**Exploring the Chatbot usage intention-A mediating role of Chatbot initial trust**

**Prof. Jyothsna1, 2. Dr.P. Venkata Subbaiah2\*** **Prof: Natalia Kryvinska**

**Abstract:**

Throughout the past ten years, numerous automation initiatives have been effective, such as chatbots for customer care. In addition to saving businesses money, chatbots improve customer engagement and save time and effort. Aspiring, well-educated, and tech-savvy, Gen Z customers perceive chatbots as highly compatible with their preferred method of seeking product-related information. Extensive study has been conducted on the utilization of technology, however, there is a scarcity of studies specifically focusing on the usage of chatbots by Gen Z prospects.

The main aim of this study is to determine which features of chatbots influence user acceptability, confidence, and engagement. The intention is to develop a model that integrates theories related to initial trust, customer engagement, loyalty, and chatbot adoption. The UTAUT and the DOI paradigm, the TAM Model, and the writings of other writers will serve as the foundation for this paradigm. Using the PLS-SEM method, we computed the suggested model. Seven predicted links are shown. Out of the six hypotheses that were proposed, seven were determined to be plausible, while one was completely rejected. The study also found that Perceived ease of use, performance expectations, and social influence of chatbots are all greatly enhanced by trust. The statistical analysis also showed that consumers' intentions, loyalty, and engagement levels are highly influenced by their level of trust in chatbots. The association between chatbot trust and intention is moderated by both age and gender. It was shown that respondents' ages had a substantial impact on their plans to use chatbots, but their gender had no effect on those intentions.

**Keywords:** Chatbot initial trust, Customer usage intention, loyalty and customer engagement.

1. **Introduction:**

Many companies have adopted chatbots with the aim of enhancing customer services. Companies see them as an innovative touchpoint offering conversation with prospects and customers (Chung, Ko, Joung, & Jin, 2018). According to (Shawar & Atwell, 2014) Chatbots are computational systems capable of engaging in conversations with humans through the use of natural language. Chatbots has recently become more popular due to technological advancements and the fact that texting has replaced face-to-face interactions as the principal method of both personal and professional communication (Araujo, 2023). When traditional marketing is insufficient, artificial intelligence is thought to be able to improve customer interactions (Yau, Saad, & Chong, 2021). A chatbot may assist in being proactive and personable in company communications with customers, by promptly and proactively answering customer inquiries (Jenneboer & Herrando, 2022).

Chatbots can be meshed with numerous communication channels like social media platforms, company websites and even in messaging apps. The reason is that many potential advantages are perceived by businesses for example chatbots can respond to quires instantaneously giving consistent information, and are a source for collecting data about customers. AI chatbots are useful for a variety of purposes and industries, including education, healthcare, customer service and entertainment. These days, chatbots are employed in a variety of industries and they are available 24/7. Advanced chatbots can be programmed and tailored for providing more enjoyable and engaging conversations. However, like any other technology the effectiveness of a chatbot depends on continuous upgradation of technology for meeting the evolving customer needs.

Chatbots have recently attracted a lot of attention from researchers interested in their possible impact on customer satisfaction (Chung et al., 2018) and how customers view companies (Araujo, 2023). Consumers and AI-driven systems are now interacting with enterprises online more often than humans with one other (Sundar, 2020).

As this study is done on Gen Z a brief description of the generation is given. Gen Z is ill-defined, according to (Gabrielova & Buchko, 2022) and (Mostafa & Kasamani, 2021). Generation Z will be defined in this paper as those who were born 1995-2012. Gabrielova & Buchko, (2022),One generation that has grown up with continual access to the internet—known as Generation Z, or iGen—has had "smart" mobile devices throughout their entire life. Gabrielova & Buchko, (2022). Compared to previous generations, the millennial generation started using cellphones and the internet when they were still teenagers, a significant change. The majority of millennials were adults when these technologies first gained traction. When it comes to their distinct upbringing, experiences with family dynamics, and the ubiquitous presence of smart technology in their daily lives, Gen Z are different from prior generations in many respects. Finding out which characteristics of AI chatbots are most likely to encourage brand loyalty could help firms better engage with Generation Z. This serves as another evidence of the study's usefulness for firms. Finally, research looking at how AI chatbots affect loyalty across generations are rare. This suggests that it may be more advantageous from a scientific standpoint to concentrate on a particular generation, such as Gen Z, for this reason.

According to several studies (Gefen, Karahanna, & Straub, 2003, Koufaris & Hampton-sosa, 2004,Gefen et al., 2003 & Reichheld, F.F. and Schefter, P. (2000), online trust is an significant factor in a website's capacity to compete in the marketplace and maintain enduring customer relationships.

