CONTINUOUS INTENTION TO USE ONLINE LEARNING DURING COVID-19 PANDEMIC BASED ON THREE DIFEERENT THEORITICAL MODELS (TAM, SVT, TOE)

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ABSTRACT

The novel COVID-19 pandemic has impacted educational systems in almost all countries worldwide. Traditional classes have been canceled or shifted to online mode through the affected countries. Resuming traditional face-to-face instruction might be delayed. This unexpectedly fast and mandatory shifting to online education, along with the significant challenges that face learners and instructors, has led to uncertainty regarding its future. This study aims to inspect students' continuous intention (CI) towards online education during COVID-19, by incorporating different constructs from three theoretical models: first, conservation values(Security(SEC), Conformity(CON)) of Schwartz Value Theory(SVT), organizational support factors (Training(TR), Top management support(TS)) in Technology-Organizational-Environmental (TOE) , and the Technology acceptance model(TAM) main factors (perceived usefulness(PU), perceived ease of use(PEU)). To achieve the research goal, a research model was developed referring to previous strong literature. The data was gathered from 310 students from Imam Abdulrahman Bin Faisal university (IAU) in Saudi Arabia, and analyzed with Structural Equation Modelling SEM-PLS. Findings show that TAM factors (PU, PEU), conservation values factors (SEC, CON), and organizational support factors (TR, TS) are important determinants for online learning adoption during COVID19 pandemic . The study provides directions for designers and developers to establish a more effective online learning environment, which is more suited for the new digitized generation during unexpected conditions.

Keywords: Online learning, Schwartz's Value Theory, COVID-19, technology-organizational-environmental, TAM, continuous intention.

INTRODUCTION

A report from the World Health Organization (WHO) about pneumonia cases in China specifically in Wuhan City, Hubei Province was published to the global society (Gao et al., 2020) . The disease spread swiftly worldwide since December 2019 (Rashid & Yadav, 2020). The Chinese government announced that this spreading pneumonia is a new type of coronavirus (Goyal et al., 2019). The primary reason for this rapid spread of the disease is a zoonotic beta-coronavirus, and it is called the 2019 novel coronavirus (2019-nCoV) (Khachfe et al., 2020).

The aftermath of COVID-19 has led to an immense public health crisis, the catastrophic collapse of medical care systems, and a dramatic decline in the wellbeing levels of the world's populations (Khachfe et al., 2020). Since January 2020, many economics, businesses, schools, and higher education institutions (HEIs) have been affected by Covid-19 ('Coronavirus'). It has become a pandemic that poses enormous challenges to the global economy and people's livelihoods in many countries (Agasisti & Soncin, 2021; Rizun & Strzelecki, 2020). Lost revenues, disrupted supply chains, and school closures are some examples of such formidable challenges (Khachfe et al., 2020; Rashid & Yadav, 2020). In response to the high infection rate of Covid-19, many governments adopted strict regulations and took drastic measures to stop its spread to give ample time for health care systems to work more effectively.

Initially, restrictions have been put in place to lower people's social contact by enforced social distancing (Rashid & Yadav, 2020). This means keeping a distance between each other more than one meter according to WHO instructions. The most effective preventive measures according to Agency France Press (AFP) are to remain confined at home and to keep travel and social contact to a minimum which will eventually control the spread of the virus (Khachfe et al., 2020). Also, many governments release daily reports to their citizens to make them aware of the biological nature of (coronavirus), which helps to clarify the controlling instructions and reach good decisions (Xie & Chen, 2020). Consequently, many HEIs and schools across nations have been closed as precautionary steps to save students' and staff's lives. Different HEIs have adopted online education implementing a wide array of models and tools. Some HEIs offer synchronous and asynchronous classes where students can log on to virtual platforms and attend live or recorded classes (Agasisti & Soncin, 2021). Other HEIs use self-paced instruction models. It entails sending different activity worksheets and assignments designed by instructors to students to facilitate self-learning. Relying on remote learning and adopting even more advanced modalities is foreseeable. Hence, shifts in the education landscape are inevitable to prepare the new generations for the upcoming challenges and opportunities. Remote learning will remain an integral part of the educational process around the world even in the post-COVID-19 (Marinoni et al., 2020).

Continuous adaptation of online education is based on the fact that there have been noticeable advancements in the last ten years in the field of online learning resources (Aldikanji & Ajami, 2016; Price et al., 2007; Weltman et al., 2019; Yilmaz, 2015). There is a growing demand for e-learning tools in educational and industrial institutes, which allows the e-learning market to flourish (Alves et al., 2017; van de Heyde & Siebrits, 2019). By 2023, the evolving market of virtual learning is anticipated to reach 65.41 billion USD expanding at a cumulative average increase rate of 7.07%(Panigrahi et al., 2018). Moreover, it is predicted that the global learning management system (LMS) will witness massive growth by 2025 (Panigrahi et al., 2018). There will be a rise from 5.05 billion dollars in 2016 to 18.44 billion increasing at a rate of 15.52% (Panigrahi et al., 2018). This rise has led to an increase in learners' habitual use of the internet in education (Yilmaz, 2015).

Online learning can help educators in enhancing the quality of education by making the learning process more personal and interactive (Saqr et al., 2018; Yilmaz, 2015). Engaging in an interactive learning environment, along with becoming more involved in the learning process, empower students' self-learning abilities, and improve their intrinsic motivation towards learning (Eseroghene & Ahmad, 2018; Weltman et al., 2019). Also, education has become more accessible for students with exceptional circumstances and tight schedules (Marinoni et al., 2020). Online learning has offered them customized learning experiences and access to quality education (Babu et al., 2013). In contrast to traditional classroom teaching, online learning has extended learning beyond the walls of classrooms, reaching a global community of learners via the internet. Shifting from direct instruction to online education has been paved by moving from paper-based to electronic materials (Price et al., 2007), which boasts several advantages over traditional learning (Molnar et al., 2019).

Previous literature has focused on evaluating factors influencing e-learning satisfaction performances and adoption from a descriptive perspective (Asoodar et al., 2016). However, the present study aims at determining key elements affecting the continuous intention to adopt e-learning modality during the current crisis to offer appropriate guidelines for e-learning organizations, decision-makers, academics, and educators. The results can help to overcome hurdles and to lower the risks of e-learning adoption failure. Academics and decision-makers can employ the findings of this research to adopt and implement an effective e-learning system as a safe path during periods of health crises, epidemics, environmental and economic crises.

