language instructions influence this simplicity (Yılmaz & Rızvanoğlu, 2022). The ease of use could additionally make technology adoption simpler, especially among less tech-savvy customers

(Taherdoost, 2018). Setting up, understanding, and employing smart personal assistants is regarded simple. Users are more inclined to embrace a product that is simple to set up and employ (Liao *et al.*, 2019). Technology confidence may also be influenced by perceived simplicity. Users are more confident to trust and share personal data with a device that is considered as simple to use those functions correctly without unexpected repercussions (Balakrishnan *et al.*, 2021). According to this study, SPAs have an impact on people's attitudes and personal information disclosure. This is crucial because PEOU has an impact on adoption of technology, engagement, and trust. Studying how PEOU affects users' interactions with smart personal assistants may help manufacturers develop more user-friendly gadgets and promote their adoption and responsible use, particularly when it comes to personal data sharing.

1.5. Perceived enjoyment

This is a key feature, starting with the interaction of personal smart assistants and lasting with their use. According to much research, the decision about using SPAs is determined by how much users enjoy interacting with such devices (Pal *et al.*, 2020; Holdack *et al.*, 2020). This enjoyment not only promotes overall acceptance of technology, but it also contributes to the continuation of interaction levels. Furthermore, some people establish friendly and communicative relationships with their smart personal assistants, making engagements more enjoyable and frequent (Wienrich *et al.*, 2023). Users' perceptions of warmth and competence vary; while Cortana and Google Assistant are ranked higher in terms of friendliness than Alexa and Siri, this can result in severely dissatisfied consumers (Lopatovska, 2020).

While SPAs are recognized for their ability to reduce feelings of loneliness by providing a social presence, this benefit does not apply universally. Older users, for example, report high levels of satisfaction with SPAs, independent of their feelings of loneliness (Winkler, Söllner, & Leimeister, 2021; YeBeet, 2020). The relationship between PE and other factors such as PU and PEOU is well-documented. PE enhances these perceptions, which in turn, impacts the inclination to accept the technology (YeBeet, 2020; Chen, 2019; Teo & Noyes, 2011; Zhou & Feng, 2017). Importantly, the enjoyment experienced by users directly impacts their intention to use technology during their leisure time (Zhou & Feng, 2017).

In educational contexts, the key factor driving student engagement with augmented reality platforms is the enjoyment derived from these interactive technologies (Balog & Pribeanu, 2010).

However, it has been shown that naturalisms such as 'um' and 'ah' are enjoyable while talking with Alexa, and as a result, consumers have greater rates (Cohn *et al.*, 2019). Combined, enjoyment greatly contributes to perceived value through an user's total experience with technology. It has a significant impact on PEOU, confirming the idea that user enjoyment is one of the crucial element of technology acceptance in the technology acceptance model (Sun & Zhang, 2006). This collection of data emphasizes the importance of incorporating user satisfaction into the improvements of user-centred clear technology solutions.

1.6. Role of Perceived Ease of Use, Usefulness, and Enjoyment in Technology Acceptance

Previous research indicates a greater impact of perceived ease of use on perceived usefulness. The ease of use, which impacts perceived usefulness, is an essential aspect of technology from the viewpoint of a user. A number of studies have demonstrated the correlation between both variables in information technology systems. Gefen and Straub (2000) observed that perceived ease of use correlates with the qualities of information technology: ease of use, ease of learning, adaptability, and user interface simplicity. Thus, these evaluations influence PU. Sheppard and Vibert (2019) further established that, although ease of use is a primary function, it does not moderate perceived usefulness; instead, it influences the nature of the relationship between the two variables.

Perceived Ease of Use exhibits a positive relationship with Perceived Enjoyment. This suggests potential correlations between perceived usefulness and attitude, particularly when individuals regard the technology as user-friendly and get pleasure from its use. Likewise, Sun and Zhang (2006) observed that PE signaficantly influences PEOU and vice versa, indicating that these two terms are interrelated. This was further supported by Venkatesh (2000), demonstrating that PE, characterised by intrinsic use, and PEOU, defined by technology fun, along with emotion conceptualised as computer anxiety, significantly influence PEOU.

The link between PU and PE is complicated. PE can enhance the PU of technology, particularly when it is utilised for both practical and entertaining objectives. A cross-sectional study by Teo and Noyes (2011) shown that of use PE predicted PU, PEOU, and behavioural intention to use the technology. Similarly, PE affects consumers' PEOU and PU over time, highlighting the significance of enjoyment in technological acceptance (Kakar, 2017).

Both PU and PEOU are essential factors that determine the acceptability of technology. While ease of use highly influences usefulness, enjoyment can also directly impact users' intentions to use technology. From findings PU had a greater impact on users' intentions compared to ease of use, but ease of use still had a significant indirect effect (Davis, 1989). This was furture supported by (Lee *et al*, 2005), who suggested that PU and PE highly impacted the students' intentions to study through the e-learning system. These findings collectively highlight that PEOU enhances both PU and PE, which are critical for technology acceptance. Enjoyment further influences both PEOU and PU, underlining the interconnected nature of these factors in shaping users' acceptance and use of technology.

1.7. Attitudes towards Alexa

Users evaluate many things when providing SPAs like Alexa, Google Assistant, or Siri their personal data, including how easy is to use them (Tulshan & Dhage, 2019). The theory TAM explains PE as the ease with which a person considers while accepting a technology (Puntoni *et al.,* 2020). The issue of user comfort and engagement is a primary focus of SPA research. Easy-to-use SPAs are recommended. This simplicity provides customers a feeling of authority and control over the technology, decreasing nervousness while improving confidence (Pridmore & Mols, 2020). Sharing personal information needs trust. Easy-to-use SPAs may be respected for their safety and security, making users at ease inputting personal data like schedules, preferences, and payment information for better device use and personalisation (Yılmaz & Rızvanoğlu, 2021). Easy application could influence the SPA's perceived value, a further significant aspect of personal data collaborating (Ebbers *et al.,* 2020). If they can easily contact a SPA to obtain assistance, users might deem showing personal information as an equal trade-off (Pizzi *et al.,* 2023). Data disclosure requires perceived value exchange. Personal sharing of data is additionally impacted by PEOU. Users think dangers, privacy, and tech advantages (Hallam *et al.,* 2017). When exchanging personal data with a SPA, PEOU increases confidence and reduces scientific adoption obstacles, but privacy and security must be solved (Ashrafi & Easmin, 2022). SPAs' PEOU impacts users' willingness to give up personal data. developers could improve user experience and reduce effort to use SPAs (Ebbers *et al.,* 2020), which could increase acceptance and increase the personal information disclosure to maximise the technology's opportunities (Huo *et al.,* 2022).

Nevertheless, Artificial Intelligence powered virtual smart assistants have sparked significant concerns over privacy and security (Shin *et al.,* 2020). These digital personal smart assistants collect the sensitive and personal data pertaining to history users' location, contacts information, meetings and calendars, history of what was search on internet, and the data of online purchasing (Shank *et al.,* 2020).).

Although SPAs are widely used, there have been few studies conducted to investigate the difficulties in its adoption (Mishra *et al.,* 2022). Adoption in this context refers to the acceptance of technology into consumers' daily lives and its subsequent usage (Waring & Skoumpopoulou, 2012). Prior research on the adoption of digital assistants has mostly focused on individualistic cultures in the Western setting, with minimal attention given to collectivist countries like India (Liao *et al.,* 2019). Privacy concerns differ significantly between individualistic and collectivist perspectives (Leidner & Kayworth, 2006). Understanding these concerns in collectivist societies is crucial for comprehending the adoption of VA and the associated phenomena (Cowan *et al.,* 2017). Additionally, the studies have also emphasised the need to create complete models for the adoption of AI-based technologies, such as VA (Fernandes and Oliveira, 2021). Hence, it is imperative to surpass the technological approach and cultivate a theory-driven comprehension of the acceptance of AI-based digital technologies (Nuseir *et al.,* 2022). This comprehension should encompass both facilitators, such as the value it offers to users, and hindrances, such as privacy and security concerns, from the standpoint of a collectivist society (Jackson, 2011).

1.8. Impact of Perceived ease of use and Perceived usefulness on attitudes

The TAM claims that ease of use and usefulness impact consumer technology attitudes (Liao *et al*., 2019). People understand and embrace technologies according to these related variables. Technology's perceived physical and cognitive ease of use is evaluated (Yılmaz and Rızvanoğlu, 2021). This is as individuals choose intuitive and simple technology because it takes less effort and aggravation. Smooth interactions with users could render technology, like SPAs, more acceptable for everyday use (Acikgoz &Vega, 2023). A person's perceived utility indicates how much they think a technology will help their line of work or life (Jabbar *et al*., 2023). A favourable view towards technology depends on this idea since consumers appreciate developments that speed things out, save time, or offer actionable information (Nuseir *et al*., 2022). Users support developments that offer significant advantages; therefore a technology's PU

could influence its adoption (Bawack *et al*., 2021). High PEOU allows customers to explore its capabilities and benefits (an increase in perceived usefulness), which improves their favourable perceives towards the technology (Bolton *et al*., 2021). This cycle emphasises that these variables impact user perceptions as well as behaviour in the adoption of technology. When technology becomes accessible to use, usage and adoption increase (Manikonda, Deotale & Kambhampati, 2018). These attributes affect consumers' attitudes and are essential for designers and developers aiming to create solutions that satisfy end-users (Guo & Luo, 2023). Understanding and developing these perspectives may enhance technological adoption and facilitate customer adaptation to new innovations (Fernandes & Oliveira, 2021).

Multiple research projects confirm the premise that PEOU positively influences PU. The research with BRI Corporate Cash Card users demonstrated that perceived ease of use completely moderated the influence of perceived usefulness on attitudes towards usage and behavioural intention (Nuryakin *et al*., 2023). Similarly, the research conducted by (Raksadigiri & Wahyuni, 2020) on online learning platforms indicated that both Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) affect students' attitudes towards system utilisation, ultimately contributing to their satisfaction. Previous research on the Ruangguru online learning application demonstrated that PEOU and PU positively influence attitudes towards system usage, which in turn affects the actual utilisation of the application (Islami *et al*., 2021). Within the e-banking context, PEOU and PU were identified as factors affecting client attitudes, thereby shaping their perceptions of change concerning the utilisation of electronic banking services (Jahangir & Begum, 2008). This finding aligns with the Technology Acceptance Model (TAM), which says that perceived ease of use and perceived usefulness are the primary factors influencing attitudes towards a certain technology (Santoso, 2017). Moreover, the current research indicates that perceived ease of use and perceived usefulness influence consumer behaviour in online environments, such as e-commerce. Research on Instagram Shop features found that PEOU and PU impacted attitudes towards utilising Instagram as an independent variable, hence influencing users' purchase intentions (M & Ali, 2021). Similarly, a study conducted by (Gunawan *et al*., 2019) on Tokopedia consumers revealed that while the influence of PEOU did not significantly affect consumer attitudes, PU had a significant positive impact on these attitudes, underscoring the importance of perceived benefits. The mediating role of attitudes has been established between perceived ease of use, perceived usefulness, and other outcomes. In the online learning

environment, attitudes elucidated the interplay between perceived ease of use, perceived usefulness, and student happiness (Nuryakin *et al.*, 2023). In the context of Instagram Shop features, attitudes fully moderate the relationship between perceived ease of use (PEOU) and partially influence the perceived usefulness and purchase intentions (M & Ali, 2021). Overall, these investigations corroborate the hypotheses of PEOU and PU regarding user perceptions of technology. Consequently, these attitudes influence several behavioural variables, including trust, privacy concerns, and, most importantly, willingness. These findings are further corroborated by the sole studies indicating contextual changes, which at least imply that the technology acceptance model is an exceptionally general theory of technology adoption and utilisation.

Customers consider ease of use and usefulness of Virtual Assistants (SPAs) such as Alexa, Google Assistant, and Siri while providing personal information. PEOU refers to the degree to which an individual perceives the ease of using a technology, which influences user comfort and engagement (Barros & Seabra, 2020; Parry *et al.*, 2012; Liang *et al.*, 2003). Simple SPAs create an illusion of prompt proficiency in technology, so reducing anxiety and improving self-efficacy (Basak *et al.*, 2015). Data disclosure occurs just when there is a perceived exchange of value, and for the user, disclosing sensitive data may be considered a justifiable trade (Chen *et al.*, 2011). However, the increasing number of powered by AI SPAs contributes to other urgent concerns regarding privacy and trust (Acikgoz & Vega, 2021). The analysis of SPAs' adoption is crucial for determining the acceptance of AI-centric technologies in collectivist societies (Huo *et al.*, 2022). Enhancing awareness of these issues can influence technological acceptance and facilitate consumer adoption of new features. Parry *et al.* (2012) asserted that trust is fundamental to customer perception and the inclination to adopt specific technologies, particularly with privacy issues.

1.9. Trust

Confidence in sharing personal information is compulsory, particularly in the context of user online interactions especially new technologies like voice assistants. Various academics have proved that trust play a significant role in influencing consumers' decisions about data disclosure. For instance, you need to trust the context and the entity asking for information. The study by Bansal *et al.*, (2016) examined how surroundings and personality of online interactions affect privacy concerns, and the willingness to provide information, and found that sensitivity to context

and individual personality features play a significant role. The disclosure personal information to the Internet of Things service providers is dependent upon trust, privacy risk, and the perceived benefits. Privacy concerns prompted a reduction in information exposure, trust enhanced the perceived advantages of such disclosure (Pal *et al*., 2021).

In the words of voice assistants, the phenomenon of personalization-privacy is certainly clear. The findings indicated that, despite higher privacy risks, users are inclined to provide more personal data if they expect greater benefits from the customised services supplied. This concerns the reduced perceived risks and enhanced perceived benefits attributed to trust in the voice assistant, and user agree to disclose personal information (Pal *et al*., 2020).

Moreover, belief in political institutions significantly influences individual results on the WTD. The study conducted in Portugal revealed that trust in public organisations is essential for individuals' decisions to disclose personal data, since citizens are more inclined to share their information when they trust these institutions (Castro & Bettencourt, 2017). The Saudi Arabian study reaches a similar conclusion: trust in government protection regulations positively influences WTD personal information, whereas concerns regarding privacy risks have a negative effect (A. & Li, 2020).

The concept of trust applies to various aspects of the internet, including social networks and online shopping. Trust plays a significant role to influence willingness to disclose information within these paradigms; trust emerged as a more favourable predictor of information sharing (Zimaitis *et al*., 2022). Visible perception of trust in online markets can be enhanced by trust on e-commerce platforms and who the personal information is managed, particularly when sensitive personal information is required. This is founded that trust exerts a more significant influence on males than females, explaining the difference in trust, particularly with peer-to-peer lending (Widjaja *et al*., 2021). Trust is a crucial aspect for teenagers and their behaviour, as they disclose personal information to commercial websites. The perceived ability, integrity, and compassion of the website were found to influence willingness to disclose various forms of personal information (Heirman *et al*., 2013). Overall, trust is a multifaceted construct that significantly influences the WTD personal information across different contexts and technologies. The interplay between trust, privacy concerns, perceived usefulness, and contextual factors underscores the complexity of information disclosure decisions. Understanding these dynamics is crucial for developing strategies to enhance trust and encourage responsible information sharing.

1.10. Privacy concern

Smart assistant's trends to provide personalize services which improves customer satisfaction and engagement but raises privacy concerns (Kim & lee, 2009). While the majority of customers appreciate the enhanced convenience and personalisation that naturally result from these advancements (Germanos *et al.,* 2020), a significant number still have concerns over the privacy implications of sharing their personal information (Lee, 2009). Privacy concerns are typically defined as the anxiety surrounding the possible loss of privacy and the necessity for protections against unsolicited contact and the misuse of personal data (Nuseir *et al.,* 2022). This issue relates to the handling of personal information exchanges and security, raising the question of whether the information's recipient will use it appropriately (Jiang *et al.,* 2020).

The privacy issue is believed to arise from an individual's perspective on privacy and the situational signals that allow them to evaluate the consequences of sharing information (Zimmer *et al.,* 2010). Contended that the impression of privacy is formed via social interactions with other individuals or groups. The cognitive processes involved in recognising the limits of information that pose a danger to privacy, invade privacy, or may be controlled are crucial for organising an individual's privacy concerns (Tulshan & Dhage, 2019). Demographic variables, such as age, gender, and economic position, influence customers' privacy concerns. People become more worried about their privacy when their information is used without their awareness or consent (Germanos *et al.,* 2020), or when the intended purpose of the information is not disclosed (Sun *et al.,* 2023). These attributions have been experimentally confirmed and verified in numerous models. For some individuals, safeguarding patients' information is an integral aspect of their professional ethics (Pal *et al.,* 2020), whereas for others, it is only a task performed as part of their occupational duties in the benefit of the organisation (Mutimukwe *et al.,* 2020).