This study looks at customer trust as the main factor behind customers returning to a company because it recognizes that keeping these customers' trust in the company is essential to keeping them as customers Reichheld, F.F. and Schefter, P. (2000) and that trust is fundamental to relationships of all kinds (Mishra and Morrissey 1990). This is especially true with e-commerce, as customers cannot assess a vendor's credibility in the same way that they could in a traditional face-to-face exchange due to the restricted nature of the Web interface (Reichheld, F.F. and Schefter, P. (2000). According to Mostafa & Kasamani, (2021), customers' first trust in chatbots is considerably increased through three factors: perceived ease of use, compatibility, and social impact.

**1.1 Theoretical backgrounds of the study:**

Ajzen and Fishbein proposed a triple perspectives theory of trust, which is grounded in the theories of planned behavior and reacted action. The three components of this framework are belief, attitude, and intention. According to (Koenig-lewis, Palmer, & Moll, 2009), there are three distinct processes that account for trust: behavioral, emotional, and cognitive. They emphasized that a cognitive process that identifies individuals and institutions as trustworthy is the basis of the growth of trust. In order to investigate the relationship between initial trust and mobile payment intention, (Talwar, Dhir, Khalil, Mohan, & Islam, 2020) integrated the information systems success (ISS) model, transaction cost economics (TCE) theory, and the information technology (IT) continuity model. According to their research, the only factors that directly affect the first level of trust are perceived information quality and service quality.

This model proposed by Davis, Model looks into how consumers act and how they feel about accepting or rejecting technology (Granic & Marangunic, 2015). Chen & Barnes, (2007) observe that the online customer experience and the chatbot's usability and responsiveness are positively correlated. Further, it enlightens the relationship between TAM and customer loyalty. According to DOI theory, consumers' initial trust behavior towards new technology is a result of the assumptions they have about it (Davis & Davis, 2015). Five technology-related elements make up DOI and are thought to be key determinants of whether innovation is accepted or rejected. These elements include trialability, observability, complexity, compatibility, and relative advantage. However, according to Fagih, (2019) , the first three characteristics have the most influence on customers' acceptance of new technology. Therefore, in our investigation, we only used compatibility as the sole element derived from DOI theory.

UTAUT Model, which was proposed by (Venkatesh, Morris, Davis, & Davis, 2003), is useful for figuring out what factors influence people to embrace new technology that businesses use. The Prospects of performance and determination, as well as social influence and enabling circumstances, make up this theory. In contrast, Existing studies has shown that performance expectancy is the most imperative component of UTAUT in explaining people's actions (Venkatesh et al., 2003), (Venkatesh et al., 2019), (Casey & Wilson-evered, 2012), (Casey & Wilson-evered, 2012),(Zhou, Lu, & Wang, 2010). Additionally, according to (Abdallah, Dwivedi, & Rana, 2017), social influence ranks as the second most important element in determining behavioral intention. We used performance expectation and social influence, two variables from the UTAUT, to predict how much confidence users would initially have in chatbots. (Davis & Davis, 2015) noted that combining theories like TAM and DOI formed the basis of the UTAUT establishment. Previous research, however, continues to draw from both UTAUT's foundational theories.

1. **Literature review:**

Customers' initial level of trust in a chatbot is a key factor in determining whether they will utilize it or not. Because chatbots are a relatively new technology, customers' perceptions of and plans for using them are greatly influenced by their degree of trust in them (Talwar et al., 2020). (Zhou et al., 2010) talked about how initial trust in previous research was impacted by information quality, system quality, and structural assurance. Additional studies were carried out to assess the influence of central signals, such computer monitoring, and peripheral cues, like functional consistency, on the growth of trust (Yang & Shen, 2018); (Silic & Ruf, 2017). Scholars such as (Pavlou, 2003), (Gefen et al., 2003), (Wu & Chang, 2005), and (Guinalı & Flavia, 2006) have explored the significance of trust and its function in online transactions and purchasing behavior to attain desired results. (Talwar et al., 2020) discovered that perceived information and service quality have a positive impact on initial trust, whereas perceived ambiguity and perceived asset specificity had a negative impact on early trust.

Trust is included in the TAM in a number of distinct contexts. The results of earlier research suggest that trust influences how simple something is thought to be to use. When it comes to examining initial trust in the context of e-commerce, the theories that are most commonly used as a theoretical basis are UTAUT, (Venkatesh et al., 2019) (Davis & Davis, 2015), TAM (Gefen et al., 2003), and DOI, Turner, Ralph. (2007). Guinalı & Flavia, (2006), Four components make up this theory, according to (Venkatesh et al., 2003): the expectation of effort, the expectation of performance, the impact of social factors, and the traits that promote communication.