This study has a contribution of combining Schwartz's value theory (SVT), Technology Acceptance Model (TAM), along withTechnology-organizational-environmental to investigate learners' continuous intention for adoption of e-learning during COVID-19 crisis. Additionally, this study considers four factors that can overcome learners' attitudinal ambivalence in adopting online learning as a safe tool during a period of crises: (1) security, (2) conformity, (3) Top management support, and (4) training. Our model provides a useful model for examining learners' intentions for using e-learning continuously. The next section starts with reviewing the literature and then manifesting the research model with hypotheses. After that, we demonstrate the methodology and empirical results. The paper ends with a discussion of the results.

THEORETICAL BACKGROUND

Technology Acceptance Model (TAM)

TAM was suggested by Davis to explore the influence of innovations on individuals' actions (Liu et al., 2010). TAM is one of the most wildly applied and dominant models (King & He, 2006). TAM indicates that the Use Intention (UI) can be anticipated using two basic constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). PU refers to the enhancement in user performance through using the innovation, while PEU indicates that using the innovation is effort-free (Davis, 1989). Venkatesh & Davis(2000) indicated that several constructs can be adopted to enhance PU and PEU. TAM model was used in the online learning context to explain individuals' acceptance, UI, and CI (Binyamin et al., 2019; Liaw, 2008). Still, the adoption of the TAM model to explain the online learning adoption, particularly in a crisis, is novel. The power of TAM to evaluate the UI and CI of innovations in several environments has motivated us to adopt TAM as a theoretical ground of this research (Cheng et al., 2011; Gefen et al., 2003; Liaw, 2008; Liu et al., 2010)

Schwartz's Value Theory (SVT)

Previous literature has indicated how cultural factors influence technology adoption and acceptance (Baptista & Oliveira, 2015; Kummer et al., 2017; Srite & Karahanna, 2006; Udo et al., 2012). Srite & Karahanna(2006) investigated the impact of culture-related values on the acceptance of innovation. The authors indicated that individuals' cultural values are affected by national culture, and this consequently affects technology acceptance. Similarly, Baptista & Oliveira(2015) explained how mobile banking acceptance is affected by cultural factors. Besides, Udo et al. (2012) examined the impact of cultural ethos on the acceptance of e-services. These studies indicated that culture is regarded as a critical factor that impacts UI. Referring to Tarhini et al. (2017) research, which focused on e-learning in Lebanon, the social environment was considered as a significant factor, in which the culture influences the behavior of individuals. Also, Salehan et al.(2018) indicated that cultural changes are more associated with individualism and it is affected by technology. Nevertheless, according to Smith(2002) study, culture is usually formed by members of a particular society and constitutes a set of basic common values. Bagchi et al. (2015) indicated the difference between culture and values. While the values distinguish between the individuals, the culture distinguishes between the groups of individuals. Values act as the main standard by which people choose and explain behaviors. Values are internally held beliefs that represent favorable goals that drive the action of behavior (Schwartz et al., 2012).

Values constitute the motivational bases of attitude along with the behavior of a person. Whereas at a group level, the prioritization of value structures helps to frame the culture (Boer & Fischer, 2013; Schwartz, 1994). UI of technology might be influenced by the cultural or personal values that form the user's attitude. Therefore, values act as the primary principles and indicators by which users adopt and justify actions.

At the individual level, Schwartz developed a theory that relates basic values that people recognize in every culture (Schwartz, 2012). Schwartz's theory is one of the common implemented and verified cross-cultural theories in the field of behavioral research(Garay, 2019). Schwartz (1992) highlighted10 motivationally different groups of values as follows: (1) achievement, (2) self-direction, (3) tradition, (4) stimulation, (5) security, (6) hedonism, (7) benevolence (8) power, (9) conformity, and (10) universalism. These groups were categorized into four high-level values: self-transcendence, self-enhancement, openness to change, and conservation. Combining SVT with decision models was implemented by several studies (Ahmad & Sun, 2018; Diddi & Niehm, 2017; Goncalves et al., 2018; Grigoryan et al., 2018a, 2018b; Pahnila et al., 2011; Seddig & Davidov, 2018). These studies revealed that individual-level values and values dimensions can affect users' attitude (ATT). Moreover, as indicated by these studies, the approach adopted by researchers who apply Hofstede's dimensions as moderators of attitude-behavior relationships differs from the procedure carried out by studies that utilize Schwartz's values as predictors of ATT or UI (Diddi & Niehm, 2017; Grigoryan et al., 2018b).

The values theory has been utilized to explore political choices and human rights (Davidov et al., 2008). Still, few papers deployed this theory in the adoption of innovation (Mehta et al., 2019). For example, in research about the most prominent experiences of effective and ineffective innovation adoption, Partala & Saari (2015) indicated that most of the values are tied to effective innovation adoption. Bagchi et al. (2015) proposed a model using the Schwartz values theory to explore Internet use. They indicated that most of the individual values impact the usage of the Internet.

Technology-organizational-environmental (TOE)

TOE framework has been broadly implemented in organizational context studies to investigate firm adoption of IT products and services (Tornatzky et al., 1990; Zhu, 2004). According to the TOE, which is an organizational-level theory, compared to other technological acceptance models like TAM, TPB, and RBV, studies should concentrate not only on technical respects yet, they should also take into consideration the organizational and environmental contexts of the IT adoption(Borgman et al., 2013; Gangwar et al., 2015). Flexibility of the TOE framework allows it to be more advantageous over other IT adoption models (Oliveira & Martins, 2009). Moreover, TOE offers a comprehensive consideration for user adoption of innovations by incorporating factors affecting decisions of the adoption of business innovation, to enhance organizational abilities in utilizing technology (Salwani et al., 2009; Shahzad et al., 2020; Y. M. Wang et al., 2010). Besides, several studies have implemented the TOE framework to understand the adoption of IT-based systems with an environmental, organizational, and technological base (Alqahtani, 2016; Awa et al., 2015; Boateng et al., 2016; Friedrich-Baasner et al., 2018; Lian et al., 2014; Liang et al., 2017; Mohd Sharif et al., 2017; Mtingwi, 2015; Senyo et al., 2016).

