# Forced eLearning Acceptance using TPB: High School vs University Students

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**Abstract.** Covid 19 Pandemic has forced Indonesian students to utilize eLearning tools. This article tests the acceptance of forced eLearning by Indonesian high school and students using Theory of Planned Behavior. The study extended original TPB to include Perceived Cost, Perceived Risks, Trust (both organization and application), Perceived Ease of Used, Perceived Usefulness, Controllability, and Self-efficacy. We also conducted Multi Group Analysis to see if university students and high school students have differences in their acceptance.

**Keywords:** TPB; High School Students; University Students; eLearning; Covid 19.

## 1. Introduction

The World Health Organization (WHO) has declared the end of emergency status of the Covid 19 pandemic on May 5th, 2023. The Indonesian Government officially ended the Covid 19 Pandemic status on June 21st, 2023. It has been a long and arduous journey for the world in dealing with the Covid 19 pandemic since it was declared as pandemic by WHO on March 11th, 2020.

Although it caused many grievance and health problems to say the least, the Covid 19 pandemic has been quite instrumental in accelerating digital transformation [1, 2]. The need for social and physical distancing has been a strong force in rapid adoption of digital technology for accomplishing many tasks that were needed to be done face to face before. Digital transformation accelerations in time of the Covid 19 pandemic have been studied in Chinese Commercial Bank [3], in Indonesian Business Schools [4], in education sectors [5], in small and medium enterprises [6], etc.

Arguably transformation could be beneficial for any organization and yet the adoption of digital technology is not only having positive impacts. Some negative impacts have been documented in few recent studies [1]. For example elderly users are usually at the most disadvantage position in relation to new digital technology [7]. In relation to the use of digital technology (such as virtual classroom), it was found that virtual classrooms have negative impacts toward work place well-being and psychological well-being [8]. Other study also found that digital transformation is causing the decrease in human resource quality due to digital inequality [9].

This article is a part of ongoing studies toward the forced, sudden, and accelerated adoption of digital technology in the classrooms during the Covid 19 pandemic. The previous studies [10-12] have been

utilising and expanding Theory of Planned Behavior (TPB) [13-18] to include perceived cost [19, 20], perceived risks [21-25], and trust [26-29]. The studies were using high school and university students (at undergraduate level). However, the analysis was conducted on each group of students and there was no comparison being made. This paper is intended to compare the results of previous studies and extend the original TPB and its extension on previous paper (perceived costs, perceived risks, and trust) with perceived ease of use, perceived usefulness, controllability, and self-efficacy.

The ongoing study was motivated by the few constraints, difficulties, and efforts to adjust from face-to-face classrooms that changed abruptly to full online classroom. The problems ranging from unprepared infrastructure and applications, security issues, adaptability to environmental changes, etc. Highs schools and universities were chosen due to students' age and closeness. Some of the high school's students who were transitioning to university faced challenges in adapting to university life while conducting distance learning. The study's results might identify factors that could be considered in designing a new and hybrid learning environment.

## 2. Literature Review

The inclusion of ICT into academic activities in form of blended learning or online learning has been regulated and encouraged by the Indonesian Ministry of Education since 2018. In 2019, the use of blended learning, online learning, and flipped classrooms has been made mandatory by the Ministry of Education to accommodate the freedom of learning curriculum. The freedom of learning curriculum encourages universities in Indonesia to accommodate non-traditional learning methods such as online learning, active learning, an internship in industries, and student exchange. It was originally designed to have gradual transition from conventional learning environment to ICT based learning environment.

Due to various health and safety measures implemented to curb the Covid19 pandemic, the gradual introduction of flipped and blended learning was abandoned. Since March 2020, most Indonesian schools and universities were forced to switch to complete online classes. This condition created many problems for academic staff, lecturers, and students. The initial sharp increase in LMS put an enormous burden on universities' ICT Infrastructure. In house hosted LMS usually had the hardest and struggle to meet the demand of fully online classes. Lecturers and students often found themselves unable to access let alone use LMS.

Slowly, most universities could overcome most technical problems by increasing Internet Bandwidth, beefing up ICT infrastructure, reorganizing their network management, etc. To unload some burden toward in-house hosted LMS, some universities turned to outsource some of the supporting applications. For facilitating face to face meeting, Zoom Meetings, MS Teams, and Google Meet are used. Most universities are currently used hybrid tools for an online classroom with their own LMS as the backbone for information sharing, examination, and assignment submission supplemented by face-to-face meeting applications for online video meeting.

In the middle of the transition, some news regarding cybersecurity emerged. Zoom Meetings that were arguably the most popular video meeting application during the pandemic was hit by security problems [7]. Some uninvited participants could meddle and send unwanted materials in a meeting and create a disturbance or known as Zoom Bombing [49]. Zoom also admitted that initially some of the data were routed through China which raises concerns on privacy and security [50]. Zoom also did not initially have end to end encryption communication as standard unlike many Messaging and Meeting Applications like WhatsApp and Signal. Later in 2020, Zoom Meeting implemented end to end encryption for communication [51].

Other security-related bad news also hit some of the well-known and the biggest Indonesian electronic marketplace. Some users' data were leaked due to a security breach [8]. This did not incite any confidence for the majority of Indonesian who were forced to use online tools for various activities as a replacement for conventional due to the Covid19 Pandemic. Stages and analysis of the research must be explained in detail. The method used must be accompanied by references, and any relevant changes must be explained. A literature review article should highlight the procedure and data analysis technique.

