

## Integrating TAM And Cost Benefit Theory to Explore University Students' Acceptance of Chat GPT For Education in Bangladesh

Rumana Ferdouse<sup>1</sup>, Mohammad Tamzid<sup>2</sup>, Sumaya Binta Junnat<sup>3</sup>, Jahir Raihan Taz<sup>4</sup>, Sahadat Hossain Siam<sup>5</sup>

<sup>1</sup>Assistant Professor Green Business School Green University of Bangladesh

<sup>2</sup>PhD Research Fellow ID: D240202002 Department of Management Studies Jagannath University, Dhaka 1100 & Assistant Professor Green Business School Green University of Bangladesh

<sup>3</sup>Lecturer Green Business School Green University of Bangladesh

<sup>4</sup>Student Green Business School Green University of Bangladesh

<sup>5</sup>Student Green Business School Green University of Bangladesh

### ABSTRACT:

**Purpose** - This study combines the TAM and cost benefit theory to investigate the Bangladeshi university students' acceptance of ChatGPT and their intentions to use it for education.

**Design/methodology/approach** – This study constructed a theoretical framework based on AIDA model and cost-benefit theory. The study is quantitative in nature and uses survey method to gather primary data. The first section of the questionnaire included demographic data, while five-point Likert-scale questions measuring the study's components were included in the second half of the questionnaire. 483 responses in all were gathered from various Bangladeshi public and private universities. The relationships between the components in the research model were evaluated using structural equation modeling.

**Finding** – The perceived benefit (relative advantage and service compatibility) significantly influenced perceived usefulness. But the perceived cost (security risk and perceived fee) did not significantly influence perceived usefulness. Perceived usefulness and perceived ease of use demonstrates a strong impact on attitude. Attitude proved to be a significant determinant of behavioural intention.

**Originality/value** – By integrating the TAM and cost-benefit analysis, this study aimed to examine the factors that influence university students' desire to adopt ChatGPT from an academic viewpoint, perhaps providing new insights into adoption. The results offer practitioners, scholars, and educators a thorough understanding of and motivation for the long-term usage of such AI technologies.

**KEYWORDS:** ChatGPT; TAM; Cost-benefit theory; Student; Bangladesh.

### INTRODUCTION

Students experience deep changes in their classroom interactions because AI-powered chatbots entered modern education alongside increased technical integration of traditional learning methods (Leelavathi & Surendhranatha, 2024). Software applications called chatbots duplicate human dialogue through processing user-generated input. OpenAI introduced ChatGPT in 2019 which functions as an artificial intelligence language model (Thorp, 2023; Lund & Wang, 2023). The deep learning method based on the transformer architecture enables this software to create replies in human-like text through its processing of natural language queries (Lund & Wang, 2023). Since ChatGPT, OpenAI launched their initiative in 2019 several versions including GPT-3, GPT-4 and potentially GPT-5 have followed along with enhanced capabilities for natural language processing tasks (Thorp, 2023; Islam & Tamzid, 2023). The recent capabilities of ChatGPT extend beyond language generation to include translation functions alongside question response capabilities as well as programming code analysis and creative content generation (Lund & Wang, 2023).

Students increasingly adopt artificial intelligence technologies such as ChatGPT because of rising flexibility demands and self-learning requirements while these technologies have become integral for university students during their educational process (Rudolph et al., 2023). Research studies demonstrate multiple educational advantages come from the deployment of AI-based chatbots (Foroughi et al., 2023). The bots deliver information independently of time and geographic location and ensure personalized assistance through their power to absorb and remember previous exchanges. Timed evaluation through chatbots functions like authentic human communication while maintaining memory of past dialogue sessions according to Chan et al. (2023). Students

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benefit from using chatbots to complete projects through their exceptional capabilities (Chan et al., 2023). Researchers are investigating multiple elements which influence users' adoption of chatbots within educational contexts (Foroughi et al., 2023).

Several academic researchers show considerable interest in determining what drives individuals to use new learning technologies. The analysis conducted by Jishnu et al. (2023) studies educational use of ChatGPT through UGT implementation. The research demonstrates that students mostly use ChatGPT to generate academic content while also retrieving data and seeking novelty and convenience in completing their work. Since the study only considers student motivations its findings lack general usefulness. By applying Davis's (1989) Technology Acceptance Model (TAM), the researchers at Yilmaz et al. (2023) have studied student perceptions regarding ChatGPT. The study demonstrates that individuals' attitudes toward adopting information technology are shaped by two primary factors. These two key dimensions which guide user experiences according to the Technology Acceptance Model are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

The popular usage of Chat GPT in Bangladesh has pushed researchers to study user interface (Naher et al., 2023; Karu & Haque, 2024), as well as its educational effects (Tanvir et al., 2023; Khan et al., 2023) on academic achievement. Academics display intense curiosity about the reasons behind human adoption of new exploration of technology. A portion of users expresses concern that modern innovations will take over job positions (Tamzid 2021).

