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Health employees' perceptions of ChatGPT use and digital health technology acceptance: a cross-sectional survey based on the UTAUT2 framework

Assit. Prof. Dr. İlknur Arslan Aras

ilknur.arslan@yuksekihtisas.edu.tr

Yüksek İhtisas Üniversitesi

Research Article

Keywords: ChatGPT, digital health, technology acceptance, UTAUT2, health workforce, Türkiye, cross-sectional study

Posted Date: February 24th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-8703155/v1

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Additional Declarations: No competing interests reported.

Abstract

Background:

Digital transformation in healthcare increasingly involves generative artificial intelligence tools such as ChatGPT. Understanding health employees’ perceptions and acceptance is critical for responsible implementation.

Methods:

A cross-sectional survey was conducted among 507 health employees working in private hospitals in Ankara, Türkiye. Data were collected using the ChatGPT Usage Purpose Scale and the UTAUT2 Technology Acceptance Scale. Descriptive statistics, t-tests, ANOVA, confirmatory factor analysis, and multiple linear regression were applied.

Results:

Participants reported above-moderate ChatGPT usage primarily for learning and development ($M = 3.51 \pm 0.48$), while overall technology acceptance remained moderate ($M = 2.76 \pm 0.49$). Technology acceptance differed significantly by education level and gender. Regression analysis showed that ChatGPT usage purpose, education level, and gender significantly predicted behavioral intention ($R^2 = 0.31$, $p < 0.001$).

Conclusions:

Introduction

Digital transformation in healthcare has accelerated the diffusion of technologies ranging from electronic health records and clinical decision support systems to telehealth and mobile health applications. Adoption of such technologies is closely linked to improvements in service quality, efficiency, and continuity of care, yet successful implementation depends not only on infrastructure but also on users’ perceptions, motivations, and contextual conditions. Consequently, research on technology acceptance among health professionals remains essential for understanding how innovation is integrated into clinical and administrative workflows ((1, 2); (3)).

Among the theoretical approaches explaining technology adoption, the Technology Acceptance Model (TAM) emphasizes perceived usefulness and perceived ease of use as key determinants of behavioral intention (1). Building upon TAM and related frameworks, the Unified Theory of Acceptance and Use of Technology (UTAUT) consolidates major

determinants such as performance expectancy, effort expectancy, social influence, and facilitating conditions ((2). UTAUT2 further extends the model by incorporating hedonic motivation, price value, and habit, thereby offering a more comprehensive explanation of technology acceptance—particularly relevant when technologies are experienced as interactive, engaging, or identity-shaping tools rather than merely functional systems ((3)). In health contexts, UTAUT2 has been frequently used to explain adoption of mHealth tools and patient- or provider-facing digital solutions, highlighting the role of perceived benefits, usability, and contextual resources in shaping behavioral intention and usage behavior.

More recently, generative artificial intelligence—especially large language models such as ChatGPT—has emerged as a potentially transformative layer in digital health ecosystems. ChatGPT has been discussed as a supportive tool across a broad spectrum of health-related tasks, including summarizing information, facilitating patient education, supporting clinical documentation, and complementing decision-making under appropriate governance and ethical safeguards (4); (5); (6). At the same time, concerns have been raised about misinformation, bias, privacy, accountability, and the need for responsible deployment in clinical environments. Therefore, understanding health professionals' perceptions of ChatGPT and its relationship with broader digital health technology acceptance is both practically and theoretically important.

Empirical research on ChatGPT adoption has expanded rapidly, particularly in education and consumer contexts, with a growing number of studies applying UTAUT2 to explain intention and continued usage. Findings from UTAUT2-based studies suggest that performance-related perceptions, social influence, hedonic motivation, habit, and perceived accuracy may play varying roles depending on user group and context. However, evidence focusing specifically on health employees—who operate under higher stakes, stronger governance constraints, and more complex workflows—remains comparatively limited. In Türkiye, studies examining digital hospital systems indicate that sociodemographic characteristics can shape technology-related attitudes and usage patterns, suggesting the importance of contextualized analyses among health professionals (7)

Against this background, the present study evaluates health employees' perceptions of ChatGPT use and their attitudes toward digital health technologies within the UTAUT2 framework. By integrating a purpose-oriented ChatGPT usage scale with UTAUT2 dimensions, this study aims to clarify (i) how ChatGPT usage perceptions are distributed across sociodemographic groups, (ii) whether UTAUT2 dimensions vary by sociodemographic characteristics, (iii) the associations between ChatGPT usage purposes and UTAUT2 dimensions, and (iv) the predictive role of ChatGPT usage on behavioral intention/technology acceptance. Understanding these relationships may support more

effective and responsible digital transformation strategies, including training, governance, and design decisions tailored to health workforce needs.