Theory of Planned Behaviour or TPB originally developed by Icek Ajzen to improve the predictive ability of Theory of Reasoned Action or TRA [10, 53, 71, 72]. In TPB, an individual's behaviour is influenced by Intention. The intention is influenced by Attitude Toward Behaviour, Subjective Norms, and Perceived Behavioural Control [9, 10, 54, 71, 73]. TPB has been used to predict and explain behaviour in many settings [11]. Further, Attitude Toward Behaviour is influenced by Behavioural Beliefs, Subjective Norms is influenced by Normative Beliefs, and Perceived Behavioural Control is influenced by Control Beliefs. The actual behaviour is not only influenced by Intention but also Perceived Behavioural Control and also Actual Behavioural Control or skills, resources, and other prerequisites needed to perform the behaviour [10, 55]

TPB has been used and extended in various studies. Concerning Information Technology usage behaviour, TPB has been to predict adoption of Ecommerce [11, 74-77], to predict behaviour in mobile viral marketing [14], adoption of e-Government [18], and even in education setting concerning eLearning [78-80]. Extending TPB in some studies about online activities might include two factors, namely Trust and Risk Perception [18-20, 81]. Trust is defined as a personality characteristic of an individual that influence interactions with online application involving reliability and dependability [81]. Risk is defined as uncertain conditions associated with decision making [16, 18, 19, 82]. Usage of online applications would increase if the application and organisation behind the application can be trusted [17, 82-84]. The perceived risk would negatively influence the usage of online applications [15, 75, 82, 85]. Other extension of TPB has included factors that constituted Behavioural Beliefs, Normative Beliefs, Perceived Behavioural Control, and Actual Behavioural Control.

The extension of TPB in this study tries to expand variables that might explain the behaviour of Indonesian students in fully online classes forced by the Covid19 Pandemic. The complete research model can be seen in figure 1 below.

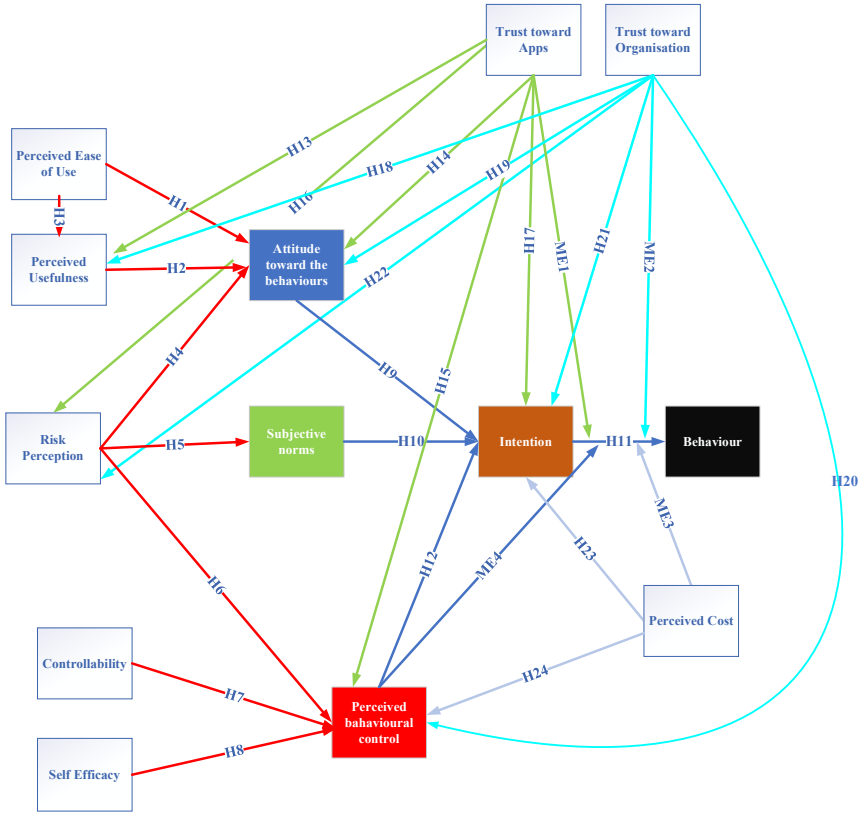


**Figure 1.** Extended TPB Research Model

The first extension is related to Attitude Toward Behaviour (ATT). ATT is defined as the degree to which performance of the behaviour is positively or negatively valued [13, 14, 46, 47]. ATT is influenced by a set of Behavioural Beliefs. In this study, Behavioural Beliefs is represented by Perceived Ease of Use (PEU) and Perceived Usefulness (PU) derived from TAM [16, 20, 21, 41, 48-51]. Therefore, the following hypotheses are proposed:

- *H1 PEU would positively influence ATT*
- *H2 PU would positively influence ATT*
- *H3 PEU would positively influence PU*

Subjective Norms (SN) is the perceived social pressure to conduct a behaviour [13, 14, 47]. It is a perception of how an individual should act based on the social environment [52]. Normative Belief refers to what others believe an individual should behave under certain circumstances [21]. In this study, Risk Perception (Risk) is influencing ATT [21, 22, 53]. Risk is not only influencing ATT, but also Subjective Norms (SN) [21, 48] and Perceived Behavioural Control (PBC) [21, 48]. The higher the risk, it would less likely an individual would conduct a behaviour; therefore, the following hypotheses are formulated:

- *H4 Risk would negatively influence ATT*
- *H5 Risk would negatively influence SN*
- *H6 Risk would negatively influence PBC*

PBC is defined as an individual perception of their ability to conduct certain behaviour [13, 14, 47]. PBC is influenced by Control Beliefs, which is defined as factors that may support or hinder behaviour [13, 14, 47]. Control Beliefs in this study are represented by Controllability (CO) and Self Efficacy (SE) [17, 52, 54]. CO is the degree of an individual's control over behaviour, while SE is an individual's confidence in

conducting a behaviour [52, 54]. Higher CO and SE would increase the belief of an individual's ability to conduct, therefore the following hypotheses are proposed:

- *H7 CO would positively influence PBC*
- *H8 SE would Positively Influence PBC*