Research on mitigating privacy concerns of customers has significantly expanded in recent years, transitioning from broad settings to more focused ones. Researchers have investigated privacy problems in several domains such as social networking, internet services, healthcare, and location-based services (Shank *et al.,* 2020). Extensive research has investigated several factors that precede or cause privacy problems (Bandara *et al.,* 2020; Kang *et al.,* 2024). Classify these antecedents into five categories based on their educational level. The elements may be categorised as individual factors, socio-relational factors, macro-environmental factors, organisational and work environment factors, and information contingencies (Hoy, 2018). Studies have developed

many tools and models to conceptualise privacy problems in diverse circumstances. One example is the Concern for Information Privacy (CFIP), which defines the standards that organisations use to protect privacy (Bernardi and Stark, 2018). The concept of online Users Information Privacy Concerns (IUIPC) implements a comprehensive understanding of the privacy concerns of online users (Kronemann *et al.,* 2023). This model elucidates the formation of an individual's privacy concern towards certain activities via a cognitive process that involves privacy control, privacy intrusion, and perceived privacy danger (Markos *et al.*, 2018). Based on information border theory, this comprehensive model suggests that an individual's inclination towards situational or privacy cues allows them to evaluate the potential outcomes of sharing their information, which in turn influences their level of privacy concern (Li *et al.,* 2023).

1.11. Privacy cynicism

Privacy cynicism towards smart personal assistants like Alexa has negative impact about what information to share. This context of data privacy in the two countries might have an impact on privacy cynicism (Acikgoz & Vega, 2021). The General Data Protection Regulation (GDPR) applies, one of the most serious data protection standards worldwide (Moorthy & Vu, 2014). It specifies that organizations must be transparent and offer individuals more access and control over their personal data. This can make users feel at ease knowing that this environment is somewhat regulated which in turn might curb privacy cynicism. Unfortunately, as some major EU and global data breaches and scandals have shown, high profile are breaches and scandals aimed to make the users lose faith in them (Lutz *et al.*, 2020). Even in a place like United Kingdom with quite robust data protection regulations, a long line of data breaches and scandals from the Facebook-Cambridge Analytica saga through to the bumps caused by fintech's fudging rules and selling data without proper checks.

By contrast, Pakistan lacks a well-developed data privacy infrastructure. The country has less strict data protection laws that have not been enforced to the same extent as GDPR. Indeed, citizens in Pakistan might already be more cautious about their privacy, because they believe that whatever they do online can most probably be viewed by others or use by some third-party without them knowing (Lutz & Newlands, 2021). Combined with a dearth of robust data protection laws and enforcement mechanisms, it is safe to say that there is an element of distrust towards organisations in the protection of personal data. In addition, a socio-political background of

stronger surveillance and monitoring in Pakistan adds to privacy scepticism within users. Privacy cynicism is a concept used to describe a decrease in users engaging with SPAs because they do not want to risk sharing personal information that could be misused. (Lyu *et al*., 2024) have shown that lack of transparency in data handling practices and prior negative experiences are common outcomes of privacy cynicism. As a result, more often than not when organizations are not open on how they are collecting, storing, and using our data, or if there have been data breaches or actual data abuse, leads to the erosion of trust through the cynicism it creates in user (Segijn *et al*., 2024).

Organizations need to build strong, independent and transparent privacy rules to address trust prophylaxes. Such policies could explain the collection, processing, security, how personal data is processed and should also be spoken in plain English. This requires auditing and certifying with companies to show that the organization is living up to its assertions around data privacy. Users need to be educated too; companies have to teach their users how their rights and data privacy works so they can become a stronger and trustworthy partner in the equation. Offering users control-like features and tools to manage privacy settings, for instance, can simply boost their perceived level of control and lower cynicism. Another key factor to counter privacy cynicism is consistent enforcement of data protection regulations in addition, in areas like Lithuania, better and stricter law enforcement of GDPR might help rationalize users more about saving the privacy of their personal data. Pakistan too, will take baby steps in order to create an environment of trust amongst the users by enforcing the data protection laws. Collaborations of government & private enterprise, and civilian organizations will greatly assist in developing data protection frameworks and practices.

1.12. Perceived lack of control

A critical determinant of the willingness of users to share data with SPAs such as Alexa is the extent to which users perceive that they have control over their personal information (Hyma *et al*., 2021). The more users feel they are unable to determine how data about them is collected, used or shared, the less likely they are to embrace technologies that involve such disclosures. This framing is largely bound up with autonomy and empowerment frameworks for technology use (Zarifis *et al*., 2020). GDPR gives individuals considerable rights, particularly with regard to access, rectification, and erasure. The purpose of these protocols was to make users the owners of

their personal information and that practices used for managing data should be transparent. Having said that, it might make Lithuanian users to feel safer and more autonomous while giving others personal information using SPAs (Segijn *et al.*, 2024).

A lack of stringent data protection mechanisms may create doubt as to how wi-fi hot spots and high-speed internet will impact the handling of personal information thereby acting a barrier to the sharing of data with SPAs (Bansal *et al.*, 2016). The absence of oversight is compounded by the complete lack of transparency by organizations as to how our personal data is being used, causing trust with users to seriously erode. AlHogail and AlShahrani (2019) have shown that user manipulation could lead to promote users' trust in the system, which then boost their readiness to disclose their personal information. Perceived information control reduces the negative effect of privacy concern on intentions to engage in positive behaviours in personalized online interactions (Taylor *et al.*, 2009). Unsurprisingly, one of the best ways to make people feel more in control is a set of clear, understandable, and easily accessed privacy settings. A site is easier to navigate, and users have the freedom to take more control over their privacy (Pizzi *et al.*, 2023). Providing users with an understanding of how data is being used is also key to giving them a sense of control and accountability (Pridmore & Mols, 2020). Providing user-friendly interfaces to help users manage their data can increase the perceived control even more. Give users a data and they'll want SPAs, and other added benefits.

Companies can help build trust and increase user engagement on SPAs by combating perceived lack of control (Liu & Tao, 2022). Transparency, privacy and control: allowing for users to understand what data is being shared, controlling business restrictions around this data, and empowering users to manage the data and secure it properly is an imperative solution to make the perception of control more reality-oriented and to increase data sharing (Kang *et al.*, 2024).

1.13. Willingness to disclose personal information

Information systems define information privacy, investigates connected ideas, and clarifies how various factors affect it (Smith *et al.* 2011). Furthermore, the research has extensively focused on the way information privacy safeguards the security of personal data (Zwilling *et al.,* 2022). The preponderance of information privacy research is focused on asserting control over an individual's personal information with particular emphasis on its secondary use.

The Internet and digital technology is making it easier for most of the businesses to collect information for customer profiling (Mutimukwe *et al.* 2020). The increasing need for personal data, frequently at the expense of customer privacy (Wang *et al.,* 2017), results the consumers behaviour more reluctant and they give personal information, both online and offline (Zheng & Cai, 2020). This is most evident online world, where consumers are subject to increasing demands for their personal data in order to close a transaction (Petronio & Child, 2020). Therefore, there is a strong correlation between people's tendency to furnish personal data, the anxiety they have about privacy (Phonthanukitithaworn & Sellitto, 2022), has been extensively explored and implications for marketing tactics (Mutimukwe *et al.,* 2020). The rise in customer willingness to disclose information is an emerging focus of research interest (Markos *et al.,* 2018). In this regard, it is necessary to learn what could be the cause or barrier to consumers' willingness to disclose personal information in online and offline environments. (Petronio Child, 2020). Previous research indicates that factors such as the influence of information type requests on an individual's willingness to disclose details, the order of sensitivity enquiries (Krafft *et al.,* 2017), and openness show the extent to which an individual is likely to reveal personal information (Pizzi *et al.*, 2023). However, there is a recognized significant element of privacy concern that has a detrimental effect on consumers' willingness to provide information. (Phonthanukitithaworn & Sellitto, 2022). This is an ongoing inquiry in the literature on personal information privacy, which asks whether individuals will favour their privacy and embrace technology. Research conducted by (Bleier & Eisenbeiss, 2015) indicates that individuals in the digital era are very concerned about the protection of their personal information. However, empirical research has shown that although people expressed a very strong concern for privacy, they revealed their personal information in almost every situation (Bansal *et al.*, 2016). The contrast between individuals' beliefs towards privacy and their actual actions is sometimes referred to as the "privacy paradox" (Ameen *et al.*, 2022).

In conclusion, understanding the dynamics of information privacy and disclosure is crucial in the digital era. As businesses continue to leverage personal data for profiling and marketing, it is imperative to balance these practices with robust privacy safeguards. Further research should focus on consumer's willingness to share personal information and how to lessen privacy concerns.

1.14. Factors influencing WTD in the context of SPAs

Every individual has two separate methods of constructing their identity one is interdependent and the other is independent self-construal's (Culnan & Armstrong, 1998). Most people will tend to have a well-developed sense of both independence and interdependence, but one of these will usually be more prominent for most people. (Mutimukwe *et al.*, 2020). According to Al-Jabri *et al.*, (2019), self-reliant individuals tend to define themselves by what they accomplish and what makes them different from others. Independents emphasise self-advancement due to the unique importance of this distinction (Bernardi and Stark, 2018). Independents, driven by the need for self-improvement, are more likely to participate in activities that promote personal growth (Phonthanukitithaworn & Sellitto, 2022). They typically prioritize the good information that is in their own interest. (Burbach *et al.,* 2019). Consequently, individuals may be more willing to exchange and distribute their personal data in return for advantages (Hallam & Zanella, 2017), because they very much care about the benefits associated with providing information, including tailored recommendations and monetary incentives (Bleier & Eisenbeiss, 2015).

The bulk of research in this sub-stream primarily examine the impact of SPA embodiment on user trust (Liao *et al.,* 2019). Research has shown that individuals have a distinct perception of trust when it comes to interactions with other humans compared to interactions with SPAs (Acikgoz & Vega, 2021). Specifically, humans are more accurate in anticipating the trustworthiness of other humans compared to avatars. Nevertheless, the rates at which trustworthiness is learned are comparable, regardless of whether one is engaging with individuals or SPAs (Ebbers *et al.,* 2020). Regarding the impact of embodiment, the findings are rather inconclusive. Physical representations of social presence agents are linked to increased trust resilience, which refers to a stronger ability to withstand trust disruptions (Taherdoost, 2018). Furthermore, these effects are amplified in the presence of higher levels of uncertainty. Nevertheless, when the various SPAs included trust repair behaviour that resembled that of humans, the impact was mostly eliminated (Ashrafi & Easmin, 2022). Additionally, a study on different trust mechanisms reported that the visual appearance was the lowest among customers of robo advisory services (Easwara Moorthy & Vu, 2015). The results suggest that appearance has a big effect on the surrounding circumstances (Yılmaz & Rızvanoğlu, 2021). This is corroborated

by another research which demonstrates that the alignment of gender between the avatar and the user might be a significant factor in the development of trust (Kronemann *et al.,* 2023).

Furthermore, less attention has been given to the level of knowledge among prospective customers regarding these hazards, and how these may influence their decision to adopt (Li *et al.,* 2017). So far, most research has concentrated on the risk to privacy. These studies found that perceived privacy risk, concern for information privacy, and privacy attitude associated with information privacy are the factors that affect information privacy (McLean *et al.,* 2021), and people's willingness to use smart home devices or services can directly or indirectly decrease by and security/privacy risk (Pal *et al.,* 2021). In relation to smart house adoption, privacy means an individual's right to control the collection, use and disclosure of personal information (Mishra *et al.,* 2022). On the other hand, security concerns the measures used to secure the hardware, software, and data linked to smart home devices and services (Aw *et al.,* 2022).

Those are interdependent who build their sense of self on the connections and interactions they have with others (Ebbers *et al.,* 2020). Those are interdependent who build their sense of self on the connections and interactions they have with others (Belen-Saglam *et al.,* 2022). Interdependent are driven to preserve harmonious connections and are preoccupied with how others see them, resulting in a tendency to prioritise avoiding unfavourable outcomes (Brill *et al.,* 2019). Consequently, individuals may place great importance on privacy and be hesitant to reveal their personal information due to their strong consideration of the potential dangers and resulting adverse consequences linked to the exposure of personal data (Zarifis *et al.,* 2020), such as identity theft or unauthorised access to private information (Cheng *et al.,* 2019). Autonomous people have a less information barrier than interdependent people, argues the information border concept (Chung *et al.,* 2023). Considering the benefits of sharing personal data, individuals are more inclined to do so.

Mishra *et al*., (2022) noticed that buyers were less concerned about privacy when human-like intelligent virtual assistants asked for data. Nevertheless, these researchers just discovered that anthropomorphism might amplify consumers' apprehensions about privacy in contrast to non-anthropomorphism, without elucidating the mechanisms and conditions under which the level of anthropomorphism influences consumers' privacy worries (Pizzi *et al.,* 2023).

Security, privacy, and information abuse issues impact users' adoption and use of SPAs like Alexa and Google Assistant (Sun *et al.,* 2020). Because of these gadgets' ongoing listening, users

worry about their personal interactions and behaviours being recorded inadvertently (Pitardi & Marriott, 2021). People worry about who can see their data and why, nervous about sensitive information being divulged and compromising their privacy (Brill *et al.*, 2019). Users worry such SPA breaches could access personal and financial data or control devices in their homes (Pitardi & Marriott, 2021). Consumers are nervous to connect SPAs to their home networks, which are security-sensitive because of attacks (Bandara *et al.*, 2020).

Worries regarding SPA misuse of information were increasing. Users dread targeted advertising, commercial manipulation, or illegal data sharing (Chung *et al.*, 2017). Lack of willingness related to data use and sharing renders users unwilling of providing personal data to SPAs (Liu & Tao, 2022). Users evaluate the hazards and advantages of SPAs, which affects their views. Many need to weigh these technologies before accepting these (Vimalkumar *et al.*, 2021). Thus, manufacturers and governments have to tackle these issues in order in order to increase confidence among consumers and SPA adoption (Zarifis *et al.*, 2021). These issues could improve SPA acceptance and perception (Hoy, 2018).

Self-disclosure refers to the deliberate act of sharing personal details with others. Information privacy, on the other hand, involves controlling the collection and application of personal information. The advent of the Internet and digital technology has facilitated businesses in gathering information for customer profiling, leading to increased consumer hesitancy in sharing personal information (Kim, 2019). Factors such as the type of information requested, sequencing of sensitive questions, and reciprocity contribute to individuals' WTD personal information (Degutis *et al.*, 2020). However, privacy concerns have a significant negative impact on consumers' desire to share information (Taddicken, 2014). The "privacy paradox" illustrates the disparity between individuals' expressed privacy concerns and their actual information-sharing behaviours (Ameen *et al.*, 2022). In the context of self-construal, individuals with an independent self-view prioritize personal growth and self-improvement, impacting their WTD personal information (Zhang *et al.*, 2021).

1.15. Country as a variable in TAM

Country plays a significant role in technology acceptance model (TAM), influencing various factors such as PU, PEOU, privacy cynicism, privacy concern, privacy lack of control,

trust, attitude, and WTD personal information. This study explores how country-specific characteristics affect these variables within the TAM framework.

It has been shown in all studies that cultural differences in countries have a big influence on technology acceptance. Choi and Totten (2012) discovered that individualism versus collectivism is a determinant of how users perceive the use of technology in terms of usefulness and ease of use. PU was more critical in collectivist cultures and PEOU was more important in individualist cultures in their study.

Another study on perceived usefulness (PU) was conducted by (Davis *et al.*, 1989), which demonstrated that PU influences users' behavioural intentions for a certain technology, irrespective of their cultural background. This study determined that perceived ease of use is beneficial in the initial phases; however, its influence diminishes over time. Conversely, perceived utility was determined to be beneficial at every level of the technology acceptance research. Park *et al.* (2009) expanded the research to ascertain that the acceptance of digital library systems varies across different countries and continents in the developing world. These findings advocate for greater emphasis on how external variables affect PEOU and PU in the search of successful technology adoption that meets local conditions. Burton-Jones and Hubona (2006) examined the mediation of external variables in the Technology Acceptance Model (TAM) and observed that these variables could exert direct effects on usage behaviour, independent of their influence through 'perceived usefulness' and 'ease of use.' This has implications in technology acceptance and usage studies, especially on the impact of country-specific external influences on technology acceptability. Karahanna and Straub (1999) examined many psychological antecedents of perceived usefulness and ease of use, highlighting that social influence and felt presence impact technology broadly. They concentrated on the literature about the diffusion of new technologies, which emphasised the significance of social and cultural elements.

The WTD personal information is additionally affected by the specific characteristics of particular countries. According to Peng (2019), willingness to disclose information is strongly and negatively correlated with privacy concerns but is considerably and positively correlated with perceived ease of use and perceived usefulness. This paper suggests that existing technological acceptance models are flawed and emphasises the significance of privacy factors that may vary by country. Vahdat *et al.* (2020) analysed the total addressable market (TAM) characteristics of mobile app technology and the social elements influencing customer purchase intentions.