Extended TAM with SVT, and TOE Framework

This paper employs three theoretical grounds: the TAM model, SVT and TOE framework. Although the significance of the TAM and the TOE models in technological adoption have been justified by a broad range of empirical and conceptual research, these models have several limitations. For example, the extrinsic variables in the extended models of TAM are not plainly defined. Also, its two main constructs (PU and PEU) elucidate less than 50% of the system's use (Legris et al., 2003). On the other side, Riyadh et al. (2009) described the TOE framework as a too generic model that has vague major constructs (S. Wang & Noe, 2010). According to Gangwar et al. (2015) it is not simple to combine both models, but it is important to improve the TOE structure by combining it with a model with clear constructs. Hence, previous studies have advocated the need to combine TAM and TOE to boost the predictive capacity of the resulting outcomes and address some of its limitations. Moreover, each of the TOE or TAM models does not concentrate on how personal values affect the adoption of innovations in any context. Based on Goncalves et al. (2018) few studies applied SVT in technology adoption and few studies have integrated it with the TAM model. Consequently, the research approach implemented in this paper is based on integrating the TAM with the TOE framework, which is broadly acknowledged, and it reckons institutional adoption variables rather

than individual variables (Borgman et al., 2013; Chau & Tam, 1997; Low et al., 2011; Tweel, 2012). Also, the paper integrates TAM with SVT theory that focuses on personal values in evaluating personal and institutional decision-making concerning the adoption of e-learning during the COVID-19 crisis.

RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

This study involves developing and testing an extended TAM model with SVT, and TOE framework. Hence, several hypotheses have been developed in the hypothesized model as illustrated in Figure 1, also see table 1. The hypotheses depict the relationships between variables that have been supported by previous literature.

According to Schwartz (1992) study, conservation values refer to meeting the expectations of key influencers in their environment, considering both peers as well as organizational levels. The adoption of new technology is often influenced by formal and informal communication and control between inter-organizational mechanisms over organizational resources (Salwani et al., 2009; R. K. Singh, 2013). Consequently, this study discusses the related organizational factors that influence online learning adoption in HEIs.

Hypothesis 1: Security (SEC) and Perceived Usefulness (PU)

The SEC values contain two subtypes, the first is personal SEC like values of sense of belonging, personal health, wellbeing, and safety, while the second is societal SEC like the value of national SEC, safe from enemies, and firm social order (Schwartz et al., 2012). In this research, we define security as individuals' emphasis on safety, sympathy, and firm social links. Referring to Mehta et al. (2019) study, employees will perceive job-related e-learning program, which is endorsed by top managers in the organizational hierarchy, as necessary to their career objectives, and worth their effort and time to deploy them. Moreover, the study projected that workers finish basic training programs through e-learning tools to protect their future employment against the threat of peer competition. Consequently, a secured environment is essential to all users, students who give significant importance to SEC value will perceive online learning technology to be helpful to their learning performance during COVID-19. So, by incorporating conservation-type values (SEC) as a predictor of PU, the following hypothesis is proposed H1: SEC has a significant positive impact on the PU of online learning.

Hypothesis 2: Conformity (CON) and Perceived Usefulness (PU)

Schwartz, (1994) defined CON as "control of behaviors, inclinations, and momentum likely to disturb others and defile social prospects or norms." Schwartz et al.(2012) suggested two potential CON subtypes, the first is interpersonal that is related to values like avoiding upsetting others, and showing respect, while the second is complying with expectations, meeting obligations, following rules, and avoiding doing anything people say is wrong. Conforming persons show obedience to follow rules, structures, and instructions designed by the organization in terms of obligatory choice (Bagchi et al., 2015; Mehta et al., 2019). Moreover, they are abiding by the rules and conforming to agreed laws. In this study, students who give significant importance to CON to authority instructions, like social distancing to avoid the threat of COVID-19, will perceive online learning technology to be helpful to their learning performance during COVID-19. Hence, we add the conservation-type values (CON) as a predictor of PU so, H2: CON has a significant positive impact on the PU of online learning.

Hypothesis 3: Training TR and Perceived Ease of Use (PEU)

Schillewaert et al. (2005) described TR as a degree to which organizations instruct and educate their staff in using innovation in terms of quality and quantity. Several studies indicated that TR's goal is to reduce ambiguity and to develop knowledge for future effective usage (Davis, 1989; Gangwar et al., 2015; Igbaria & Angele, 1997). TR should reflect the usefulness of the innovation and provide users with the necessary knowledge and capability to operate it. Since online learning is a complicated information system, HEIs need to train and educate its students before adopting it. This helps to lower students' anxiety about the

usage of online learning. Also, based on Schillewaert et al. (2005) study, TR helps to achieve the goals of the organization, increases students' understanding of online learning benefits, and raises the motivation to adopt the technology. (Arpaci, 2017) indicated that if students believe that they are capable of using an online learning system through the TR time, they will be mindful of the unfavorable learning curve impacts. So, the following hypothesis is proposed H3: TR has a significant and positive impact on PEU of online learning.

Hypothesis 4: Top Management Support (TS) and Perceived Ease of Use (PEU)

Innovation adoption literature has also determined how TS affects the adoption of innovations (Salwani et al., 2009; Teo et al., 2009). Previous literature explained that TS is higher-level officials' actions and perceptions toward using innovation, to create values for the organization (Gangwar et al., 2015; Salwani et al., 2009). Top managements have various roles that are necessary to ensure the commitment of resources, cultivation of organizational climate, reinforcement of values, and ensuring long-term vision. Furthermore, continuous TS is necessary for overcoming barriers and to handle possible resistance towards technological innovation (Gangwar et al., 2015; Jeyaraj et al., 2006; Ramdani et al., 2009; R. K. Singh, 2013; Teo et al., 2009; Y. M. Wang et al., 2010). TS is positively related to PEU and is considered a critical factor in the adoption of information technologies. Unfortunately, according to G. Singh & Hardaker(2014), in the academic field, TS is often absent and has a low priority. Managers might not support online Learning, due to many reasons like competing priorities and lack of resources (Freitas et al., 2006; Lisewski, 2004). In the current study, TS is necessary to reinforce the value of using online learning services due to the very fast shift to online learning caused by the crisis. So, the following hypothesis is proposed H4: TS has a significant and positive impact on PEU of online learning.

