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Modeling Consequences of Brand Authenticity in Anthropomorphized AI-Assistants: A Human-Robot Interaction Perspective

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Abstract

The emergence of anthropomorphized AI Assistants can be linked to the advanced convergence of machine learning and natural language processing algorithms that could mimic human brains. Conversational-AI has led users to expect a sense of authenticity in their anthropomorphized assistants, more so, in a social context; which creates newer avenues for brands to better connect with their consumers. The present study aimed to develop a consequential model of AI-authenticity while drawing inferences from a series of human-robot interaction based theories, viz. "Computers as Social Actors" (CASA); "Media Equation" (ME), "Stereotype Content Model" (SCM) and "Socio-Cognitive Computational Trust" (SCCT) theory. Partial-Least-Square based Structural-Equation-Modeling was performed to examine the hypothesized framework; while, bootstrapping technique was utilized to better assess the effect of mediation analysis. The predictive relevance of the developed model was evaluated based on cross-validated redundancy approach. The findings designated 'Emotional Attachment', 'Customer Engagement' and 'Cognitive Trust' as major consequences of brand authenticity; while 'warmth' was accounted as a positive, but weak mediator in authenticity-cognitive trust relationship, due to probable effects of uncanny valley phenomenon. 'Cognitive Trust' remained a significant predictor of 'continuous usage intentions' and 'word-of-mouth' behaviour. The proposed AI-authenticity framework could aid underpinning effective customer retention and extension strategies.

Keywords: AI Authenticity; Anthropomorphized Assistants; Conversational-AI; Human-Robot interaction; Uncanny Valley

Introduction

As AI-powered technologies are adapting more and more anthropomorphic traits; tech-users are expecting a sense of authenticity in their behaviour especially in social context. Today, AI assistants such as "Amazon's Alexa", "Apple's Siri", "Google's Google Assistant", "Microsoft's Cortana" or "Samsung's Bixby" are programmed to think like humans-beings and imitate the intelligence of human conversations; however, due to such conversational-AI characteristics, these anthropomorphized agents are being evaluated on the grounds of authentic intelligence rather than artificial intelligence (Jago et al, 2022). Scates (2019, para 16) viewed that, "IT companies need to amplify this opportunity by providing AI Assistants that are truly conversational — not simply speech recognition technology that requires robotic interactions"; however, this will be possible only if tech-users could perceive their AI agent as genuine or authentic. Authenticity ensures attachment and trust especially in human-computer interactions (Mozafari et al., 2021). Metcalf et al (2019, p.4) pointed out that, "AI Assistants that mirror the conversational style of the user are more trustworthy and likable". In this line, IT companies are constantly involved in harnessing deep learning algorithms to improve the behavioural reactions of

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their AI agents (Thomas 2016). At this juncture, 'authenticity' becomes an even more crucial phenomenon for real-time character evolution of such anthropomorphized assistants. Despite the relevance and acclaimed prophecy of AI assistants; it somehow fell short in attracting desired customer preference. According to a joint report by Microsoft, Bain & Company, and IAMAI (2022), "even though AI adoption in India has grown at a steady pace over the past one year, it still remains an early-stage market"; the major reasons attributed for this were 'difficulty in integrating AI services' and 'challenges in building user experience". CGS Survey (2019) revealed that, "consumers' willingness to use AI as a go-to resource may be waning as they struggle to have meaningful or genuine interactions". The survey reported that, "71% of consumers said they would be less likely to use a product if it doesn't have human customer service representatives available; only 30% believe that AI assistants genuinely address the issues related to customer services". As per the PWC Consumer Intelligence Series Voice-Assistants Report (2018), "72% of the survey respondents used AI Assistants at least once; however, they did not utilize it for performing sensitive tasks". As AI-based humanoids lacks the capability to understand the nuances and subtleties of language, especially in a social context; they often fail to reflect the desired authenticity, warmth and humor crucial for gaining users' trust (AI Authenticity", n.d.). In 2018, NITI Aayog came out with a 'National Strategy for AI' and India emerged as one of the first countries to discuss about the relevance of artificial intelligence in addressing inclusion and social challenges. In its Discussion Paper (June 2018), NITI Aayog mentioned that, "weak AI reflects 'simulated thinking', i.e., a system which appears to behave intelligently, but doesn't have any kind of consciousness about what it's doing"; whereas, "strong AI describes 'actual thinking'; i.e., behaving intelligently, thinking as human does, with a conscious and subjective mind". To this, Scates (2019) pointed out that, "customers expect AI interactions to become more natural and conversational — and less command and response oriented". He suggested that, "brands interested in leading their markets have an opportunity to create dialogues between AI assistants and their customers that seems more authentic or genuine". In February 2021, NITI Aayog released an approach document - 'Responsible AI' specifying the importance of 'accountability of AI decisions'. The underlying facts highlight the significance of authenticity in anthropomorphized AI assistants and its crucial impact on consumer behaviour.

Review of Literature& Hypotheses Development

It is estimated that "AI has the potential to add USD 957 billion to India's economy by 2035" (Accenture India Report 2018); however, "AI systems appear to have prejudices in certain decisions and this gets amplified when used at a large scale" (NITI Aayog 2021). Capgemini Report (2019) said that, "ethical AI interactions drive customers trust- with AI systems that are seen as ethical have a 44 point Net-Promoter-Score (NPS) advantage over the ones that are not; however, 85% of the surveyed organisations in India encountered ethical concerns from the use of AI". Klein (2018) commented that, "this is the time to introduce authentic AI". He asserted that, "there is a need to change the narrative around AI technology to something meaningful and authentic that reflects the real-life challenges and opportunities that businesses are facing while dealing with customers".