As in the original TPB, Intention to conduct a behaviour is influenced by ATT, SN, and PBC [13, 14, 46, 47]. The intention would influence Behaviour [13, 14, 46, 47]. PBC would moderate the influence of Intention toward Behaviour [47]. The following hypotheses are proposed:

- *H9 ATT would positively influence Intention*
- *H10 SN would positively influence Intention*
- *H11 Intention would positively influence Behaviour*
- *H12 PBC would positively influence Intention*
- *ME4 Intention influence toward Behaviour is moderated by PBC*

The next variable that extending the original TPB is Trust [21, 22, 55]. In this study, trust is two different variables which are Trust Toward Applications (TA) and Trust Toward Organisation (TO). Two components in eLearning that relevant in this study are the eLearning applications and the organisation that managed the applications. eLearning applications used in Indonesia are either setup and managed entirely in-house (in the case of LMS like Moodle) or provided by the vendor and managed internally by the university (in the case of Google Classrooms, Zoom Meetings, and MS Teams). Therefore, the users need to trust both the applications and organisation which managed them. Literature showed that Trust can influence many parts of TPB. Trust could influence ATT, SN, PBC, and Intention [18, 21, 48, 56, 57]. Trust could also influence PU [58]. Lastly, Trust is also found to be a moderating variable for Intention influence toward Behaviour [55]. Based on literature the following hypotheses are proposed:

- *H13 TA would positively influence PU*
- *H14 TA would positively influence ATT*
- *H15 TA would positively influence PBC*
- *H16 TA would negatively influence Risk*
- *H17 TA would positively influence Intention*
- *H18 TO would positively influence PU*
- *H19 TO would positively influence ATT*
- *H20 TO would positively influence PBC*
- *H21 TO would positively influence Intention*
- *H22 TO would negatively influence Risk*
- *ME1 Intention influence toward Behaviour is moderated by TA*
- *ME2 Intention influence toward Behaviour is moderated by TO*

The last extension proposed in this study is the Perceived Cost (Cost). Cost in this study is referring to the cost to access eLearning and the cost of acquiring eLearning equipment for students. Cost is negatively influencing Intention to use eLearning [19, 20]. We argue that in this study Cost could act as Actual Behaviour Control. Actual Behavioural Control is defined as the extent to which an individual has the skills, resources, and other prerequisites needed to perform the behavior which is using eLearning [13, 47]. Related to Cost, the following hypotheses are proposed:

- *H23 Cost would negatively influence Intention*
- *H24 Cost would negatively influence PBC*
- *ME3 Intention influence toward Behaviour is moderated by Perceived Cost*

## 3. Research Method

The research was started with few observations and interview with high school students and teachers as well as university students and lecturers. The difficulties in adjusting from conventional learning process to fully online classroom were apparent, such as adjusting to new way of social interaction, learning new tools and applications, security concerns, etc. [22, 25, 30-34]. A literature review was conducted to identify the appropriate theoretical foundation. Theory of Planned Behaviour has been considered as it is not only focused on technology but also social factors and psychological drivers [35-37].

To obtain data for this research, the most appropriate method was using questionnaire that can be administered using online forms. It could reach wider participants [38, 39] and reduced physical interaction. Questionnaire is developed based on Theory of Planned Behaviour [13, 16, 35-37, 40] with additional variables derived from Technology Acceptance Model [16, 32, 41-43]. The questionnaire was developed based on literature.

Data were collected using an online questionnaire (Google Forms). Invitations to participate were sent using email to the author's contacts and various communities. In the end, there were 945 responses universities' students and 462 responses from high schools' students. The respondent's characteristics data can be seen in table 1 below for universities' students and table 2 for high school's student.

SEM PLS is used to analyse data. The data is analysed using software SmartPLS version 4 [44, 45]. The analysis also includes Multi Group analysis to see the differences between university students and high school students.

## 4. Result and Discussion

The result of the survey can be classified based on several criteria as follow

**Table 1.** University Students Profile

| Criteria | Sub Criteria | Amount | Percentage |
|---|---|---|---|
| *Gender* | *Male* | 491 | 51% |
| | *Female* | 454 | 49% |
| *Class/Level* | *Diploma/Vocational* | 145 | 17.6% |
| | *Undergraduate* | 670 | 70.8% |
| | *Master* | 127 | 13.4% |
| | *Doctoral* | 3 | 1.8% |
| *Disciplines* | *STEM* | 485 | 51.4% |
| | *Non STEM* | 460 | 48.6% |

**Table 2.** High School Students Profile

| Criteria | Sub Criteria | Amount | Percentage |
|---|---|---|---|
| *Gender* | *Male* | 260 | 56.28% |

| | | | |
|---|---|---|---|
| | *Female* | 202 | 43.72% |
| *Class/Level* | *X* | 262 | 56.71% |
| | *XI* | 143 | 30.95% |
| | *XII* | 57 | 12.34% |
| *Discipline* | *STEM* | 237 | 51.30% |
| | *Non STEM* | 225 | 48.7% |

The first step is to conduct an indicator reliability test. This test is to confirm the reliability of all reflective indicators for all the constructs [59-61]. The test is done by executing PLS Algorithm within SmartPLS version 4 [44]. To be considered reliable an indicator should have an outer loading value above 0.7 [61]. There are four indicators' value below 0.7, which are one for Attitude (indicator ATT2), two for PBC (indicator PBC3 and PBC4), and three for Behavior (indicator BE1, BE2, and BE6). Once those indicators were dropped, the Outer Loadings value for all the remaining indicators is above 0.7.

The next step is to test internal consistency reliability, convergent validity, and discriminant validity [61]. Internal consistency reliability should be above 0.7 and Convergent Validity (Average Variance Extracted or AVE) should be above 0.5, and Heterotrait-Monotrait (HTMT) values should be below 0.85 [61]. All constructions are satisfying those criteria.