**2.1 Perceived ease of use**

"The degree to which a person believes that using a specific system would be free of effort" is how perceived ease of use is defined. People's propensity to think that utilizing a new technology will be simple is known as perceived ease of use (Davis & Davis, 2015). (Sarkar, Chauhan, & Khare, 2020) asserts that increasing the perceived ease of use can lessen the difficulties that any technology presents. Perceived ease of use" refers to how well a system functions and how little additional work, expertise, or skill is needed from users, (Yang & Shen, 2018) & (Yang & Shen, 2018), (Gefen et al., 2003), (Jo, 2022) asserts that despite diligent implementation efforts, new technologies that do not support people while they carry out their duties are less likely to be well-accepted. Additionally, people must be capable of using any technology correctly even if there is a small probability that they may make mistakes because this affects their trust in that technology, (Zhou et al., 2010) in our case the chatbot. (Chung et al., 2018) claim that by highlighting perceived ease of use, service providers can swiftly remove hesitancy in utilizing Internet-based services.

An increase in perceived ease of use is correlated with an increase in trust. Studies tend to use these two terms interchangeably since the TAM and UTAUT models explain perceived ease of use as effort expectancy, (Gefen et al., 2003), T. Mahara et al, (2021), (Yau et al., 2021).

The DOI theory states that customers' attitudes toward using new technology affect how they behave with it. Complexity, the antithesis of perceived ease of use, is one of the technology-related aspects of the DOI theory, Mostafa & Kasamani, (2021), Park, Eunil. (2019).

Hence it is anticipated that apparent ease of use would increase initial trust in chatbots. In light of this, we propose the following hypothesis:

***H1:*** *Perceived ease of usage has a significantly positive impact on trust to use chatbot*.

**2.2 Perceived Compatibility**

Compatibility was described by Moore, G.C. and Benbasat, (1991) as "the extent to which an innovation is viewed as being consistent with the current values, needs, and prior experiences of potential adopters." There is strong evidence from studies on both mobile banking (Koenig-lewis et al., 2009) and internet banking (Sundar, 2020) (Ali, 2019) that consumers' expectations of how well two systems work together significantly impact their propensity to embrace and utilize the two systems. Consistent with the domain-oriented integrity (DOO) theory Turner, Ralph. (2007).; (Li, Zhang, & Shim, 2010), compatibility may affect consumers' first faith in online merchants.

In addition, research on the adoption of mobile banking (Koenig-lewis et a, 2009) and internet banking (Williams, 2014) indicated that customers' views of the products' usefulness and usability were positively affected by their perceptions of compatibility. People tend to adopt innovations more quickly if they fit in with their lifestyle. Turner, Ralph. (2007). stated. The public is more likely to embrace innovations that are in line with people's values, which is why compatibility is crucial in the DOI. While working together in 1982, (Hallenges, Brown, & Olson, 2001),(Sundar, 2020) state that compatibility is an important factor in building trust in services early on.

If you want people to trust and adopt new technologies quickly, compatibility is key (Singh & Sinha, 2020). Users' trust in mobile banking services is boosted by interoperability, as stated by (Lee, Kozar, & Larsen, 2016),because of this, the level of compatibility between chatbots and systems is likely to affect people's trust in chatbots.

***H2****:* *Perceived Compatibility has a significantly positive impact on trust to use chatbot*.

**2.3 Performance expectancy**

Performance Expectancy refers to an individual's belief in the effectiveness of implementing a particular program in enhancing their job performance. (Venkatesh et al., 2003), People expect that when they use online technology, it will aid them with certain activities like discovering what they need, making easy payments, and more, according to (Yang & Shen, 2018). Moreover, other studies have demonstrated that people's trust in new technology is initially impacted when they use it and get its benefits. Previous studies have demonstrated a high association between initial trust and performance expectancy in the digitalization sector Oliveira, Tiago & Thomas (2014). Consequently, we contend that a key element of chatbot startup is performance expectation.

Performance Expectancy (PE), also known as Expectation of Performance (PE), is defined as "the degree to which the user expects that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003). (Gefen et al., 2003),(Gefen et al., 2003),(Nguyen, Chiu, & Le, 2021) assert that chatbot services have the potential to significantly improve user experience. They are more likely to be used again by users who find them useful for online transactions, informational purposes, prompt responses, and useful solutions. Three categories of German chatbot users—those who use them for transportation, at home, and in the healthcare sector—were surveyed by researchers (Gabrielova & Buchko, 2022) using the UTAUT paradigm. Regarding AI goodies, it was discovered that performance expectancy was a significant factor in determining behavioral intention and usage behavior. The proportionate benefits that the chatbot system offers could be offset by users believing it to be overly complicated and cognitively taxing. Effort expectation is the factor that defines the extent to which the chatbot system aids the user in accomplishing tasks with more success and efficiency. Users can enhance their productivity by reallocating the time and effort they save towards other work-related assignments.

***H3****:* *Performance expectancy has a significantly positive impact on trust to use chatbot*.

**2.4 Social influence**

Social influence, according to the UTAUT (Venkatesh et al., 2003), is "the degree to which an individual perceives how important it is for others to believe he or she should use the new system." According to (Yau et al., 2021), these attitudes will influence consumers' trust in and adoption of new technology. According (Mostafa & Kasamani, 2021), one of the most essential variables in generating confidence in a product or service is the level of social support it receives. This component aids in the expression of various points of view regarding the dependability, compatibility, and utility of a product or service, which in turn assists prospective purchasers in deciding whether or not to utilize that product or service (Gabrielova & Buchko, 2022).