Variables including past experience, organizational support, system quality, and computer fear were identified within the context of improving the Technology Acceptance Model (TAM) to enhance variables influencing system utilization (McFarland & Hamilton 2006). Their study demonstrated the influence of country-specific factors on technology acceptance, hence highlighting the importance of contextual specificity in determining acceptance rates for technologies. These publications highlight the importance of country level factors for many aspects of technology adoption models. A clear understanding of this is necessary to develop an appropriate strategy to promote the use of these technologies in a wide range of cultural and legal contexts.

2. METHODOLOGY INVESTIGATING FACTORS INFLUENCING INFORMATION DISCLOSURE TO SMART PERSONAL ASSISTANTS

2.1. Research Objectives, Framework, and Hypotheses

The research will utilize a survey-based methodology to examine variables which influence willingness to disclose personal information, and how cultural differences and privacy regulations between Lithuania and Pakistan influence user decisions to engage with Alexa. The study will collect and analyze data from surveys to better understand willingness to disclose information that could alleviate privacy concerns, increase user control, and increase smart personal assistants' adoption and satisfaction rates worldwide.

Problem of research - Finding the factors that impacts user's willingness to disclose personal information to Alexa in Pakistan and Lithuania.

Aim of research - To identify which the factors which has most significant influence on willingness to disclose information to Alexa and which factors vary in Pakistan and Lithuania.

Research objective - To find what factors have the strongest influence over people's willingness to share their personal information with smart personal assistants and to compare this across two countries.

The research uses Technology Acceptance Model (TAM) to build a unified adoption framework for Smart Personal Assistants, analysing how PEOU, PU and PE influence user acceptance and WTD personal information. (Aw *et al*., 2022; Dogra & Kaushal, 2021; Liao *et al*., 2019; Vimalkumar *et al*., 2021). Traditionally, PEOU and PU are considered as primary drivers of technology adoption (Lu *et al*., 2005). Additionally, PE is being viewed as a key factor influencing user attitudes towards SPAs. (Jackson *et al*., 2010; Wu & Chen, 2017). As these technologies address privacy concerns, trust is particularly important to fostering engagement with them (Hassan *et al*., 2022; Lee *et al*., 2021).

Users can be greatly influenced in their behaviour towards SPAs by privacy cynicism, based on the skepticism of how organizations manage personally identifiable information. (Moussawi *et al*., 2020; Moorthy & Vu, 2015; Lutz *et al*., 2020). This is exacerbated in regions like Pakistan, where less stringent privacy laws may heighten distrust and skepticism (Lutz & Newlands, 2021; Lyu *et al*., 2024). Additionally, a perceived lack of control over personal data

greatly deters willingness to use SPAs, because users are afraid that data will be misused without consent and there is a lack of transparency in how the data will be handled (Hyma *et al.*, 2021; Zarifis *et al.*, 2020). The research model is depicted below as an outline of the interconnections among the discussed factors in the Technology Acceptance Model framework to show how each of them plays a role and influences user personal information disclosure of Smart Personal Assistants like Alexa.

Figure 1

Research Model
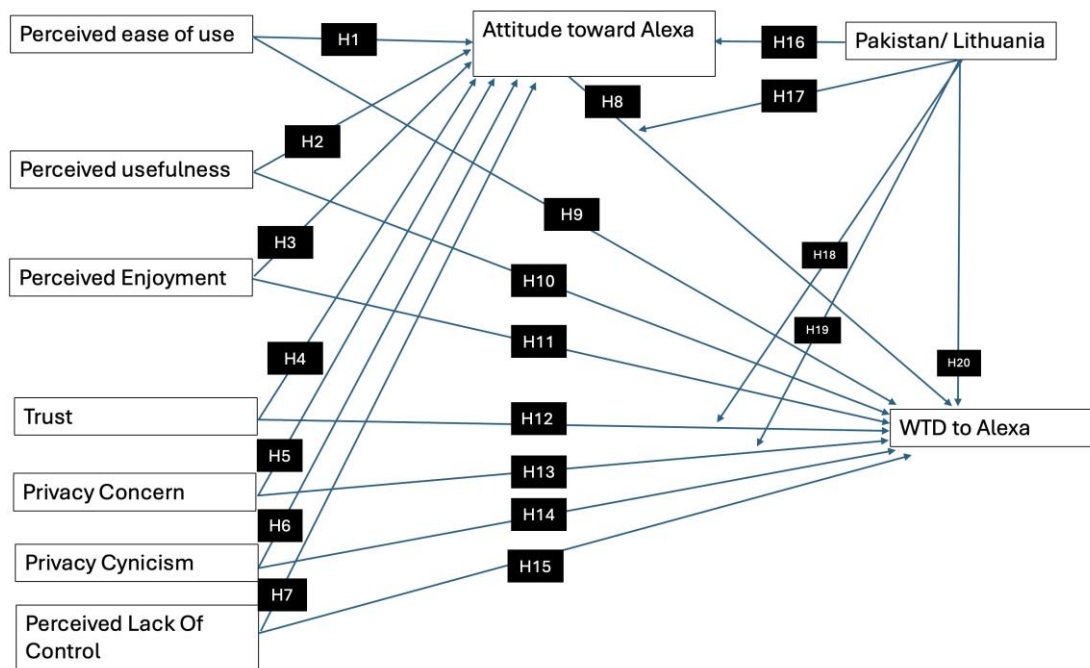
Compiled by author

To measure the relationship between the factors that affect WTD personal information to Alexa is presented in this research model, the collection of twenty hypotheses were formulated.

Various research supports this hypothesis, emphasising the significance of user-friendliness in influencing user attitudes and behaviours towards voice assistants. A study analysing user interactions with Amazon Alexa found that users reported high satisfaction levels, even when Alexa failed to give the desired information. This suggests that the whole interaction experience, including ease of use, plays a critical role in user happiness (Lopatovska *et al.*, 2019). In addition, research conducted in Jakarta examined the components that influence people's

attitudes and behaviours towards smartphone voice assistants. The study found that the PEOU has a substantial impact on user attitudes and intends to use these assistants (Oktavia, *et al.*, 2023). Another study by Buteau and Lee (2021) supports this finding, since it identifies PEOU as a key factor in predicting the use of voice assistants. This suggests that when voice assistants are easy to use, it favourably influences people's views towards these technologies. These data highlight the crucial importance of how simple it is perceived to use Alexa in shaping users' positive opinions towards it, thereby supporting the proposed hypothesis.

H1: PEOU of positively influences users' attitudes toward Alexa.

The perceived utility is the extent to which customers believe using a virtual assistant is an improvement in their life quality (Fortes & Rita, 2016). In support of this, research conducted by (McLean & Osei-Frimpong, 2019) has demonstrated that smart assistants show a high level of effectiveness and efficiency in accomplishing specified tasks. Furthermore, they provide good advice in carrying virtual tours and helping people move in bustling places like libraries and exhibitions. Additionally, their research claims that virtual assistants are also able to perform complex tasks, including programming. Smart personal assistants assist busy knowledge workers with repetitive activities and offload cognitively taxing activities to manage time and get things done. (Myers *et al.*, 2007).

H2: PU of Alexa positively influences users' attitudes toward Alexa.

Through supporting evidence of various studies, it is proven that PE has an influence on user attitudes. For instance, empathetic Alexa interactions result into positive user experiences like increasing the fun factor involved and the attitude (Coker & Thakur, 2023). Lopatovska *et al.* (2021) also noted that users like the voice assistant's personality, which makes for a more enjoyable, more satisfying experience. Study also showed that users who view voice assistants as friendly and empathetic, tend to use the device more, are more satisfied with it, and report higher levels of positive engagement (Wienrich *et al.*, 2023). It was also found that humour and a human like voice in Alexa increased users' perceptions of the device's anthropomorphism, increasing emotional trust and the intention to use it (Moussawi & Benbunan-Fich, 2020). Lastly, Hsu and Lee (2023) emphasized that given human-like linguistic and behavioural traits, voice assistants such as Alexa increase PE, trust, and user willingness to continue using the device. Together, these

results imply that users' enjoyment of using Alexa is pivotal in influencing positive user attitudes towards the device.

H3: PE from using Alexa positively influences users' attitudes toward Alexa.

Several studies have found that trust in smart assistants has a large effect on users' attitudes towards the device. For example, research has found that the trust perceived in smart assistants, propelled by the characteristics of convenience and status seeking is positively related to users' intentions to engage in service encounters via the voice assistant. (Malodia *et al*., 2022). Furthermore, the implementation of Alexa as an augmented reality embodiment has been shown to increase user perceived trust, indicating that visual representations may be important in trust building (Haesler *et al*., 2018). Furthermore, by anthropomorphizing Alexa, that is, by giving users the ability to personify the device, users are able to alleviate distrust towards the parent company Amazon and bring Alexa into the sphere of daily life. (Fetterolf & Hertog, 2023). These findings collectively underscore the importance of trust in shaping user attitudes and behaviors towards Alexa, supporting the hypothesis that.

H4: Trust in Alexa positively influences users' attitudes toward Alexa

Privacy concerns have a large impact on users' views towards Alexa. A study has shown that privacy issues are key to influence users' opinions and willingness to use voice assistants like Amazon's Alexa. A study found that privacy concerns was a negative predictor of attitudes toward the use of voice assistants, which in turn led to users' behavioural intentions to use these devices. (Buteau & Lee, 2021). Moreover, average users can benefit from the ability to customise privacy settings in order to enhance trust and usability, but those who highlight privacy could be negatively affected (Cho *et al*., 2020). Additionally, analyses of the dialogues on social media show that the discussions about privacy in voice activated personal assistants are markedly more negative than general discussions. The fact that privacy issues are a major factor in the way people feel about the matter suggests that (Alzate *et al*., 2023). These findings emphasise the significance of highlighting privacy concerns to enhance user attitudes and acceptance of Alexa.

H5: Privacy concerns regarding Alexa negatively influence users' attitudes toward Alexa.

This was noticed that privacy cynicism (a state of frustration, hopelessness, disillusionment with privacy protection) significantly affects user attitudes and behaviours

towards technology use, including voice assistants such as Amazon's Alexa. Research indicates that users' privacy concerns negatively affect their attitudes towards using voice assistants, which in turn, affect their behavioural intentions (Buteau & Lee, 2021). Privacy cynicism can then cause a resigned neglect of privacy protection behaviours, as users rationalise the use of online services in spite of serious privacy concerns (Hoffmann *et al.*, 2016). Therefore, it is hypothesized that privacy cynicism regarding Alexa will negatively influence users' attitudes toward Alexa, potentially reducing their willingness to engage with the device.

H6: Privacy cynicism regarding Alexa negatively influences users' attitudes toward Alexa.

Reducing privacy risks and influencing positively information sharing attitudes are related to the perceived control over personal information. Whereas lack of control causes perceived risks increase and negative attitudes (Hajli & Lin, 2014). A study which focused on social networking sites discovered that perceived control over personal data is essential for building trust. Lack of control decreases trust, resulting in a decrease in users' attitude for disclosing personal information (Kim & Kim, 2020). From these studies we can hypothesise this lack of control over personal data negatively influences attitudes towards Alexa.

H7: Perceived lack of control over personal information negatively influences users' attitudes toward Alexa.

Research indicates that attitudes were the strongest predictors of their intention to share personal information on social media that is, a positive attitude toward the platform increases the willingness for users to disclose personal information. (Van Gool *et al.*, 2014). A study of information sharing technologies revealed that attitudes toward self-disclosure technologies were positively related to the intention to use and provide personal information, and cultural factors and trust increased these attitudes (Lowry *et al.*, 2011). Positive attitudes toward personalized recommendations, supported by perceived benefits, were found to motivate users to share personal data despite privacy concerns (Kim & Kim, 2018).

H8: Positive attitudes towards Alexa positively influence WTD personal information to Alexa.

Using the Technology Acceptance Model (TAM), a study demonstrates that perceived ease of use has a significant impact on users' willingness to share information on mobile social platforms such as WeChat and leads to a decrease in user resistance to divulging data (Wang Peng,

2019). Results are reported from research with elderly users, who indicated that perceived ease of use has a positive impact on trust and user attitudes toward AI-enabled caregiver robots, and thus on their willingness to disclose personal health information (Amin *et al.*, 2024). Perceived ease of use was identified as a significant factor in users' willingness to share personal data with Internet of Things (IoT) services, as it increases trust and reduces perceived risks (Pal *et al.*, 2021).

H9: PEOU positively influences WTD personal information to Alexa.

Studies indicate that when users perceive the benefits and utility of a voice assistant as high, they are more inclined to share their personal data. For instance, PU in terms of personalized services, convenience, and enhanced user experience can outweigh privacy concerns, thereby increasing the likelihood of information disclosure (Pal *et al.*, 2020). Furthermore, users are more willing to share information if they think that the information shared will lead to better service outcomes and more tailored experiences. (Al-Jabri *et al.*, 2019). Thus, it is hypothesized that PU positively influences WTD personal information to Alexa.

H10. PU positively influences WTD personal information to Alexa.

Perceived enjoyment was an important factor on information disclosure to encourage users to continue to use voice assistant devices. It indicates that users will remain in using such devices so long as fun and benefits outweigh privacy concerns (Pal *et al.*, 2020). This study proposes a dual channel methodology of study of information disclosure based on both benefits and risks. This suggests that the propensity for people to disclose personal information is more strongly related to perceived benefits, especially of enjoyment, than to perceived risks.

H11: PE positively influences WTD personal information to Alexa.

User's willingness to disclose personal information to voice activated personal assistants such as Amazon Alexa is largely dependent on the amount of trust they have of these assistants. By integrating the Technology Acceptance Model with trust constructs, it has been discovered that users' intention to share personal data is influenced by their trust in reliability, functionality, and benevolence of technology. According to studies, users who trust smart assistant's reliability, functionality, and helpfulness are more likely to disclose personal information (Pal *et al.*, 2020). Second, trust in the technology decreases perceived risks related to sharing personal data, and therefore increases information disclosure (Bansal *et al.*, 2010). Additionally, research shows that

the perceived benefits users get from these assistants, e.g., more personalization and convenience, drive users to share personal information. (Malodia *et al.*, 2022). Thus, fostering trust in the specific technological dimensions of reliability, functionality, and helpfulness can significantly enhance users' willingness to engage and share personal information with Alexa, supporting the hypothesis.

H12: Trust positively influences WTD personal information to Alexa.

The studies of peoples' willingness to disclose personal information to voice assistants indicated that privacy concerns reduced peoples' willingness to share information with a voice assistant, indicating that perceived risk is negatively associated with peoples' willingness to disclose personal information to a voice assistant (Pal *et al.*, 2020). Hence, we can hypothesize that.

H13: Privacy concern negatively influences WTD personal information to Alexa.

Research also found that perceived privacy cynicism (frustration or disillusionment about privacy protection) was a key moderating factor between perceived privacy and disclosure behaviour. Higher privacy cynicism was associated with a higher likelihood of the individual to share personal information despite having privacy concerns (Van Ooijen *et al.*, 2022).

H14: Privacy cynicism positively influences WTD information to Alexa.

Previous research show that perceived lack of control over personal information leads to increased perceived risks and discourages respondents from sharing data to a voice assistant such as Alexa. On the other hand, higher perceived control has a positive impact on trust and willingness to disclose, while demonstrating that perceived control acts as a moderating variable on trust and willingness to disclose. (Pal *et al.*, 2020). So we can expect that.

H15: Perceived lack of control negatively influences WTD personal information to Alexa.

Mahmood *et al.* (2022) he found that in Pakistan university students have positive attitudes toward using technology in educational purposes and this also applies to other tech applications such as Alexa. Conversely, in Lithuania, while there is an appreciation for technological innovations, there is also significant skepticism and concern regarding privacy and data security. Lithuanian users may tend to be more cautious about sharing personal information, influenced by the country's stringent data protection regulations and a higher baseline awareness of privacy

issues (Bharti & Aryal, 2022; Custers *et al.*, 2017). Lesauskaite *et al.* (2019) examined technology adoption by older adults in Lithuania and found that they are more cautious, and skeptical about new technologies, because of privacy issues and cultural factors. Due, in part, to this cultural context, adoption of new technologies like voice assistants tends to be quite reserved.

H16: Users in Pakistan have a more positive attitude towards using Alexa compared to users in Lithuania.

Strong predictors of willingness to disclose personal information are positive attitude towards technology and trust in the platform or service provider. (Martins *et al.*, 2024). The insufficient level of data protection significantly differs throughout various cultures. For instance, consumers in Europe already have a heightened sense of their privacy rights because of stringent legislation, but in Asia, there is need to start to find ways to encourage consumers to change. (Peprah Owusu *et al.*, 2024). Customers for whom smart assistants are seen as trustworthy and helpful are more willing to disclose personal information because they perceive benefits in terms of customised services, convenience, and better user satisfaction. (Pal *et al.*, 2020). Besides that, trust in smart assistants and the brand associated with it has also been found to help reduce privacy concerns, and therefore encourage users to interact with the device and share data. (Al-Jabri *et al.*, 2019).

H17: Attitudes towards Alexa influences WTD information more strongly in Pakistan than Lithuania.