Lastly, the structural model is tested for collinearity. The VIF value should be below 5 [60, 61]. All VIF values are below 5, therefore there are no collinearity issues in the structural model.

Having reliability and validity of both indicators and constructs and confirming the absence of collinearity issues in the structural model, the next step is to test hypotheses. Hypotheses testing is done by utilizing the Bootstrap facility within SmartPLS version 4 [45].

A hypothesis is supported if T Statistics value greater than 1.64 (two-tailed test) and P Values less than 0.05 [59-61]. The result of the hypotheses testing can be seen in Table 3.

**Table 3.** Hypotheses Testing Results

| Code | Hypotheses | T Statistics | P Values | Result |
|---|---|---|---|---|
| **H1** | PEU would positively influence ATT | 6,253 | 0,0000 | Supported |
| **H2** | PU would positively influence ATT | 16,07224041 | 0,0000 | Supported |
| **H3** | PEU would positively influence PU | 20,19649325 | 0,0000 | Supported |
| **H4** | Risk would negatively influence ATT | 0,313863626 | 0,7536 | *Not Supported* |
| **H5** | Risk would negatively influence SN | 1,98459478 | 0,0472 | Supported |
| **H6** | Risk would negatively influence PBC | 2,576674164 | 0,0100 | Supported |
| **H7** | CO would positively influence PBC | 12,85740182 | 0,0000 | Supported |

| Code | Hypotheses | T Statistics | P Values | Result |
|---|---|---|---|---|
| **H8** | SE would Positively Influence PBC | 6,495768114 | 0,0000 | Supported |
| **H9** | ATT would positively influence Intention | 5,518140262 | 0,0000 | Supported |
| **H10** | SN would positively influence Intention | 9,752316711 | 0,0000 | Supported |
| **H11** | Intention would positively influence Behavior | 11,28859217 | 0,0000 | Supported |
| **H12** | PBC would positively influence Intention | 5,786162383 | 0,0000 | Supported |
| **ME4** | Intention influence toward Behavior is moderated by PBC | 1,928342421 | 0,0539 | *Not Supported* |
| **H13** | TA would positively influence PU | 6,434194879 | 0,0000 | Supported |
| **H14** | TA would positively influence ATT | 5,033919857 | 0,0000 | Supported |
| **H15** | TA would positively influence PBC | 7,393198281 | 0,0000 | Supported |
| **H16** | TA would negatively influence Risk | 12,70182131 | 0,0000 | Supported |
| **H17** | TA would positively influence Intention | 1,709223214 | 0,0875 | *Not Supported* |
| **H18** | TO would positively influence PU | 4,860161726 | 0,0000 | Supported |
| **H19** | TO would positively influence ATT | 3,492379376 | 0,0005 | Supported |
| **H20** | TO would positively influence PBC | 7,030462475 | 0,0000 | Supported |
| **H21** | TO would positively influence Intention | 1,232524464 | 0,2178 | *Not Supported* |
| **H22** | TO would negatively influence Risk | 12,70182131 | 0,0000 | Supported |
| **ME1** | Intention influence toward Behavior is moderated by TA | 0,456845748 | 0,6478 | *Not Supported* |
| **ME2** | Intention influence toward Behavior is moderated by TO | 0,586950065 | 0,5573 | *Not Supported* |
| **H23** | Cost would negatively influence Intention | 3,034268716 | 0,0024 | Supported |
| **H24** | Cost would negatively influence PBC | 2,947676712 | 0,0032 | Supported |
| **ME3** | Intention influence toward Behavior is moderated by Cost | 0,535913923 | 0,5920 | *Not Supported* |

A Multi Group Analysis (MGA) is used to test differences between university students and high school students [44, 45, 61]. The results indicate that only Cost influence toward PBC and Trust in Application influence toward Risks that significantly differ between university students and high school students

The As the hypotheses testing shown, TPB is indeed able to explain and has prediction power for the forced use of eLearning by Indonesian students due to Covid19 Pandemic containment measures. The Intention to use eLearning influenced by Attitude Toward Behaviour, Subjective Norms, and Perceived Behavioural Control as suggested by literature [13, 14, 21, 47, 52]. The result showed that Trust Toward Applications used in eLearning (such as LMS, Zoom, MS Teams, and others) directly influence Intention to use eLearning in a positive way [56]. The study did not support Trust (neither toward application nor toward organisation) as a moderating variable for Intention's influence toward Behaviours [55].

Attitude Towards Behaviour is influenced by Perceived Ease of Use and Perceived Usefulness; confirming results found on literature [16, 20, 21, 41, 49, 50]. This study also found that Trust (both towards organisation and application) is influencing Attitude Toward Behaviours [18, 21]. The result also confirms that Perceived Usefulness is influenced by Perceived Ease of Use and Trust [16, 20, 21, 41, 49, 50, 58].

Subjective Norms is only influenced by Risk Perception, which confirms what we found in literature [21]. Risk perception is also influencing Perceived Behavioural Control [21, 48]. The result did not support the hypothesis that Risk Perception influences Attitude Toward Behaviour [22, 48, 53]. The result also supports Trust negatively influences Risk Perception hypotheses [21, 22, 48]. It seems that Risk Perception does not influence Attitude Toward Behaviour because Trust influence Attitude Toward Behaviour and negatively influence Risk Perception. Risk Perception is not considered by many respondents since they already have Trust for developing Attitude.