Users evaluate benefits against implementation costs after adopting an information system according to cost-benefit theory (Hernandez-Ortega et al., 2017). By conducting a cost-benefit analysis process users establish their system value perception before deciding about information system use (Kim et al., 2007; Lin and Lu, 2015). The dedicated validation of both TAM and Cost Benefit analysis theory in multiple disciplines creates a foundation for combining these approaches by integrating Cost Benefit theory which could help decision making regarding technology adoption.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Financial assessment drives human choice behavior through optimization of maximal benefits combined with minimal costs according to Hernandez-Ortega et al. (2017) and Yang et al. (2016). Research studies have shown that people evaluate both benefits and costs of purchases before forming opinions about product worth (Kim et al., 2007; Hsiao, 2011; Lin and Lu, 2015). The selection of the best information system depends on cost-benefit analysis which determines system adoption (Lu et al., 2011). The process of evaluating costs and benefits impacts peoples' decisions regarding their purchase actions and product usage (Hsiao, 2011). Relative advantage and service compatibility functioned as measurement constructs for the perceived benefits assessment by Lin et al., (2020). Some researchers define perceived cost as the total of money along with non-financial expenses (Kim et al., 2007; Yang et al., 2016). Lin et al. (2020) used perceived cost combined with security risk as their measurement criteria for cost assessment. According to Davis (1986 technology acceptance model (TAM) analyzes individual acceptance of innovation possibilities. The adoption of new technology through user acceptance follows from perceived ease of use and perceived usefulness for determining user attitude according to TAM (Davis, 1989a; Davis, 1989b).

## COST BENEFIT ANALYSIS AND PERCEIVED USEFULNESS

Users build value-related perception from their benefit versus cost analysis which shapes their willingness to use the offering according to Yang et al. (2016) and Lin et al (2020). The process of comparing product benefits against their cost leads individuals to develop perceived usefulness according to Kim et al. (2007), Hsiao (2011), and Lin and Lu (2015). Relative advantage and service compatibility functioned as measurement constructs for the perceived benefits assessment by Lin et al., (2020). Some researchers define perceived cost as the total of money along with non-financial expenses (Kim et al., 2007; Yang et al., 2016). Lin et al. (2020) used perceived cost combined with security risk as their measurement criteria for cost assessment. Thus, we can hypothesize

**H1a:** The relative advantage analysis of Chat GPT will have a strong impact on the perceived usefulness of Chat GPT

**H1b:** The service compatibility analysis of Chat GPT will have a strong impact on the perceived usefulness of Chat GPT

**H1c:** The security risk analysis of Chat GPT will have a strong impact on the perceived usefulness of Chat GPT

**H1d:** The perceived fee analysis of Chat GPT will have a strong impact on the perceived usefulness of Chat GPT

## PERCEIVED USEFULNESS, PERCEIVED EASE OF USE AND ATTITUDE

The model identifies perceived usefulness and perceived ease of use dimensions as essential elements for shaping user attitudes leading to intended technology adoption (Davis, 1989a; Gefen and Keil, 1998). Much of the existing literature shows that perceived usefulness and ease of use serve two critical functions because they independently drive users towards new technological adoption (Dishaw and Strong, 1999; Taylor and Todd, 1995; Venkatesh and Davis, 2000). Thus, we can hypothesize

**H2a:** Perceived usefulness will have a strong impact on the attitude toward the Chat GPT.

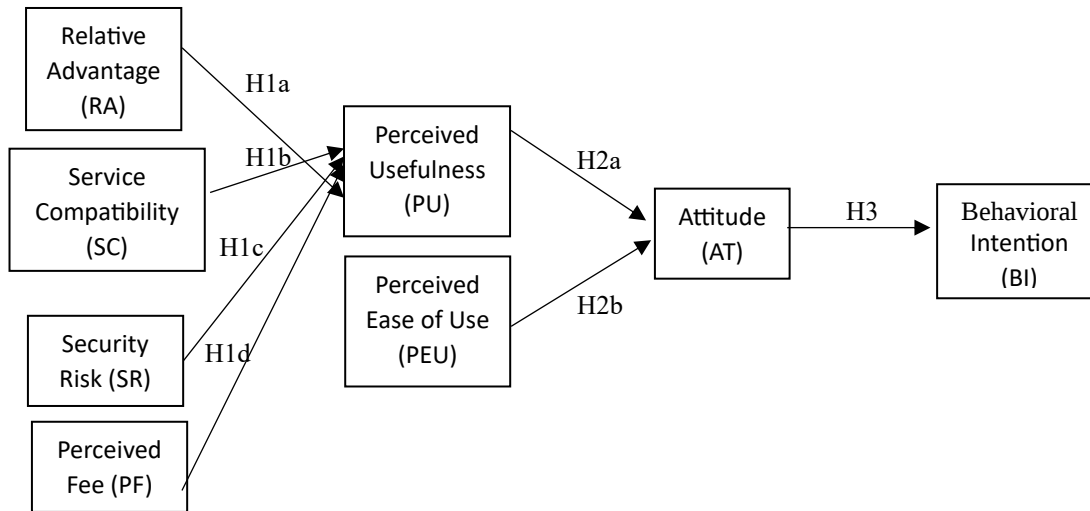
**H2b:** Perceived ease of use will have a strong impact on the attitude toward the Chat GPT.