According to (Yau et al., 2021), social impact influences customers' trust in online channels. Furthermore, empirical research by (Akhter, Dwivedi, Kumar, & Kumar, 2017) discovered that social impact is vital for establishing customers' trust. As a result, it was realistic to expect the chatbot to gain trust through social influence at first.

It is described as "the degree to which an individual perceives that it is important that others believe he or she should use the new system" by (Venkatesh et al., 2003). According to the theory of reasoned action (TRA), people a person knows might have an effect on their mood, whether positive or bad (Fishbein and Ajzen, 1975).

The subjective norm in technology adoption refers to an individual's belief that their social circle, including friends and superiors, influences their usage and adoption behavior (Granic & Marangunic, 2015) (Taylor and Todd, 1995). A user is required to follow subjective standards, also known as social influence, which are informal rules agreed upon by the user and social influencers. It is considered that the strength of a person's behavioral intention is strongly tied to the social impact of their peer group.

Consumer attitudes and behaviors are heavily influenced by social contacts, according to Bearden et al. (1989). (Hallenges et al., 2001) define social influence as the extent to which individuals of a social network influence the attitudes and actions of their peers. (Koufaris & Hampton-sosa, 2004),underlined the importance of maintaining a positive self-concept, having accurate perceptions of reality, and responding correctly in their discussion on social influence. They also emphasized the need of making social relationships. Many people seek advice from their social networks when opting to upgrade their technology, and some have discovered that the perceived social pressure of significant others makes a difference.

According to (Fagih, 2019), social influence has a favorable effect on people's intentions to adopt Internet services based on trust. Importantly, (Gefen et al., 2003) noted that peer observation has a substantial impact on consumer decision-making and that consumers of allegedly socially unacceptable innovations may be compelled to withdraw from their social circle in the absence of sufficient social support.

***H4:*** *Social influence of the customer significantly influences the trust on chatbot.*

**2.6 Chatbot usage intention**

Consumers' perceptions on specific technologies are significantly connected with their intention to engage in trust-related actions, according to previous research. Trust is essential for chatbot adoption. Additionally, people are more likely to trust those they see as trustworthy and honest (Kaabachi, Mrad, Leary, Mrad, & Leary, 2019), The significance of trust in enhancing customer relationships with new technologies has been highlighted in various research on technology adoption (Asadi, Abdullah, Safaei, & Nazir, 2019).

Furthermore, additional research by (Kaabachi et al., 2019) has verified that consumers' intentions to utilize cutting-edge technologies, such as online shopping and mobile banking, rely on their perceptions of this new technology being trustworthy. In this way, (Singh & Sinha, 2020) highlighted that a customer's willingness to adopt new technologies is greatly influenced by his level of trust. Our research demonstrates that the degree to which consumers initially trust internet businesses determines their propensity to use chatbots developed by those organizations.

As per (Venkatesh et al., 2003), behavioral intention (BI) is a good indicator of a person's actual usage behavior. BI is described as "the strength of one's intention to perform a specified behavior". It would be challenging to gauge real system usage for services chatbots because they are a relatively new technology type that is still in the adoption stage. (Fishbein and Ajzen, 1975.

***H5:****Chatbot initial trust has a significantly positive influence on customer usage intention.*

**2.7 Customer loyalty**

The "new customer in 2022" anticipates being able to contact a business at any time, from anywhere, using any channel, and doing so with less effort. In today's digital world, when companies need to be available at all times, improving the customer experience is more important than ever.

According to (Mostafa & Kasamani, 2021) and (Fagih, 2019), analyzing customer loyalty in the context of the quickly expanding and changing digital world is fascinating. Due to heightened rivalry and emerging technologies, businesses are continuously facing challenges in luring and keeping customers (Chung et al., 2018). Chatbots are a potential answer to the issues of bad customer service and digitization. Increasing customer engagement by offering an extra avenue of communication to visitors. Quick responses to queries or grievances from clients help them feel understood and appreciated (Fagih, 2019). Chatbot use fosters consumer confidence, which in turn boosts customer loyalty.

For decades, customer loyalty has been seen as crucial to business success. Consumer loyalty is the extent to which a consumer maintains a loyal attitude and behavior toward a particular business in the face of alternatives from other suppliers (Fornell, 1992). Customers that consistently make repeat purchases are highly valued by many businesses. The expenses associated with acquiring new customers and keeping hold of current ones fluctuate significantly. (Shawar & Atwell, 2014) also discovered that a repeat customer guarantees a greater average customer value. Despite this, as a result of technological advancements and online competition, the best way to accomplish this goal has evolved throughout time. Because of this, improving the customer experience is more crucial than ever in the digital age. This is because companies have a need to remain accessible at all times (Kaabachi et al., 2019).