Perceived Behavioural Control is positively influenced by Trust (organisation and application), Risk Perception, Controllability, Controllability, and Self Efficacy [13, 14, 47, 48, 52, 54, 62]. Perceived Cost negatively influences Perceived Behavioural Control but the result does not support Perceived Cost influence toward Intention [19, 20]. The result also does not support Perceived Cost as a moderating variable for Intention influence toward Behaviour. Although many eLearning participants cited cost as a hindering factor [63, 64] it does not reflect neither influence toward Intention nor a moderating variable for Intention influence toward Behaviour. Perceived Cost negatively influences Perceived Behavioural Control, which is then would influence Intention. Indonesian Government also issues direct subsidy to help covering Internet connection cost and urged telecommunication companies to provide discount [65]. The initiative might be responsible for lowering the Perceived Cost influence.

Lastly we only found that SmartPLS 4 MGA test result [44] shown there are only Cost influence toward PBC, and Trust in Application influence toward risks that significantly differ between university students and high school students. High school students typically are less independent financially compared to university students. Therefore, the cost of eLearning is different from the university counterpart. Most Indonesian high school students are also living with their immediate family and have less freedom in learning compared to university students. Therefore, their risk appetite is different from university students'. The final model can be seen in figure 2.

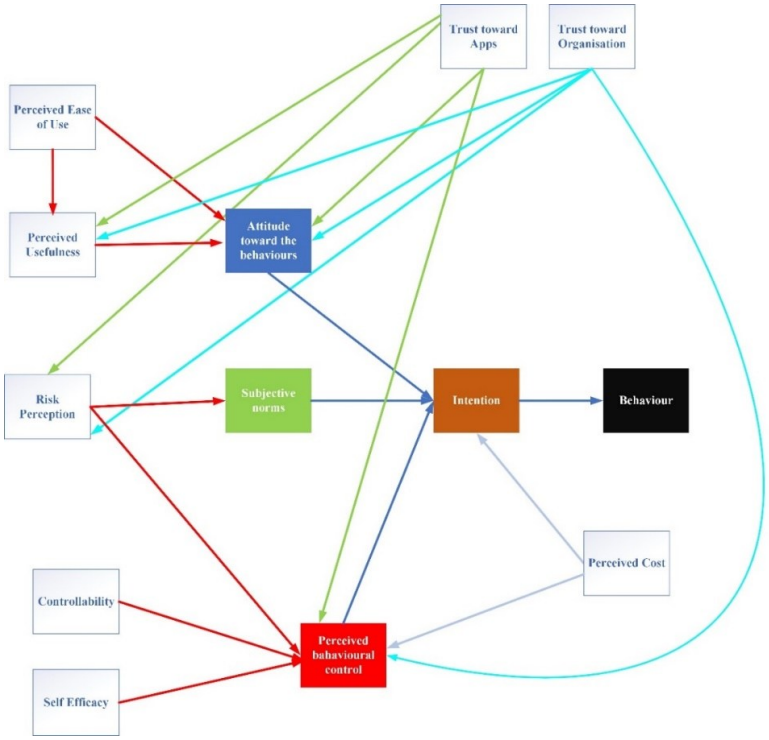


**Figure 2.** Final Extended TPB Research Model

The final model has shown that the original TPB model could explain the usage eLearning by university and high school students [18, 35-37, 40]. Attitude toward using eLearning, subjective norms, and perceived behavioral controls influencing intention to use eLearning. Intention to use eLearning influencing behavior which is using eLearning. Considering security concerns, the study finds that Trust (both toward organization and application used in eLearning) influencing perceived usefulness, Risk perception, attitude toward using eLearning, and perceived behavioral controls. Risk perception is influencing subjective norms and perceived behavioral control. This means that the students relied on their institutions and application selected by institutions for eLearning. In times of uncertainty like the pandemic, the students perceived that their institutions and application providers would protect their online activities. Perceived cost has influence toward intention to use eLearning and perceived behavioral control [63, 66]. This means that cost has been considered as factors that may prevent or support the use of eLearning. Luckily, the government immediately provided financial support and various measures to ensure eLearning accessibility.

## 5. Conclusion

Based on the result of data collected and hypotheses testing, TPB can explain the use of full online classes by Indonesian students under the Covid19 Pandemic situation. Participation in an online classroom is influence by Intention to participate. The intention is influenced by Attitude Toward Behaviours, Subjective Norms, and Perceived Behavioural Control. Our extension toward TPB has also proven to influence the final result. We did not find any significant differences between high school and university students result. The findings suggested that in eLearning environment user trust their institution and application providers to secure their online activities. A proper investment in selection and development application for eLearning should include security by design. Although cost is a consideration, but various measure to support eLearning by reducing the cost to be bear by students have lessen the burden. For future research, more in-depth study on how the students adapt into eLearning need to be explored. The

study only captured how the intention and use of eLearning being influenced by various factors. It is not yet explore the adaptation process and how various factors worked.

## 6. References

[1] R. Subramaniam, S. P. Singh, P. Padmanabhan, B. Gulyás, P. Palakkeel, and R. Sreedharan, "Positive and Negative Impacts of COVID-19 in Digital Transformation," Sustainability, vol. 13, pp. 1-18, 2021, doi: https://doi.org/10.3390/su13169470.

[2] L. Nagel, "The influence of the COVID-19 pandemic on the digital transformation of work," International Journal of Sociology and Social Policy, vol. 40, no. 9/10, pp. 861-875, 2020, doi: https://doi.org/10.1108/IJSSP-07-2020-0323.

[3] Y. Zhu and S. Jin, "COVID-19, Digital Transformation of Banks, and Operational Capabilities of Commercial Banks," Sustainability, vol. 15, pp. 1-17, 2023, doi: https://doi.org/10.3390/su15118783.

[4] A. Ridwansyah, D. C. Lantu, and Y. Anggoro, "Leadership dimensions and behaviors in business schools' forced digital transformation," INTERNATIONAL JOURNAL OF RESEARCH IN BUSINESS AND SOCIAL SCIENCE, vol. 12, no. 3, pp. 159-170, 2023, doi: https://doi.org/10.20525/ijrbs.v12i3.2501.