Hypothesis 5: Perceived Usefulness (PU) and Attitude (ATT)

PU is defined as the degree to which person can utilize a particular innovation to increase users' job achievement (Davis, 1989). This construct is identical to other constructs, like "relative advantage" in the DOI (Rogers, 2010), and "effort expectancy" in the UTAUT (Venkatesh et al., 2003). Focusing on the current crisis, PU refers to the extent to which students believe that the utilization of online learning will enhance their learning process and will boost their learning performance. So, the following hypothesis is proposed H5: PU has a significant and positive impact on learners' ATTs.

Hypothesis 6: Perceived Ease of Use PEU and Attitude (ATT)

PEU's is the degree to which users presume that understanding and learning innovation is easy and effortless (Davis, 1989). This construct is the same as the effort expectancy in the UTAUT (Venkatesh et al., 2003) and to "complexity" in the DOI Theory (Rogers, 2010). The complexity of online learning systems depends on how easy it is to perform the key learning functionalities. The easier it is to perform these functionalities, the lower the level of complexity, and the easier the perception of system advantages. In this study, PEU is learners' perceptions that the use of online learning is possible without physical and mental effort. Accordingly, if the learners feel that using an online learning platform requires less mental and physical effort and can be simply and easily used, their ATT towards using online learning are greater; hence, we suggest H6: PEU has a positive impact on students' ATT towards online learning adoption.

Hypothesis 7: Attitude (ATT) and Contious Intention (CI)

Davis et al. (1989) defined ATT as "an individual's overall affective reaction to using innovation". However, continued use intentions can be defined as "the level of users' belief that he or she will keep using the innovation (Venkatesh et al., 2003). Icek (1991) proposed that the more favorable students' ATT towards using an online learning system, the greater their CI would be. The TAM presumes that PU and PEU positively influence the ATT, which refers to a user's assessments and evaluation regarding system usage. According to Shih(2004), ATT describes general users' feelings of favor or disfavor toward a specific behavior. Consequently, we suggest the following H7: ATTs toward online learning services are significant and positively associated with CI.

Table 1. Summary of the Hypothesis

| Number	Hypothesis details
H1	SEC has a significant positive impact on the PU of online learning.
H2	CON has a significant positive impact on the PU of online learning.
H3	TR has a significant and positive impact on PEU of online learning.
H4	TS has a significant and positive impact on PEU of online learning
H5	PU has a significant and positive impact on learners' ATTs
H6	PEU has a positive impact on students' ATTs towards online learning adoption.
H7	ATTs toward online learning services are significant and positively associated with CI.
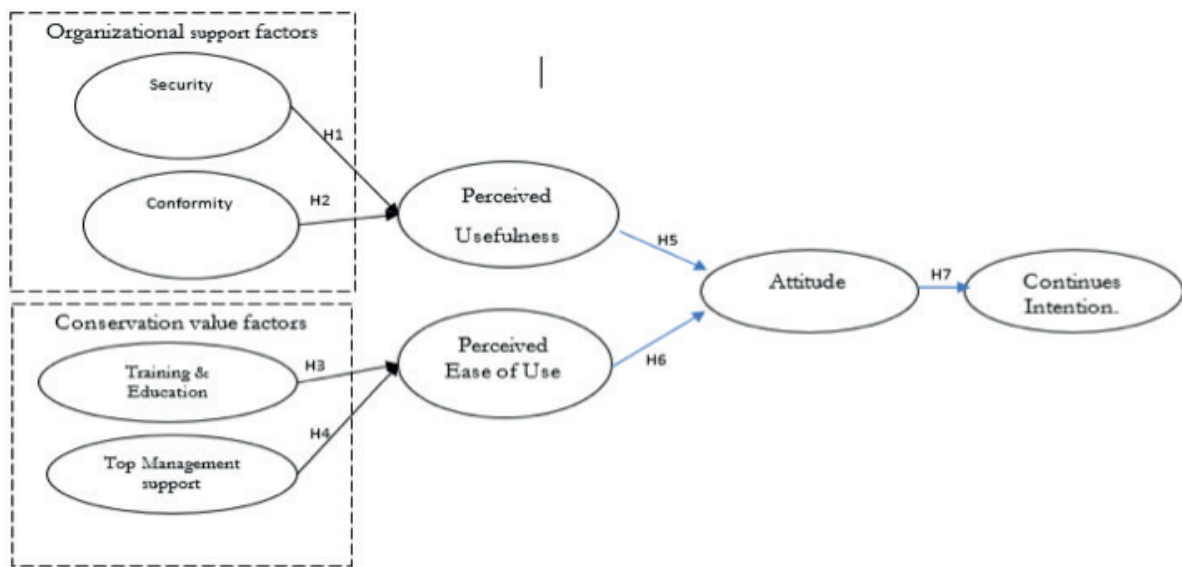
Figure 1. The Research Model

RESEARCH METHODOLOGY

For data gathering, we utilized a questionnaire tool to assess the eight basic variables in the research model (SEC, CON, TR, PU, TS, PEU, ATT & CI). We adopted a five-point Likert scale (1 to represent: strongly disagree and 5 to represent: strongly agree) for the basic factors in the research model. To assure the credibility of the utilized questionnaire, the questions were adapted from previous studies. Following that, survey questions were evaluated by five experts in the education and information system fields. The research was performed with the involvement of 310 participants (IAU). As the participants of the survey are students in a higher education institution, we did not need to translate the questionnaire to the Arabic language . The questionnaire was sent to students through their emails and they were encouraged to fill it by their instructors. The questionnaire contains two parts. In the first part, demographic information was needed to segment the data and classify the respondents. This part gathered information regarding age, gender, education level, see table 2. The purpose of the second part was to assess the factors affecting continuous intention to use online learning based on the conceptual model factors, see table 7 in Appendix 1. The validity and reliability of the results were evaluated using partial least square (PLS) software, by considering the values of Composite Reliability(CR) (0.7), Cronbach's Alpha(CA) (0.7), Average Variance Extracted (AVE) (0.5), and Loading Factor (0.7) (Hair et al., 2013).