Based on studies, trust is an important factor in online information disclosures and strongly related to user behaviour in the Pakistani contexts (Khan *et al.*, 2021). However, in Lithuania, trust may have less impact because cultural differences concerning the use of technology and privacy exist, as was demonstrated in comparative studies of information disclosure and trust. (Zimaitis *et al.*, 2022). Based on this information We may consider that:

H18: Trust influences the WTD information to Alexa more significantly in Pakistan than in Lithuania.

According to the studies, Pakistanis are apprehensive about privacy and data security, and hence it strongly affects their disclosure behaviours. (Kanwal *et al.*, 2018; Al-Jabri *et al.*, 2019). In Lithuania, privacy concerns are also important, and may have a somewhat stronger effect on

willingness to disclose, as cultural and regulatory environments may reduce the felt costs of sharing information. (Degutis & Urbonavičius, 2023). Thus, based on this information we expect that.

H19: Privacy concerns have a stronger effect on the WTD information to Alexa in Lithuania than in Pakistan.

In Pakistan, there is a lot of enthusiasm about technology, they are getting more and more dependent on digital platforms, to the extent that users can be easily lured to share personal information with Alexa. Yet, there is a great willingness to disclose, however this is tempered with a significant concern over privacy and perceived lack of control over personal data. (Sharif *et al*., 2021). In contrast, In contrast, Lithuanian users, who are typically more privacy-conscious and operate under stringent data protection laws, exhibit a higher level of skepticism towards disclosing personal information to technology (Zimaitis *et al*., 2022). The stronger regulatory framework in Lithuania and the higher baseline awareness of privacy issues make users more cautious about information disclosure. Thus, it is expected that Pakistani user may show a greater readiness to give personal information to Alexa compared to Lithuanian users, despite prevailing privacy concerns, due to the cultural enthusiasm for technology and digital integration.

H20: Pakistani users show a higher WTD information to Alexa compared to Lithuanian users.

2.2. Comparative analysis: Lithuania and Pakistan

Lithuania and Pakistan are very different culturally, they are probably different on their privacy and technology-related values as well for example, Lithuanians are more individualistic, moderately uncertain avoiding, and preferring a low power distance than Brits, which can be interpreted as them being more privacy aware and wanting to have control over their personal data. Such caution may cause people to disclose less of their personal data to smart personal assistants such as Alexa. Pakistan, on the other hand, is a rather collectivist, highly uncertainty avoiding and power distant culture; this may result in a greater predisposition to disclose personal data, if the use of the technology is considered desirable and backed by the government. Balakrishnan *et al*., (2021) conducted an extensive study exploring the desired cultural dimensions on privacy concerns and information sharing behaviour related to country of origin. This broader cross-cultural study investigated the impact of cultural values on attitudes to online privacy and online personal information disclosure (Kim *et al*., 2024). In a study comparing Indian

(collectivist) and US (individualist) participants, it was found that Indian participants' privacy behavior was more sensitive to the value of personal data, unlike their US counterparts (Fleming *et al*., 2021 On the other hand while in individualistic cultures personal freedom and rights are prized, and personal security is important for it these respondents are more privacy scandalized and more reluctant to disclose personal details(Liu & Tao, 2022).

There are big differences between privacy regulations in Pakistan and Lithuania, which are caused by differences in legal, cultural, and technological contexts in these two countries. The inviolability of human dignity and privacy is primarily grounded in the Constitution, in Article 14 in Pakistan. However, the implementation of comprehensive data protection laws remains inadequate, leading to reliance on Islamic principles and selective international standards for privacy protection (Daudpota, 2016). On the one hand, Lithuania's approach is affected by its integration into the European Union, which requires very strict compliance with the GDPR standards. All of this has led to well defined legal frameworks for data protection and privacy, covering everything from healthcare privacy to cybersecurity and the use of unmanned aerial systems (Kutkauskienė, 2015; Pūraitė *et al*., 2017). Although Lithuania is harmonizing its privacy laws with EU directives, Pakistan's privacy framework is still developing and faces the requirement to develop new laws comprehensive in information privacy protection in the digital age. (Masudi & Mustafa, 2023).

2.3. Research design and instrument.

The quantitative research approach will be used to measure all the variables that influence the willingness to provide personal information to Alexa. This approach is well-suited for analysing the relationships between variables and helps in generalizing the data gathered from respondents. For this research, surveys will be employed. To ensure easy access for respondents, online surveys will be conducted. Online surveys are convenient because they can be filled out anytime, anywhere, and they save time and effort. We translated the questionnaire into Lithuanian for elderly Lithuanian-speaking respondents with less good English ability to make sure the questionnaire is accessible.

Table 1

Research Design

Aspect	Description
Research Method	Quantitative
Purpose	Measure factors influencing WTD personal information to Alexa
Data Collection Method	Online survey
Benefits of Online Survey	Convenience for respondents, higher response rates, reduced time and cost.

To form a suitable questionnaire, scales from several scientific articles were used. Constructs developed by Acikgoz & Vega in 2021 were employed to measure both the perceived usefulness and ease of use of Alexa, focusing on tasks such as information storage, life management, and user-friendliness, each validated through rigorous research. Additionally, (Ashrafi *et al.*, 2022) introduced a construct to assess the hedonic aspects of technology, quantifying emotional satisfaction by examining enjoyment levels. McKnight *et al.* (2011) provided a construct evaluating trust through reliability, functionality, and helpfulness. Concerning privacy concerns and cynicism, the scales were from (Bansal *et al.*, 2016; Khan *et al.*, 2023) in which privacy concerns had 11-point semantic differential and cynicism was measured using a 7-point Likert-type scale respectively. Also, Khan *et al.* (2023) built a construct aimed at measuring perceived lack of control on personal information, which is related to users' discomfort related to data autonomy. These varied constructs, were derived from different research studies, that offer a comprehensive framework to understand user perceptions about Alexa, focusing on utility, ease of use, enjoyment, trust, privacy concerns, and control over personal data, which are important for understanding the broader implications of the integration of technology into everyday life. The questionnaire is presented below in Table 2.

Table 2

Research Questionnaire

Variables	Description	Measurement	References
Perceived Usefulness	• Using Alexa would enable me to accomplish more tasks more quickly. • Using Alexa increases my productivity. • Using Alexa would make it easier to store information. • Overall, using Alexa is advantageous. • Using Alexa would improve my life.	5-point Likert-type scale	(Acikgoz & Vega, 2021)
Perceived Ease of Use	• Using Alexa is easy to understand and clear. • I would find Alexa easy to use. • I would find it easy to use Alexa for accessing information. • I would be easy for me to become skillful at using Alexa.	5-point Likert-type scale	(Acikgoz & Vega, 2021)

Table 2 continuation

PE	• Using the <u>Alexa</u> is pleasurable. • I have fun using the <u>Alexa</u>. • I find using the <u>Alexa</u> to be interesting.	5-point Likert-type scale	(Ashrafi *et al.*, 2022)
Trust	• Alexa is a trustworthy. • I can count Alexa to protect my privacy. • I can count Alexa to protect my personal information from unauthorized use. • Alexa can be relied on to keep its promises.	7-point Likert-type scale	(Salehan *et al.*, 2016)
Privacy Concern	• Personal information <u>provided to Alexa</u> *(will not be abused at all/will be abused for sure)* • Personal information <u>provided to Alexa</u> *(will not be compromised at all/ could be shared or sold to others)* • My extent of concern regarding the misuse of my personal information <u>provided to Alexa</u> is *(very low/very high)*	11-point (0–10) semantic differential scale	(Bansal *et al.*, 2016)

Table 2 continuation

Privacy Cynicism	• I have become less interested in privacy issues. • I have become less enthusiastic about protecting personal information provided to Alexa. • I doubt the significance of privacy issues more often. • I have become more cynical about whether my efforts in protecting privacy are in any way effective.	7-point Likert-type scale	(Khan *et al.*, 2023)
Perceived lack of control	• I am usually bothered when I do not have control over the personal information that I provide to Alexa. • I am usually bothered when I do not have control over personal information or autonomy over decisions about how my personal information is collected, used, and shared by Alexa. • I am concerned when personal information control is lost or unwillingly reduced as a result of a marketing transaction with Alexa.	7-point Likert-type scale	(Urbonavicius *et al.*, 2021)

Table 2 continuation

Attitudes towards Alexa	• I feel positive towards the usage of Alexa. • I think that using Alexa is a good idea. • I think that using Alexa is a smart way to get things done.	7-point Likert-type scale	(Oktavia *et al.* 2023)
Willingness to Disclose Personal Information	While using Alexa seamlessly, you are often asked to provide them your personal data. Please, specify, how much are you willing to provide personal data of each type: • Name • Email • Private Phone Number • Address • Date of Birth • Current Location • Bank Account Credentials • Credit Card Details • Passwords	7-point Likert-type scale	(Urbonavicius *et al.*, 2021)

2.4. Research sample size and structure.

This portion of the Methodology chapter provides an overview of the sampling strategy employed, clarify the process to calculate the sample size, and details the techniques employed for data collecting. The study initially identifies its target audience, requiring only that participant be adults, aged 18 and older, capable of making independent decisions and are thinking of using smart personal assistant in near future. There are no additional gender or age restrictions beyond the

minimum age requirement. A convenience sampling method, which is a type of non-probability sampling, will be employed to select participants. The chosen sample size of 315 participants is based on a review of marketing research best practices and supported by the combined results from 7 key studies on personal information disclosure, which report an average sample size of 315, as detailed in Table 3.

Table 3

Comparable research sampling method

Sr. No.	Author	Type of questionnaire	Sampling method	Number of respondents
1.	Al-Jabri *et al*., 2019	Online Questionnaire	Non-Probability Sampling	253
2.	Pal *et al*., 2020	Online Questionnaire	Non-Probability Sampling	427
3.	Aiello *et al*., 2020	Online Questionnaire	Non-Probability Sampling	401
4.	Bansal *et al*., 2016	Online Questionnaire	Non-Probability Sampling	367
5.	Kim *et al*., 2016	Online Questionnaire	Non-Probability Sampling	200
6.	Easwara Moorthy & Vu, 2015	Online Questionnaire	Non-Probability Sampling	120
7.	Degutis *et al*., 2020	Online Questionnaire	Non-Probability Sampling	439
			Average	315

3. DATA ANALYSIS AND FINDINGS

3.1. Demographic

The survey was conducted between July 7, 2024, and November 17, 2024. A total of 337 people provided responses via an online questionnaire, of which two people refused to answer since they were younger than 18. Thus, the final number from the sample comprised 335 valid responses. Of these, 165 were male, accounting for 49.3 percent, and 170 were female, accounting for that remaining percentage of the sample.

As for nationality, most respondent's 54.9 percent were Pakistani i.e. 184 persons, while the other proportion of 45.1 percent i.e. 151 persons was Lithuanian. This data showed a balanced data collection from both nationalities' participants in the research.

Respondents were categorized according to their ages into 4 age groups: 18-25 years Group-1; 26-35 years Group-2; 36-45 years Group-3; and 46 years and over Group-4. Most of the respondents i.e. 51.9 percent belonged to the age group 18-25 years while 31.9 percent were in the 26-35 age group. 9.9 percent and 5.7 percent of the respondents were in the 36-45 and 46+ age groups, respectively. Table 4 illustrates the overall demographics, including age, gender and Nationality of the respondents. Further details about gender, age, and nationality are added to Table 4a, 4b and 4c in Annex 2.

Table 4

Demographic characteristics

		Count	*Percentage*
Gender	Male	165	49.3 %
	Female	170	50.7 %
Age	18-25	175	52.2%
	26-35	108	32.2 %
	36-45	33	9.9 %
	46 Onwards	19	5.7 %

Table 4 continuation

Nationality	Lithuanian	151	45.1 %
	Pakistani	184	54.9 %

3.2. Comparative Demographic Analysis of Pakistan and Lithuania

Demographic data provides valuable insights into the age and gender distribution of Pakistani and Lithuanian. This analysis explores patterns in representation across these key variables, offering a foundation for deeper research.

The gender distribution across both nationalities is relatively balanced, with minor variations. Among Pakistanis, females 98 slightly outnumber males 86, while among Lithuanians, males 79 exceed females 72. This indicates equitable gender participation within both groups, with a combined total of 165 males and 170 females as shown in Table 5.

The age group data reveal distinct disparities in representation. The youngest cohort, Group 1, exhibits the highest proportion overall, with significantly more Pakistanis 124 than Lithuanians 51. Conversely, in Group 2, Lithuanians 61 outnumber Pakistanis 47 as illustrated in Table 5. In the older cohorts, Groups 3 and 4, Lithuanians maintain higher representation, despite the smaller overall counts in these categories. Further details about gender, age, and nationality are added to Table 5a and 5b in Annex 2.

Table 5

Demographic characteristics with respect to nationalities

		Pakistani	Lithuanian
Gender	Male	86	79
	Female	98	72
Age	18-25	124	51
	26-35	47	61
	36-45	7	26
	46 Onwards	6	13

3.3. Discriminant Validity

For this study the extraction method of Maximum likelyhood and the rotation method used is Promax with Kaiser Normalisation. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to analyse the appropriateness of the data for Factor analysis. As form the Table 6 KMO value was 0.922 and it was above .90, so it was ascertained that factor analysis was appropriate to be conducted. When conducting Bartlett's Test of Sphericity, the obtained chi-square was equal 10.306.414; df - 666; and $p < 0.000$. The p-values showing that $p < 0.05$ give us an indication that we should properly reject the null hypothesis that the correlation matrix is the identity matrix hence the occurrence of the categorical correlations among the variables. Also, by the Goodness-of-fit Test we can say that this test is a good fit to data because the value is significant and below 0.001 illustrated in Table 6a in Annex 2.

Table 6

Factor analysis – KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.922
Bartlett's Test of Sphericity	Approx. Chi-Square	10306.414
	df	666
	Sig.	.000

To improve the clarity of the factor structure and construct definitions, it was decided to remove Item 4 from the Privacy Cynicism scale. This decision was based on the observation that Item 4 overlapped significantly with the Perceived Lack of Control construct, which posed a risk to the distinctiveness of the factors and could have led to misinterpretation.

Despite this removal, the internal consistency of the Privacy Cynicism construct remained strong, with a Cronbach's alpha above 0.8, indicating good reliability. The updated pattern matrix showed that most items had high factor loadings (≥ 0.6) and minimal cross-loadings, further confirming the distinctiveness of the constructs as shown in Table 6b in Annex 2. Additionally, the Promax rotation converged in six iterations, confirming that the data was well-suited for factor

analysis. This adjustment enhanced the model's clarity while preserving its theoretical robustness and validity.

More specifically, additional factor analysis identified some expected overlaps between constructs of the present model, in line with more prior research. More precisely, the findings propose that Attitude toward Alexa, Perceived Usefulness, Perceived Ease of Use, and Perceived Enjoyment are on the same factor. This can be explained by the fact that all these constructs reflect similar aspects of user experiences and attitudes towards the pleasure derived from engaging with Alexa. Such patterns are well documented in the prior research on technology adoption where perceived ease of use, perceived usefulness and enjoyment are indeed the constructs that measure similar underlying concept.

Also, Trust and Privacy Cynicism were deemed to have low factorial validity and were combined to give a single factor. This is theoretically possible, because people with high levels of privacy cynicism act in a way like trust in technology, because, apparently, they express pragmatic acceptance of risks when interacting with technology.

Lastly, items of the Willingness to Disclose construct had a different behaviour because three of its items loaded a different factor. The fact that it has deviated could be because the items pertain to highly privacy-sensitive issues including providing of financial information or passwords. These items by their nature are different to general trust or privacy attitudes, as is evident here. This behaviour is in coherent with the theoretical framework perceived concerning the willingness to disclose sensitive data and is based on precise psychological and contextual factors.

The factor analysis results demonstrate that approximately 65 percent of the total variation is explained by the extracted components according to squared loadings, whereas 71 percent of the variance corresponds to cumulative eigenvalues illustrated in Table 6c in Annex 2. The values indicate a substantial amount of dimensionality reduction, implying that the extracted components accurately represent the original variables, so rendering them appropriate for further analysis and interpretation.

3.4. Comparative Factor Analysis of Pakistan and Lithuania

The results of the factor analysis provide important insights into the dataset. The Kaiser-Meyer-Olkin (KMO) in Table 7 measure of sampling adequacy is 0.930 for Pakistan and for

Lithuania it is 0.872 these both can be classified as marvellous, indicating that the data is highly suitable for factor analysis. Additionally, Bartlett's Test of Sphericity is significant (Chi-Square = 6395.992, p < 0.001) for Pakistan and for Lithuania it is (Chi-Square = 4484.948, p < 0.001), confirming that the correlation matrix is not an identity matrix and factor analysis is appropriate.

Table 7

Comparative Factor analysis- KMO and Bartlett's test

Pakistan	Lithuania
KMO and Bartlett's Test[a]	**KMO and Bartlett's Test**[a]

Pakistan				Lithuania			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			.930	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			.872
Bartlett's Test of Sphericity	Approx. Chi-Square		6395.992	Bartlett's Test of Sphericity	Approx. Chi-Square		4484.948
	df		666		df		666
	Sig.		.000		Sig.		.000
a. Only cases for which Nationality = Pakistani are used in the analysis phase.				a. Only cases for which Nationality = Lithuanian are used in the analysis phase.			