[5] Z. Szuts, G. Molnár, R. Racsko, G. Vaughan, and T. L. Molnár, "Pedagogical Implications and Methodological Possibilities of Digital Transformation in Digital Education after the COVID-19 Epidemic," Computers vol. 12, no. 73, pp. 1-19, 2023, doi: https://doi.org/10.3390/computers12040073.

[6] R. Rupeika-Apoga, K. Petrovska, and L. Bule, "The Effect of Digital Orientation and Digital Capability on Digital Transformation of SMEs during the COVID-19 Pandemic," Journal of Theoretical and PPlied Electronic Commerce Research, vol. 17, pp. 669-685, 2022, doi: https://doi.org/10.3390/jtaer17020035.

[7] J. Nam, S. Kim, and Y. Jung, "Elderly Users' Emotional and Behavioral Responses to Self-Service Technology in Fast-Food Restaurants," BEhavioral Sciences, vol. 13, no. 4, pp. 284-300, 2023, doi: https://doi.org/10.3390/bs13040284.

[8] S. Sharma and M. Sharma, "Impact of Digital Transformation on Academicians' Well-being: A Study with the Moderating Role of Public and Private Universities in India," Digital Education Review, vol. December 2022, no. 42, pp. 118-135, 2022, doi: https://doi.org/10.1344/der.2022.42.118-135.

[9] A. L. Popova, P. A. Nuttunen, M. V. Kanavtsev, and V. A. Serditov, "The impact of the digital divide on the development of socio economic systems," in International AgroScience Conference, Cheboksary, Russia, 1-2 June 2019 2019, vol. 433, pp. 1-10, doi: https://doi.org/10.1088/1755-1315/433/1/012022.

[10] S. Sarosa, "Forced elearning usage: Extending theory of planned behaviour with perceived cost during Covid 19 pandemic," in 14th IADIS International Conference Information Systems 2021, IS 2021, Virtual, Online, 3-5 March 2021 2021: IADIS, pp. 121-128.

[11] S. Sarosa, "The effect of perceived risks and perceived cost on using online learning by high school students," Procedia Computer Science, vol. 197, pp. 477-483, 2022, doi: https://doi.org/10.1016/j.procs.2021.12.164.

[12] S. Sarosa and A. R. Setyowati, "Trust and Perceived Risks in High School Students' Online Learning Behaviour During Covid19 Pandemic," INTENSIF: Jurnal Ilmiah Penelitian dan Penerapan Teknologi Sistem Informasi, vol. 6, no. 1, pp. 66-80, 2022, doi: https://doi.org/10.29407/intensif.v6i1.16477.

[13] I. Ajzen, "The Theory of Planned Behavior," Organizational Behavior and Human Decision Processes, vol. 50, no. 2, pp. 179-211, 1991, doi: https://doi.org/10.1016/0749-5978(91)90020-T.

[14] D. Hrubes, I. Ajzen, and J. Daigle, "Predicting Hunting Intentions and Behavior: An Application of The Theory of Planned Behavior," Leisure Sciences, vol. 23, no. 3, pp. 165-178, 2001, doi: https://doi.org/10.1080/014904001316896855.
[15] H. Prapavessis, A. Gaston, and S. DeJesus, "The Theory of Planned Behavior as a model for understandingsedentary behavior," Psychology of Sport and Exercise, vol. 19, 2015, doi: https://doi.org/10.1016/j.psychsport.2015.02.001.
[16] E. W. L. Cheng, "Choosing between the theory of planned behavior (TPB) and the technology acceptance model (TAM)," Educational Technology Research and Development, vol. 67, pp. 21-37, 2019, doi: https://doi.org/10.1007/s11423-018-9598-6.
[17] E. H. Redda, "Attitudes towards Online Shopping: Application of the Theory of Planned Behaviour," ACTA UNIVERSITATIS DANUBIUS, vol. 15, no. 2, pp. 148-159, 2019. [Online]. Available: http://journals.univ-danubius.ro/index.php/oeconomica/article/view/5290.
[18] A. N. H. Ibrahim, M. N. Borhan, and R. A. O. K. Rahmat, "Understanding Users' Intention to Use Park-and-Ride Facilities in Malaysia: The Role of Trust as a Novel Construct in the Theory of Planned Behaviour," Sustainability, vol. 12, 2020, doi: https://doi.org/10.3390/su12062484.
[19] T. T. Wei, G. Marthandan, A. Y.-L. Chong, K.-B. Ooi, and S. Arumugam, "What drives Malaysian m-commerce adoption? An empirical analysis," Industrial Management & Data Systems, vol. 109, no. 3, pp. 370-388, 2009, doi: https://doi.org/10.1108/02635570910939399.
[20] H. C. Yang and L. Zhou, "Extending TPB and TAM to mobile viral marketing: An exploratory study on American young consumers' mobile viral marketing attitude, intent and behavior," Journal of Targeting, Measurement and Analysis for Marketing, vol. 19, pp. 85-98, 2011, doi: https://doi.org/10.1057/jt.2011.11.
[21] Q. Xie, W. Song, X. Peng, and M. Shabbir, "Predictors for e-government adoption: integrating TAM, TPB, trust and perceived risk," The Electronic Library, vol. 35, no. 1, pp. 2-20, 2017, doi: https://doi.org/10.1108/EL-08-2015-0141.
[22] A. Gurung and M. K. Raja, "Online privacy and security concerns of consumers," Information & Computer Security, vol. 24, no. 4, pp. 348-371, 2016, doi: https://doi.org/10.1108/ICS-05-2015-0020.
[23] C. Bianchi and L. Andrews, "Risk, trust, and consumer online purchasing behaviour: a Chilean perspective," International Marketing Review, vol. 29, no. 3, pp. 253-276, 2012, doi: https://doi.org/0.1108/02651331211229750.
[24] J.-H. Lee and C.-H. Song, "Effects of trust and perceived risk on user acceptance of a new technology service," Social Behavior and Personality, vol. 41, no. 4, pp. 587-598, 2013, doi: https://doi.org/10.2224/sbp.2013.41.4.587.
[25] J. Ejdys, R. Ginevicius, Z. Rozsa, and K. Janoskova, "The Role of Perceived Risk and Security Level in Building Trust in E-Government Solutions," E+M Ekonomie a Management, vol. 22, no. 3, pp. 220-235, 2019, doi: https://doi.org/10.15240/tul/001/2019-3-014.
[26] K. Chopra and W. A. Wallace, "Trust in Electronic Environments " in The 36th Hawaii International Conference on System Sciences, Hawaii, 2003, pp. 1-10, doi: https://doi.org/10.1109/HICSS.2003.1174902.
[27] J. Ejdys, "Building technology trust in ICT application at a university," International Journal of Emerging Markets, vol. 13, no. 5, pp. 980-997, 2018, doi: https://doi.org/10.1108/IJoEM-07-2017-023.
[28] N. Martin, J. Rice, and R. Martin, "Expectations of privacy and trust: examining the views of IT professionals," Behaviour & Information Technology, vol. 35, no. 6, pp. 500–510, 2016, doi: https://doi.org/10.1080/0144929X.2015.1066444.
[29] R. Baganzi and A. K. W. Lau, "Examining Trust and Risk in Mobile Money Acceptance in Uganda," Sustainability, vol. 9, no. 12, 2017, doi: https://doi.org/10.3390/su9122233.