Brand Authenticity and Emotional Attachment

Reeves and Nass's (1996) "Media Equation Theory" claims that, "people tend to assign human characteristics to computers and other media, and treat them as if they were real social actors; thus, assigning social roles, emotions and human characters to machines is an innate human

response". This human-robot interaction theory attributed perceived reality as a major reason behind people's such responses towards machines. Pentina et al (2023) viewed that, AI Brand authenticity has been found to develop favorable consumer attitudes and behaviour such as positive word of mouth, online engagement and emotional attachment. Pandey & Rai (2024) recognized a strong association between AI-authenticity and emotional attachment. Thomas (2016) suggested that, as anthropomorphized AI assistants have begun to react and interact with their users as a human-friend; brands are required to be more vigilant while improving their emotional responses. Shreenath & Manjunath (2020) pointed out that conversational AI do evoke a sense of emotions within human counterparts during interaction. De Cremer (2020) agreed that, tech-users get inspired by the anthropomorphic repertoire of their AI assistants which develops within them a palette of emotions unique to and ownable by that AI brand; however, they opined that, as AI works on imitation principle; it can't develop an authenticity to an extent that could generate deep level emotions; though, it can infuse surface-level emotions. While, Turkle (2007, p.504) evidenced that, "even very simple relational artifact in the form of a robotic creature can provoke strong feelings; at this point, it seems helpful to reformulate a notion of benchmarks that puts authenticity at center stage."

Based on the review (section 2.1); we hypothesize:

H1: Brand Authenticity has a significantly positive effect on Emotional Attachment

Brand Authenticity and Customer Engagement

Nass & Moon's (2000) "Computers as Social Actors" (CASA) theory describes how humans interact with robots or computer-controlled agents. The theory articulates that despite knowing the fact that machines do not have any feeling that might get hurt; tech-users often get engaged in a polite and face-saving behaviour with their computers that is normally expected in an human-human interpersonal communication. To this, Gambino (2021, p.9) commented that, "Contemporary users are likely to engage in long-term socializing with their technological devices". Kumar& Kaushik (2022, p.28) mentioned that, "A consumer that positively identifies with an authentic brand has a higher probability of engaging with such brand; as authentic brands enhance consumer's interactive and co-creative experiences". Researchers in marketing domain have recognized the relevance of brand authenticity in stimulating customer engagement (Vivek et al 2018; Grewal et al 2017); however, there is a dearth of studies which particularly dealt with authenticity of anthropomorphized AI brands. Eigenraam (2022) identified the positive role of authenticity towards online customer engagement. In the context of augment reality, Alimamy and Nadeem (2022) mentioned that, perceived authenticity drives customer engagement; which ultimately leads to an increased intention for value co-creation. Pentina et al (2023, p.6) asserted that, "while specifying relationships between human and non -human objects, such as brands; authenticity has been identified as an effective strategy to enhance consumer engagement".

Based on the review (section 2.2); we hypothesize:

H2: Brand Authenticity has a significantly positive effect on Customer Engagement

Brand Authenticity and Cognitive Trust

Castelfranchi and Falcone's (2010) "Socio-Cognitive Computational Trust Model" assumes that AI-powered virtual-assistant users develop trust towards it as they perceive it as competent (i.e., it is able to do what it ought to be) and predictable (i.e., it will actually do the expected task); because such realization make them believe that their agent

is honest, faithful and authentic. Long-term reliance on AI assistants requires a sense of trust in the assistant and its abilities; generating a need to align trust-oriented strategies (Metcalf et al 2019). Alimamy & Kuhail (2023) observed that, perceived authenticity in anthropomorphized AI Assistants triggers emotional and cognitive response among its users; that inherently develops trust among them for such non-human counterpart. Glikson & Woolley (2020) discussed about authenticity elements such as reliability and transparency (Arter 2020; Joo et al 2019) which depict AI Assistant's level of intelligence and capabilities responsible for shaping users' emotional and cognitive trust. Mori's (1970) "Uncanny Valley Hypothesis" states that "when robots appear close but not quite human, people tend to feel uncomfortable or even disgusted and stop eliciting emotional response". Researchers viewed that the uncanny valley phenomenon might be responsible for activating cognitive response as explained by pathogen avoidance mechanism (Ciechanowski et al 2019; Moosa & Ud-dean 2010). Studies often suggest that the visual stimuli of the uncanny valley in the form of conflicting perceptual cues might trigger contradictory cognitive response mainly due to psychological discomfort (Cheetam 2017; Ferry et al 2015; Elliot & Devine 1994); at this very point, tech-users develop cognitive trust as they perceive their AI Assistants as authentic.