Research Problem and Hypotheses

Research Problem: How are health employees' perceptions of ChatGPT use and their attitudes toward digital health technologies shaped within the UTAUT2 framework?

Accordingly, the hypotheses were formulated as follows:

- **H1**: There are significant differences in ChatGPT usage perceptions across health professionals' sociodemographic characteristics (e.g., gender, age, education).
- **H2**: There are significant differences in the mean scores of UTAUT2 subdimensions across health professionals' sociodemographic characteristics (e.g., gender, marital status, age, education).
- **H3**: ChatGPT usage subdimensions are significantly associated with UTAUT2 subdimensions.
- **H4**: ChatGPT usage has a significant effect on behavioral intention (within the UTAUT2 structure).

The proposed research model is presented in Fig. 1.

Methods

Study Design

This study employed a quantitative, cross-sectional survey design to assess health employees' perceptions of ChatGPT use and their attitudes toward digital health technologies within the UTAUT2 framework.

Setting and Population

The target population comprised health employees working in private hospitals in Ankara, Türkiye, including physicians, nurses/midwives, and other health personnel. According to the Ministry of Health Health Statistics Yearbook (2022), the number of health employees working in the private sector in Ankara was 15,419 (Table 1).

Inclusion and Exclusion Criteria

Inclusion criteria were:

1. actively working in a private hospital in Ankara (physician, nurse/midwife, or other health personnel),
2. aged 18 years or older,
3. at least one year of professional experience in the health sector,
4. prior awareness of ChatGPT or having obtained information about it, and
5. voluntary participation with signed informed consent.

Exclusion criteria were:

1. not actively practicing in the profession,
2. no awareness/knowledge of ChatGPT, and
3. incomplete or invalid questionnaire responses.

Sampling Strategy and Sample Size

A convenience sampling approach was used. Sample size was estimated at a 95% confidence level with a 5% margin of error using a standard finite population formula ($N = 15{,}419$; $Z = 1.96$; $p = 0.50$; $e = 0.05$), yielding a minimum required sample size of approximately $n \approx 375$. A total of 612 health employees were invited to participate. Of these, 545 responded (response rate: 89.1%). After excluding incomplete questionnaires and ineligible cases ($n = 38$), the final analytic sample consisted of 507 participants.

Data Collection Procedure

Questionnaires were distributed online after providing participants with standardized study information. Participation was voluntary, and informed consent was obtained prior to data collection. To minimize bias, data cleaning procedures were applied, including checks for incomplete entries and outlier screening.

Measures

The survey instrument consisted of two main scales and a sociodemographic form:

1. Sociodemographic Information Form: Collected data on age, gender, education, occupation, and work experience.
2. ChatGPT Usage Purpose Scale: Developed by (8) this scale assesses individuals' purposes of using ChatGPT. In this study, it comprised three subdimensions: Usage, Learning, and Development. Scale scores were computed as mean values, with higher scores indicating stronger endorsement of ChatGPT usage purposes.
3. Technology Acceptance Scale (UTAUT2): The UTAUT2 scale was used in its Turkish form (adapted/validated in prior work) and included core subdimensions consistent

with UTAUT2: performance expectancy, social influence, facilitating conditions, hedonic motivation, effort expectancy, price value, habit, and behavioral intention (3). Higher scores indicate more favorable acceptance-related perceptions.