***H6:*** *Chatbot initial trust has a significantly positive influence on customers loyalty to use chatbot.*

**2.8 Customer engagement**

Customer engagement can improve organizational performance and eventually lead to the development of a lasting business-customer connection (Yau et al., 2021). "the level of customers' motivational, brand related, and context-dependent state of mind characterized by specific levels of cognitive, emotional and behavioral activity in brand interactions” is what is meant by customer engagement. In addition, client engagement was defined by (Koenig-lewis et al., 2009) as "mechanics of a customer's value addition to the firm, either through direct or/and indirect contribution." Numerous customer online engagement behaviors, such as social interactions, frequent website visits, as per (Jenneboer & Herrando, 2022), there are several ways in which word-of-mouth recommendations, reviews, knowledge sharing/storage, blogging, customer assistance, and legal action can greatly impact the brand.

According to (Nguyen et al., 2021), customers who are confident in a company's offerings are inclined to engage with it favorably on the internet, increasing the possibility that they will end up as brand ambassadors. As such, customer involvement may follow. Furthermore, research by (Li et al., 2010) demonstrated that when consumers have faith in the social media brand communities' context, they feel safer and are more engaged in the activities of the communities. Additionally, when two parties trust each other, interaction is more likely (Fagih, 2019). This study aims to determine whether consumers' early trust in chatbots might result in higher brand engagement.

***H7:*** *Chatbot initial trust has a significantly positive influence on customer engagement*

1. **Methodology:**

Data were collected from students of selected higher education institutes through structured questionnaire, using simple random technique. A total of 294 survey replies were gathered throughout the eight-weeks survey period between March to May 2023. After deleting 23 responses as they were incomplete, we had 271 responses left for our data analysis. List of constructs, Description and source of measurement scale are listed in table I, Reliability of each construct, among those Performance expectance, social influence, Chatbot initial trust, Chatbot usage intention loaded as more than 0.8, However all the constructs are loaded more than threshold value as per (Hair et al., 2010).

*Table:1 Sources of Measurement Scale*

|  |  |  |
| --- | --- | --- |
| *Name of the Construct* | *Operational Definition* | *Sources of Measurement scale* |
| Compatibility | The degree to which a novel concept or innovation conforms to the beliefs, requirements, and prior experiences of those who might embrace it is known as perceived compatibility | Turner, Ralph. (2007)., (Koenig-lewis et al., 2009); (Singh & Sinha, 2020) |
| Perceived ease of use | The propensity for people to think that a new technology would be simple to use is known as perceived ease of use. | (Davis & Davis, 2015). |
| Performance expectancy | The degree of assurance exhibited by an individual that the execution of a particular activity will result in enhanced work performance. | (Venkatesh et al., 2003) |
| Social influence | An individual's sense of how strongly others think they should utilize the new method. | (Venkatesh et al., 2003) |
| Chatbot initial trust | The establishment of trust at the outset of a relationship is not contingent upon prior experiential interactions but rather relies on the presence of institutional cues. | Hallenges et al., (2001),McKnight et al. (1998) |
| Chatbot usage intention | In the context of Chatbot usage intention. The term "intent" pertains to the specific objective or purpose that a customer has in mind while formulating a query or comment. | Hao-En, Chueh, (2021) |
| Customer engagement | The amount of intrinsic drive varies according on surroundings and brand. Different levels of mental, emotional, and behavioral engagement with brand interactions characterize this psychological condition. | (Davis & Davis, 2015) Hollebeek (2011)  Pansari and Kumar (2017) |
| Loyalty | Loyalty defined as, a deeply held commitment to reusage of a specific service. | Oliver (1999)  Kumar et al., (2013) |