Based on the review (section 2.3); we hypothesize:

H3: Brand Authenticity has a significantly positive effect on Cognitive Trust

Brand Authenticity, Warmth and Cognitive Trust

Brand Authenticity and Warmth

Brand Authenticity has been regarded as synonym of 'sincerity'; the brands which are perceived as sincere are believed to generate a feeling of 'warmth' (Yang & Hu 2022). Portal et al (2019, p.719) noted that, "Perceived warmth is felt when one perceives the brand to have good intentions and to act in the best interests of the consumer". Theyattributed 'warmth' as a significant mediator in authenticity-trust relationship. Researchers signified warmth traits with trustworthiness, friendliness, tolerance and morality and positively associated them brand authenticity (Yang et al 2023; Malone & Fiske, 2013; Porter & Kramer, 2011). Kervyn et al (2022) specified the significance of authenticity-warmth relationship especially in reference to anthropomorphized AI brands; however, they cautioned about the possible uncanny effect that may occur in the specified relationship. Joy et al (2022) observed that, AI authenticity particularly attract those customers who prefer the warmth of human-interaction. In the context of anthropomorphized AI Assistants, Kull et al (2021) designated authenticity as a personal and sincere and response rather than detached and distant; responsible for inducing a feeling of warmth among its users. Reinforcing Kull et al's (2021) view, Mariani et al (2023) agreed that, authenticity-initiated warmth enhances positive customer experiences that drives user-engagement towards AI-based conversational agents. Chua et al (2023) specified the role of an authentic brand in eliciting perceived warmth inherently responsible for strengthening customer's trust.

Warmth and Cognitive Trust

Cognitive trust refers to "when one believes that another can accomplish a given task" (Portal et al 2019). MacInnis (2012, p. 196) described warm brands as "those that are trusted to be sensitive to consumer's needs". Reinforcing Maclnnis's (2012) definition of warm brands; Portal et al (2019, p.720) explained that, "the use of the word 'trusted' is almost intuitive, demonstrating a close connection between warmth and trust". As emotion and cognition have been treated as distinct entities since old times; few researchers often today segregate

warmth from cognition treating the former as an affective element (Li et al 2022; Joo & Kim 2021). However, psychology-based researches evidenced that emotion is closely linked with cognition and have substantial influence on individual's perception and decision making (Tyng et al 2017; Ojha et al 2017; Harlé et al 2013). Fiske (2018) discussed about 'stereotype content model' and attributed 'warmth' as one of the significant drivers of social cognition. Kolbl et al (2020, p.349) quoted that, "by stereotyping the brand's ability (i.e., competence) and intentions (i.e., warmth), consumers are making cognitive assessments of brands that influence their perceptions and attitudes". They agreed that, brand authenticity do impact the warmth dimension and such brands are perceived to be trustworthy. In the literature, the stereotype content model has been effective to demonstrate simultaneous occurrence of affective and cognitive response mechanism especially during human-robot interaction (Seiler, R., & Schär 2021; Oliviera et al 2019). An in-depth review further designated 'uncanny valley' as one of the possible reasons for eliciting affection-driven cognitive response among AI users; particularly as a paroxysmal effect of cognitive dissonance (Weis & Wiese 2017; Wang et al 2015). Gidakovic & Zabkar (2022) asserted that, warmth and competence impressions represent cognitive evaluations forming customer trust.

Based on the review (section 2.3 & section 2.4 (2.4.1 & 2.4.2); we hypothesize:

H4a: Brand Authenticity has a significantly positive effect on Warmth

H4b: Warmth has a significantly positive effect on Cognitive Trust

H4c: Warmth mediates the relationship of Brand Authenticity and Cognitive Trust

Cognitive Trust and Word of Mouth

Consumer's cognitive trust "rests on the confidence in the ability and responsibility of the source; affecting their intention to spread positive word of mouth (WoM)" (Zhao et al 2020); however, cognitive distrust leads to negative WoM (Dalzotto et al 2016). In the context of anthropomorphized AI assistants, Mishra et al (2022) observed that, Individuals' WOM behaviour depends on their experiences and gratifications derived from the use of such technologies. Troshani et al (2021, p.8) noted that, "It is likely that consumers will develop a high level of cognitive trust in AI when they perform standard services, that is, trust is directly related with performance." Homan's (1958) social exchange theory states that, "trust bridges the reciprocity relationships between two parties"; referring to which, Chen et al (2023) quoted that, "willingness to maintain reciprocity relationships with others depends on the rational appraisals of others' performance (cognitive trust) which influence consumers' willingness to reciprocate, such as generating positive WOM". They confirmed the applicability of the stated reciprocation process too with the affective trust. Gupta & Savita (2023) recognized the importance of word of mouth in association with source credibility and acquired trust. Thus, Cognitive trust rests on the evaluation of sincerity, competence and honesty of the source (Chen et al 2023; Zainal et al 2017); which reflects the inherited attributes of authenticity (Yang & Hu 2022; Kull et al 2021).

Based on the review (section 2.5); we hypothesize:

H5: Cognitive Trust has a positive effect on Word of Mouth

Cognitive Trust and Continuous Usage Intentions

'Continuous Usage Intention' has been refereed as a crucial phenomenon to be studied for sustainable adoption of anthropomorphized AI Assistants (Jain

et al 2022; Chen & Park 2021). Researchers agreed that, trust elicited by cognitive mechanism leads to continuous usage intention among AI Assistant users (Choung et al 2022; Hu et al 2021). Gkinko & Elbanna (2023) noted that, cognitive trust has been critiqued for its limited focus on initial trust formation; however, it well contributes towards the formation of continuous usage intention behaviour especially among chatbot users. Tech-users form cognitive beliefs about AI assistants based on their usage experiences; subsequently, trust become a key factor influencing continuous intention of AI Assistant users (Pal et al 2021). Tsai & Hung (2019) observed that without having sufficient levels of cognitive trust, consumers may adopt switching behaviour. Meng et al (2022) attributed affective and cognitive trust as influential factors behind service users' continuous intention; however, Pi et al (2012) evidenced an insignificant relationship between affective trust and continuous intention; while specifying cognitive trust as relevant in the context. Idemudia & Raisinghani (2014) observed that, a high level of cognitive trust means that customers believe that a particular service is unbiased, truthful and honest. Recent studies evidenced the instrumental role of cognitive trust in AI assistants and its subsequent positive influence on users' continuous usage intention behaviour (Malodia et al 2023; Pitardi & Marriott 2021).