Reliability and Validity

Internal consistency was assessed using Cronbach's alpha. Both scales demonstrated high reliability (ChatGPT Usage Purpose Scale $\alpha = 0.93$; Technology Acceptance Scale $\alpha = 0.95$). Construct validity was examined through confirmatory factor analysis (CFA). Fit indices indicated acceptable-to-excellent model fit for both scales

Statistical Analysis

Data analyses were conducted using SPSS for descriptive and inferential statistics and SEM/CFA tools (e.g., lavaan/jamovi) for measurement validation. The analysis plan included:

- Descriptive statistics (means, standard deviations, frequencies)
- Assumption checks: homogeneity (Levene test) and normality (Kolmogorov–Smirnov; Shapiro–Wilk; skewness/kurtosis)
- Univariate comparisons:
    - ANOVA for group differences (e.g., education level)
    - Independent samples t-test for gender differences
- Multivariate analysis:
    - Multiple linear regression to test predictors of technology acceptance/behavioral intention (education, gender, ChatGPT usage purpose) and to examine explained variance (R^2) and model diagnostics (VIF; Durbin–Watson).

All tests were evaluated at a significance level of $p < 0.05$.

Ethical Considerations

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Yuksek Ihtisas University Ethics Committee (Approval No:6 Date: 05/05/2025). Participation in the study was voluntary, informed consent was obtained from all participants, and anonymity and confidentiality of the data were ensured.

Findings

The majority of the 507 participants included in the study were aged between 30 and 39 years (44.4%). Female participants constituted 53.5% of the sample, while 46.5% were male. Regarding educational level, the vast majority of participants held a bachelor’s degree (80.9%), followed by those with an associate degree or lower (11.0%) and those with postgraduate education (8.1%). In terms of occupational distribution, 39.4% of the participants were technicians or technical staff, 18.9% were administrative personnel, 9.1% were physicians, 9.1% were nurses or midwives, and 23.5% belonged to other occupational groups. When work experience was examined, 32.7% of participants had five years or less of experience, 41.8% had 6–10 years of experience, and 25.4% had 11 years or more of experience (Table 1).

Table 1
Characteristics of the Participants

Variable	n	%
Age		
22–29	192	37.9
30–39	225	44.4
≥ 40	90	17.8
Gender		
Female	271	53.5
Male	236	46.5
Education		
Associate degree or below	56	11.0
Bachelor’s degree	410	80.9
Postgraduate	41	8.1
Occupation		
Physician	46	9.1
Nurse/Midwife	46	9.1
Technician/Technical staff	200	39.4
Administrative staff	96	18.9
Other	119	23.5
Work Experience		
≤ 5 years	166	32.7
6–10 years	212	41.8
≥ 11 years	129	25.4
Total	507	100.0

Descriptive statistics related to the ChatGPT Usage Purpose Scale and the Technology Acceptance Scale are presented in Table 2. Accordingly, participants’ overall tendency toward using ChatGPT was found to be above the moderate level ($M = 3.509$; $SD = 0.476$). Among the subdimensions, the mean scores of usage ($M = 3.522$), learning ($M = 3.512$), and development ($M = 3.502$) were very close to each other, indicating that participants primarily used ChatGPT for personal and professional development purposes.

In terms of the Technology Acceptance Scale, the overall mean score was found to be at a moderate level (M = 2.757; SD = 0.487). As shown in Table 2, the highest mean score among the subdimensions was observed in hedonic motivation (M = 3.491), indicating that participants enjoyed using ChatGPT. In contrast, the lowest mean scores were found in the price value (M = 2.722) and effort expectancy (M = 2.745) dimensions, suggesting a more cautious approach regarding cost and usage effort.

Table 2
Descriptive Statistics

Variable	N	Mean	SD
Usage	507	3.522	0.551
Learning	507	3.512	0.510
Development	507	3.502	0.495
ChatGPT Usage Purpose Scale	507	3.509	0.476
Performance expectancy	507	2.746	0.581
Social influence	507	2.769	0.570
Facilitating conditions	507	2.755	0.571
Hedonic motivation	507	3.491	0.573
Effort expectancy	507	2.745	0.557
Price value	507	2.722	0.643
Habit	507	2.751	0.526
Behavioral intention	507	2.833	0.641
Technology Acceptance Scale	507	2.757	0.487

Reliability analysis results of the scales used in the study are presented in Table 3. The overall Cronbach’s alpha coefficient of the ChatGPT Usage Purpose Scale was found to be 0.93, indicating a very high level of internal consistency. Among its subdimensions, learning (0.84) and development (0.85) demonstrated high reliability, while the usage subdimension showed an acceptable reliability level (0.69).