**3.1 Conceptual Model:**

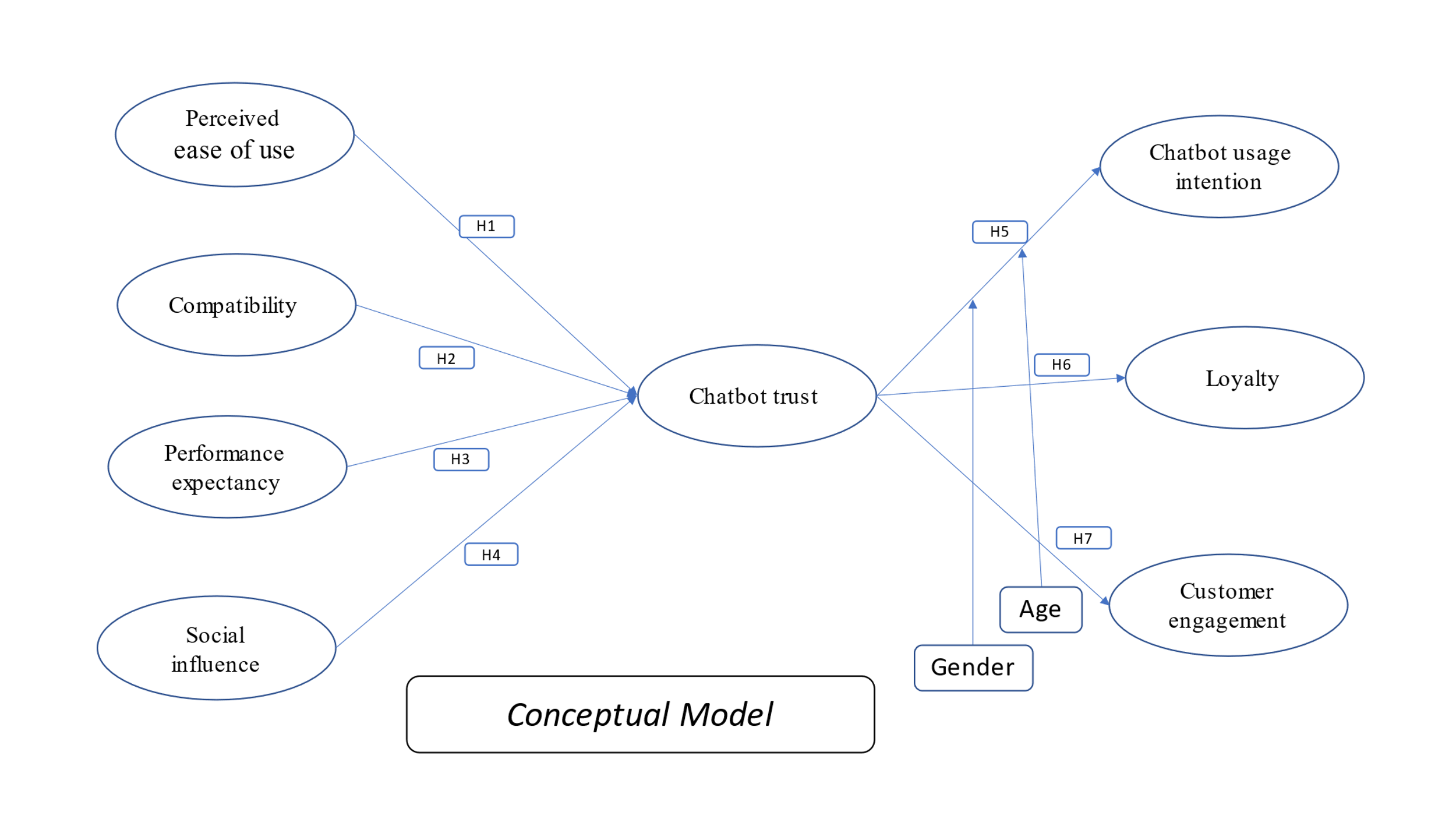
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Fig:1 Conceptual Model

1. **Data Analysis & Interpretation:**

PLS-SEM is a statistical technique that does not rely on parametric assumptions. In contrast to covariance-based structural equation modeling. This method is deemed appropriate once the objective is to evaluate the predictive capacity of a model. In this research emphasis on predictive capacity of antecedents of chatbot trust how it interns chart bot intention, loyalty and customer engagement. Hence, the partial least squares (PLS) method has been applied in this study, and the testing and measurement of our structural models was carried out with the aid of the Smart PLS 3.2 software (Fig-2). We carried out a confirmatory factor analysis, also known as a CFA, to ensure the validate and establish the reliability of the measurement model.

*Table:2 Cronbach’s α, AVE*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Construct Name* | *Label Name* | *Cronbach’s α* | *CR* | *Average variance extracted (AVE)* |
| Compatibility | CM | 0.773 | 0.894 | 0.741 |
| Perceived ease of use | PU | 0.765 | 0.799 | 0.615 |
| Performance expectancy | PE | 0.816 | 0.891 | 0.680 |
| Social influence | SI | 0.807 | 0.869 | 0.731 |
| Customer engagement | CE | 0.846 | 0.813 | 0.779 |
| Chatbot initial trust | CT | 0.841 | 0.897 | 0.686 |
| Chatbot usage intention | CI | 0.723 | 0.798 | 0.694 |
| Loyalty | L | 0.720 | 0.813 | 0.653 |

To assess internal reliability, Cronbach's alpha, and composite reliability (CR) were employed. Each construct's Cronbach's and CR values were higher than the acceptable threshold of 0.7, the constructs are, Compatibility (0.773), perceived Usage (0.765), Performance expectancy (0.816), Social influence (0.807), Customer engagement (0.846), Chatbot initial trust (0.841) chatbot intention (0.723) and loyalty (0.720) All the constructs were loaded as more than threshold value, as per (Dijkstra, 2015) and, Hair et al., (2017). Discriminant validity was successfully established, as indicated by the fulfillment of the Fornell-Larcker criterion. Subsequently, the confirmation of the measurement model's convergent validity was established by assessing the factor loading value and the average variance extracted (AVE) values (Table1) for each item and construct, respectively. All the AVE values more than 0.50 (Hair et al., 2019).