The Goodness-of-Fit test results as illustrated in Table 7a Annex 2 for Pakistan and Lithuania reveal statistically significant outcomes, with p-values of .000 in both instances. The Chi-Square value for Pakistan is 963.766 with 459 degrees of freedom, but for Lithuania, it is 752.144 with 398 degrees of freedom. These findings validate the study for each country's sample.

The Pattern Matrix study underscores substantial differences between Pakistan and Lithuania, especially with the number of factors, which are greater in Lithuania than in Pakistan. In Lithuania, the attitudes towards Alexa and Perceived Ease of Use (PEU) are clearly distinct from Perceived Usefulness (PU) and Perceived Enjoyment (PE), indicating a more significant differences of constructs as shown in Table 7b in Annex 2. Moreover, Privacy Concerns exhibit greater consistency in Lithuania and are well separated from Perceived Lack of Control, which is likewise distinctly defined. Trust is more cohesive in Lithuania than in Pakistan, indicating a stronger alignment within this construct. Furthermore, the Willingness to Disclose, specifically WTD_2, is significantly elevated in both contexts (Pakistan: 0.962; Lithuania: 0.880), but somewhat more pronounced in Pakistan.

Comparing the total variance explained between the two countries, Pakistan shows that approximately 70% of the total variation is explained by the extracted components based on

squared loadings, while 71% corresponds to cumulative eigenvalues. On the other hand, Lithuania demonstrates that approximately 67% of the total variation is explained by the extracted components based on squared loadings, with approximately 73% corresponding to cumulative eigenvalues as illustrated in Table 7c Annex 2. These values indicate a substantial level of dimensionality reduction, suggesting that the extracted components effectively represent the original variables, making them suitable for further analysis and interpretation.

There are slight differences in factor analysis for two countries which have no major difference in general. So, the essential calculations will be performed on the basis of the joint data from the two countries, therefore differences between the two countries will not impact that and have just descriptive nature.

3.5. Reliability of scales

Reliability was determined by Cronbach's Alpha values, which range from 0 to 1 in the literature. A Cronbach's Alpha value ranging from 0.6 to 0.95 is considered acceptable, indicating that the results are suitable for future research. The overall reliability of the questionnaire was $\alpha=0.859$, while the Table below presents the specific reliability ratings for each construct as shown in Table 8 below.

Table 8

Constructs' reliability evaluation based on Cronbach's Alpha

Construct	Reliability Cronbach's α	No. of items
Perceived Ease of Use	.911	4
Perceived Usefulness	.928	5
Perceived Enjoyment	.900	3
Trust	.926	4
Privacy Concern	.821	3
Privacy Cynicism	.825	3
Perceived Lack of Control	.869	3
Attitudes towards Alexa	.896	3
Willingness to Disclose	.914	9

3.6. Tests of hypothesis

a) *Attitudes towards Alexa*

The regression analysis was performed to calculate the impact of various variables, including Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Perceived Enjoyment (PE), Trust, Privacy Concerns, Privacy Cynicism, and Perceived Lack of Control behaving as independent variables on users' attitudes towards Alexa which is the dependent variable. In this case multivariate regression was performed. The Model Summary table suggests 59.4% of the variation in user attitudes is explained ($R^2 = 0.594$), rectified to 58.6% for the number of variables examined as shown in Table 9a in Annex 2. This indicates the solid analytical potential for the model. The Standard Error ofĺ Estimate (1.023) indicates a strong model fit, representing the average deviation of real data points from the projected regression line.

From the ANOVA Table presented in Table 9b in Annex 2, we calculate the overall significance of the model. The p-value of <0.001 with an F-value of 68.479 represents that the predictor variables significantly explain the dependent variable. The mean square is 71.721, which supports the effectiveness and reliability of the model. The regression Sum of Squares is 502.045, which indicates how well the predictors account for users' opinions. The regression Sum of Squares, which is more significant, indicates that this model accounts for the most variation in attitudes towards Alexa.

Table 9

Effect of PEU, PU, PE, Trust, Privacy Concerns, Privacy cynicism and Perceived lack of control on Attitudes towards Alexa

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.448	.251		1.786	.075
	PEU_M	.284	.056	.268	5.054	<.001
	PU_M	.314	.064	.305	4.897	<.001
	PE_M	.137	.059	.138	2.334	.020
	Trust_M	.195	.048	.203	4.034	<.001
	Pcy.Conc_M	.059	.044	.056	1.345	.179
	Pcy.Cyn_M	-.003	.049	-.003	-.057	.954
	PLC_M	-.061	.046	-.056	-1.321	.188

a. Dependent Variable: Att_M

The Coefficients Table 9 analysis illustrated in above provides a comprehensive understanding of the individual contributions of the predictors to users' attitudes towards Alexa.

Perceived Ease of Use (PEOU) was identified as a significant positive predictor among all the variables (B = 0.284, β = 0.268, t = 5.054, p < 0.001). This finding suggests that users' attitudes towards Alexa become more favourable as they perceive Alexa as easier to use. The effectiveness of PEOU as one of the most impactful factors in shaping positive attitudes is further underscored by the standardized coefficient (β = 0.268), which demonstrates the critical role of usability in user satisfaction. **Hence, H1 is confirmed.**

H1: PEOU of Alexa positively influences users' attitudes toward Alexa.

The PU value is statistically significant, and below 0.001 shows an influence of PU on attitudes toward Alexa. Therefore, we reject the null hypothesis. Furthermore, the positive value of the standardized coefficients of Beta's value of 0.305 validates the positive effect confirms that **H2 is confirmed.**

H2: PU of Alexa positively influences users' attitudes toward Alexa.

The PE value is statistically significant, and below 0.05 shows an influence of PE on attitudes toward Alexa. Therefore, we reject the null hypothesis. Furthermore, the positive value of the standardized coefficients of Beta's value of 0.138 validates the positive effect. **Thus, we approve H3.**

H3: PE from using Alexa positively influences users' attitudes toward Alexa.

The Trust value is statistically significant, and below 0.05 shows an influence of Trust on attitudes toward Alexa. Therefore, we reject the null hypothesis. Furthermore, the positive value of the standardized coefficients of Beta's value of 0.203 validates the positive effect. **Thus, H4 is confirmed.**

H4: Trust in Alexa positively influences users' attitudes toward Alexa.

The Privacy Concern value is not statistically significant and is above 0.05, which is 0.179. This shows no influence of variable Privacy Concern on attitudes toward Alexa. Therefore, we

accept the null hypothesis because privacy concerns regarding Alexa have no effect on users' attitudes towards Alexa so **H5 is rejected**.

H5: Privacy concerns regarding Alexa negatively influence users' attitudes toward Alexa.

The Privacy Cynicism value is not statistically significant and above 0.05, which is 0.954. This shows no influence of variable Privacy Cynicism on attitudes toward Alexa. Therefore, we accept the null hypothesis because Privacy Cynicism regarding Alexa have no effect on user's attitudes towards Alexa. From finding we can interpret that **H6 is rejected**.

H6: Privacy cynicism regarding Alexa negatively influences users' attitudes toward Alexa.

Perceived Lack of Control value is not statistically significant and above 0.05, which is 0.188. This shows no influence of variable Perceived Lack of Control on attitudes toward Alexa. Therefore, we accept the null hypothesis because Perceived Lack of Control over persoanl data have no effect on users' attitudes towards Alexa. **Thus, H7 is rejected.**

H7: Perceived lack of control over personal information negatively influences users' attitudes toward Alexa.

b) *Willingness to Disclose to Alexa*

The regression analysis was performed to calculate the impact of various variables, that includes Attitudes towards Alexa, Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Perceived Enjoyment (PE), Trust, Privacy Concerns, Privacy Cynicism, and Perceived Lack of Control behaving as independent variables on users' Willingness to disclose information which is the dependent variable. In this case multivariate regression was performed. The Model Summary Table 10a in Annex 2 suggests 18.7% of the variation in user willingness to disclose data is explained ($R^2 = 0.187$), rectified to 17.7% for the number of variables examined. This indicates the solid analytical potential for the model. The Standard Error of Estimate (1.355) indicates a strong model fit, representing the average deviation of real data points from the projected regression line.

Analysing the ANOVA Table 10b which is shown in Annex 2 the p-value (<0.001) and F-value (9.385) which both suggest that the predictors make a significant contribution in explaining variation in the overall willingness to disclose. On one hand, the regression sum of squares

(137.793) implies that the model used explains some of willingness to disclose variability, on the other hand, the residual sum of squares (598.278) reveals a lot of unexplained variability. The mean square value of 17.224, not 71.224 indicates the reliability of the model.

Table 10

Effect of PEU, PU, PE, Trust, Privacy Concerns, Privacy cynicism and Perceived lack of control on Willingness to Disclose to Alexa

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.497	.333		4.491	<.001
	Att_M	.169	.073	.181	2.310	.022
	PEU_M	.012	.077	.012	.154	.877
	PU_M	.024	.088	.025	.271	.787
	PE_M	-.036	.079	-.039	-.461	.645
	Trust_M	.267	.065	.298	4.079	<.001
	Pcy.Conc_M	-.120	.058	-.124	-2.082	.038
	Pcy.Cyn_M	.028	.064	.030	.436	.663
	PLC_M	.023	.061	.023	.383	.702

a. Dependent Variable: WTD_M

The Coefficients Table analysis above provides a comprehensive understanding of the individual contributions of the predictors to willingness to disclose personal data. The P-value of Attitudes towards Alexa is significant and is below 0.05, which is 0.022. This shows influence of attitudes towards Alexa impacts the individual willingness to disclose personal data. In this case, we Reject the null hypothesis in addition the positive value of the standardized coefficients of Beta's value of 0.181 validates the positive effect so **H8 is confirmed**.

H8: Positive attitudes towards Alexa positively influence WTD personal information to Alexa.

The P-value of PEOU is not statistically significant and above 0.05, which is 0.877. This shows no influence of PEOU on WTD to Alexa. Therefore, we accept the null hypothesis because PEOU over Alexa have no effect on WTD to Alexa. **Thus, H9 is rejected.**

H9: PEOU positively influences WTD personal information to Alexa.

The P-value of PU is not statistically significant and above 0.05, which is 0.787. This shows no influence of PU on WTD to Alexa directly. Therefore, we accept the null hypothesis because PU over Alexa have no effect on WTD to Alexa. **Thus, H10 is rejected.**

H10. PU positively influences WTD personal information to Alexa.

The P-value of PE is not statistically significant and above 0.05, which is 0.645. This shows no influence of PE on WTD to Alexa directly. Therefore, we accept the null hypothesis because PE over Alexa have no effect on WTD to Alexa. **Thus, H11 is rejected.**

H11: PE positively influences WTD personal information to Alexa.

The P-value of mean of Trust is significant and is below 0.001, which is 0.022. This shows influence of attitudes towards Alexa impacts the individual willingness to disclose personal data. In this case, we Reject the null hypothesis in addition the positive value of the standardized coefficients of Beta's value of 0.298 validates the positive effect so **we accept H12.**

H12: Trust positively influences WTD personal information to Alexa.

The P-value of mean of Privacy Concerns is significant and is below 0.05, which is 0.038. This shows the impact of Privacy Concerns towards Alexa on the individual willingness to disclose personal data. In this case, we Reject the null hypothesis in addition the positive value of the standardized coefficients of Beta's value of -0.124 validates the negative impact so **we accept H13.**

H13: Privacy concern negatively influences WTD personal information to Alexa.

The P-value of Privacy Cynicism is not statistically significant and above 0.05, which is 0.663. This shows no impact of Privacy Cynicism on WTD to Alexa. Therefore, we accept the null hypothesis because Privacy Cynicism over Alexa have no effect on WTD to Alexa. **Thus, H14 is rejected.**

H14: Privacy cynicism positively influences WTD information to Alexa.

The P-value of Perceived Lack of Control is not statistically significant and above 0.05, which is 0.702. This shows no influence of Perceived Lack of Control on WTD to Alexa directly. Therefore, we accept the null hypothesis because Perceived Lack of Control over personal data have no effect on WTD to Alexa. **Thus, H15 is rejected.**

H15: Perceived lack of control negatively influences WTD personal information to Alexa.

By Comparing means of attitudes of users between two different countries we performed independent Sample T-test as shown in Table 11a Annex 2 in which Pakistan has total mean of

4.99 and for Lithuania this was 4.53. This was experienced that there is difference in the means attitudes of using Alexa. The mean of Pakistan was higher than Lithuania, suggesting more positive attuites of Pakistanis towards Alexa. By performing the Levene's Test for Equality of Variances (F = 0.015, Sig. = 0.903) as shown in Table 11 below. The p-value is greater than 0.05, indicating that the assumption of equal variances is met. The mean difference of 0.465 (with a 95% confidence interval of 0.124 to 0.805) further confirms the difference in attitudes. **Thus, the hypothesis H16 is supported**.

H16: Users in Pakistan have a more positive attitude towards using Alexa compared to users in Lithuania.

Table 11

Independent Sample Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Att_M	Equal variances assumed	.015	.903	2.686	333	.008	.465	.173	.124	.805
	Equal variances not assumed			2.694	323.453	.007	.465	.173	.125	.804

Nationality did not significantly influence the relation between attitude toward Alexa and willingness to disclose, according to findings of the moderation investigate that used country as a moderator. Overall, the model represented 12.84% of the difference in willingness to disclose (R^2 = 0.1284) and was statistically significant (F = 16.2559, p < 0.0001). Nationality (b = -0.1017, p = 0.8348) and attitude toward Alexa (b = 0.1897, p = 0.2020) failed to have any significant direct effects. Additionally, the interaction term (Attitudes towards Alexa x willingness to disclose) was not significant (b = 0.0966, p = 0.3233), demonstrating that there is no variation in the relationship between willingness to disclose and attitude toward Alexa by country. The interaction term only slightly altered the variance (R^2 change = 0.0026) as shown in Table 12, the entire table is in Annex 2 named as 12a.

Table 12

Moderation of countries on attitudes towards Alexa and willingness to disclose

```
OUTCOME VARIABLE:
 WTD_M

Model Summary
          R       R-sq       MSE         F       df1       df2         p
      .3583      .1284    1.9382   16.2559    3.0000  331.0000     .0000

Model
             coeff        se         t         p      LLCI      ULCI
constant    1.7430     .7621    2.2873     .0228     .2439    3.2421
Att_M        .1897     .1484    1.2784     .2020    -.1022     .4817
Natlty      -.1017     .4872    -.2088     .8348   -1.0601     .8567
Int_1        .0966     .0976     .9893     .3233    -.0955     .2886

Product terms key:
 Int_1    :      Att_M    x      Natlty

Test(s) of highest order unconditional interaction(s):
         R2-chng        F       df1       df2         p
X*W        .0026     .9787    1.0000  331.0000     .3233
----------
```

The two country's attitudes toward Alexa undoubtedly had distinct effects on their willingness to disclose, but these disparities were not statistically significant based only on descriptive indicators. The effect of attitude on willingness to disclose, for instance, was somewhat greater for Lithuanians than for Pakistanis according to some evidence on figure plots. However, this does not reach statistical significance, indicating that the difference may simply be the result of chance variation. All things considered, this result suggests that attitudes toward Alexa behave equally for both nations in terms of willingness to disclose, and that nationality has no discernible moderating effect on the relationship. **Thus, hypothesis H17 rejected.**

H17: Attitudes towards Alexa influences WTD information more strongly in Pakistan than in Lithuania.

The moderating effect of nationality on the relationship between willingness to disclose and trust was analysed as shown in Table 13 below and the whole table is in Annex 2 Table 13a. Two nations were specifically examined: Lithuania coded as 2 and Pakistan coded as 1. As a result, the outcomes of the research show that both groups' instances of this relationship differ. Overall, the model explained 18.84% of the variance in willingness to disclose ($R2 = 0.1884$) and was statistically significant ($F = 25.609$, $p < 0.0001$). Neither nationality ($b = -0.5705$, $p = 0.1652$) nor trust ($b = 0.0433$, $p = 0.7554$) had any significant direct influence. However, a significant moderating influence was present, as indicated by the interaction term Trust x Nationality ($b = 0.2254$, $p = 0.0128$). In Lithuania, the degree of trust regarding his willingness to disclose was significantly higher ($b = 0.4940$, $p < 0.0001$, $CI = 0.3635, 0.6244$) than in Pakistan ($b = 0.2686$, p

< 0.0001, CI = 0.1488, 0.3884), according to additional analysis. The results show that compared to Pakistanis, Lithuanians place a higher value on trust when it comes to personal information exposure. Investigating disclosure behaviour requires considering the moderating effect, which illustrates the cultural or national significance of the link or effect between trust and willingness to disclose. **Thus, H18 is confirmed.**

H18: Trust influences the WTD information to Alexa more significantly in Lithuania than in Pakistan.