Similarly, the Technology Acceptance Scale exhibited a very high overall Cronbach’s alpha value (0.95), indicating excellent internal consistency. As shown in Table 3, the subdimensions of performance expectancy (0.75), effort expectancy (0.78), habit (0.71), and behavioral intention (0.74) demonstrated high reliability, whereas social influence (0.67), facilitating conditions (0.66), hedonic motivation (0.65), and price value (0.61)

were within acceptable reliability limits. Overall, both scales were considered reliable for use in this study.

Table 3
Reliability Analysis Results

Scales / Dimensions	Number of Items	Cronbach's Alpha
Usage	3	0.69
Learning	7	0.84
Development	8	0.85
ChatGPT Usage Purpose Scale	18	0.93
Performance expectancy	4	0.75
Social influence	3	0.67
Facilitating conditions	3	0.66
Hedonic motivation	3	0.65
Effort expectancy	5	0.78
Price value	2	0.61
Habit	4	0.71
Behavioral intention	3	0.74
Technology Acceptance Scale	27	0.95

According to the confirmatory factor analysis results, the ChatGPT Usage Purpose Scale demonstrated acceptable fit indices ($\chi^2/df = 2.560$; RMSEA = 0.084; CFI = 0.915; RMR = 0.056; SRMR = 0.059; AVE = 0.610), indicating good model fit and supporting the structural validity of the scale. Similarly, the Technology Acceptance Scale exhibited a very good model fit ($\chi^2/df = 1.195$; RMSEA = 0.079; CFI = 0.995; RMR = 0.069; SRMR = 0.071; AVE = 0.634). In particular, the high CFI value (0.995) and AVE values above 0.60 indicate strong construct validity for the scale (Table 4).

Table 4
Validity Analysis Results (CFA – 95% CI)

Scales	χ^2/df	RMSEA	CFI	RMR	AVE	SRMR
ChatGPT Usage Purpose Scale	2.560	0.084	0.915	0.056	0.610	0.059
Technology Acceptance Scale	1.195	0.079	0.995	0.069	0.634	0.071

The results of the variance homogeneity analysis indicated that the assumption of homogeneity of variances was satisfied for both scales. According to Levene's test results, p values were greater than 0.05 for both the ChatGPT Usage Purpose Scale ($F = 0.827$; $p = 0.438$) and the Technology Acceptance Scale ($F = 0.725$; $p = 0.485$), indicating equal variances across groups (Table 5).

Table 5
Homogeneity of Variance

Scales	Levene Statistic	p
ChatGPT Usage Purpose Scale	0.827	0.438
Technology Acceptance Scale	0.725	0.485

Regarding the normality of distribution, Kolmogorov–Smirnov and Shapiro–Wilk test results indicated p values greater than 0.05 for both scales, suggesting that the data approximated a normal distribution. Additionally, skewness and kurtosis values for the ChatGPT scale (-0.231 / -0.209) and the Technology Acceptance Scale (0.062 / 0.559) were within acceptable limits (± 1), supporting the use of parametric tests (Table 6).

Table 6
Normality of Distribution

Scales	Kolmogorov–Smirnov Statistic	p	Shapiro–Wilk Statistic	p	Skewness / Kurtosis
ChatGPT Usage Purpose Scale	0.053	0.126	0.099	0.074	−0.231 / −0.209
Technology Acceptance Scale	0.034	0.200	0.093	0.104	0.062 / 0.559

Since parametric test assumptions were met in the univariate analyses, ANOVA and independent samples t-tests were employed. According to the ANOVA results, a statistically significant difference was found only in the Technology Acceptance Scale, and this difference emerged across educational levels (Table 7). The t-test results revealed statistically significant gender-based differences in both ChatGPT usage purpose and technology acceptance variables (Table 8).