Based on the review (section 2.6); we hypothesize:

H6: Cognitive Trust has a positive effect on Continuous Usage Intentions

Research Framework

The study aims to explore the psychological and behavioural consequences of brand authenticity in anthropomorphized AI assistants while synthesizing the assumptions of prominent theories justifying human-robot interactions; which has become one of the crucial issues of discussion since the encroachment of AI into human domains. The research framework (refer figure 3.1) represents the explored hypothesized relationships pertaining to AI-authenticity. Based on Media-Equation (ME) theory, the framework depicted a direct relationship between authenticity and emotional-attachment; while 'Computers as social Actors' (CASA) theory was utilized to attribute authenticity as a predictor of customer-engagement. 'Socio-Cognitive Computational Trust' (SCCT) theory was used to examine the relationship between AI-authenticity and cognitive trust; whereas, 'Stereotype Content Model' (SCM) was to designate 'warmth' as a mediator in authenticity-cognitive trust relationship. In the process, the inferences from cause-effect mechanism of 'Uncanny Valley' (UV) paradigm were drawn upon to witness the explicit as well as implicit cognitive response towards AI-authenticity.

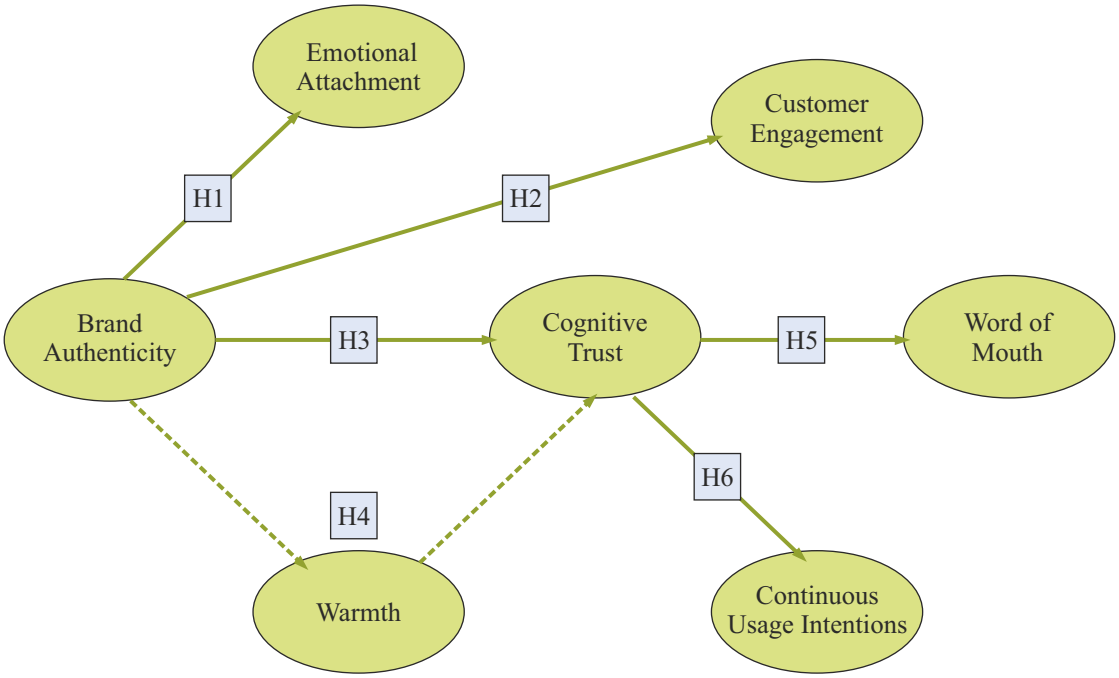

Figure 3.1 Research Framework

Research Methodology

The study is exploratory cum descriptive in nature. Purposive Sampling technique was employed; targeting AI Assistants' users belonging to "millennial generation" (i.e., "roughly born between the mid-80s to the early 2000s"). Tuzovic & Paluch (2018) pointed out that, "millennials are four times as likely to use AI assistants compared to baby boomers". The preliminary part of the questionnaire constituted the demographic characteristics of the respondents; apart fromthe details of anthropomorphized AI-Assistantsbrands being used by them. The secondary part of the questionnaire included the measures of seven reflective constructs comprising 20 items. The measurement parameters of the constructs were mainly adapted from established sources viz. 'Brand Authenticity' (Hernandez-Fernandez & Lewis 2019); 'Emotional Attachment'(Lee et al 2022); 'Customer Engagement' (Moriuchi 2019); 'Cognitive Trust' (Chen et al 2021);'Warmth' (Hu et al 2021);'Word-of-Mouth' (Mishra et al 2021) and 'Continuous Usage Intentions' (Hu et al 2021). The items of the constructs were customized to suit the context of the present study. The scale for each of the constructs (refer table 5.1) was finalized after examining the psychometric properties of the measurement model.