Table 13

Moderation of countries on trust and willingness to disclose

```
OUTCOME VARIABLE:
 WTD_M

Model Summary
          R        R-sq         MSE           F         df1         df2           p
      .4340       .1884      1.8049     25.6090      3.0000    331.0000       .0000

Model
             coeff          se           t           p        LLCI        ULCI
constant    2.4302       .6513      3.7312       .0002      1.1489      3.7114
Trust_M      .0433       .1387       .3118       .7554      -.2296       .3161
Natlty      -.5705       .4102     -1.3908       .1652     -1.3774       .2364
Int_1        .2254       .0900      2.5028       .0128       .0482       .4025

Product terms key:
 Int_1    :        Trust_M  x        Natlty

Test(s) of highest order unconditional interaction(s):
      R2-chng          F         df1         df2           p
X*W      .0154      6.2638      1.0000    331.0000       .0128
----------
```

Privacy concerns significantly influence the willingness to disclose, as indicated by the regression coefficient (b = 0.4177, p = 0.0102) as shown in Table 14 below and whole table is in Annex 2 named as Table 14a. The main impact of nationality was considerable (b = 1.4318, p = 0.0032), indicating that the likelihood of disclosure varies in two countries. The regression analysis of the moderated relationship indicates that privacy concerns strongly predicted the willingness to share information, with nationality moderating the effect (b = -0.2866, p = 0.0071). In the Pakistan sample, privacy concerns had a minimal positive effect on one's willingness to disclose, but this relationship was similarly insignificant (b = 0.1311, p = 0.0639). The privacy problem negatively affected Lithuanians' interest to disclose personal information with Alexa (Co-ef = -0.1555, p = 0.0496).

Table 14

Moderation of countries on Privacy concern and willingness to disclose

```
------------------------------------------------------------------------
OUTCOME VARIABLE:
 WTD_M

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .1619       .0262      2.1655      2.9704      3.0000    331.0000      .0320

Model
             coeff         se          t          p        LLCI       ULCI
constant    1.0727      .7392      1.4512      .1477      -.3814      2.5267
Pcy.Con      .4177      .1616      2.5843      .0102       .0998       .7356
Natlty      1.4318      .4817      2.9722      .0032       .4841      2.3795
Int_1       -.2866      .1058     -2.7079      .0071      -.4948      -.0784

Product terms key:
 Int_1    :          Pcy.Con  x          Natlty

Test(s) of highest order unconditional interaction(s):
       R2-chng         F         df1        df2          p
X*W      .0216      7.3325      1.0000    331.0000      .0071
----------
```

Consequently, these findings indicate that privacy concerns hardly influence the desire to disclose among Pakistanis, while significantly reducing the willingness to disclose among Lithuanians. This variation indicates that cultural and national environments shape and govern the relationship between privacy concerns and willingness to disclose. The findings suggest that privacy concerns exhibit a small and insignificant positive link with the likelihood to provide information with Alexa in Pakistan, while negatively impacting this propensity in Lithuania. This indicates that privacy concerns are more significant in reducing the intention to engage in willingness to disclose in Lithuania compared to Pakistan. **Thus, H19 is confirmed.**

H19: Privacy concerns have a stronger negative effect on the WTD information to Alexa in Lithuania than in Pakistan.

The comparison between the mean values for two nationalities was performed by independent samples T-Test as shown in Table 15a in Annex 2 and smaller difference in mean values was observed. The mean value for Pakistan was 3.07 and for Lithuania this was 3.27. The differences an independent samples test was conducted and yielded a p-value of 0.214 and 0.203 respectively as shown in Table 15 in Annex 2. Thus, this clarifies this that there was not much difference in willingness to disclose information in two countries. Therefore, the null hypothesis was accepted and **H20 was rejected**.

H20: Pakistani users show a higher WTD information to Alexa compared to Lithuanian users.

Table 15

Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
WTD_M	Equal variances assumed	2.320	.129	-1.244	333	.214	-.203	.163	-.523	.118
	Equal variances not assumed			-1.256	329.451	.210	-.203	.161	-.520	.115

Figure 2 below demonstrate the accepted and rejected hypotheses. Hypotheses labelled in green are accepted, whereas those marked in red are rejected. Additionally, Table 16 provides detailed information about the accepted and rejected hypotheses.

Figure 2

Research Model – Accepted and Rejected hypotheses
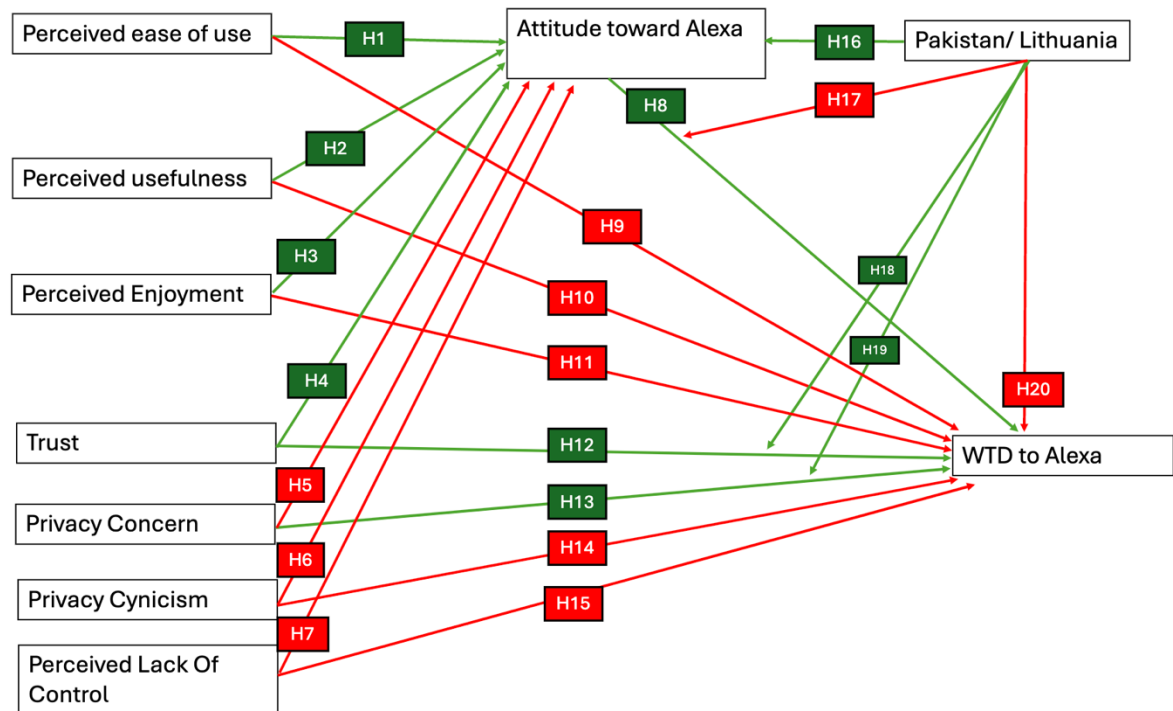
Compiled by author

Table 16

Accepted and Rejected hypotheses

Hypothesis No.	Hypothesis	Status
H1	PEOU of Alexa positively influences users' attitudes toward Alexa.	Accepted
H2	PU of Alexa positively influences users' attitudes toward Alexa.	Accepted
H3	PE from using Alexa positively influences users' attitudes toward Alexa.	Accepted
H4	Trust in Alexa positively influences users' attitudes toward Alexa.	Accepted
H5	Privacy concerns regarding Alexa negatively influence users' attitudes toward Alexa.	Rejected
H6	Privacy cynicism regarding Alexa negatively influences users' attitudes toward Alexa	Rejected
H7	Perceived lack of control over personal information negatively influences users' attitudes toward Alexa.	Rejected
H8	Positive attitudes towards Alexa positively influence WTD personal information to Alexa.	Accepted
H9	PEOU positively influences WTD personal information to Alexa.	Rejected
H10	PU positively influences WTD personal information to Alexa.	Rejected
H11	PE positively influences WTD personal information to Alexa.	Rejected
H12	Trust positively influences WTD personal information to Alexa.	Accepted
H13	Privacy concern negatively influences WTD personal information to Alexa.	Accepted
H14	Privacy cynicism positively influences WTD information to Alexa.	Rejected
H15	Perceived lack of control negatively influences WTD personal information to Alexa.	Rejected
H16	Users in Pakistan have a more positive attitude towards using Alexa compared to users in Lithuania.	Accepted
H17	Attitudes towards Alexa influences WTD information more strongly in Pakistan than in Lithuania.	Rejected
H18	Trust influences the WTD information to Alexa more significantly in Lithuania than in Pakistan.	Accepted
H19	Privacy concerns have a stronger effect on the WTD information to Alexa in Lithuania than in Pakistan.	Accepted
H20	Pakistani users show a higher WTD information to Alexa compared to Lithuanian users.	Rejected

3.7. Discussion

In this research, we explored the intricate dynamics influencing users' willingness to disclose personal information to voice assistants, particularly Alexa. Our investigation extended the Technology Acceptance Model (TAM) to incorporate factors such as trust, privacy concerns, perceived enjoyment (PE), and perceived ease of use (PEOU), which have demonstrated significant roles in shaping user behaviour towards technology. The research done strongly supports the hypothesis which states that PEOU of Alexa will have a positive effect on the attitude towards the device. Studies such as Lopatovska *et al*. (2019) although was not giving the desired response users report high satisfaction levels. This indicates that the smooth interaction process significantly improves customer satisfaction. This finding was further supported by Oktavia *et al*. (2023) and Buteau and Lee (2021) that easy-to-use voice assistants like Alexa favourably impact users' attitudes, encouraging continued use and positive engagement with the technology. The investigation carried out in the current study confirms the general assumption that the perceived usefulness (PU) of Alexa enhances consumer attitudes in a positive manner. McLean & Osei-Frimpong (2019) and Fortes & Rita (2016) have identified several advantages of utilising Alexa to enhance quality of life by executing designated activities and offering significant assistance in environments characterised by relative usefulness, such as libraries and exhibitions. The use of Alexa has been shown to facilitate task completion efficiently and offer valuable suggestions, indicating that positive user attitude towards Alexa result from its functionality.

H3 was support which posits that perceived enjoyment (PE) from using Alexa positively influences users' attitudes, is confirmed by various studies. Coker and Thakur (2023) showed that empathetic responses increase the level of enjoyment in the conversation, which leads to the positive user experience. Lopatovska *et al*. (2021) and Wienrich *et al*. (2023) state that Alexa's friendly personality significantly enhances user satisfaction, suggesting that the enjoyment derived from interacting with Alexa likely impacts users' attitudes most significantly. The findings certainly validate Hypothesis 4, which posits a favourable relationship between trust in Alexa and consumer attitudes towards the voice assistant. Malodia *et al*. (2022) prove that confidence arising from convenience significantly influences its use. Haesler *et al*. (2018) stated that integrating Alexa into augmented reality environments enhances users' perceived trust, therefore confirming

that trust is a vital component in the utilisation of Alexa. Unexpectedly, similar to the results of Buteau & Lee (2021) and Alzate *et al.* (2023), H5 was disproved, indicating that privacy concerns did not influence consumers' perceived attitudes towards Alexa. This indicates that, despite frequent discussions among authors regarding privacy concerns as an obstacle for users, this does not seem to apply to Alexa users. Users' interest in Alexa may mostly come from the device's usability, regardless of acknowledged privacy concerns. Likewise, Hypothesis 6 was rejected, contradicting the expected adverse effect of privacy cynicism outlined in research by Acikgoz & Vega (2021) and Hoffmann *et al.* (2016). This result suggests that although privacy cynicism is recognised in literature as reducing trust and user engagement, it may not exert significant influence in practice among Alexa users. Users may either ignore cynicism due to the perceived advantages of Alexa or address these problems without significantly impacting their overall experience.

Our hypothesis H7 posited that a perceived lack of control over personal data would negatively influence users' attitudes toward Alexa. However, our results did not support this hypothesis, showing that perceived control over personal data does not significantly influence user attitudes toward Alexa. This finding contrasts with previous research by Hajli & Lin (2016) and Kim & Kim (2020), which emphasized the importance of perceived control in shaping attitudes towards information sharing on social platforms. The discrepancy suggests that the context of voice-activated assistants like Alexa may involve different user expectations and trust dynamics. H8 suggested that positive attitudes toward Alexa would increase the willingness to disclose personal information. Our analysis confirms this hypothesis, showing that positive attitudes indeed enhance users' willingness to disclose. This finding aligns with prior research by Van Gool *et al.* (2015), Lowry *et al.* (2011), and Kim & Kim (2018), which highlighted the strong influence of user attitudes on their engagement with digital platforms. These findings highlight the significance of building positive user attitudes to promote increased personal data sharing with technologies such as Alexa. Hypothesis H9 proposed that perceived ease of use (PEOU) would positively influence the willingness to disclose personal information to Alexa. However, our findings did not support this hypothesis, as PEOU showed no significant effect on willingness to disclose. This contrasts with previous studies, such as those by Wang Peng (2019), Amin *et al.* (2024), and Pal *et al.* (2021), which found that that ease of use significantly increased trust and reduced user resistance across many technological contexts. Hypothesis 10's rejection indicates that perceived

usefulness alone does not drive users to disclose personal information to Alexa. This suggests that, in addition to utility, additional factors must be considered, which contradicts the positive the basis that any sort of usefulness enhances disclosure (Pal *et al.*, 2020). It seems that users appear to require more than just functional characteristics to build trust and interact with voice assistants regarding personal data sharing.H11 examined the potential beneficial influence of perceived enjoyment on the provision of personal information to Alexa. In contrast to the assumptions made in previous research by Pal *et al.*, (2020), which posited that enjoyment might influence information sharing behaviours to the extent of dominating privacy concerns, our study did not yield similar findings. The non-significant interaction between PE and WTD indicates that, within the context of Alexa, perceived enjoyment is not a crucial determinant in users' decision-making over the disclosure of personal information.

Hypothesis 12 suggests that trust is fundamental to consumers' willingness to disclose personal information. This outcome fits with the findings of Bansal *et al.* (2010) and Malodia *et al.* (2022), indicating that trust in a technology's reliability and utility, can reduce perceived risks and enhance data sharing. H13 was confirmed by our study, indicating that of privacy concerns negatively influenced users' willingness to disclose personal information. This aligns with the findings of Pal *et al.* (2020), which demonstrated that perceived risks negatively related with the utilisation of Voice Assistants. H14 posited that privacy cynicism would positively influence the willingness to disclose personal information to Alexa, drawing from research suggesting that individuals with higher privacy cynicism are more likely to share personal information despite privacy concerns (Van Ooijen *et al.*, 2022). Nonetheless, the results did not provide insights into this hypothesis, and finally, we found that privacy cynicism does not affect the willingness to submit information to Alexa. H15 explored whether perceived lack of control over personal information would negatively influence the willingness to disclose personal information to Alexa. Contrary to the literature, including Pal *et al.* (2020), which asserts that increased control correlates with higher trust and a higher willingness to disclose information, our hypothesis was refuted. This failure to attain statistical significance suggests that perceived control may not be the definitive factor influencing data sharing with voice-operated intelligent assistants like Alexa. H16 suggested that users in Pakistan would have a more positive attitude towards using Alexa compared to users in Lithuania. This was confirmed. The relationship between culture and area significantly influences consumers' attitude to use technology. Key references supporting this

analysis include Mahmood *et al*. (2022) for Pakistan, and Bharti & Aryal (2022) and Lesauskaite *et al*. (2019) for Lithuania, which underscore how societal assumptions and regulatory frameworks influence technology reception. In H17, we proposed that the perceived attitude towards Alexa would have a stronger impact on WTD information in Pakistan than in Lithuania, but this was not supported in the results. While there existed variations in attitudes regarding disclosure, there was no difference in willingness to disclose, as measured on the dependent variable. The findings of descriptive analyses tend to indicate that Lithuanians had a slightly higher attitude influence on WTD but not significantly different.

In H18 we analysed how nationality might moderate the relationship between trust and willingness to disclose personal information, focusing on Lithuania and Pakistan. The results showed that nationality significantly moderates this relationship, with trust playing a more crucial role in Lithuania compared to Pakistan in influencing the decision to disclose personal information. H19 suggested that privacy concerns would exhibit a more significant influence with willingness to disclose information to Alexa in Lithuania compared to Pakistan. The data aligned with the prediction, indicating a significant impact of privacy concern in Lithuania, where the willingness to provide information significantly reduced due to privacy concerns; conversely, in Pakistan, privacy concern exerted a small influence. Based on our hypothesis H20, we expected that Pakistani users would exhibit an increased willingness to provide information to Alexa compared to Lithuanian users, due to Pakistan's passion for technology. Nevertheless, the study findings did not support this idea. The results indicated that the differences between the two countries were insignificant.