Table 7
Univariate Analysis Results (Technology Acceptance) – 1

Variable	N	Mean	F	p	Significant Difference
Education Level					
Associate degree or below	41	2.382	26.444	< 0.001	1–2; 1–3; 2–3
Bachelor’s degree	56	2.780			
Postgraduate	410	3.043			

Table 8
Univariate Analysis Results – 2

Scale	Variable	N	Mean	t	p
ChatGPT Usage Purpose	Gender – Female	271	3.678	9.268	< 0.001
	Gender – Male	236	3.315		
Technology Acceptance	Gender – Female	271	2.868	5.664	< 0.001
	Gender – Male	236	2.629		

In the multivariate analyses, multiple linear regression analysis was conducted. The results indicated that education level, gender, and ChatGPT usage purpose significantly affected technology acceptance ($p < 0.001$). Accordingly, having a bachelor’s or postgraduate degree had a positive effect on technology acceptance compared to having an associate degree or lower, male gender had a negative effect compared to female gender, and higher levels of ChatGPT usage purpose positively influenced technology acceptance. The regression model was statistically significant ($F = 55.974$; $p < 0.001$) and explained 30% of the variance. VIF values indicated no multicollinearity, and the Durbin–Watson statistic confirmed the absence of autocorrelation (Table 9).

Table 9
Multivariate Analysis Results

Variables	Std. β	t	p	VIF
Constant		5.776	< 0.001	
Education – Bachelor’s degree	0.300	6.392	< 0.001	1.595
Education – Postgraduate	0.373	7.964	< 0.001	1.592
Gender – Male	−0.085	−2.128	0.034	1.170
ChatGPT Usage Purpose	0.423	10.527	< 0.001	1.173
$F = 55.974$; $R^2 = 0.308$; Adjusted $R^2 = 0.303$; Durbin–Watson = 1.913; $p < 0.001$				

Discussion

The findings indicate that healthcare professionals use ChatGPT primarily for learning- and development-oriented purposes, with an above-moderate level of engagement (ChatGPT Usage Purpose Scale M = 3.509; SD = 0.476) (Table 2). This result is consistent with previous studies showing that generative artificial intelligence tools are increasingly adopted for information acquisition, learning support, and professional development in educational and health-related contexts(9). The emphasis on learning and development suggests that ChatGPT is perceived more as a supportive tool rather than a fully integrated clinical technology.

Despite the relatively high level of purpose-oriented use, overall technology acceptance remained at a moderate level (Technology Acceptance Scale M = 2.757; SD = 0.487) (Table 2). This finding aligns with the health informatics literature, which frequently reports cautious adoption of emerging digital technologies among healthcare professionals. Studies based on the Technology Acceptance Model and its extensions emphasize that acceptance in healthcare settings is shaped not only by perceived usefulness but also by concerns related to reliability, accountability, and professional responsibility (10)In this context, moderate acceptance may reflect the critical and risk-sensitive nature of healthcare work.

(11). Among the UTAUT2 subdimensions, hedonic motivation showed the highest mean score (M = 3.491) (Table 2). This suggests that participants generally found interacting with ChatGPT enjoyable and engaging. Prior research has shown that hedonic motivation plays an important role in encouraging initial engagement with digital technologies, particularly in non-mandatory usage contexts ((12)In professional settings, enjoyment and curiosity may act as facilitators of experimentation, even when full institutional adoption has not yet occurred.

In contrast, effort expectancy and price value yielded comparatively lower mean scores (M = 2.745 and M = 2.722, respectively) (Table 2). These findings indicate that participants may perceive barriers related to the time, cognitive effort, or cost associated with using ChatGPT. The UTAUT2 framework highlights both effort expectancy and price value as critical determinants of behavioral intention, especially in contexts where technology use is optional (13). For healthcare professionals, heavy workloads and the need to verify AI-generated information may increase perceived effort, thereby limiting acceptance.

Educational level emerged as a significant factor influencing technology acceptance. Participants with bachelor’s and postgraduate degrees reported higher acceptance levels compared to those with lower educational attainment (Table 7). This result is consistent with earlier studies suggesting that higher education is associated with greater digital

literacy, stronger self-efficacy, and more positive attitudes toward technological innovation (14) Individuals with advanced education may also be more accustomed to evaluating information critically, which could reduce uncertainty when interacting with AI-based systems.