The data collection instrument comprised of structured and non-disguised "five-point Likert scale", ranging from "totally disagree" (1) to "totally agree" (5). Out of '634' respondents approached; '478' filled the questionnaire; however, subsequent to data cleaning, the responses of '423' participants were retained for data analysis. Sample Size was calculated with the help of Cochran's (1963) formula, which revealed that, the sample of 385 is adequate to give us 95% confidence interval. Amongst the respondents, 38.72% were users of Siri; 32.31 % preferredGoogle Assistant; 22.16% were users of Alexa; while 6.81% respondents preferred AI assistants belonging to other brands. As far as the demographic profile of the respondents was concerned, 58.32% fell in female category; while 41.68% of respondents fell inmale category. Further, 34.57% of the respondents belong to the age group of 18-26 years; while 65.43% fell in the age group of 27-36 years. MTurk platform was used

to collect the data particularly from pan India. The platform is considered reliable and has been used extensively in marketing researches (Cao et al 2022; Pal et al 2020).

Statistical Techniques

Partial Least Square based Structural Equation Modeling was performed to analyze the consequences of AI authenticity within the purview of the hypothesized model. As confidence limits are important for understanding the significance of relational intricacies; especially mediation effects (MacKinnon et al. 2004); a bootstrap estimation with 5000 resamples was usedto determine the significance of the hypothesized paths forming the structural model; while consistent PLS-SEM algorithm was utilized to examine the fitness of the obtained model. The statistical softwares used were SPSS version 20 and Smart-PLS version 4.0.

Data Analysis and Research Findings

The analysis of the developed AI authenticity model was executed in two phases. The measurement model was examined first; followed by the evaluation of the structural model.

Measurement Model

The factor-loadings of all the items were found high (>0.70) for their respective factors (Hair et al 2010) confirming the suitability of the indicators of the measurement scale However, one item each of 'Word of Mouth' and 'Emotional Attachment' were removed due to their poor factor loadings falling below 0.60 (Hair et al 2010). The definitions of prime constructs along with theirmeasurement items have been depicted in Table 5.1

Table 5.1 Prime Constructs: Definitions & Measurement Items

Prime Constructs	Definitions	Measurement Items
Brand Authenticity	"The extent to which a brand is faithful towards itself, true to its consumers, motivated by caring&responsibility and able to support consumers in being true to themselves" (Morhart et al 2015, p. 208)	BA1:My AI Assistant knows exactly what it stands for and does not promise anything which contradicts its essence and character. BA2:Considering its brand promise, my AI Assistant doesn't pretend to be something else. BA3:Considering its brand promise, my AI Assistant doesn't favour any specific group; moreover, it shows self-esteem. BA4:My AI Assistant possesses a clear philosophy which guides its brand promise.
Emotional Attachment	"Characterized by deep feelings of connection, affection and passion towards a brand" (Akgün et al 2013, p. 506)	EA1:I am very attached to my AI Assistant. EA2:I feel strong sense of belongingness to my AI Assistant.
Customer Engagement	"The level of customers' physical/virtual, cognitive, and emotional presence in their relationship with the exchange party" (Moriuchi 2019, p.491)	CE1:I feel that the engagement I have with myAI Assistant is very human-like CE2:The engagement I have with my AI Assistant is very meaningful CE3:I engage in a conversation myAI Assistant, whenever I need support in decision making.
Cognitive Trust	"A rational evaluation whether other party is trustworthy, competent and capable of handling the exchange" (Chen et al 2021, p.47)	CT1:I believe in the competence of my AI Assistant. CT2:I am confident about my AI Assistant's ability to advice. CT3:I can rely upon my AI Assistant's advice for making crucial decisions.
Warmth	"The degree of individuals' perception of AI Assistant'skindness, friendliness, and care" (Zhou et al 2019 p.964)	WT1:My AI Assistant cares about me. WT2:My AI Assistant is kind. WT3:My AI Assistant is friendly.
Word of Mouth	"Sharing excitement or intense feeling about a product or brand with others" (Maduku et al 2023, p.4)	WoM1:I will recommend this AI Assistant to my known ones. WoM2:I will encourage my friends to thisAI Assistant.
Continuous Usage Intentions	"The intention to continue using AI Assistant" (Hu et al 2021, p.6)	CUI1:It is likely that I will continue using this AI Assistant in the future. CUI2:If I could, I would like to continue using this AI Assistant. CUI3:I expect to continue using this AI Assistantin the future.

The Cronbach's alpha as well as composite reliability (rho_a and rho_c) values for all the constructs remained higher than 0.7 (refer table 5.2); thus, the reliability of the constructs was found satisfactory (Carmines & Zeller, 1988).

Table 5.2: Construct Reliability and Convergent Validity

Constructs	Cronbach's alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Brand Authenticity	0.950	0.950	0.949	0.824
Emotional Attachment	0.914	0.914	0.914	0.842
Customer Engagement	0.884	0.918	0.891	0.736
Cognitive Trust	0.923	0.924	0.923	0.750
Warmth	0.925	0.926	0.925	0.805
Word of Mouth	0.941	0.946	0.943	0.892
Continuous Usage Intentions	0.848	0.855	0.847	0.651

Content Validity was verified through existing literature related to AI brand-authenticity and subject expert's opinion. Further, the obtained CR and AVE values of all the constructs were found greater than 0.70 and 0.50 respectively; while, the CR values for each individual constructs remained greater than their respective AVE values (refer table 5.2) indicating sufficient convergent validity (Hair et al 2010).

As per the "Fornell-Lacker Criterion of discriminant validity", the "Square root of AVE" of each of the constructs were found greater than the "inter-construct correlations" formed by the respective constructs (refer 5.3), establishing sufficient discriminant validity (Hair et al., 2006).

