



Accentuating technology acceptance among academicians: A conservation of resource perspective in the Malaysian context

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Received: 31 March 2022 / Accepted: 15 August 2022 / Published online: 22 August 2022

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Abstract

Although recent research looked at the unified theory of acceptance and use of technology (UTAUT) model among academicians, there is still lacking an adequate account for their technology adoption intentions and behaviors in the face of the COVID-19 virus. This study applies the conservation of resource (COR) theory to ground the statistical results investigating the moderation and moderated mediation effects of COVID-19 anxiety in relation to the UTAUT model. According to the COR theory, anxiety linked with the COVID-19 pandemic endangers resources such as human connections (death of friends and relatives), job security and finances, as well as physical health and psychological well-being. Since resource loss is more salient according to COR theory, academicians are more willing to employ technologies like Zoom, MS Teams, and Google Classroom since the COVID-19 threat is existential and the resource loss is eminent. To test the theory, data was collected through an anonymous survey during the months of December 2020 and January 2021. The resultant data from 215 academicians was analyzed using Hayes Process Macro in SPSS. COVID-19 Anxiety positive moderates both the direct effects of Performance Expectance-Behavior Intention and the mediating Performance Expectance-Behavior Intention-Usage relationships. Similar results were seen for other predictors, albeit the moderated mediations for Effort Expectancy and Facilitating Conditions were not significant. These findings overwhelmingly corroborate the claims that COR theory more comprehensively explains the effects of COVID-19 anxiety among academicians in relation to the UTAUT model.

Keywords UTAUT · COVID-19 anxiety · Conservation of resource theory · Academicians · ZOOM · Online learning

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1 Introduction

Amidst ongoing waves of the COVID-19 virus, Malaysian universities have repeatedly had to close their doors (Ross, 2021). Sudden closure of academic institutions forced the authorities to propose online learning in order to make sure that students were not left idle during the pandemic lockdown (Aboagye et al., 2021). The presence of COVID-19 has caused an abrupt but necessary transition from the traditional face-to-face method of learning to online learning (Simamora et al., 2020). This digital transition was rolled out in short order with a sense of urgency while mitigating the situation but not without social and psychological consequences (Händel et al., 2020). As private universities and colleges in Malaysia transition to the digital environment, quality education depends on multiple factors involving students, academicians, factors related to the institutions, and so on (Thian, 2014). Prior to the COVID-19 pandemic, some research indicated resistance to online learning (e.g., Leigh et al., 2008). Student impressions of online education have been unfavorable, resulting in increased absences and poor academic engagement. Smart & Cappel (2006) indicate that online education has received low student satisfaction ratings. The phenomena of online learning arose to the forefront during the COVID-19 pandemic (Nambiar, 2020). Requiring academicians to quickly adapt to a new teaching approach using the new medium of online teaching applications seems a formidable task as claimed by some research (for examples, Giannoni & Tesone, 2003; Noh et al., 2012). A global study has shown that transitioning to online teaching is an evolving challenge during the COVID-19 pandemic (Sangster et al., 2020).

Although academicians have already been proven to reject online learning due to the difficulties and obstacles that teachers encounter in balancing teaching with technology available to students, Olmos-Gómez (2020) recently showed the picture is not altogether bleak. In that study, 72.25% of 441 students in Spain have agreed that chats, emails, and Facebook applications allow for social interactions to solve problems. Similarly encouraging, 78.75% of students show satisfaction with online education because of better relationships with friends and family during lockdowns and self-isolation periods. Furthermore, Bao (2020) suggests that students might not perceive online learning as less favorable because the medium requires changes in the teaching speed due to students' low concentration qualities in online learning. By modulating the teaching pace, students' support for online learning can be garnered. Recent studies on digital transformation of Malaysian higher education institutions pay more attention to the academician perspectives (e.g., Gunasinghe et al., 2019b; Khairi et al., 2021; Muzi et al., 2021).

Despite attempts to ground academicians' acceptance of the online learning environment (for example, Gunasinghe et al., 2019a, b, c), there is still inadequate theoretical elucidation on the recent phenomenon of widespread and persistence use of new technology for online teaching among academicians in Malaysia during the COVID-19 pandemic. Recent study found that student anxiety is negatively related to the use of Internet and digital technologies (Lakhali et al., 2021) and user anxiety negatively predicts adoption readiness (Donmez-Turan, 2019)

and adoption intention (Gunasinghe et al., 2019c). However, very little is known whether anxiety related to the COVID-19 pandemic has any significant effects on technology adoption among academicians. This study breaches new ground in integrating the conservation of resource theory in explaining and model testing of technology acceptance in the context of the COVID-19 pandemic.