Table 2. Demographic Results of the Participants (N=310)

	Item	Frequency	Percent
Gender	Female	150	48.3
	Male	160	51.6
Age	18-20	70	22.5
	21-30	190	61.2
	>30	50	16.1
Academic level	undergraduate	220	70.9
	Postgraduate	90	29.0

EMPIRICAL RESULTS

Measurement Model Analysis

Referring to Hair et al. (2013) all research variables, SEC, CON, TR, TS, ATT, PU, PEU, and CI, were examined in terms of CA, and AVE tests. CA measure was used to evaluate the reliability of the multi-indicator variables. The resulted outcomes of the CA test varied between 0.734 to 0.929, presenting sufficient reliability for each research variable Hair et al., (2013) . As presented in Table 5, the CR test result was more than 0.7 for all research variables, supporting the internal consistency of the variable items. Assessing the convergent validity of research variables was established using AVE and outer loading measures. The AVE was higher than 0.5, affirming the latent variables' explanatory power of the presented variables. The indicator loadings were inspected to assess the reliability of the variable for research measurement. The loading of each indicator needs to achieve a result of at least 0.70 to fulfill the indicator reliability condition (Hair et al., 2013). In the resulted outcome, only one item (CON 5) did not achieve the outer loading condition. Still, following Hair et al. (2013) suggestions, we decided to keep the item for further analysis, as deleting this item will not impact the result of CA and CR tests. The Discriminant validity was inspected by two main tests: the Fornel-Larker criterion and cross-loadings tests. In the Fornel-Larker criterion, the outcomes of the square roots for each factor's AVE need to be higher than the correlation with other variables. In the cross-loadings evaluation of the indicators, the loading of each index in any variable needs to load more highly than the cross-loadings on other variables. The above-mentioned indicators supported that the research model of this research can be utilized to inspect the collected data (Table 6).

Structural Model Analysis

After affirming the validity and reliability of the variables model, the paths model should be analyzed carefully. A bootstrapping method was applied to obtain the t-values and p-values (Hair et al. 2015). These measures can aid the researcher to check the degree of the impact of the coefficients. The path test outcomes are displayed in Table 3. All the paths in the research model are statistically accepted. Additionally, the predictive power of the research model is identified using the coefficients of the determination test (R2). R2 defines the ratio of contrast in an endogenous variable, which can be reflected by its exogenous variables (Hair et al. 2015). The R2 measures for the endogenous variables have values in the 0-1 range. The findings of the coefficients of the determination test are demonstrated in Table 4. The measures of R2 fall between 0.434 to 0.662, highlighting more predictive accuracy with increasing measures (Hair et al. 2015).

The effect size test inspects each exogenous variable, by the means of the power of its share to explain a specific endogenous factor using the R2 indicator. Cohen (1988) recommended that if the f^2 result is within the 0.02-0.15 range, the influence is little. The effect is moderate if the result of the effect size is within the 0.15-0.35 interval. On the other hand, if the f^2 outcome is more than 0.35, the impact is high. Table 4 presents the effect sizes.
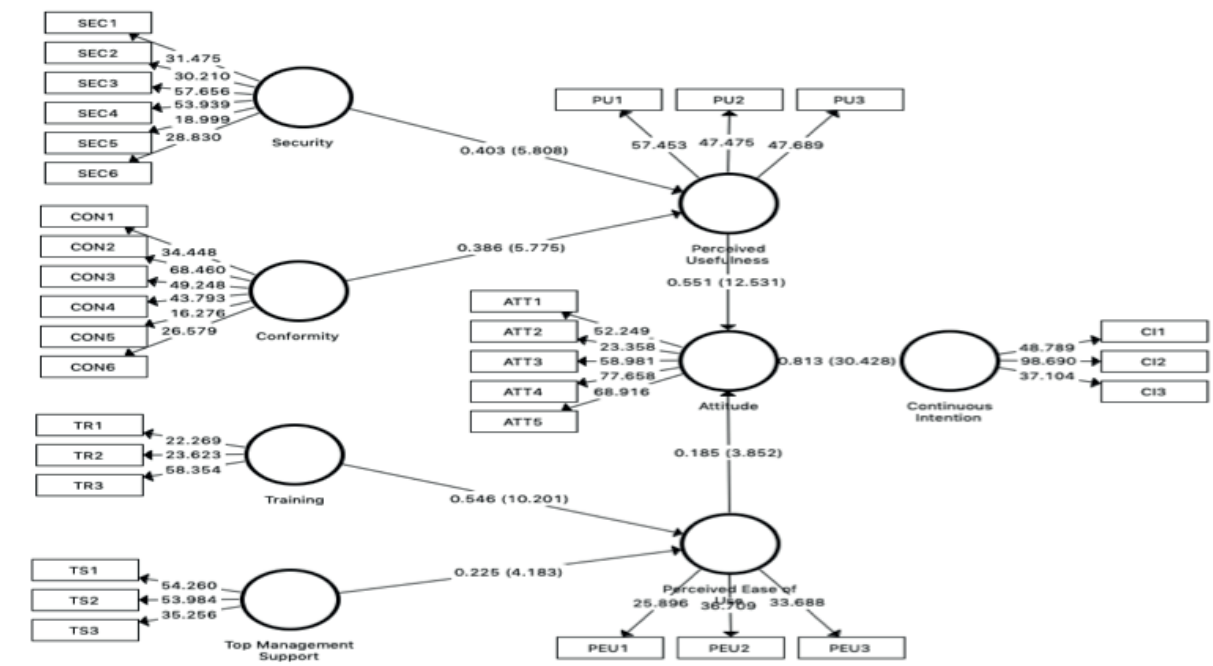
Figure 2. The Final Research Model

Table 3. Path Analysis Output

Hypotheses	Original Sample (O)	Sample Mean (M)	STDEV	T-Values	P-Values	
ATT -> CI	0.813	0.813	0.024	33.279	0.000	Accepted **
CON -> PU	0.386	0.384	0.073	5.302	0.000	Accepted **
PEU -> ATT	0.185	0.192	0.046	4.051	0.000	Accepted **
PU -> ATT	0.551	0.548	0.046	12.068	0.000	Accepted **
SEC -> PU	0.403	0.409	0.076	5.315	0.000	Accepted **
TS-> PEU	0.225	0.224	0.053	4.204	0.000	Accepted **
TR -> PEU	0.546	0.553	0.052	10.513	0.000	Accepted **

Significant at Degree= * <0.05, ** <0.01

Table 4. F-Squares and R-Squares Results

	ATT	CI	PEU	PU	R Square	R Square Adjusted
ATT		1.956			0.434	0.430
CI					0.662	0.661
CON				0.155	0.438	0.434
PEU	0.047				0.535	0.532
PU	0.417					
SEC				0.168		
TS			0.078			
TR			0.461			