Table 5.3: Discriminant Validity

Constructs	BA	CT	CUI	CE	EA	WT	WoM
BA	0.908						
CT	0.792	0.866					
CUI	0.286	0.417	0.807				
CE	0.625	0.584	0.215	0.858			
EA	0.854	0.697	0.322	0.630	0.918		
WT	0.392	0.502	0.179	0.324	0.353	0.897	
WoM	0.418	0.394	0.275	0.379	0.433	0.148	0.944

Structural Model

Structural model analysis was performed to assess the statistical significance of the hypothesized relationships in the developed conceptual framework. Bootstrapping resampling technique with 5000 re-samples was employed; as the procedure is considered effective in generating t-statistics, p values, standard errors & 95% bias-corrected confidence intervals; which facilitates examining complex behavioural relationships, especially the higher-order effects (Hair et al., 2021).

Multicollinearity test

As, our model is reflective in nature; within-construct collinearity was assessed. Hair et al (2019, p.17) suggested that, "Prior to assessing the structural relationships in PLS-SEM, collinearity must be examined to make sure it does not bias the regression results".

Table 5.4 VIF (Variance Inflation Factor) of measurement items

Latent Variables	Observed Variables	VIF
Brand Authenticity	BA1	4.301
	BA2	3.889
	BA3	4.134
	BA4	4.965
Emotional Attachment	EA1	3.435
	EA2	3.435
Customer Engagement	CE1	3.603
	CE2	3.314
	CE3	1.932
Cognitive Trust	CT1	3.808
	CT2	2.853
	CT3	2.620
Warmth	WT1	3.581
	WT2	3.234
	WT3	3.983
Word of Mouth	WoM1	4.530
	WoM2	4.760
Continuous Usage Intentions	CUI1	2.273
	CUI2	2.165
	CUI3	1.847

The results evidenced that, the "variance inflation factor" (VIF) values of all the measurement indicators remained <5 (refer table 5.4); indicating that, there was no issue of collinearity among the items of the underlying constructs (Hair et al 2019).

Model fit

The fitness of the structural model was evaluated based on "Standardized Root-Mean-Square-Residual" (SRMR); a comparative fit-index which assists examining the degree to which the expected correlation matrix (predicted by the model) deviates from the actual correlation matrix (observed from the sample). The SRMR value of the existing model is 0.048 which is less than the threshold value of 0.08; indicating a good fit of the model (Henseler et al., 2016).

Coefficient of determination (R^2)

The explanatory power of the structural model was assessed by evaluating the values of R^2 (coefficient of determination) which reflects the variance explained by the endogenous constructs. According to Cohen (1988) "R^2 values of 0.12 or less suggest a

small effect size; 0.13 to 0.25 values indicate a medium effect size; while values of 0.26 or more indicate a large effect size". In the obtained model, the R^2 values of endogenous variables 'Emotional Attachment' (0.91), 'Cognitive Trust' (0.67) and 'Customer Engagement' (0.39) remained greater than 0.26; highlighting their higher effect size; while, R^2 values of 'Warmth' (0.15), 'Word of Mouth' (0.15) and 'Continuous Usage Intentions' (0.17) fell within the range of 0.13 to 0.25 which indicates the moderate effect size of such constructs (refer table 5.5).

Table 5.5 R^2 and adjusted-R^2 values

Endogenous Constructs	R-square	R-square adjusted
Emotional Attachment	0.910	0.910
Customer Engagement	0.391	0.389
Cognitive Trust	0.671	0.669
Warmth	0.153	0.151
Word of Mouth	0.155	0.153
Continuous Usage Intentions	0.174	0.172

It is essential to note that, R^2 increases with every predictor added to a model; which often prompt over-fitting of data leading to misleading projections; while, the adjusted R^2 compensates for such error by including the effect of those predictors only that actually explain the variance in endogenous constructs (Dankers et al, 2019). Thus, adjusted-R^2 is used for evaluating any discrepancies or errors in the R^2 values and provides more pragmatic evidence regarding the explanatory power of a model. Here, the obtained values of adjusted-R^2 are very close to that of R^2 values (refer table 5.5); which confirms the accuracy of the predicted results.

Effect size (F^2)

The F^2 indicator was used to assess the elimination effect size of each of the predictor variables on the model's explanatory power. A large effect-size reflects the pragmatic relevance of a research finding; while, a small effect- size indicates the restricted applications in the context. Cohen (1988) prescribed that, "F^2 values higher than 0.02, 0.15, and 0.35 specifies small, medium, and large effect sizes respectively". The results (refer table 5.6) revealed that dropping of the exogenous variable of 'Brand Authenticity' will have high effect size on 'Emotional' Attachment', 'Cognitive Trust' and 'Customer Engagement'; while it will exert medium

Table 5.6 Effect Size (F^2 values)

Relationships between the Constructs	F-Square
Brand Authenticity- Cognitive Trust	0.674
Brand Authenticity- Customer Engagement	0.541
Brand Authenticity- Emotional Attachment	0.733
Brand Authenticity-Warmth	0.181
Cognitive Trust-Continuous Usage Intention	0.310
Cognitive Trust-Word of Mouth	0.183
Warmth-Cognitive Trust	0.232

The results designated authenticity as the most effective exogenous construct responsible for explaining the major percentage of the variances in the endogenous constructs of the model; while, the exogenous constructs 'Cognitive Trust' and 'Warmth' moderately contributes towards determining the explanatory power of the developed structural model. Overall, the obtained model qualified to possess substantial practical applications.