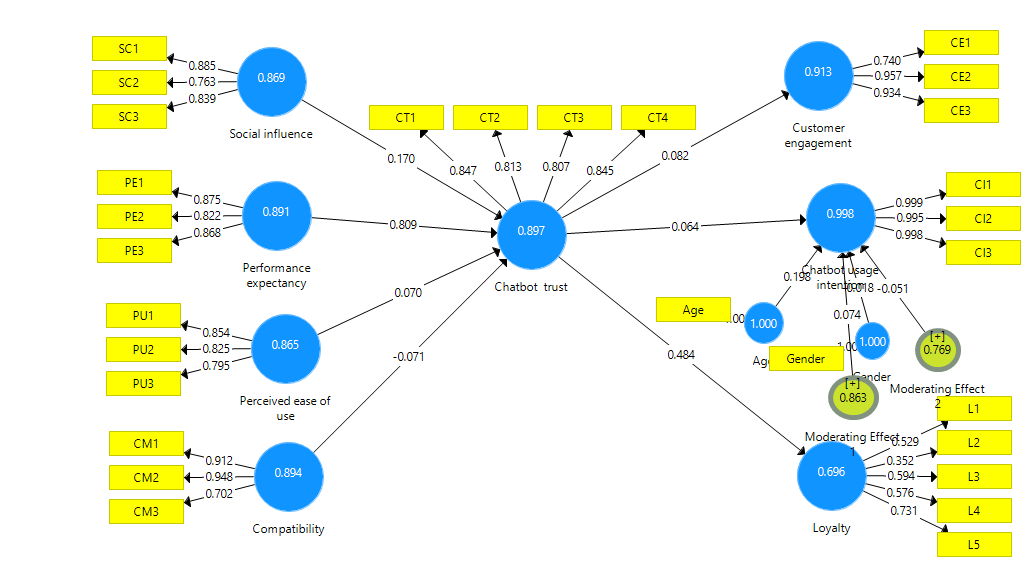
**4.1 Measurement model result:**

Fig:2 PLS-Structural equation Measurement model result

**4.2 Path Coefficients**

**4.2.1 Mean, STDEV, T-Values, P-Values**

*Table:3 Mean, STDEV, T-Values, P-Values)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Construct | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values | Results  Supported  YES/NO |
| C T\_ -> C I\_ | 0.064 | 0.072 | 0.064 | 0.998 | 0.001 | YES |
| C T\_ -> C E\_ | 0.082 | 0.077 | 0.103 | 0.797 | 0.003 | YES |
| C T\_ -> L | 0.484 | 0.498 | 0.051 | 9.552 | 0.000 | YES |
| C\_ -> C T\_ | 0.071 | 0.073 | 0.043 | 1.649 | 0.231 | NO |
| P U\_ -> C T\_ | 0.070 | 0.075 | 0.049 | 1.434 | 0.002 | YES |
| P E\_ -> C T\_ | 0.809 | 0.807 | 0.042 | 19.078 | 0.000 | YES |
| S I -> C T\_ | 0.170 | 0.169 | 0.068 | 2.514 | 0.012 | YES |
| G -> C I\_ | -0.018 | -0.016 | 0.067 | 0.269 | 0.004 | YES |
| A -> CI\_ | 0.198 | 0.189 | 0.029 | 6.844 | 0.000 | YES |
| Moderating Effect 1-  A -> C I\_ | 0.074 | 0.067 | 0.112 | 0.664 | 0.001 | YES |
| Moderating Effect 2-  G -> C I\_ | -0.051 | -0.054 | 0.038 | 1.346 | 0.179 | NO |

**4.2.2 Results of R2:**

*Table:4 R Squar and R Square Adjusted*

|  |  |  |
| --- | --- | --- |
|  | R Square | R Square Adjusted |
| Chatbot trust\_ | 0.902 | 0.900 |
| Chatbot usage intention\_ | 0.400 | 0.360 |
| Customer engagement\_ | 0.188 | 0.184 |
| Loyalty | 0.239 | 0.235 |

Table 4 indicates that seven out of the proposed six hypotheses were deemed valid, while one of the proposed hypotheses was deemed invalid. Chatbot trust has a significantly positive impact on the Perceived ease of use, Performance expectancy, social influence as indicated by the statistical analysis (H1: β = 0.637, t = 16.096, (H3: β = 0.637, t = 16.096, (H4: β = 0.637, t = 16. 096.Results of the study coincide with (Mostafa & Kasamani, 2021),Rania Badr (2021), (Lee et al., 2016),(Talwar et al., 2020) , (Fagih, 2019),and (Araujo, 2023). while Compatibility did not have a positive influence on Chatbot trust (H2: β = −0.007, t = 0.069). The results of the study are contradictory to the Adamopoulou & Moussiades, (2020),Chinedu Wilfred (2021).