DISCUSSION

The goal of this research is to present a new research model that integrates SVT, TOE with the TAM model to investigate the variables that affect students' behavioral continous intentions to use online learning systems during the COVID-19 pandemic. Based on the proposed model, we investigated the relationships among research factors as follows: conservation values (SEC, CON and the PU, organizational support (TS, TR) and the PEU, and the relationship between PU, PEU, and students' CI through the mediation of students' ATT. In general, the outcomes supported the suggested hypotheses. The major results of this research are as follows: First, the measurement model result shows an immense and positive effect of the SEC on the PU. The results (β = 0.403, t-value = 5.315, p < 0.05) provided proof to reinforce this hypothesis. Therefore, the PU of online learning is profoundly influenced by SEC, and H1 is supported. It could be inferred that students appreciate the online learning system that meets their SEC needs. SEC is a key factor to promote students' perception of the system's usefulness during COVID-19. This study confirms prior studies' outcomes that indicate the significant role of online learning during a political crisis (Aldikanji & Ajami, 2016; Rhema & Miliszewska, 2012). On the other hand, during COVID-19, students consider the online learning system as being better and safer than the traditional learning approaches, which can enhance their perception of the usefulness of the system (Chang & Tung, 2008; Lee et al., 2011; Wu & Wang, 2005). Our finding contradicts Mehta et al. (2019) study, in which the influence of CON and SEC was insignificant, when learners recognize e-learning as an optional choice, but not obligatory, and there is no clear compensation nor disciplinary measures, SEC and CON may not be important in job environment. Furthermore, if the accomplishment obtained through e-learning has no direct reward related to job professional advancement, CON and SEC will not be essential in deciding e-learning adoption. A similar argument was presented by Liu et al.(2010) study, in which no proof was acknowledged to reinforce the correlation between SEC and ICT acceptance, indicating SEC might not be regarded as vital in some contexts. Moreover, this outcome agrees with Bagchi et al.(2015) study, in which the authors indicated that the most related type of Schwartz values is SEC. Considering the use of the Internet, SEC is considered to be steering the behavior of individuals.

The assessment model result demonstrates a considerable and positive effect of CON on PU. The result (β= 0.386, t value = 5.302, p < 0.05) provides the proof to support Hypothesis 2. So, CON has a positive and considerable influence on PU. CON has a favorable effect on PU because following organizational policy and confirming its instructions, in the situation of the mandatory usage of the e-learning program in the educational institution, can improve the PU of the e-learning. Learners who use e-learning to achieve their learning objectives, endorsed by decision-makers support in their organizations, will utilize the required time and effort to achieve their tasks by using the system. The result of this study demonstrates that the strength of the impact of conforming to authority rules and public safety policies is impacted by the government rules followed by most institutions in the country, including HEIs, to avoid students' exposure to the COVID-19 risk. The COVID-19 pandemic has a huge impact on increasing the importance of using online learning as a tool for public safety. The influence of CON can be developed if students believe in the necessity and importance of using online learning in compliance with the HEIs/government's instructions, which include quarantine rules for a long period.

The measurement model result shows a remarkable impact of the TR on PEU. The results (β = 0.546, t-value = 10.513, p < 0.05) provided the evidence to support hypothesis 3. Therefore, the PEU of online learning is significantly shaped by the presented TR. The result runs consistently with previous studies' outcomes (Amoako-Gyampah & Salam, 2004; C et al., 2015; Kerimoglu et al., 2008). TR of users allows them to comprehend the technical and functional perspectives of an online learning system and allows them to gain the required information and experience. By supporting students to be well-educated, experienced, and responsible; students can effectively use the online learning system. Thus, it becomes viable for them to use and realize its benefit in the learning process and increases their performance. Thus, top managers in HEIs should design compelling and functional TR modules so that online learning can be successfully adopted by their students. This boosts the essential technical requirements and develops a constant intention twards online learning as a risk prevention mechanism.

Fourth, the result of this study shows that TS plays a crucial part in the adoption of online learning. As Hypothesis 4 indicates, TS significantly affects PEU. The results (β = 0.225, t-value = 4.204, p < 0.05)

provided the evidence to support this H4. The result of this study supports previous literature (Gangwar et al., 2015; Low et al., 2011; Ramdani et al., 2009; Schillewaert et al., 2005; Teo et al., 2009). This result is consistent with the result presented by Lee et al. (2011), which indicated that TS facilitates the use of electronic learning systems. Thus, users tend to perceive the online learning system as easy to use if TS is presented. The study of Konradt et al. (2006) found that TS impacts the PEU of system technology. As indicated by Venkatesh(1999), during the initial stages of learning and system usage, TS will impact the PEU of the system positively. The educational institution's top management plays a vital role in persuading their students with their policies and guiding their e-learning practices. E-learning requires diligent and constant support for designing a conducive online learning environment (like providing the needed resources). Thus, according to Gangwar et al. (2015), technology adoption is generally conducted via a top-down approach. Thus, top managers must recognize the role of technology in enhancing the performance of the organization, overcoming the performance gaps, and seizing the opportunities. This is particularly vital during the COVID-19 pandemic where online learning adoption is exploited by top management as a safety tool. Thus, TS is an essential factor to be considered for online learning adoption during a crisis.

Fifth, the result of this study suggests that PU has a considerable impact (β = 0.551, t-value = 12.068, p < 0.05) on the ATT towards adopting online learning. The result is in alignment with several prior TAM studies, which highlighted that PU is a critical determinant of technology adoption and directly influences users' ATT and behavioral intention (Boateng et al., 2016; Chau & Hu, 2002; Davis, 1989; Keil et al., 1995; Ong & Lai, 2006; Purnomo & Lee, 2013; Venkatesh & Davis, 2000). Those scholarly works illustrated that PU impacts intention to use directly through user ATTs.

Sixth, according to the results obtained from the measurement model, PEU affects the ATT towards adopting online learning positively. Based on the results (β = 0.185, t-value = 4.051, p < 0.05), hypothesis 6 is supported. This was also confirmed by Sanchez et al. (2013) study, in which better technical service support or aid provided to students, to assess in solving their issues, has impacted their perception towards the e-learning platform usage. The problem can be increased if top management fails to present suitable support. Therefore, top management should select an online learning system carefully and should offer the technical support that enables learners to gain competence and confidence in carrying out the required class activities.