[30] J. Khalilzadeh, A. B. Ozturk, and A. Bilgihan, "Security-related factors in extended UTAUT model for NFC based mobile payment in the restaurant industry," Computers in Human Behavior, vol. 70, pp. 460-474, 2017, doi: 10.1016/j.chb.2017.01.001.
[31] C. Osborne. "Zoom security: Your meetings will be safe and secure if you do these 10 things." ZDNet. https://www.zdnet.com/article/make-sure-your-zoom-meetings-are-safe-by-doing-these-10-things/ (accessed November 27th, 2020).
[32] A. R. Pratama, "Fun first, useful later: Mobile learning acceptance among secondary school students in Indonesia," Education and Information Technologies 2020, doi: 10.1007/s10639-020-10334-w.
[33] M. T. Rajeh, F. H. Abduljabbar, S. M. Alqahtani, F. J. Waly, I. Alnaami, A. Aljurayyan, and N. Alzaman, "Students' satisfaction and continued intention toward e-learning: a theorybased study," Medical Education Online, vol. 26, no. 1, pp. 1-8, 2021, doi: 10.1080/10872981.2021.1961348.
[34] A. Rof, A. Bikfalvi, and P. Marques, "Pandemic-accelerated Digital Transformation of a Born Digital Higher Education Institution: Towards a Customized Multimode Learning Strategy," Educational Technology & Society, vol. 25, 1, pp. 124-141, 2022.
[35] M. H. Pakravan and N. MacCarty, "What Motivates Behavior Change? Analyzing User Intentions to Adopt Clean Technologies in Low-Resource Settings Using the Theory of Planned Behavior," Energies, vol. 13, 2020, doi: :10.3390/en13113021.
[36] W. H. Loo and H. P. Y. Y. Y. Y. Paul, "Antecedents of the responsible acquisition of computers behaviour: Integrating the theory of planned behaviour with the value-belief-norm theory and the habits variable," (in English), PLoS One, vol. 18, no. 6, Jun 2023

2024-10-24 2023, doi: https://doi.org/10.1371/journal.pone.0286022.
[37] R. B. Basnet, D. J. Lemay, and P. Bazelais, "Modeling students' intentions to learn data science: Using an extended theory of planned behavior," (in English), Knowledge Management & E-Learning, vol. 16, no. 4, pp. 638-652, 2024

2025-03-10 2024, doi: https://doi.org/10.34105/j.kmel.2024.16.029.
[38] T. Clark, L. Foster, L. Sloan, and A. Bryman, Bryman's social research methods, Sixth edition. ed. (Social research methods). Oxford: Oxford University Press, 2021.
[39] V. Sheppard, Research Methods for the Social Sciences. Place of publication not identified: BCcampus, 2020.
[40] M. T. Liu, Y. Liu, and Z. Mo, "Moral norm is the key: An extension of the theory of planned behaviour (TPB) on Chinese consumers' green purchase intention," (in English), Asia Pacific Journal of Marketing and Logistics, vol. 32, no. 8, pp. 1823-1841, 2020

2024-11-17 2020, doi: https://doi.org/10.1108/APJML-05-2019-0285.
[41] F. D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," MIS Quarterly, vol. 13, no. 3, pp. 319-340, 1989, doi: https://doi.org/10.2307/249008.
[42] M. P. Bach, M. Meško, A. M. Stjepić, K. Sarwar, and Q. Fayyaz Hussain, "Understanding Determinants of Management Simulation Games Adoption in Higher Educational Institutions Using an Integrated Technology Acceptance Model/Technology–Organisation–Environment Model: Educator Perspective," (in English), Information, vol. 16, no. 1, p. 45, 2025

2025-01-25 2025, doi: https://doi.org/10.3390/info16010045.
[43] E. Gößwein and M. Liebherr, "Embracing Change in the Modern Working Environment: Exploring the Role of Trust, Experimentation, and Adaptability in the Acceptance of New Technologies," (in English), Sage Open, vol. 15, no. 1, Jan 2025