When it comes to chatbots, trust plays a crucial role in influencing client engagement, loyalty, and usage intention. The conceptual model has also examined how respondent gender and age moderate the relationship between chatbot trust and customer usage intention. A customer's age significantly affects their inclination to use a chatbot, but gender had no discernible moderating effect, according to the study's results. It has evidence in studies by (Mostafa & Kasamani, 2021), (Etemad-sajadi, 2016).

The coefficients of determination (R2) for the three endogenous constructs (behavioral intention, perceived trust, and use) explained a significant proportion of the total variance (R2 = 0.4008 for chatbot trust, R2 = 0.902 for Chatbot usage intention, and R2 = 0.239 loyalty for use of chatbot). As per Cohen (1988) and Falk and Miller (1992), r2 value is more than 0.2 and is considered as substantial. The PLS-SEM results presented in Table 4 demonstrate that the proposed model was statistically significant.

**4.3** **Moderation Effect:**

The results revealed a significant moderating role of age group between (16-20), and (21-26) on the relationship between chatbot trust and chatbot intention to usage. The plot shows a steeper and positive gradient for when age of the responds increases. Thus, this shows that the impact of age in fostering collaborative chatbot intention is stronger when age group (21-26) as compared to age between (16-20). whereas there is significant moderating impact of gender in between chatbot trust and chatbot intention.

**4.4 Blind fold Values:**

*Table:5 Blind fold Values*

|  |  |  |  |
| --- | --- | --- | --- |
|  | SSO | SSE | Q² (=1-SSE/SSO) |
| **Chatbot trust\_** | 864.000 | 340.979 | 0.605 |
| **Chatbot usage intention\_** | 648.000 | 639.800 | 0.013 |
| **Compatibility** | 648.000 | 648.000 |  |
| **Customer engagement\_** | 648.000 | 611.025 | 0.057 |
| **Loyalty** | 864.000 | 799.902 | 0.074 |
| **Perceived ease of use** | 648.000 | 648.000 |  |
| **Performance expectancy** | 648.000 | 648.000 |  |
| **Social Influence** | 648.000 | 648.000 |  |

The coefficient of determination, sometimes known as the R2 value or the R2 value itself, is a statistical tool that measures the extent to which shifts in one variable may explain shifts in another one. The results presented in Table 5 demonstrate that the statistical measure provides valuable insight into the regression model. The value (R2), also known as the coefficient of determination (R2) value, indicates the proportion of the total variance in a dependent variable that can be attributed to the effects of the independent variables. It is referred to as "a measure of the model's predictive accuracy derived as the squared correlation between factors key affecting on chatbot trust and outcome of chatbot trust such as customer usage intention, loyalty and customer engagement along with moderators’ model has more predictive power " In other words, it is a correlation that has been squared. Finally, all the Hypothesis of the study are accepted except H3 i.e., Compatibility has a significantly positive impact on trust to use chatbot.

1. **Implications and Conclusion:**

The study emphasizes the significance of chatbot trust and its influencing factors, customer usage intention, loyalty and customer engagement, and the gender and age of the respondents considered as a moderator of the measurement models, according to the study. Consumers' opinions of brands that offer chatbots could shift depending on how positive or negative their experiences with chatbots are. Based on these results, businesses should develop plans to increase faith in messaging chatbots among customers.

The study also concluded that as age increases, educated young adults are more likely to use mobile messaging chatbots and have a favorable view towards the technology, according to one study. Messenger chatbots for mobile commerce will gain traction with consumers. Brands might view it as the future of e-commerce and an opportunity to expand into new markets. Since most consumers are avid internet users, social media, and messenger chatbots present excellent opportunities for commercial expansion. Companies are beginning to use chatbots for customer care, and brands stand to gain from messenger chatbots that make it easier for customers to find and buy things online.

The results of the research can be distilled into three fundamental aspects. Initial factors that significantly impact trust in a chatbot are its perceived utility, anticipated level of performance, and social influence. Furthermore, a strong correlation exists between chatbot trust and customer loyalty, intention to use the chatbot, and expectations of the customer. As a result, consumers develop confidence in AI chatbots that enhance the efficiency of the service sector. Second, the need of tailoring to individual customers is highlighted as a key factor in establishing credibility. Third, chatbots are a helpful tool for service providers to improve their relationships with the customers. Service industry and service providers and marketing directors benefit from more insights into the findings' major business consequences.

Further studies that incorporate a greater range of demographic variety would enhance the richness of this research topic. Nevertheless, the discoveries could serve as a foundation for the development and enhancement of efficient chatbots in the field of e-commerce. Additionally, they can serve as a valuable resource for managers, e-marketers, and chatbot architects in comprehending the association among trust in chatbots and customers' usage intention, loyalty, and customer engagement.

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