In conclusion, this study explored multiple factors influencing users' willingness to share their information with Alexa, extending the Technology Acceptance Model and including perceived enjoyment, trust, privacy concerns, privacy cynicism, and perceived lack of control over personal information. The findings highlighted the positive impact of perceived ease of use, perceived usefulness, perceived enjoyment, and trust on attitudes toward Alexa. However, perceived ease of use, perceived usefulness, perceived enjoyment, privacy cynicism, and perceived lack of control did not significantly influence users' willingness to disclose personal information. Privacy concerns, while unexpectedly negatively impacting willingness to disclose, did not affect attitudes toward Alexa. Cultural differences were also evident, with users in Pakistan exhibiting more positive attitudes toward Alexa compared to those in Lithuania. However, there

was no significant moderating effect of nationality on the relationship between attitudes toward Alexa and willingness to disclose information. Trust emerged as a pivotal factor in willingness to disclose, particularly in Lithuania, underscoring cultural variations in technology adoption. Privacy concerns were more pronounced in Lithuania, where they significantly deterred willingness to share personal information with Alexa. These insights contribute to a deeper understanding of user dynamics with voice assistants and offer valuable guidance for designing more user-centric and culturally adaptive technologies.

CONCLUSION AND ACTIONABLE RECOMMENDATIONS

This study was aimed to find whether perceived usefulness, ease of use, perceived enjoyment, trust, privacy concern, privacy cynicism, lack of control over data and user attitudes towards smart personal assistants has impact willingness to disclose personal information to these devices. The following conclusions are drawn from both literature review and empirical analysis:

1. The main factors which were influencing willingness to disclose information to smart personal devices was attitude towards smart assistants, trust and privacy concerns.

2. It was noticed that attitude towards smart assistants was highly influenced by perceived ease of use, perceived usefulness, perceived enjoyment, and trust.

3. Trust was found the most significant factor which highly impacts users' willingness to disclose personal information to personal smart assistants. Attitudes towards those devices has also positive effect on the willingness to share personal information. Privacy concerns has least effect among all the factors that were affecting individuals' readiness to share their data to smart personal assistants.

4. In the study more factors were also analysed like privacy cynicism and perceived lack of control on data, but those variables didn't show any significant influence on willingness to disclose to personal smart assistant such as Alexa.

5. The Technology Acceptance Model was able to predict willingness to disclose personal information to personal smart assistants. It helps to understand the attitudes towards these devices.

6. The results of factor analysis revealed slight differences between the two countries, with no major disparities in the overall structure of the constructs. While there were some variations in the factor patterns, such as the more complex structure in Lithuania and higher willingness to disclose in Pakistan, these differences were relatively minor and did not significantly impact the overall analysis.

7. It was observed that in both countries trust is strongest factor which highly influence users' willingness to disclose personal information to the devices like personal smart assistants like Alexa.

8. It was also found that Lithuanians trust more than Pakistanis and are willing to share personal information to these devices.

9. Privacy concerns have a stronger effect on the willingness information to Alexa in Lithuania than in Pakistan. Whereas privacy concerns hardly influence the desire to disclose among Pakistanis, while significantly reducing the willingness to disclose among Lithuanians.

10. From the finding it was cleared that there was no significant difference in the willingness to disclose personal information to Alexa in Pakistan and Lithuania. However, this was found that users in Pakistan exhibits more positive attitude towards Alexa than Lithuanian users which indirectly influence willingness to disclose to Alexa.

11. Overall, trust was found the most significant factor which highly impacts users' willingness to disclose personal information to personal smart assistants. Attitudes towards those devices has also positive effect on the willingness to share personal information. Privacy concerns has least effect among all the factors that were affecting individuals' readiness to share their data to smart personal assistants.

Recommendations

1. To enhance users' willingness to disclose personal information to smart personal devices, companies developing smart personal assistants should prioritize factors that significantly influence user attitudes. Specifically, efforts should be made to improve the perceived ease of use of these devices by simplifying user interfaces and streamlining interactions, ensuring accessibility and intuitive functionality. Additionally, companies should emphasize the perceived usefulness of these devices by showcasing practical benefits such as time-saving features, task efficiency, and seamless integration with other services. To further strengthen user engagement, companies can enhance the perceived enjoyment of these devices by incorporating engaging, human-like interaction features, such as humour, relatable personality traits, and interactive responses that create a more enjoyable user experience. Lastly, trust remains a critical component; therefore, companies should focus on building trust by implementing transparent data practices, ensuring robust data security measures, and clearly communicating privacy policies to users. By addressing these factors, companies can positively influence user attitudes, leading to greater willingness to share personal information and fostering long-term user engagement with smart personal assistants.

2. Regulatory Bodies and Policymakers can develop and enforce robust privacy standards that build consumer trust in SPAs, focusing on transparency of personal data protection. Although

privacy concerns had the least effect, strengthening these areas can further enhance trust and positively influence user attitudes toward disclosing personal information.

3. Researchers in Technology Adoption Fields can conduct further studies to explore the underlying reasons why trust and attitudes significantly impact willingness to disclose personal information and why privacy concerns vary in impact. This research should aim to develop deeper insights into how SPAs can be designed and marketed to better meet user expectations and concerns in different cultural contexts.

4. Like this study other research could also be done but in countries other than Pakistan and Lithuanian to study attitudes towards personal smart assistants, as it was observed in this study that attitudes towards Alexa is different in Pakistan and Lithuania. Which will help in us in confirming that every country has different attitudes towards Alexa.

5. Companies developing Smart Personal Assistants should implement globally consistent measures to build trust, such as robust data security, transparent communication about data handling, and customizable privacy controls. By combining universal strategies with localized adjustments, companies can effectively address user concerns and build trust across diverse cultural contexts, ensuring broader acceptance and adoption of smart personal assistants.

6. In future it is recommended to continue doing similar research in order to find more factors which impacts the attitudes towards personal smart assistants as it highly influences the willingness to disclose personal data to these devices.

Research Limitations

This research has specific limitations that need to be acknowledged:

1. This study primarily focuses on a specific smart personal assistant, particularly emphasizing Alexa. While this targeted approach allows for a detailed examination of factors affecting user interaction and data disclosure with this technology, the findings may not be applicable to other types of smart personal assistants, home security systems, or various IoT devices in different contexts. Other types of such applications may exhibit distinct dynamics regarding user trust, privacy, and decisions concerning the exposure of personal data. Future research could expand this analysis to include a broader range of smart personal assistants, enhancing the understanding of user behaviour across different platforms and technologies.

2. Secondly, while this thesis has examined various variables within the Technology Acceptance Model, such as perceived usefulness, ease of use, and trust, many more factors may still influence one's willingness to share personal information. The influence of marketing promotions and the effect of peers etc. were left out. Considering these factors could impact the user interaction and their willingness of sharing personal information to smart personal assistants.

3. Lastly, the methodology of this study relies on cross-sectional data collection, which restricts the ability to understand the long-term effects of the examined variables on user behaviour and attitudes. A longitudinal study design would be advantageous for observing changes over time and providing a more comprehensive understanding of how attitudes towards technology and personal data disclosure evolve.

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VEIKSNIAI, ĮTAKOJANTYS NORĄ ATSKLEISTI ASMENINĘ INFORMACIJĄ ALEXA LIETUVOJE IR PAKISTANE

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SANTRAUKA

Tyrimas susideda iš 117 puslapių, 16 lentelių, 2 paveikslų ir 186 šaltinių.

Pagrindinis šio magistro darbo tikslas – nustatyti veiksnius, kurie labiausiai įtakoja vartotojų norą atskleisti asmeninę informaciją išmaniesiems asmeniniams asistentams. Šis magistro darbas susideda iš trijų pagrindinių dalių: literatūros analizės, tyrimo ir jo rezultatų, išvadų ir rekomendacijų.

Literatūros apžvalga skirta pristatyti esamų teorinių koncepcijų ir empirinių tyrimų sintezę, susijusią su SPA vartotojų sąveikos aspektais, su akcentu į veiksnius, darančius įtaką asmenų norui dalintis asmeniniais duomenimis. Taip pat aptariami skirtingų šalių, turinčių skirtingą kultūrą ir privatumo reglamentavimą, veiksnių skirtumai. Autorius atliko apklausų pagrįstą tyrimą, kuriame dalyvavo vartotojai iš Lietuvos ir Pakistano, empiriškai išbandant TAM karkaso išvystytas hipotezes. Tyrimas atidžiai analizavo atsakymus, siekiant suprasti, kaip kultūriniai niuansai ir privatumo reglamentavimas veikia vartotojų elgseną su SPA. Atsakymai buvo statistiškai apdoroti naudojant SPSS programą, siekiant patvirtinti TAM karkase siūlomus ryšius. Buvo taikomos konkrečios analizės, pvz., faktorinė analizė ir patikimumo testavimas naudojant Cronbach's Alpha, siekiant užtikrinti duomenų nuoseklumą ir validumą. Šis metodinis požiūris leido giliau suprasti veiksnius, lemiančius asmeninės informacijos atskleidimą SPA.

Atliktas tyrimas atskleidė, kad pasitikėjimas yra svarbiausias veiksnys, darantis įtaką vartotojų norui atskleisti asmeninę informaciją Alexai. Požiūris į Alexą, teigiamai veikiamas pasitikėjimo, reikšmingai veikia vartotojų norą dalintis asmenine informacija. Iš visų ištirtų veiksnių privatumo susirūpinimai daro mažiausią įtaką asmenų norui dalintis savo duomenimis su

Alexa. Tačiau buvo pastebėta, kad Pakistano vartotojai linkę vertinti Alexą teigiamiau lyginant su Lietuvos vartotojais, kas netiesiogiai veikia jų norą atskleisti informaciją Alexai. Privatumo susirūpinimai stipriau veikia norą atskleisti informaciją Alexai Lietuvoje, nei Pakistane. Nors privatumo susirūpinimai beveik neveikia atskleidimo noro tarp pakistano vartotojų, jie reikšmingai mažina atskleidimo norą tarp lietuvių.

Apskritai, tyrimas ištyrė veiksnius, darančius įtaką norui atskleisti asmeninę informaciją išmaniesiems asmeniniams asistentams, pavyzdžiui, Alexai, nustatant požiūrį, pasitikėjimą ir privatumo susirūpinimus kaip pagrindinius lemiamus veiksnius. Požiūris buvo formuojamas suvokiamu naudojimo paprastumu, nauda ir malonumu. Pasitikėjimas išryškėjo kaip svarbiausias veiksnis, veikiantis atskleidimo norą abiejose šalyse, nepaisant nedidelių duomenų skirtumų tarp jų. Privatumo susirūpinimai skirtingai veikė, stipriau Lietuvoje nei Pakistane. Norint didinti atskleidimo norą, įmonėms turėtų sutelkti dėmesį į vartotojo sąsajos gerinimą, pabrėžiant praktinius SPA naudingumus ir malonias funkcijas, užtikrinant tvirtą duomenų saugumą ir skaidrias privatumo praktikas. Toliau tyrėjai galėtų giliau išnagrinėti kultūrinius šių veiksnių skirtumus, kad SPA būtų veiksmingiau pritaikyti skirtingoms vartotojų grupėms.

FACTORS INFLUENCING WILLINGNESS TO DISCLOSE PERSONAL INFORMATION TO ALEXA IN LITHUANIA AND PAKISTAN

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SUMMARY

The research consists of 117 pages, 16 tables, 2 figure, and 186 references.

The main purpose of this master's thesis is to identify factors that most significantly influence users' willingness to disclose personal information to smart personal assistants.

This master thesis consists of three main parts; the analysis of literature, the research and its results, a conclusion and recommendations.

The literature review is aimed at presenting the synthesis of the existing theoretical concepts and empirical studies regarding to the aspects of SPA users' interaction, with the emphasis made on the factors that impacts willingness of individuals to share personal data. It also discusses the factors vary in different countries having different culture and privacy regulations.

Author conducted a survey-based study involving users from both Lithuania and Pakistan to empirically test the hypotheses developed from the TAM framework. The research meticulously analysed the responses to understand how cultural nuances and privacy regulations influence user behaviour towards SPAs. The responses were statistically processed using SPSS to validate the relationships proposed in the TAM framework. Specific analyses, such as factor analysis and reliability testing using Cronbach's Alpha, were employed to ensure the consistency and validity of the data. This methodical approach allowed for a nuanced understanding of the factors that drive personal information disclosure to SPAs.

The research performed revealed that trust is the most significant factor impacting users' willingness to disclose personal information to Alexa. Attitudes toward Alexa, positively shaped

by trust, significantly affect users' willingness to share personal information. Among all factors examined, privacy concerns have the least effect on individuals' willingness to share their data with Alexa. However, it was observed that users in Pakistan exhibit a more positive attitude towards Alexa compared to Lithuanian users, indirectly influencing their willingness to disclose information to Alexa. Privacy concerns have a stronger impact on the willingness to disclose information to Alexa in Lithuania than in Pakistan. While privacy concerns barely influence the desire to disclose among Pakistanis, they significantly reduce the willingness to disclose among Lithuanians.

Overall, the study explored factors influencing willingness to disclose personal information to smart personal assistants (SPAs) like Alexa, identifying attitude, trust, and privacy concerns as key determinants. Attitude was shaped by perceived ease of use, usefulness, and enjoyment. Trust emerged as the most significant factor affecting disclosure willingness across two countries, Pakistan and Lithuania, despite minor differences in data patterns between them. Privacy concerns varied in impact, with a stronger influence in Lithuania than in Pakistan. To enhance disclosure willingness, companies should focus on improving user interfaces, emphasizing the practical benefits and enjoyable features of SPAs, and ensuring robust data security and transparent privacy practices. Further research could explore deeper cultural variations in these factors to tailor SPAs more effectively to different user bases.

ANNEX

Annex 1. Questionnaire development

Dear respondent,

My name is Muhammad Sulaiman, I am Marketing and Integrated Communication Master's programme student at Vilnius University. By this research I aim to analyse the factors that influence willingness to disclose personal information to Alexa. The questionnaire contains some question blocks and will take approximately 7-10 minutes to complete. It is anonymous, and the answers will be analyzed solely for the research purposes. If you have any concerns regarding the research, you can contact me via email: muhammad.sulaiman@evaf.stud.vu.lt

Thank you for your participation and input in my research!

7-point Likert type scale; reference - Acikgoz & Vega, 2021

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree
Using Alexa would enable me to accomplish more tasks more quickly.							
Using Alexa increases my productivity.							
Using Alexa would make it easier to store information.							
Overall, using Alexa is advantageous.							
Using Alexa would improve my life.							

7- point Likert scale; reference - Acikgoz & Vega, 2021

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree
Using Alexa is easy to understand and clear.							
I would find Alexa easy to use.							
I would find it easy to use Alexa for accessing information.							
I would be easy for me to become skillful at using Alexa.							

7-point Likert type scale; reference - Ashrafi et al., 2022

	1 Strongly disagree	2	3	4	5	7	7 Strongly agree
Using the Alexa is pleasurable.							
I have fun using the Alexa.							
I find using the Alexa to be interesting.							

7-point Likert type scale; reference - Salehan et al., 2016

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree

Alexa is trustworthy.							
I can count Alexa to protect my privacy.							
I can count Alexa to protect my personal information from unauthorized use.							
Alexa can be relied on to keep its promises.							

7-point Linkert Scale; reference -Bansal et al., 2016

Personal information provided to Alexa.

Will not be abused at all							Will be abused for sure
Will not be compromised at all							Could be shared or sold to others
Very Low							Very High

7-point Likert type scale; reference - Khan et al., 2023

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree
I have become less interested in privacy issues.							
I have become less enthusiastic about protecting personal information provided to Alexa.							
Alexa supplies my need for help through a help function.							

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree
I have become more cynical about whether my efforts in protecting privacy are in any way effective.							

7-point Likert type scale; reference - Pham & Nguyen, 2019

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree
Alexa is a reliable.							
Alexa has a good reputation.							
Alexa is well known.							
Alexa can be aware of many people.							

7-point Likert type scale; reference - Urbonavicius et al., 2021

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree
I am usually bothered when I do not have control over the personal information that I provide to Alexa.							
I am usually bothered when I do not have control over personal information or autonomy over decisions about how my personal information is collected, used, and shared by Alexa.							
I am concerned when personal information control is lost or unwillingly reduced as a result of a marketing transaction with Alexa.							

7-point Likert type scale; reference - Acikgoz & Vega, 2021

	1 Strongly disagree	2	3	3	4	5	6	7 Strongly agree
Using Alexa is useful.								
Using Alexa is realistic.								
Using Alexa is informative.								
Using Alexa is specific.								
Using Alexa is logical.								