2025-05-05 2025, doi: https://doi.org/10.1177/21582440241311126.
[44] SmartPLS 4. (2022). SmartPLS GmbH, Oststeinbek. [Online]. Available: http://www.smartpls.com

[45] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), 3rd ed. Los Angeles: Sage, 2022.
[46] I. Ajzen, Attitudes, Personality, and Behavior. Milton-Keynes: Open University Press, 1988.
[47] I. Ajzen, Attitudes, personality, and behavior, 2nd ed. Milton-Keynes: Open University Press / McGraw-Hill, 2005.
[48] N. Fortes and P. Rita, "Privacy concerns and online purchasing behaviour: Towards an integrated model," European Research on Management and Business Economics, vol. 22, pp. 167-176, 2016, doi: https://doi.org/10.1016/j.iedeen.2016.04.002.
[49] H. O. Awa, O. U. Ojiabo, and B. C. Emecheta, "Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs," Journal of Science & Technology Policy Management, vol. 6, no. 1, pp. 76-94, 2015, doi: https://doi.org/10.1108/JSTPM-04-2014-0012.
[50] M. M. Rahman, M. F.Lesch, W. J.Horrey, and L. Strawderman, "Assessing the utility of TAM, TPB, and UTAUT for advanced driver assistance systems," Accident Analysis & Prevention, vol. 108, pp. 361-373, 2017, doi: https://doi.org/10.1016/j.aap.2017.09.011.
[51] F. A. Kimathi, Y. Zhang, and L. Hu, "Citizens' Acceptance of E-Government Service: Examining E-Tax Filing and Payment System (ETFPS) in Tanzania," African Journal of Library, Archives and Information Science, vol. 29, no. 1, pp. 45-62, 2019.
[52] P. A. Pavlou and M. Fygenson, "Understanding and predicting Electronic Commerce adoption: an extension of the Theory of Planned Behavior," MIS Quarterly, vol. 30, no. 1, pp. 115-143, 2006, doi: https://doi.org/10.2307/25148720.
[53] A. Herrero and H. S. Martín, "Effects of the risk sources and user involvement on e-commerce adoption: application to tourist services," Journal of Risk Research, vol. 15, no. 7, pp. 841–855, 2012, doi: https://doi.org/10.1080/13669877.2012.666758.
[54] M.-H. Hsu and C.-M. Chiu, "Predicting electronic service continuance with a decomposed theory of planned behaviour," Behaviour & Information Technology, vol. 23, no. 5, pp. 359–373, 2004, doi: https://doi.org/10.1080/01449290410001669969.
[55] S. U. Rehman, A. Bhatti, R. Mohamed, and H. Ayoup, "The moderating role of trust and commitment between consumer purchase intention and online shopping behavior in the context of Pakistan," Journal of Global Entrepreneurship Research, vol. 9, no. 43, 2019, doi: https://doi.org/10.1186/s40497-019-0166-2.
[56] J. S. Kim, S. Yoon, and D. M. V. Zemke, "Factors affecting customers' intention to use of location-based services (LBS) in the lodging industry," Journal of Hospitality and Tourism Technology, vol. 8, no. 3, pp. 337-356, 2017, doi: https://doi.org/10.1108/JHTT-03-2017-0023.
[57] N. Pérez-Macías, J. L. Fernández-Fernández, and A. R. Vieites, "Entrepreneurial intentions: trust and network ties in online and face-to-face students," Education + Trainin, vol. 61, no. 4, pp. 461-479, 2019, doi: https://doi.org/10.1108/ET-05-2018-0126.
[58] E. Cheunkamon, S. Jomnonkwao, and V. Ratanavaraha, "Determinant Factors Influencing Thai Tourists' Intentions to Use Social Media for Travel Planning," Sustainability, vol. 12, 2020, doi: https://doi.org/10.3390/su12187252.
[59] J. F. Hair, M. Sarstedt, L. Hopkins, and V. G. Kuppelwieser, "Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research," European Business Review, vol. 26, no. 2, pp. 106-121, 2014, doi: https://doi.org/10.1108/EBR-10-2013-0128.
[60] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), 2nd ed. Los Angeles: Sage, 2017.
[61] J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, "When to use and how to report the results of PLS-SEM," European Business Review, vol. 31, no. 1, pp. 2-24, 2019, doi: https://doi.org/10.1108/EBR-11-2018-0203.

[62] K. Nuttavuthisit and J. Thøgersen, "The Importance of Consumer Trust for the Emergence of a Market for Green Products: The Case of Organic Food," Journal of Business Ethics vol. 140, no. 2, pp. 323–337, 2017, doi: 10.1007/s10551-015-2690-5.
[63] G. Ghaliya, "Majority of Indonesians find distance learning costly: Study," in The Jakarta Post, ed. Jakarta: PT Niskala Media Tenggara, 2020.
[64] SMRC, "Asesmen Publik tentang Pendidikan Online di Masa COVID-19 " Saiful Muljani Research and Consulting, Jakarta, 2020. [Online]. Available: https://saifulmujani.com/wp-content/uploads/2020/08/SMRCSurvei-Telepon_5-8-Ags-2020_-BELAJAR-ONLINE-2.pdf
[65] L. Olavia and J. N. Shofa. "Students and Teachers to Receive Internet Subsidy for Online Classes." Jakarta Globe. https://jakartaglobe.id/news/students-and-teachers-to-receive-internet-subsidy-for-online-classes (accessed 23rd December 2020, 2020).
[66] N. Tsaloukidis, D. Tsoromokos, D. Zarakovitis, A. Vozikis, and A. Lazakidou, "Comparative Analysis of Cost-Effectiveness in Basic Life Support Training: Traditional Learning versus Distance Learning," (in English), Advances in Management and Applied Economics, vol. 10, no. 3, pp. 13-20, 2020