Cross-validated redundancy (Q^2)

The predictive relevance of the inner model was assessed by evaluating the cross-validated redundancy measure of the endogenous constructs. Stone (1974, p.116) explained Cross-validation as "a resampling approach that partitions the sample data and uses its subsets to test and train a model on different iterations". To this, Shanmugapriya & Subramanian 2015, p.1984) added that, "the approach uses the estimates of the path model to predict eliminated or omitted data points". Blindfolding procedure with an omission distance of 7 was used to obtain the Q^2 statistic i.e. '1-SSE/SSO' representing squared prediction error/squared observations.

Table 5.7 Q2 Statistics

Constructs	Q^2 (1-SSE/SSO)
Brand Authenticity	0.000
Cognitive Trust	0.476
Continuous Usage Intentions	0.102
Customer Engagement	0.268
Emotional Attachment	0.724
Warmth	0.114
Word of Mouth	0.125

The results (refer table 5.7) evidenced that, the Q^2 values (also known as Stone-Geisser's indicator) for all the endogenous constructs remained above the threshold value of zero; which confirms the predictive relevance of the structural model (Götz et al 2009).

Path Analysis of the Structural Model

The obtained structural model (figure 5.1) was tested in order to examine the hypothesized relationships pertaining to AI brand authenticity and its consequences under the lens of the mentioned (refer section 3) human-robot interaction based theories.

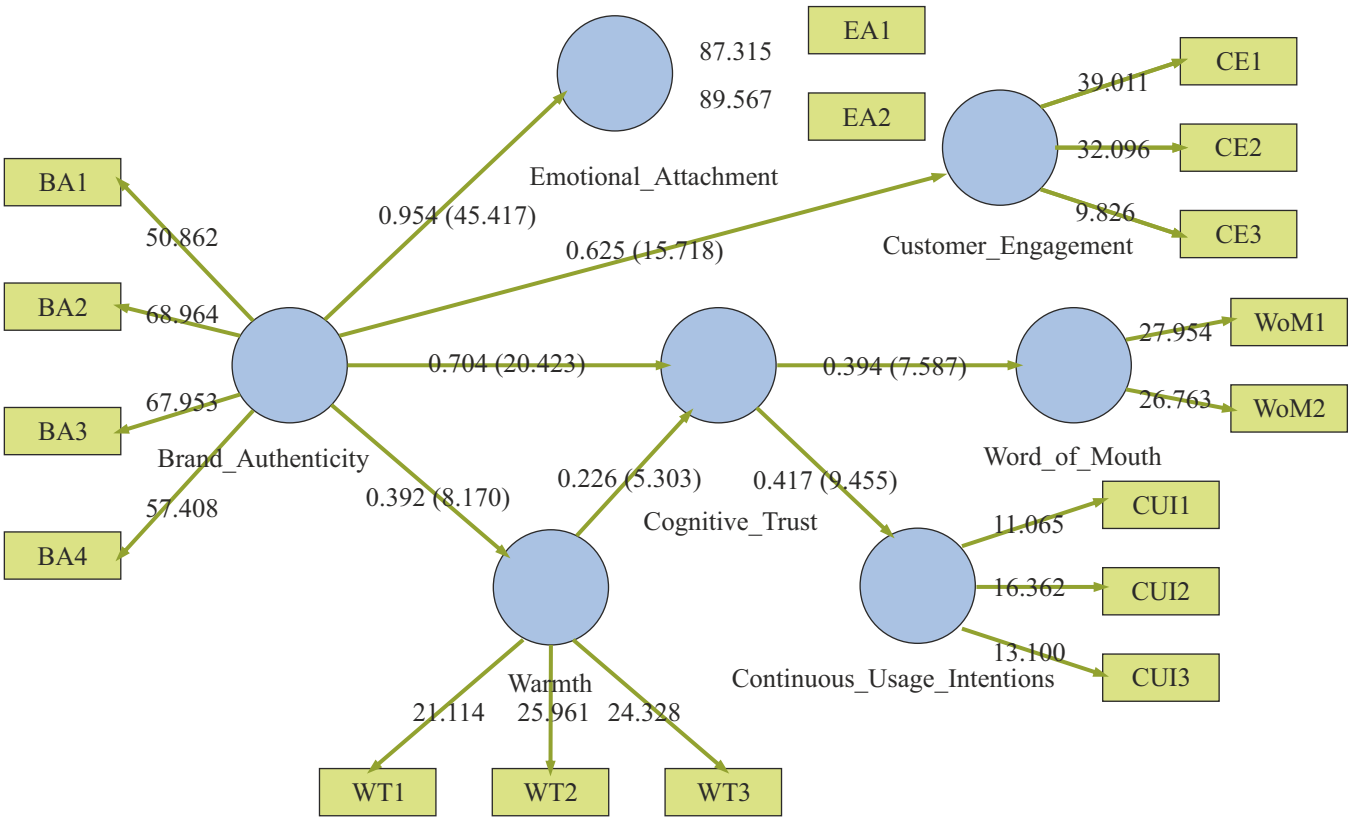

Figure 5.1 Structural Model: AI Brand Authenticity and its Consequences

The results have been depicted in Table 5.7:

Table 5.7: Path Coefficients

Relationships between the constructs	ß coefficients	t statistics	p value
Direct Effect			
Brand Authenticity → Cognitive Trust	0.704	20.423	0.000
Brand Authenticity → Customer Engagement	0.625	15.718	0.000
Brand Authenticity → Emotional Attachment	0.954	45.417	0.000
Brand Authenticity → Warmth	0.392	8.170	0.002
Cognitive Trust → Continuous Usage Intentions	0.417	9.455	0.000
Cognitive Trust → Word of Mouth	0.394	7.587	0.001
Warmth → Cognitive Trust	0.226	5.303	0.003
Indirect Effect			
Brand Authenticity → Warmth → Cognitive Trust	0.089	4.193	0.015
Total Effect			
Brand Authenticity → Coguitive Trust	0.793	34.506	0.000

Note: Estimates (β) = "standardized beta coefficient"; p Value = "two-tailed significance" at 95% C.I.