7-point Likert type scale; reference - Urbonavicius et al., 2021

While using Alexa seamlessly, you are often asked to provide them your personal data. Please, specify, how much are you willing to provide personal data of each type:

	1 Strongly disagree	2	3	4	5	6	7 Strongly agree
Name							
Email							
Private phone number							
Address							
Date of birth							
Current location							
Bank account credentials							
Credit card details							
Passwords							

Please choose your gender:

Age	

Please choose your gender:

Gender	Male	Female

Please choose your Nationality:

Nationality	Pakistani	Lithuanian

Annex 2. Additional Tables

Table 4a

Gender Details

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	165	49.3	49.3	49.3
	Female	170	50.7	50.7	100.0
	Total	335	100.0	100.0	

Table 4b

Age Group Details

Age Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	175	52.2	52.2	52.2
	2	108	32.2	32.2	84.5
	3	33	9.9	9.9	94.3
	4	19	5.7	5.7	100.0
	Total	335	100.0	100.0	

Table 4c

Nationality Details

Nationality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pakistani	184	54.9	54.9	54.9
	Lithuanian	151	45.1	45.1	100.0
	Total	335	100.0	100.0	

Table 5a

Gender - Nationality Crosstabulation

Gender * Nationality Crosstabulation

Count

		Nationality		Total
		Pakistani	Lithuanian	
Gender	Male	86	79	165
	Female	98	72	170
Total		184	151	335

Table 5b

Age Group - Nationality Crosstabulation

Age Group * Nationality Crosstabulation

Count

		Nationality		Total
		Pakistani	Lithuanian	
Age Group	1	124	51	175
	2	47	61	108
	3	7	26	33
	4	6	13	19
Total		184	151	335

Table 6a

Factor analysis – Goodness of fit test

Goodness-of-fit Test

Chi-Square	df	Sig.
1639.344	459	.000

Table 6b

Factor analysis – Pattern Matrix

Pattern Matrix[a]

	Factor					
	1	2	3	4	5	6
Att_1	.597					
Att_2	.655					
Att_3	.745					
PEU_1	.820					
PEU_2	.889					
PEU_3	.841					
PEU_4	.782					
PU_1	.916					
PU_2	.853					
PU_3	.746					
PU_4	.757					
PU_5	.720					
PE_1	.715					
PE_2	.620					
PE_3	.607					
Trust_1		.786				
Trust_2		.885				
Trust_3		.898				
Trust_4		.897				
Pcy.Conc_1						.812
Pcy.Conc_2						.834
Pcy.Conc_3						.571
Pcy.Cyn_1		.530				
Pcy.Cyn_2		.593				
Pcy.Cyn_3		.568				
PLC_1					.833	
PLC_2					.888	
PLC_3					.682	
WTD_1			.877			
WTD_2			.946			
WTD_3			.829			
WTD_4			.733			
WTD_5			.766			
WTD_6			.578			
WTD_7				.943		
WTD_8				.887		
WTD_9				.840		

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 6c

Factor analysis – Total variance explained.

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	13.399	36.213	36.213	12.629	34.132	34.132	11.678
2	4.739	12.809	49.022	4.629	12.510	46.642	9.117
3	2.727	7.371	56.392	2.288	6.185	52.827	6.189
4	2.382	6.437	62.829	2.040	5.513	58.339	4.817
5	1.595	4.312	67.141	1.603	4.333	62.673	4.366
6	1.322	3.574	70.715	1.011	2.733	65.406	3.551
7	.989	2.673	73.388				
8	.975	2.636	76.024				
9	.786	2.124	78.148				
10	.727	1.964	80.112				
11	.618	1.669	81.781				
12	.497	1.344	83.125				
13	.474	1.281	84.406				
14	.450	1.215	85.621				
15	.408	1.104	86.725				
16	.383	1.036	87.761				
17	.373	1.008	88.769				
18	.362	.978	89.747				
19	.338	.914	90.660				
20	.301	.814	91.474				
21	.297	.803	92.278				
22	.263	.712	92.989				
23	.258	.697	93.686				
24	.250	.676	94.363				
25	.232	.627	94.989				
26	.209	.565	95.554				
27	.190	.514	96.068				
28	.186	.504	96.572				
29	.176	.475	97.047				
30	.165	.446	97.494				
31	.156	.420	97.914				
32	.152	.412	98.326				
33	.145	.391	98.717				
34	.139	.377	99.094				
35	.126	.341	99.435				
36	.110	.296	99.731				
37	.100	.269	100.000				

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 7a

Comparative Factor analysis- Goodness of fit test

Pakistan	Lithuania
Goodness-of-fit Test[a]	**Goodness-of-fit Test**[a]

	Chi-Square	df	Sig.
Pakistan	963.766	459	.000
Lithuania	752.144	398	.000

a. Only cases for which Nationality = Pakistani are used in the analysis phase.

a. Only cases for which Nationality = Lithuanian are used in the analysis phase.

Table 7b

Comparative Factor analysis- Pattern Matrix

Pakistan — Pattern Matrix[a,b]

	1	2	3	4	5	6
Att_1	.568					
Att_2	.584					
Att_3	.751					
PEU_1	.777					
PEU_2	.852					
PEU_3	.817					
PEU_4	.823					
PU_1	.970					
PU_2	.962					
PU_3	.933					
PU_4	.893					
PU_5	.804					
PE_1	.871					
PE_2	.635					
PE_3	.669					
Trust_1	.378			.535		
Trust_2				.789		
Trust_3				.862		
Trust_4				.902		
Pcy.Conc_1			.609			
Pcy.Conc_2			.721			
Pcy.Conc_3			.576			
Pcy.Cyn_1					.760	
Pcy.Cyn_2					.847	
Pcy.Cyn_3					.511	
PLC_1			.773			
PLC_2			.732			
PLC_3			.789			
WTD_1		.915				
WTD_2		.962				
WTD_3		.793				
WTD_4		.731				
WTD_5		.853				
WTD_6		.613				
WTD_7				.930		
WTD_8				.833		
WTD_9				.824		

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 7 iterations.
b. Only cases for which Nationality = Pakistani are used in the analysis phase.

Lithuania — Pattern Matrix[a,b]

	1	2	3	4	5	6	7	8
Att_1								.805
Att_2								.809
Att_3								.700
PEU_1				.803				
PEU_2				.916				
PEU_3	.326			.632				
PEU_4				.813				
PU_1	.925							
PU_2	.920							
PU_3	.606							
PU_4	.739							
PU_5	.907							
PE_1	.611							
PE_2	.695							
PE_3	.577							
Trust_1		.907						
Trust_2		.921						
Trust_3		.783						
Trust_4		.716						
Pcy.Conc_1							.849	
Pcy.Conc_2							.875	
Pcy.Conc_3							.564	
Pcy.Cyn_1	.490							
Pcy.Cyn_2	.564							
Pcy.Cyn_3	.559							
PLC_1						.806		
PLC_2						.982		
PLC_3						.760		
WTD_1			.453					
WTD_2			.652					
WTD_3			.880					
WTD_4			.851					
WTD_5			.699					
WTD_6			.768					
WTD_7					.916			
WTD_8					.885			
WTD_9					.805			

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 8 iterations.
b. Only cases for which Nationality = Lithuanian are used in the analysis phase.

Table 7c

Comparative Factor analysis- Total Variance Explained

	Pakistan						Lithuania					

Total Variance Explained[a] — Pakistan

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[b]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	15.607	42.181	42.181	15.131	40.894	40.894	13.995
2	4.967	13.424	55.605	4.714	12.741	53.635	5.962
3	2.894	7.821	63.425	2.564	6.929	60.564	9.285
4	1.674	4.523	67.949	1.305	3.527	64.091	9.579
5	1.419	3.836	71.785	1.206	3.259	67.350	4.421
6	1.056	2.854	74.639	.983	2.657	70.007	7.278
7	.914	2.470	77.109				
8	.776	2.097	79.206				
9	.689	1.862	81.068				
10	.572	1.547	82.615				
11	.504	1.362	83.977				
12	.473	1.279	85.256				
13	.439	1.186	86.442				
14	.417	1.128	87.570				
15	.393	1.062	88.632				
16	.356	.962	89.594				
17	.338	.913	90.506				
18	.333	.899	91.405				
19	.317	.857	92.262				
20	.284	.767	93.029				
21	.234	.634	93.663				
22	.224	.606	94.268				
23	.223	.602	94.870				
24	.203	.548	95.417				
25	.197	.531	95.949				
26	.177	.477	96.426				
27	.168	.453	96.879				
28	.157	.426	97.304				
29	.145	.393	97.697				
30	.134	.363	98.060				
31	.125	.339	98.399				
32	.119	.322	98.721				
33	.112	.302	99.022				
34	.109	.294	99.316				
35	.094	.255	99.571				
36	.083	.225	99.796				
37	.075	.204	100.000				

Extraction Method: Maximum Likelihood.

a. Only cases for which Nationality = Pakistani are used in the analysis phase.

b. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Total Variance Explained[a] — Lithuania

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[b]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	11.950	32.298	32.298	11.419	30.863	30.863	9.249
2	4.706	12.720	45.019	4.309	11.645	42.508	7.951
3	2.714	7.334	52.353	2.382	6.437	48.945	7.379
4	2.387	6.451	58.803	2.061	5.570	54.515	5.616
5	1.848	4.994	63.798	1.659	4.485	59.000	5.495
6	1.507	4.072	67.870	1.343	3.630	62.630	2.656
7	1.255	3.391	71.261	.925	2.501	65.130	2.461
8	1.007	2.723	73.984	.724	1.958	67.088	6.883
9	.968	2.616	76.600				
10	.915	2.473	79.073				
11	.880	2.379	81.452				
12	.673	1.820	83.271				
13	.629	1.700	84.972				
14	.544	1.471	86.443				
15	.519	1.401	87.844				
16	.429	1.160	89.004				
17	.386	1.043	90.046				
18	.354	.956	91.002				
19	.304	.821	91.823				
20	.291	.787	92.610				
21	.277	.749	93.358				
22	.259	.699	94.058				
23	.248	.671	94.728				
24	.206	.558	95.286				
25	.197	.533	95.819				
26	.193	.520	96.340				
27	.175	.473	96.813				
28	.157	.423	97.236				
29	.153	.412	97.648				
30	.142	.383	98.032				
31	.133	.361	98.392				
32	.129	.348	98.741				
33	.117	.317	99.058				
34	.097	.263	99.321				
35	.091	.247	99.568				
36	.086	.234	99.802				
37	.073	.198	100.000				

Extraction Method: Maximum Likelihood.

a. Only cases for which Nationality = Lithuanian are used in the analysis phase.

b. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 9a

Effect of PEU, PU, PE, Trust, Privacy Concerns, Privacy cynicism and Perceived lack of control on Attitudes towards Alexa - Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.771[a]	.594	.586	1.023

a. Predictors: (Constant), PLC_M, Trust_M, Pcy.Conc_M, PEU_M, Pcy.Cyn_M, PE_M, PU_M

Table 9b

Effect of PEU, PU, PE, Trust, Privacy Concerns, Privacy cynicism and Perceived lack of control on Attitudes towards Alexa - ANOVA Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	502.045	7	71.721	68.479	<.001[b]
	Residual	342.481	327	1.047		
	Total	844.525	334			

a. Dependent Variable: Att_M

b. Predictors: (Constant), PLC_M, Trust_M, Pcy.Conc_M, PEU_M, Pcy.Cyn_M, PE_M, PU_M

Table 10a

Effect of PEU, PU, PE, Trust, Privacy Concerns, Privacy cynicism and Perceived lack of control on Willingness to Disclose to Alexa - Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.433[a]	.187	.167	1.355

a. Predictors: (Constant), PLC_M, Trust_M, Pcy.Conc_M, PEU_M, Pcy.Cyn_M, Att_M, PE_M, PU_M

Table 10b

Effect of PEU, PU, PE, Trust, Privacy Concerns, Privacy cynicism and Perceived lack of control on Willingness to Disclose to Alexa - ANOVA Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	137.793	8	17.224	9.385	<.001[b]
	Residual	598.278	326	1.835		
	Total	736.071	334			

a. Dependent Variable: WTD_M

b. Predictors: (Constant), PLC_M, Trust_M, Pcy.Conc_M, PEU_M, Pcy.Cyn_M, Att_M, PE_M, PU_M

Table 11a

Comparing Means

Group Statistics

	Nationality	N	Mean	Std. Deviation	Std. Error Mean
Att_M	Pakistani	184	4.99	1.594	.118
	Lithuanian	151	4.53	1.552	.126

Table 12a

Moderation of countries on attitudes towards Alexa and willingness to disclose.

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.        www.afhayes.com
     Documentation available in Hayes (2022). www.guilford.com/p/hayes3

*************************************************************************
Model  : 1
    Y  : WTD_M
    X  : Att_M
    W  : Natlty

Sample
Size:  335

*************************************************************************
OUTCOME VARIABLE:
 WTD_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3583      .1284     1.9382    16.2559     3.0000   331.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    1.7430      .7621     2.2873      .0228      .2439     3.2421
Att_M        .1897      .1484     1.2784      .2020     -.1022      .4817
Natlty      -.1017      .4872     -.2088      .8348    -1.0601      .8567
Int_1        .0966      .0976      .9893      .3233     -.0955      .2886

Product terms key:
 Int_1   :      Att_M    x       Natlty

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W      .0026      .9787     1.0000   331.0000      .3233
----------
    Focal predict: Att_M    (X)
          Mod var: Natlty   (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
    Att_M      Natlty     WTD_M       .
BEGIN DATA.
      3.0000     1.0000     2.5003
      5.0000     1.0000     3.0729
      6.3333     1.0000     3.4546
      3.0000     2.0000     2.6883
      5.0000     2.0000     3.4540
      6.3333     2.0000     3.9645
END DATA.
GRAPH/SCATTERPLOT=
 Att_M    WITH     WTD_M    BY       Natlty   .

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

------ END MATRIX -----
```

Table 13a

Moderation of countries on trust and willingness to disclose.

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
      Documentation available in Hayes (2022). www.guilford.com/p/hayes3

*************************************************************************
Model  : 1
    Y  : WTD_M
    X  : Trust_M
    W  : Natlty

Sample
Size:  335

*************************************************************************
OUTCOME VARIABLE:
 WTD_M

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4340      .1884     1.8049    25.6090     3.0000   331.0000      .0000

Model
              coeff        se          t          p       LLCI       ULCI
constant     2.4302      .6513     3.7312      .0002     1.1489     3.7114
Trust_M       .0433      .1387      .3118      .7554     -.2296      .3161
Natlty       -.5705      .4102    -1.3908      .1652    -1.3774      .2364
Int_1         .2254      .0900     2.5028      .0128      .0482      .4025


Product terms key:
 Int_1    :       Trust_M  x        Natlty

Test(s) of highest order unconditional interaction(s):
       R2-chng         F        df1        df2          p
X*W      .0154     6.2638     1.0000   331.0000      .0128
----------
    Focal predict: Trust_M  (X)
          Mod var: Natlty   (W)

Conditional effects of the focal predictor at values of the moderator(s):

      Natlty     Effect         se          t          p       LLCI       ULCI
      1.0000      .2686      .0609     4.4093      .0000      .1488      .3884
      2.0000      .4940      .0663     7.4496      .0000      .3635      .6244

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   Trust_M    Natlty     WTD_M       .
BEGIN DATA.
     2.5000     1.0000     2.5312
     4.2500     1.0000     3.0013
     6.0000     1.0000     3.4713
     2.5000     2.0000     2.5241
     4.2500     2.0000     3.3885
     6.0000     2.0000     4.2529
END DATA.
GRAPH/SCATTERPLOT=
 Trust_M  WITH     WTD_M    BY        Natlty   .
```

Table 14a

Moderation of countries on Privacy concern and willingness to disclose.

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
     Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : WTD_M
    X  : Pcy.Con
    W  : Natlty

Sample
Size:  335

**************************************************************************
OUTCOME VARIABLE:
 WTD_M

Model Summary
          R        R-sq       MSE          F        df1        df2          p
      .1619      .0262     2.1655     2.9704     3.0000   331.0000      .0320

Model
             coeff         se          t          p       LLCI       ULCI
constant    1.0727      .7392     1.4512      .1477     -.3814     2.5267
Pcy.Con      .4177      .1616     2.5843      .0102      .0998      .7356
Natlty      1.4318      .4817     2.9722      .0032      .4841     2.3795
Int_1       -.2866      .1058    -2.7079      .0071     -.4948     -.0784

Product terms key:
 Int_1    :        Pcy.Con  x        Natlty

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0216     7.3325     1.0000   331.0000      .0071
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    Focal predict: Pcy.Con  (X)
          Mod var: Natlty   (W)

Conditional effects of the focal predictor at values of the moderator(s):

     Natlty     Effect         se          t          p       LLCI       ULCI
     1.0000      .1311      .0705     1.8588      .0639     -.0076      .2698
     2.0000     -.1555      .0789    -1.9705      .0496     -.3108     -.0003

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   Pcy.Con    Natlty      WTD_M       .
BEGIN DATA.
     3.0000     1.0000     2.8977
     4.3333     1.0000     3.0725
     6.0000     1.0000     3.2910
     3.0000     2.0000     3.4697
     4.3333     2.0000     3.2623
     6.0000     2.0000     3.0031
END DATA.
GRAPH/SCATTERPLOT=
 Pcy.Con  WITH      WTD_M     BY        Natlty   .
```

Table 15a

Comparing Means of Pakistan and Lithuania

Group Statistics

	Nationality	N	Mean	Std. Deviation	Std. Error Mean
WTD_M	Pakistani	184	3.07	1.545	.114
	Lithuanian	151	3.27	1.405	.114