Finally, a hypothesized path between ATT towards using online learning and CI to use has been established and a direct relationship is supported by this study. However, mixed results, considering this hypothesis, have been indicted in the literature. For example, Davis(1989) asserted that introducing the benefits of technology explicitly, in a user-friendly manner, enables users who lack a positive viewpoint about technology to use it. Thus, in the technology acceptance context, the role of ATT towards usage is modest in this case. Additionally, Al-hawari & Mouakket (2010) did not support the immediate influence of ATT on the adoption of technology. this result also confirms Ong & Lai's(2006) study and contradicts the result obtained by Cheung & Vogel(2013). in which PU was found to be the most determinant trigger of behavioral intention towards online learning.

RESEARCH CONTRIBUTIONS AND IMPLICATIONS

This study supports the online learning adoption research and asserts previous findings from the literature. It entails implications for students, HEIs, and online learning providers. Its contributions are discussed further from theoretical and practical aspects in the following sections:

Theoretical Contribution

This study manifests the key constructs that trigger students to adopt online learning during the COVID-19 crisis. The development of a validated model is a major contribution to online learning literature. The proposed research model integrates SVR, TOE with TAM. Constructs derived from the literature contribute towards a better perception of the CI to use online learning. The TAM model has been widely utilized in interpreting users' behavioral intention to use technology, still, a few studies validated the TAM model in the context of human values(Mehta et al., 2019). There are mixed pieces of evidence regarding the greater expository capacity of integrating SVR with TAM. It was determined by Mehta et al. (2019). first, human

values give tremendous power to the TAM to explain behaviors. This represents a remarkable contribution considering the existence of conservation values (CON, SEC) in the online learning context. The results suggest that students with a higher initial level of CON to authority and SEC tended to perceive online learning systems as useful during a crisis like the COVID-19 pandemic more than others. Moreover, this study extended TAM by employing a set of TOE variables related to continuous intention to use online learning. both TS and TR are critical factors influencing continuous intention to use online learning system during crisis. The successful continuous intention to use online learning relies on the competency of top management in creating an environment of trust. It should take serious measures to ensure that senior management is fostering organizational climate and creating a supportive and creative culture by providing TR, encouragement, and support to prompt adopters of online learning. Findings show that PU, PEU, conservation values (SEC, CON), and organizational support (TR, TS) are important determinants for online learning adoption.

Practical Contribution

SEC has major implications for the CI to use online learning during COVID-19. Online learning that is perceived as yielding high SEC is more likely to increase the CI to use online learning. Students should ensure that adopting online learning is all perceived as highly valuable to them. Practitioners implementing online learning in the educational process should also be aware of the link between perceived SEC and the PU of electronic learning during a crisis like COVID-19. Accordingly, top management in higher education institutions should invest further in technology to enable this shift from traditional learning style to remote education, this will lead to developing learning processes during the crisis and enhance access to the learning resources (Marinoni et al., 2020). it is advised that top management should seek to engage early in promoting online learning through positive word-of-mouth. Making online learning a mandatory choice is another recommended approach that top management can use. this will assist in informing novice users about the possible advantages of using online learning systems which will consequently increase their perceptions about how technology helps during the crisis period.

Also, the CI to use online education will refine the learning process, bridging the gap between rural and urban regions, and will help to meet education targeted visions. Moreover, the awareness of the importance of the TR in education should be considered by the top managers, they should provide adequate time and resources to train students, teachers, even parents on how to use online learning. TR is very essential in building self-esteem and presents users with adequate experience in utilizing electronic platforms. Teachers and instructors need to be trained not only on how to use the technology but also how to organize and deliver the material (Polloff & Pratt, 2001; G. Singh & Hardaker, 2014). Top management should reflect on their higher educational vision and mission to ensure the quality of their online learning subject matter by offering sufficient cutting-edge content that meets students' needs and the quality of learning outcomes (Rashid & Yadav, 2020). failing to offer the TR in terms of technology usage and the effectiveness of incorporating the innovation into the curriculum will negatively influence the CI to use online learning (Gulbahar, 2007; G. Singh & Hardaker, 2014; Surry et al., 2005). Moreover, top managers and policymakers should have follow-up plans for the further development of online learning platforms. Besides, they must maintain collaboration with the government and institutions to overcome the digital divide deficiency and make the online learning services more accessible, dependable, and affordable, also they should enhance the readiness of HEIs for any emergency cases.

LIMITATION AND FUTURE WORK

This study has many restrictions, first, the population is specific merely to students at a higher educational level. Therefore, applying the outcomes of this study to students at the secondary level or lower requires caution, as the factors may vary with the age and level of students. Given the increasing importance of online learning technologies for schools during the COVID-19, and the considerable variations between graduated students and secondary level or lower students, however, CI to use online learning by lower-level students' grow over time and requires deep exploration. Second, the generalization of the conclusion and findings of

the study is limited. Although the research methodology chosen to fulfill the research goals of this study was sufficient, still, it was restricted to the questionnaire and online survey method for data collection. Choosing alternative data-gathering techniques like interviews or both qualitative and quantitative methods may result in various outcomes. Third, students from private sectors are not included in the sample. This restricts the generalizability of this study to other communities. Furthermore, the data, which is restricted to online learning during the COVID-19, was gathered in a limited base.

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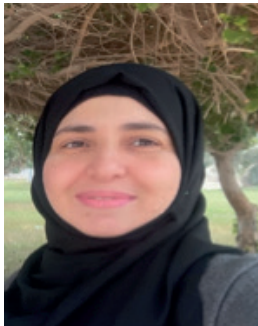
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Table 5. Constructs' Reliability and Convergent Validity Test (N=310)

Variable	Indicator	Outer Loadings	CA	CR	AVE
ATT	ATT1	0.877	0.929	0.946	0.779
	ATT2	0.837			
	ATT3	0.887			
	ATT4	0.910			
	ATT5	0.901			
CI	CI1	0.893	0.873	0.922	0.797
	CI2	0.930			
	CI3	0.854			
CON	CON1	0.807	0.897	0.922	0.665
	CON2	0.886			
	CON3	0.875			
	CON4	0.860			
	CON5	0.669			
	CON6	0.775			
PEU	PEU1	0.815	0.772	0.868	0.686
	PEU2	0.855			
	PEU3	0.814			
PU	PU1	0.877	0.841	0.904	0.759
	PU2	0.882			
	PU3	0.854			
TS	TS1	0.884	0.855	0.911	0.774
	TS2	0.905			
	TS3	0.849			
TR	TR1	0.760	0.734	0.848	0.651
	TR2	0.795			
	TR3	0.862			
SEC	SEC1	0.795	0.891	0.917	0.650
	SEC2	0.795			
	SEC3	0.864			
	SEC4	0.871			
	SEC5	0.716			
	SEC6	0.788			

Table 6. Fornell-Larcker Criterion (N=310).