Hypotheses Testing

Based on the results depicted in Table 5.7, hypothesis testing was done. It was found that, 'Brand Authenticity' had a strong positive influence on 'Emotional Attachment' with β = 0.954 & p value = 0.000 at 95% CI; supporting *H1* hypothesis. The results attributed 'Brand Authenticity' as a significant predictor of 'Customer Engagement' with β = 0.625 & p value = 0.000 at 95% CI; supporting *H2* hypothesis. Further, a significant positive relationship was established between 'Brand Authenticity' and 'Cognitive Trust' with β = 0.704 & p value = 0.000 at 95% CI; thus, *H3* hypothesis was supported. The results designated 'Brand Authenticity' as a significant predictor of 'Warmth' (β=0.392; p=0.002) which in turn remained a significant predictor of 'Cognitive Trust (β=0.226; p=0.003); moreover, the results of mediation analysis witnessed an indirect effect of 'warmth' in authenticity-cognitive trust with β=0.089 and p value = 0.015; attributing 'Warmth' as a significant mediator in the specified relationship; thus, supporting *H4* hypothesis. The total effect of 'Brand Authenticity' on 'Cognitive Trust' was found as β=0.793 {(direct effect = β 0.704+ indirect effect = β 0.089)}. Even after accounting for mediation, a direct relationship between authenticity and cognitive trust' continued to exist; evidencing the occurrence of partial mediation. Further, 'Cognitive Trust'; remained a significant predictor of 'Word of Mouth' (β=0.394; p=0.001) and 'Continuous Usage Intentions' (β=0.417; p=0.000) at 95% CI; thus, supporting *H5* and *H6* respectively.

Discussion and Conclusion

The emergence of conversational-AI based anthropomorphized assistants has prompted frequent human-robot interactions raising customers' expectations to an unprecedented level; where, AI-users are evaluating such agents on the grounds of authenticity; more so, in a social context. Drawing inferences from a series of human-robot interaction based theories; the present study developed a mediation approach based structural model to witness the psychological and behavioural consequences of brand authenticity in anthropomorphized AI assistants. The critical analysis indicated 'Emotional Attachment' as the most prominent consequences of AI authenticity; confirming the application of media equation theory's reciprocity principle justifying human-robot interactions. 'Cognitive Trust' has been found as the second most effective consequence of AI-authenticity; evidencing that AI users also make rational evaluations of their agents' functional performance; thus, satisfying the assumptions of socio-cognitive computational trust theory. The mediation analysis attributed 'warmth' as a significant mediator in authenticity-cognitive trust relationship; highlighting the simultaneous occurrence of affective and cognitive response of users towards AI authenticity, which is verified in the stereotype-content model. However, it was observed that, warmth explained a little percentage of the afore-mentioned relationship; evidencing the probable influence of uncanny valley's cognitive conflict mechanism. The results signified 'Customer Engagement' as another effective consequence of authenticity; reinforcing the crucial assumptions of CASA (Computers as Social Actors) theory that, AI users get engaged with their anthropomorphized assistants in such a way as if they are involved in human-human interpersonal communication. The developed model designated 'emotional attachment' as the most effective consequences of authenticity; followed by 'cognitive trust' and 'customer engagement'. Further, 'Cognitive trust' in AI-assistants reinforces their users to continue using such anthropomorphized technology and spread positive word-of-mouth as well.

Implications of the Study

The study possesses theoretical as well as

managerial implications. It contributes to the literature a consequential model of brand authenticity specifically for anthropomorphized AI-powered technologies. The model is hybrid in nature; drawing inferences from a series of human-robot interaction based theories; which meta-analysts and others could interpret across studies pertaining to similar domain. As conversational AI-assistants are replicating more & more human traits; software developers are expected to augment their anthropomorphized propositions across authentic-intelligence parameters; which are highly embraced by tech-users during their interactions with such robotic agents. AI marketers are required to promote their AI brands along the lines of such authentic cues; which could strengthen human-AI emotional bond and drive customer engagement as well. The study evidenced that authenticity stimulates cognitive trust among AI-users; which could inherently be utilized by marketers in driving positive customer response; such as, continuous-usage-intentions and word-of-mouth behaviour. The study further cautions marketers with probable effects of uncanny valley which could suppress users' affective connotations instigating implicit cognition. The proposed AI-authenticity schema could assist underpinning robust customer retention and extension strategies.

Limitations of the Study

The findings of the study are constrained to the information furnished by the respondents which may suffer risk of biasness and human errors. As, AI companies were reluctant to provide the details of their customers; non-probability sampling was used, which warrants caution in generalizing results. Examining the target market of AI technologies, the study chose millennial customers as the sampling units; however, other groups may hold different opinions in the specified context. Lastly, the developed authenticity model is pertinent to conversational-AI application; thus, the findings may not be generalized to traditional-AI based technologies.

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