Gender differences were also observed in both ChatGPT usage purposes and technology acceptance. Female participants reported significantly higher scores than male participants on both measures (Table 8). While findings on gender differences in technology acceptance are mixed, some studies suggest that women may place greater value on technologies that support communication, learning, and collaboration (15). Given the interactive and conversational nature of ChatGPT, such characteristics may enhance its perceived relevance among female healthcare professionals.

Multivariate regression analysis demonstrated that ChatGPT usage purpose, education level, and gender were significant predictors of technology acceptance (Table 9). Among these variables, usage purpose showed the strongest effect, indicating that individuals who actively use ChatGPT for functional and developmental reasons are more likely to exhibit higher acceptance of digital health technologies overall. This finding supports the assumption that experiential use strengthens acceptance through increased familiarity and perceived value. Similar conclusions have been reported in UTAUT-based studies, where behavioral intention is strongly influenced by actual use and perceived relevance (16).

Overall, the findings suggest that healthcare professionals are already engaging with generative AI tools such as ChatGPT, primarily for learning and development, while maintaining a cautious stance toward broader technological adoption. This highlights the importance of structured institutional strategies that address perceived effort, cost concerns, and reliability issues. Previous research indicates that targeted training and clear organizational guidelines can significantly enhance acceptance and responsible use of digital health technologies (17).

Conclusion

This study provides evidence that health employees exhibit above-moderate perceptions of ChatGPT use for practical and developmental purposes, while maintaining a moderate overall stance toward digital health technology acceptance. Both measurement instruments demonstrated strong reliability and validity, enabling confident interpretation of observed effects. Univariate findings show that technology acceptance differs by education level. and that both ChatGPT usage purpose and technology acceptance differ by gender. In multivariate analysis, ChatGPT usage purpose emerged as a substantial

predictor of technology acceptance/behavioral intention, alongside education and gender, explaining about 30% of the variance.

Overall, the findings support the view that experiential, purpose-driven interaction with generative AI tools such as ChatGPT may meaningfully relate to broader acceptance patterns of digital health technologies within the UTAUT2 framework. From a policy and management perspective, the results highlight the need for structured institutional approaches that reduce perceived effort, clarify value, and strengthen facilitating conditions to enable safe and effective digital transformation in healthcare settings.

Limitations

Several limitations should be considered when interpreting these findings. First, the study used a cross-sectional design, which limits causal inference. Although regression results indicate significant associations, longitudinal designs are necessary to determine whether increased ChatGPT usage purpose leads to higher technology acceptance over time or whether more technology-accepting individuals are simply more inclined to use ChatGPT.

Second, the sampling approach relied on convenience sampling and included health employees working in private hospitals in Ankara. Therefore, generalizability to public hospitals, other regions, or different healthcare systems may be limited. Institutional culture, digital infrastructure, and governance practices could influence UTAUT2 dimensions and ChatGPT perceptions differently across settings.

Third, the data were based on self-report measures, which may be subject to social desirability bias, recall bias, or common method variance. Although the scales showed strong psychometric properties future studies could incorporate objective indicators such as system usage logs, training participation, or observed workflow outcomes.

Fourth, while the model demonstrated adequate explanatory power ($R^2 \approx 0.31$), a substantial proportion of variance remains unexplained. Future research may improve prediction by incorporating additional variables relevant to healthcare contexts, such as perceived risk, trust, information accuracy concerns, organizational policy clarity, data privacy perceptions, and clinical accountability.

Finally, this study operationalized ChatGPT engagement through a usage purpose scale rather than direct measures of frequency, specific clinical use cases, or organizationally sanctioned usage. Subsequent research could differentiate between personal learning use, administrative documentation support, and clinical decision-adjacent applications to better map the boundaries of appropriate and effective adoption.

Abbreviations

AI
Artificial Intelligence
CFA
Confirmatory Factor Analysis
SEM
Structural Equation Modeling
TAM
Technology Acceptance Model
UTAUT2
Unified Theory of Acceptance and Use of Technology 2

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Yüksek İhtisas University Social and Human Sciences Research Ethics Committee (Approval No: Form-1). Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Availability of data and materials

The anonymized datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors’ contributions

IAA designed the study. IAA collected the data. IAA performed statistical analysis. IAA drafted the manuscript. All authors reviewed and approved the final manuscript.