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## ATTITUDE AND BEHAVIORAL INTENTION

According to Perugini and Bagozzi (2001) attitude toward an object creates desire which intensifies acceptance of new behaviors thanks to this mediating factor. The study presented by Leone et al. (2004) explained how desire acts as an essential factor between attitude and intentional behavior. Hwang et al. (2019a, 2019b) performed two studies investigating drone-food-delivery services to demonstrate that service attitude generates user desire before leading to behavioral intention. Thus, we can hypothesize

**H3:** Attitude toward the Chat GPT will have a strong impact on the behavioral intention to use the Chat GPT.



**Figure 1: Research model/conceptual framework**

## METHODOLOGY

### Measurement

The research model consisted of eight fundamental components. Multiple items were applied to measure each research component. The majority of selected items for the constructions came from previous research to establish validity in the study. The Appendix contains adjusted questionnaire measuring items which were made compatible for this study's context. Relative advantage measurement depended on the Lu et al. (2011) developed scale. The research adopted all measurement items appearing in Kleijnen et al. (2007). Security risk received quantification through the Lee (2009) scale. Research by Luarn and Lin (2005) provided the foundation to adapt their fee-related measurement items. The items used by Song et al. (2021) were modified to measure the main components of TAM: The evaluation model incorporates measures of perceived usefulness together with perceived ease of use and attitude and behavioral intention. Each measure in the study analyzes variables through a 5-point Likert scale system.

### Data Collection and Analysis

University students who live in Bangladesh were selected as the research population. Data collection for this study involved 483 usable responses. 287 student participants became a part of Song et al. (2021) while they examined the integrated framework of TAM and AIDA models. The study used 283 students' data according to Le et al. (2024) while using TAM and UGT model. Incorporating 6 factors and showing that sample sizes larger than 200 fulfill basic statistical demands when using Structural Equation Modeling (SEM) to test research hypotheses (Hair et al., 2010). According to Hair et al., (2010) researchers should use data from 5 to 10 times more than the number of scale items for appropriate study assessment. This analysis incorporates 22 items across 8 constructs and incorporates SEM methodology. Researches in social science alongside management fields employ Partial Least Squares (PLS) due to their status as variance-based structural equation modeling techniques (Nitzl et al., 2016).

**Table I: Respondents' profile**

| Demography             | Frequency | Percentage |
|------------------------|-----------|------------|
| <b>Gender</b>          |           |            |
| Male                   | 278       | 58%        |
| Female                 | 205       | 42%        |
| <b>University Type</b> |           |            |
| Private                | 320       | 66%        |
| Public                 | 163       | 34%        |
| <b>Usage</b>           |           |            |
| Daily                  | 149       | 31%        |

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|                          |     |     |
|--------------------------|-----|-----|
| Once every two days      | 96  | 20% |
| Several times in a week  | 174 | 36% |
| Several times in a month | 64  | 13% |

## RESULTS

### Reliability and Validity

Table II displays the factor loadings from additional items accompanied by reliability and validity indices. Expert thresholds at 0.700 were met through evaluation with Cronbach's Alpha and CR. Both reliability measures obtained CR (Rho\_A) values above 0.7 indicating robust measurements according to Heseler et al. (2016) and this range fell between Cronbach's alpha and CR (Rho\_C) (Sarstedt et al., 2017). The Fornell and Larcker (1981) recommended minimum AVE standard of 0.500 for variables which demonstrate convergent validity. All latent variables exhibited AVE above 0.5 leading to an acceptable level of convergent validity.

**Table II: Item loadings, reliability and convergent validity**

| Construct | Items | Loading | Cronbach's alpha | Composite reliability (rho_a) | Composite reliability (rho_c) | Average variance extracted (AVE) |
|-----------|-------|---------|------------------|-------------------------------|-------------------------------|----------------------------------|
| AT        | AT1   | 0.916   | 0.914            | 0.916                         | 0.940                         | 0.796                            |
|           | AT2   | 0.897   |                  |                               |                               |                                  |
|           | AT3   | 0.875   |                  |                               |                               |                                  |
|           | AT4   | 0.879   |                  |                               |                               |                                  |
| BI        | BI1   | 0.896   | 0.842            | 0.867                         | 0.905                         | 0.760                            |
|           | BI2   | 0.925   |                  |                               |                               |                                  |
|           | BI3   | 0.789   |                  |                               |                               |                                  |
| PEU       | PEU1  | 0.901   | 0.912            | 0.913                         | 0.938                         | 0.792                            |
|           | PEU2  | 0.887   |                  |                               |                               |                                  |
|           | PEU3  | 0.871   |                  |                               |                               |                                  |
|           | PEU4  | 0.901   |                  |                               |                               |                                  |
| PF        | PF1   | 0.939   | 0.739            | 0.865                         | 0.879                         | 0.784                            |
|           | PF2   | 0.828   |                  |                               |                               |                                  |
| PU        | PU1   | 0.855   | 0.859            | 0.862                         | 0.914                         | 0.780                            |
|           | PU2   | 0.917   |                  |                               |                               |                                  |
|           | PU3   | 0.876   |                  |                               |                               |                                  |
| RA        | RA1   | 0.925   | 0.829            | 0.829                         | 0.921                         | 0.854                            |
|           | RA2   | 0.923   |                  |                               |                               |                                  |
| SC        | SC1   | 0.873   | 0.748            | 0.764                         | 0.887                         | 0.797                            |
|           | SC2   | 0.913   |                  |                               |                               |                                  |
| SR        | SR1   | 0.916   | 0.760            | 0.776                         | 0.892                         | 0.806                            |
|           | SR2   | 0.879   |                  |                               |                               |                                  |