	ATT	CI	CON	PEU	PU	SEC	TS	TR
ATT	0.883							
CI	0.813	0.893						
CON	0.665	0.625	0.816					
PEU	0.445	0.440	0.448	0.828				
PU	0.638	0.623	0.676	0.472	0.871			
SEC	0.644	0.601	0.720	0.433	0.681	0.806		
TS	0.528	0.527	0.620	0.422	0.832	0.607	0.880	
TR	0.431	0.434	0.373	0.628	0.369	0.435	0.362	0.807

Table 7. The Questionnaires Items

Construct	Item	References
CON	1. I think that I need to follow what people in leadership ask.	(Mehta et al., 2019; Saris & Schwartz, 2013)
	2. It is vital to me to obey instructions even when no one is monitoring.	
	3. Following all the rules is significant to me.	
	4. It is significant to me to prevent disturbing other people	
	5. I believe it is vital not to disturb anyone.	
	6. I attempt to be sensitive and assure not to irritate others.	
SEC	7. I try to prevent anything that might threaten my safety	(Mehta et al., 2019; Saris & Schwartz, 2013)
	8. My security is highly significant to me.	
	9. It is significant for me to be in a secure environment.	
	10. It is vital to me that my government defends us against all dangers.	
	11. I think the government needs to be firm to protect the community.	
	12. We need to have rules and stability in the community.	
TS	13. Our upper administration considers the adoption of online learning as strategically significant.	(Gangwar et al., 2015; Shahzad et al., 2020)
	14. Our upper administration provides powerful direction and shows a culture of broad knowledge sharing.	
	15. Our upper administration takes risks entailed in the adoption of online learning	
	16. The upper administration has the regulations to support the utilization of online learning	
TR	17. My organization supports me with comprehensive training in using online learning	(Gangwar et al., 2015)
	18. The training can enhance my understanding of online learning	
	19. The training empowers my self-esteem in utilizing online learning	
PU	20. Online learning would enhance my learning outcomes.	(Tantiponganant & Laksitamas, 2014)
	21. Online learning would raise academic productivity.	
	22. Online learning easiness the study of course contents.	
PEU	23. I find the online learning system easy to use	(Tantiponganant & Laksitamas, 2014)
	24. Learning how to use an online learning system is easy	
	25. It is easy to become proficient at using an online learning system	
	26. The benefits of using an online learning system were more than the difficulties in operation	
ATT	27. I believe that adopting online learning is good for the educational process.	(Taylor & Todd, 1995)
	28. I think that adopting online learning is beneficial for the educational process.	
	29. I think that using online learning is wise during COVID-19.	
	30. I think that using the online system is the best choice during COVID-19.	
	31. I think that adopting online learning is appropriate during COVID-19.	
CI	32. If I can access the online learning system, I will continue to use it.	(Davis, 1989; Venkatesh & Davis, 2000)
	33. I recommend others to use online learning.	
	34. If I can access the online learning system, I will use it in the future	

Table 8. Cross-Loadings Test

	ATT	CI	CON	PEU	PU	SEC	TS	TR
ATT1	0.877	0.717	0.616	0.380	0.577	0.568	0.486	0.362
ATT2	0.837	0.668	0.562	0.378	0.506	0.546	0.429	0.381
ATT3	0.887	0.680	0.545	0.423	0.557	0.555	0.456	0.375
ATT4	0.910	0.717	0.601	0.394	0.570	0.587	0.464	0.362
ATT5	0.901	0.800	0.607	0.391	0.601	0.587	0.493	0.419
CI1	0.740	0.893	0.589	0.413	0.583	0.577	0.487	0.393
CI2	0.766	0.930	0.610	0.396	0.559	0.558	0.469	0.409
CI3	0.669	0.854	0.466	0.368	0.526	0.470	0.457	0.359
CON1	0.596	0.562	0.807	0.344	0.612	0.634	0.545	0.270
CON2	0.614	0.549	0.886	0.430	0.609	0.625	0.538	0.335
CON3	0.517	0.489	0.875	0.336	0.526	0.573	0.500	0.314
CON4	0.534	0.481	0.860	0.311	0.540	0.561	0.513	0.297
CON5	0.457	0.491	0.669	0.335	0.481	0.498	0.442	0.334
CON6	0.510	0.470	0.775	0.434	0.515	0.612	0.481	0.278
PEU1	0.383	0.389	0.377	0.815	0.441	0.335	0.366	0.436
PEU2	0.333	0.353	0.341	0.855	0.374	0.352	0.329	0.486
PEU3	0.385	0.351	0.390	0.814	0.361	0.382	0.352	0.616
PU1	0.529	0.547	0.566	0.407	0.877	0.579	0.742	0.336
PU2	0.562	0.519	0.618	0.447	0.882	0.591	0.732	0.300
PU3	0.575	0.562	0.582	0.379	0.854	0.609	0.703	0.331
SEC1	0.531	0.547	0.557	0.434	0.519	0.795	0.465	0.385
SEC2	0.537	0.493	0.577	0.387	0.553	0.795	0.499	0.377
SEC3	0.538	0.526	0.641	0.355	0.607	0.864	0.537	0.335
SEC4	0.592	0.522	0.641	0.369	0.581	0.871	0.521	0.362
SEC5	0.453	0.404	0.479	0.255	0.479	0.716	0.434	0.354
SEC6	0.459	0.409	0.572	0.288	0.546	0.788	0.472	0.299
TR1	0.306	0.245	0.206	0.454	0.236	0.257	0.225	0.760
TR2	0.396	0.399	0.307	0.428	0.321	0.358	0.316	0.795
TR3	0.349	0.400	0.372	0.608	0.333	0.421	0.329	0.862
TS1	0.446	0.478	0.555	0.357	0.739	0.536	0.884	0.339
TS2	0.469	0.438	0.564	0.422	0.746	0.533	0.905	0.296