Acknowledgements

Not applicable.

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Figures

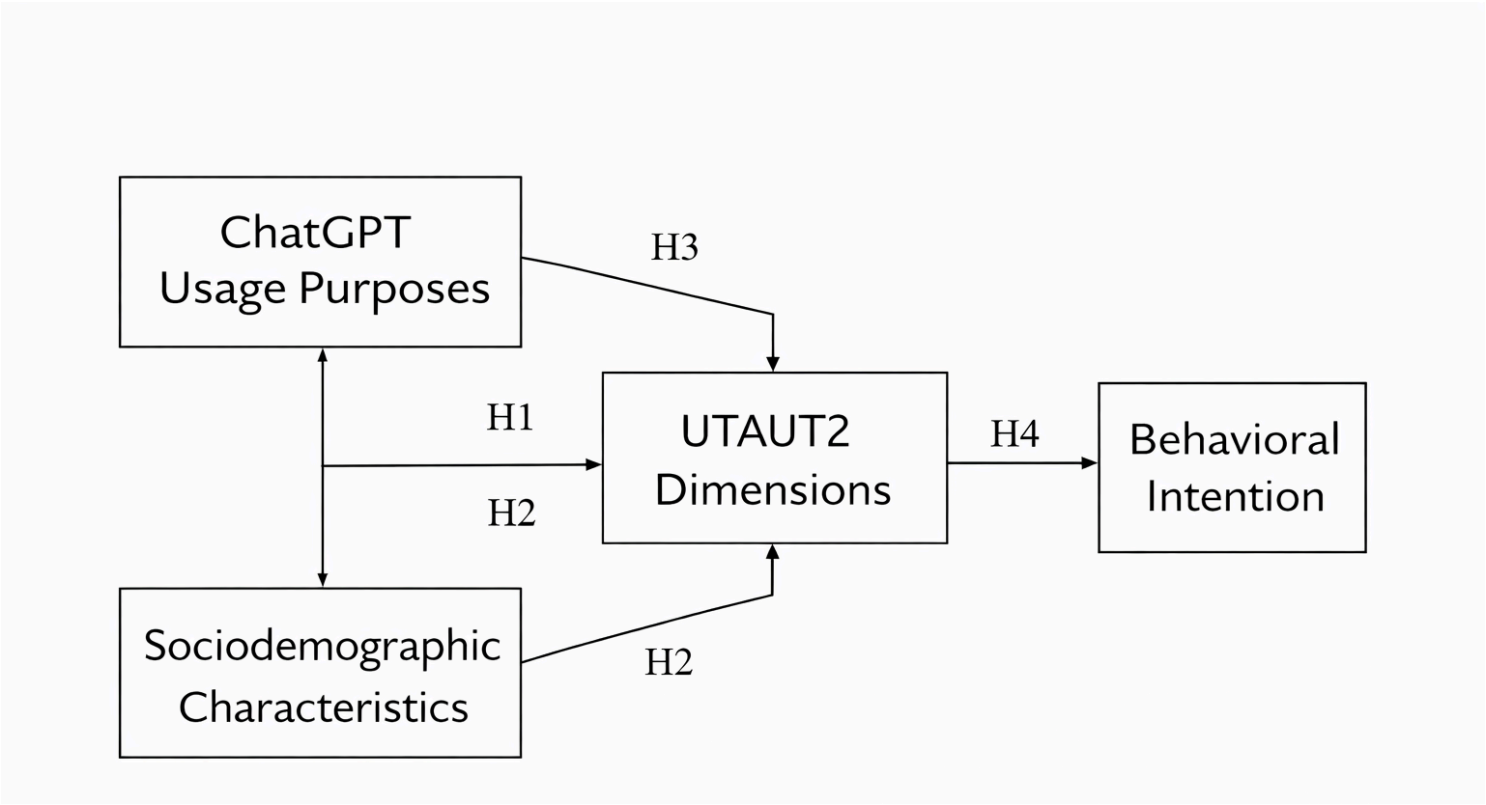

Figure 1

Proposed reseacrh model