Discriminant validity is confirmed when AVE square root exceeds inter-variate correlations (Fornell and Larcker, 1981). All relationships exhibit an AVE greater than other throughout the analysis.

**Table III: Discriminant validity (Fornell and Larcker Criterion)**

|     | AT           | BI           | PEU          | PF           | PU           | RA           | SC           | SR           |
|-----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| AT  | <b>0.892</b> |              |              |              |              |              |              |              |
| BI  | 0.808        | <b>0.872</b> |              |              |              |              |              |              |
| PEU | 0.856        | 0.737        | <b>0.890</b> |              |              |              |              |              |
| PF  | 0.318        | 0.329        | 0.294        | <b>0.886</b> |              |              |              |              |
| PU  | 0.850        | 0.717        | 0.835        | 0.289        | <b>0.883</b> |              |              |              |
| RA  | 0.827        | 0.805        | 0.782        | 0.343        | 0.742        | <b>0.924</b> |              |              |
| SC  | 0.772        | 0.740        | 0.778        | 0.392        | 0.720        | 0.791        | <b>0.893</b> |              |
| SR  | 0.696        | 0.704        | 0.671        | 0.439        | 0.620        | 0.756        | 0.749        | <b>0.898</b> |

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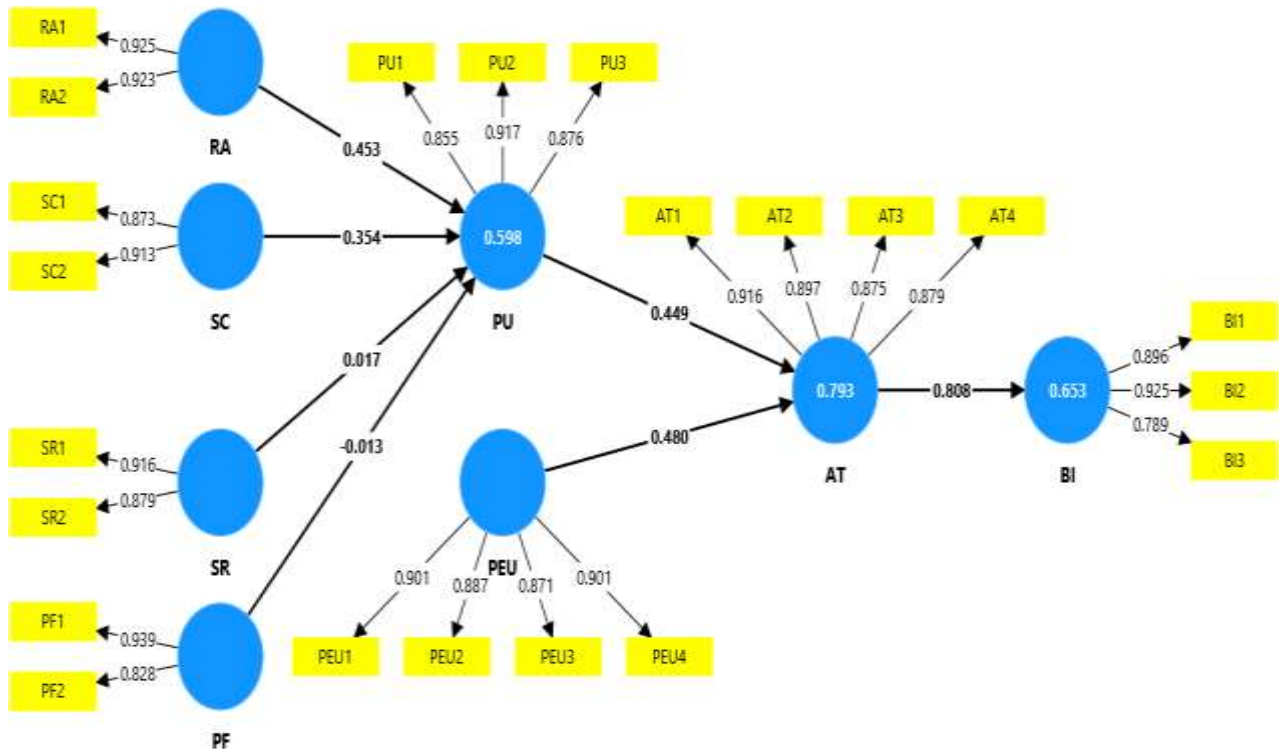


Figure 2: Measurement and structural model

### Structural Model

Hypothesis testing results in Table IV demonstrate both meaningful associations and unremarkable relationships between the involved variables.

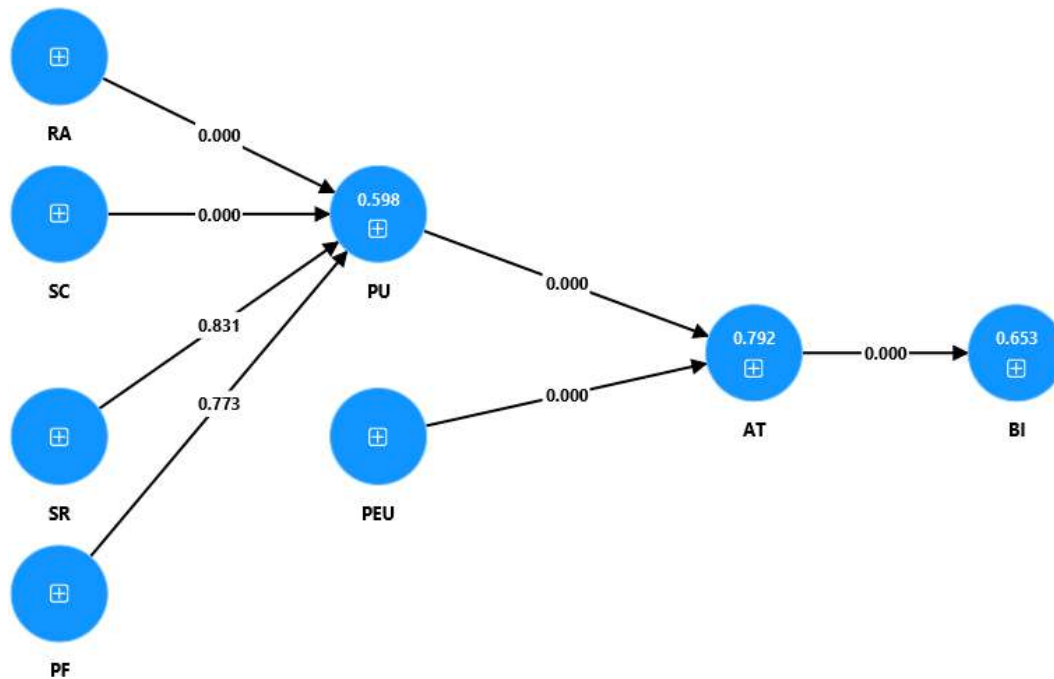
The examinations revealed that relative advantage (RA) significantly affects perceived usefulness (PU) through a relationship of  $\beta = 0.452$ ;  $t = 4.861$  and  $p = 0.000$ . Service compatibility exhibited a strong positive relationship with Perceived Usefulness (PU) through its significant coefficient value ( $\beta = 0.355$ ;  $t = 4.233$ ;  $p = 0.000$ ). The research variables security risk (SR) and perceived fee (PF) demonstrated no statistically significant relationship with perceived usefulness (PU).

Perceived usefulness (PU) demonstrates a strong impact on attitude (AT) with a beta value of 0.448 and a t-score of 9.320 at significance level  $p = 0.000$ . Perceived ease of use (PEU) positively impacted attitude (AT) ( $\beta = 0.481$ ;  $t = 9.890$ ;  $p = 0.000$ ). AT proved to be a significant determinant of behavioural intention (BI) through statistical measurement ( $\beta = 0.808$ ;  $t = 31.393$ ;  $p = 0.000$ ).

The findings match existing research from Yilmaz et al., (2023), Song et al. (2021) and Lin et al., (2020). The analysis established multiple significant relationships which explained the linkages between studied constructs in the proposed model.

Table IV: Results of the structural model

| Hypothesis | Relationship | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics ( O/STDEV ) | P values |
|------------|--------------|---------------------|-----------------|----------------------------|--------------------------|----------|
| H1a        | RA -> PU     | 0.452               | 0.448           | 0.093                      | 4.861                    | 0.000    |
| H1b        | SC -> PU     | 0.355               | 0.360           | 0.084                      | 4.233                    | 0.000    |
| H1c        | SR -> PU     | 0.017               | 0.018           | 0.079                      | 0.214                    | 0.831    |
| H1d        | PF -> PU     | -0.013              | -0.013          | 0.046                      | 0.289                    | 0.773    |
| H2a        | PU -> AT     | 0.448               | 0.449           | 0.048                      | 9.320                    | 0.000    |
| H2b        | PEU -> AT    | 0.481               | 0.480           | 0.049                      | 9.890                    | 0.000    |
| H3         | AT -> BI     | 0.808               | 0.809           | 0.026                      | 31.393                   | 0.000    |



**Figure 3: Result of structural model**

## DISCUSSION

The present study evaluates Bangladeshi university students' adoption of ChatGPT for educational use as it integrates Technology Acceptance Model (TAM) alongside Cost-Benefit Theory. This research reveals important understandings about how both functional elements and contextual elements shape adoption processes.

Research data shows Relative Advantage (RA) functions as a strong determinant of Perceived Usefulness (PU) ( $\beta = 0.452$ ;  $t = 4.861$ ;  $p = 0.000$ ). Students rate ChatGPT highly because they see its educational value through better outcomes and tailored learning support and reduced time in educational tasks. Service Compatibility (SC) demonstrated significant impact on Perceived Usefulness (PU) ( $\beta = 0.355$ ;  $t = 4.233$ ;  $p = 0.000$ ) because students report that ChatGPT suits their educational requirements and existing learning procedures exceptionally well. The results are resonant to the earlier findings by Lin et al. (2020) because users identify technology acceptance through proper functional alignment of systems.

The analysis reveals Security Risk (SR) ( $\beta = 0.017$ ;  $t = 0.214$ ;  $p = 0.831$ ) and Perceived Fee (PF) ( $\beta = -0.013$ ;  $t = 0.289$ ;  $p = 0.773$ ) developed no statistically significant connection to PU. The data indicates Bangladeshi students do not consider privacy risks or subscription expenses substantial barriers when using ChatGPT. The subject matter experts maintain their attention on ChatGPT's practical advantages in addition to academic benefits which surpass their apprehensions regarding security threats and expenses. According to Lin et al., (2020) studies data showed that users' perception of fee did not correlate with experiential value.

Research results demonstrate that Perceived Usefulness (PU) affects Attitude (AT) strengthening student attitudes through positive perceptions of the technology ( $\beta = 0.448$ ;  $t = 9.320$ ;  $p = 0.000$ ). Students accept AT more because Perceived Ease of Use (PEU) creates a positive influence on AT ( $\beta = 0.481$ ;  $t = 9.890$ ;  $p = 0.000$ ). Research reveals that students display 0.808 beta statistical strength (31.393 t value / 0.000 p value) toward Behavioral Intention indicating strong adoption probability when having positive attitudes toward ChatGPT.

## IMPLICATIONS

### Theoretical Implications

The study enhances the existing body of research through an integration of TAM and Cost-Benefit Theory which investigates ChatGPT adoption in educational settings. Users require features and functionality of educational technologies that match their academic requirements which explains why Relative Advantage (RA) and Service Compatibility (SC) significantly influence Perceived Usefulness (PU). These findings demonstrate that Attitude (AT) has a strong practical connection with Behavioral Intention (BI) which validates TAM's usefulness for studying adoption patterns in Bangladeshi higher education environments. Security Risk (SR) and Perceived Fee (PF) parameters had no influence on users' behavior in cases where functional utility and ease of use received greater emphasis. Results challenge traditional theories about benefits and costs because perceived value shows the potential to reduce hazardous elements according to future study indications.

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## Practical Implications

Educators and developers must highlight ChatGPT's useful features which include enhancing students' learning efficiency while offering personalized help. The acceptance rate among students would improve when developers demonstrate how the platform matches academic requirements. The user interface requires optimization to preserve both accessibility and intuitive interaction with special attention to non-technical users. The lack of significant obstacles related to fee perception makes student acceptance higher but institution-wide sustainable pricing options will boost adoption specially for budget-restricted users.

## CONCLUSION

Bangladeshi university students show strong acceptance of ChatGPT for educational needs primarily because of its advantage compared to other products and its ease of matching student needs according to study results. Perceived Usefulness along with Perceived Ease of Use creates a positive attitude about ChatGPT thus influencing students to have strong Behavioral Intention toward the platform.

The research findings show Security Risk and Perceived Fee failed to predict Perceived Usefulness among students in Bangladesh thus indicating students value academic advantages above monetary fears and security threats. The advancements revealed support an increased focus on effective implementation strategies for hard-to-use frequencies and integration methods that will improve user adoption rates.

Long-term analysis of user adoption preferences needs further investigation to track how new users advance toward steady long-term utilization. Additional research that compares different student populations with varying cultural beliefs and national economic standards reveals specific environmental variables effecting classroom technology adoption patterns. The research work establishes opportunities to adopt AI systems such as ChatGPT for teaching enhancement purposes throughout Bangladesh and additional developing nations.

## REFERENCES

- 1) Chan, M.M.K., Wong, J.Y.H., Ngai, C.S.L., Fok, C.T. and Wang, M.P. (2023). Co-Creation of health related social media content to engage students in learning. *Nurse Educator*, 48 (2), p. E40, doi: 10.1097/NNE.0000000000001287.
- 2) Davis, F.D. (1989a), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, Vol. 13 No. 3, pp. 319-340, doi: 10.2307/249008.
- 3) Davis, F.D. (1989b), "Technology acceptance model: TAM", Al-Suqri, MN, Al-Aufi, AS: *Information Seeking Behavior and Technology Adoption*, Vol. 205, p. 219.
- 4) Davis, F.D., (1986). *A Technology Acceptance Model for Empirically Testing New End- User Information Systems: Theory and Results* (Doctoral dissertation). MIT Sloan School of Management, Cambridge, MA.
- 5) Dishaw, M.T., Strong, D.M., (1999). Extending the technology acceptance model with task-technology fit constructs. *Inf. Manag.* 36 (1), 9–21.
- 6) Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- 7) Foroughi, B., Senali, M.G., Iranmanesh, M., Khanfar, A., Ghobakhloo, M., Annamalai, N. and Naghmeh-Abbaspour, B. (2023), "Determinants of intention to use ChatGPT for educational purposes: findings from PLS-SEM and fsQCA", *International Journal of Human-Computer Interaction*, 40 (17), pp. 1-20, doi: 10.1080/10447318.2023.2226495.
- 8) Gefen, D., Keil, M., (1998). The impact of developer responsiveness on perceptions of usefulness and ease of use: an extension of the technology acceptance model. *Database Adv. Inf. Syst.* 29 (2), 35–49.
- 9) Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010), *Multivariate Data Analysis, a Global Perspective*, 7th ed., Pearson, NJ, p. 816.
- 10) Henseler, J., Hubona, G., and Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management and Data Systems*, 116(1), 2-20.
- 11) Hernandez-Ortega, B., Aldas-Manzano, J., Ruiz-Mafe, C., and Sanz-Blas, S. (2017). Perceived value of advanced mobile messaging services: A cross-cultural comparison of Greek and Spanish users. *Information Technology and People*, 30(2), 324-355.
- 12) Hsiao, K. L. (2011). Why internet users are willing to pay for social networking services. *Online Information Review*, 35(5), 770-788.
- 13) Hwang, J., Kim, D., Kim, J.J., (2020a). How to form behavioral intentions in the field of drone food delivery services: the moderating role of the COVID-19 outbreak. *Int. J. Environ. Res. Public Health* 17, 9117.
- 14) Hwang, J., Kim, H., Kim, W., (2019b). Investigating motivated consumer innovativeness in the context of drone food delivery services. *J. Hosp. Tour. Manag.* 38, 102–110.

## **Integrating TAM And Cost Benefit Theory to Explore University Students' Acceptance of Chat GPT For Education in Bangladesh**

- 15) Islam, M. T., and Tamzid, M. (2023). Artificial intelligence in human resource management. In *Management Education for Achieving Sustainable Development Goals in the Context of Bangladesh* (pp. 61-80). Department of Management, University of Dhaka. <https://doi.org/10.57240/DUJMBK04>
- 16) Jishnu, D., Srinivasan, M., Dhanunjay, G. S., and Shamala, R. (2023). Unveiling student motivations: A study of ChatGPT usage in education. *ShodhKosh: Journal of Visual and Performing Arts*, 4, 65-73. <https://doi.org/10.29121/shodhkosh.v4.i2.2023.503>
- 17) Karu, E. K., and Hoque, M. A. (2024). User experience of ChatGPT: Insights from undergraduate English language and literature students in Bangladesh. *Studies in Self-Access Learning Journal*, 15(3), 394–418. <https://doi.org/10.37237/150305>
- 18) Khan, M. M. R. R., Habib, S. B., Tasnim, S. T., and Islam, M. A. (2023, December). Educational AI and ethical growth: Exploring the effects of ChatGPT on student learning strategies, critical thinking, and academic ethics from a Bangladeshi academic perspective. In *2023 26th International Conference on Computer and Information Technology (ICCIT)* (pp. 1-6). IEEE.
- 19) Kim, H. W., Chan, H. C., and Gupta, S. (2007). Value-based adoption of mobile internet: An empirical investigation. *Decision Support Systems*, 43(1), 111-126.
- 20) Kleijnen, M. H. P., de Ruyter, J. C., and Wetzels, M. G. M. (2007). An assessment of value creation in mobile service delivery and the moderating role of time consciousness. *Journal of Retailing*, 83(1), 33-46.
- 21) Le, T. M. D., Do, H. T. N., Tran, K. M., Dang, V. T., & Nguyen, B. K. H. (2024). Integrating Tam and UGT to explore students' motivation for using ChatGPT for learning in Vietnam. *Journal of Research in Innovative Teaching & Learning*.
- 22) Lee, M. C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, 8(1), 130-141.
- 23) Leelavathi, R., and Surendhranatha, R. C. (2024). ChatGPT in the classroom: Navigating the generative AI wave in management education. *Journal of Research in Innovative Teaching and Learning*, ahead-of-print. <https://doi.org/10.1108/JRIT-01-2024-0017>
- 24) Leone, L., Perugini, M., Ercolani, A.P., (2004). Studying, practicing, and mastering: a test of the model of goal-directed behavior (MGB) in the software learning domain. *J. Appl. Psychol.* 34 (9), 1945–1973.
- 25) Lin, K. Y., and Lu, H. P. (2015). Predicting mobile social network acceptance based on mobile value and social influence. *Internet Research*, 25(1), 107-130.
- 26) Lin, K. Y., Wang, Y. T., and Huang, T. K. (2020). Exploring the antecedents of mobile payment service usage: Perspectives based on cost–benefit theory, perceived value, and social influences. *Online Information Review*, 44(1), 299-318.
- 27) Lin, K.Y. and Lu, H.P. (2015), “Predicting mobile social network acceptance based on mobile value and social influence”, *Internet Research*, Vol. 25 No. 1, pp. 107-130.
- 28) Lu, Y., Yang, S., Chau, P. Y. K., and Cao, Y. (2011). Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective. *Information and Management*, 48(8), 393-403.
- 29) Luarn, P., and Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior*, 21(6), 873-891.
- 30) Lund, B. D., and Wang, T. (2023). Chatting about ChatGPT: How may AI and GPT impact academia and libraries? *Library Hi Tech News*, 40(3), 26-29. <https://doi.org/10.1108/LHTN-01-2023-0009>
- 31) Naher, J., Maruf, M. H., Bakht, S. T., and Sadaf, S. S. (2023). A survey to understand the experience of ChatGPT usage among engineering university students in Bangladesh. *Technium: Romanian Journal of Applied Sciences and Technology*, 15, 1–8. <https://doi.org/10.47577/technium.v15i.9660>
- 32) Nitzl, C., Roldan, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modeling: Helping researchers discuss more sophisticated models. *Industrial Management and Data Systems*, 116(9), 1849-1864.
- 33) Perugini, M., Bagozzi, R.P., (2001). The role of desires and anticipated emotions in goal directed behaviours: Broadening and deepening the theory of planned behaviour. *Br. J. Soc. Psychol.* 40 (1), 79–98.
- 34) Rudolph, J., Tan, S. and Tan, S. (2023). ChatGPT: bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning and Teaching*, 6(1), pp. 342-363.
- 35) Sarstedt, M., Ringle, C. M., and Hair, J. F. (2017). Partial least squares structural equation modeling. In *Handbook of Market Research* (Vol. 26, pp. 1-40).
- 36) Song, H., Ruan, W. J., & Jeon, Y. J. J. (2021). An integrated approach to the purchase decision making process of food-delivery apps: Focusing on the TAM and AIDA models. *International Journal of Hospitality Management*, 95, 102943.
- 37) Tamzid, M. (2021). Will AI replace human recruiters? *Journal of Green Business School*, 4(1), 37-54.

## Integrating TAM And Cost Benefit Theory to Explore University Students' Acceptance of Chat GPT For Education in Bangladesh

- 38) Tanvir, K., Islam, M. S., Sezan, S. B. K., Sanad, Z. A., and Ataur, A. J. I. (2023). Impact of ChatGPT on academic performance among Bangladeshi undergraduate students. *International Journal of Research in Science and Engineering*, 35, 18-28.
- 39) Taylor, S., Todd, P.A., 1995. Understanding information technology usage: a test of competing models. *Inf. Syst. Res.* 6 (2), 144–176.
- 40) Thorp, H. H. (2023). ChatGPT is fun, but not an author. *Science* (New York, N.Y.), 379(6630), 313–313. <https://doi.org/10.1126/science.adg7879>
- 41) Venkatesh, V., Davis, F.D., 2000. A theoretical extension of the technology acceptance model: four longitudinal field studies. *Manag. Sci.* 46 (2), 186–204.
- 42) Yang, H., Yu, J., Zo, H., and Choi, M. (2016). User acceptance of wearable devices: An extension of the technology acceptance model.
- 43) Yilmaz, H., Maxutov, S., Baitekov, A., and Balta, N. (2023). Student attitudes towards ChatGPT: A technology acceptance model survey. *International Educational Review*, 1(1), 57-83. <https://doi.org/10.58693/ier.114>

### Appendix

Measurement items:

Cost Benefit Theory:

Perceived Benefit –

Relative Advantage (RA)

RA1. ChatGPT provides more advantages than traditional methods of obtaining information

RA2. ChatGPT is more convenient than traditional research or assistance methods for solving problems.

Service Compatibility (SC)

SC1. ChatGPT fulfills my information and assistance needs effectively.

SC2. ChatGPT is compatible with my usual methods for learning or seeking knowledge.

Perceived Cost –

Security Risk (SR)

SR1. I feel totally safe sharing personal or private information with ChatGPT.

SR2. I am unconcerned to use ChatGPT because my data could not be accessed by unauthorized parties.

Perceived Fee (PF)

PF1. It would cost a reasonable amount to use premium versions of ChatGPT.

PF2. There are no financial barriers (e.g., needing to purchase credits or subscriptions) preventing me from using ChatGPT.

TAM Model:

Perceived Usefulness (PU)

PU1. ChatGPT is useful as it provides accurate and quick responses to questions.

PU2. ChatGPT is useful as it helps users solve problems effectively.

PU3. ChatGPT is useful as it enhances productivity and efficiency.

Perceived Ease of Use (PEU)

PEU1. It is easy to understand how to use ChatGPT.

PEU2. ChatGPT makes it easy to generate ideas or solutions.

PEU3. It is straightforward and easy to interact with ChatGPT to get desired outputs.

PEU4. ChatGPT provides a user-friendly interface for engagement.

Attitude (AT)

AT1. Using ChatGPT is a positive experience.

AT2. Using ChatGPT is beneficial for my work/study.

AT3. Using ChatGPT feels necessary for achieving my tasks/goals.

AT4. Using ChatGPT is an engaging and attractive process.

Behavioral Intention (BI)

BI1. I will try to use ChatGPT in the future.

BI2. I am willing to use ChatGPT regularly in the future.

BI3. I will invest time and money in using ChatGPT in the future.



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