This study investigates the effects of COVID-19 anxiety (CA) from the conservation of resource theory (COR theory) by Hobfoll et al. (2018). COR theory claims that resource loss is not only more powerful than resource gain in terms of scale, but it also affects people more quickly and at a faster rate over time and that people must invest resources to guard against resource loss, recover from losses, and obtain resources, according to the second premise of COR theory. This suggests that when faced with COVID-19 anxiety, academicians will more readily accept online teaching as an alternative to protect themselves from the negative effects of the COVID-19 virus. According to COR theory, a stressful event cannot be considered in isolation, but in the context of complicated sequences of anticipated causes leading to the events and subsequent consequences thereof. Individuals faced with an event like the COVID-19 pandemic will subjectively appraise the situation and adjust their behaviors to preserve resource losses. As Hobfoll et al. (2018, p. 105) argue, individual assessments are often strong predictors since “most individuals are good catalogers of these complex objective elements—albeit, as COR theory emphasizes, people carry an evolutionary-based built-in and powerful bias to overweight resource loss and underweight resource gain”. As such, this study investigates the impact of COVID-19 anxiety of academicians in Malaysian on the intention and usage of ZOOM applications in the online teaching environment.

2 The unified theory of acceptance and use of technology (UTAUT) in the context of online teaching using the zoom application

Swan et al. (2002) suggests that while three vital components in online learning are technology and resources, academicians, and students support for academicians in terms of mentoring and training is important to transition well from a conventional to online learning environment. Higher education institutions in 2020 were toughly impacted by the presence of Covid-19. Online learning is no longer an option (Radha et al., 2020), as mandatory lockdowns and movement restrictions are enforced in Malaysia. The use of technology such as ZOOM, Google Classroom (Soni, 2020), and MS Teams (Khairi et al., 2021) has mushroomed.

ZOOM is one of the user-friendly tools which led the way in the digital transformation towards online learning, at least in terms of popularity. This can be observed from a spate of recent research papers related to ZOOM as an online teaching tool (for instance, Budur, 2020; Jan, 2020; Singh et al., 2020). Owing to its popularity, this study considers ZOOM as the technology in the application of the unified theory of acceptance and use of technology (UTAUT) model to investigate the effects of COVID-19 anxiety among academicians. The UTAUT model originates from Venkatesh et al. (2003) to explain the discrepancy in behavioral intention and actual

technology usage. The model proposes four factors which are performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC) as predictors of behavior intention (BI). In turn BI predicts technology usage, whereas the actual frameworks also contain four moderators which are age, experience, gender, and voluntariness of use.

In this framework the behavioral intention is directly determined by the four factors, whereas gender, age, voluntariness of use, and experience directly influence the behaviors component eventually (Williams et al., 2015). Below is the description of the four vital components of this framework:

Performance Expectancy (PE) is the degree to which a person thinks that by utilizing the new system or technology, it may help to boost the quality and outcomes of their work (Shin, 2009; Venkatesh et al., 2003). In the original conception, performance expectancy remains a strong indicator of behaviour intention in both voluntary and mandated environments (Venkatesh et al., 2003; see also Udang, 2021). Similarly, in this study, PE applies where it relates to the degree of perception that the academicians have in which the use of ZOOM application will assist to gain productivity and at the same time create a prompt opportunity to gain an achievement (Hu et al., 2020).

Effort Expectancy (EE) is the degree of ease of using a new system or a new technology (Hu et al., 2020; Venkatesh, 2003). The EE construct may be more prominent in the early stages of a new behavior (Chang, 2012; Chaputula, 2016). In this study, EE relates to the perception of academicians whether the use of ZOOM application is deemed easy or complicated and difficult when delivering instructions to students.

Social Influence (SI) is the extent to which a person believes significant others think they should use the new technology (Abbad, 2021; Venkatesh et al., 2003). In other words, the degree to which a person will perceive that favourable people who may often be higher up in the organisational hierarchy opine that they should use the new technology or the system. Social influence is also perceived as an important scale in the determination of acceptance of technology because idea is that the behaviors of the individuals are affected by expectations and views of others (Venkatesh et al., 2003). Similarly, in this study, SI applies where academicians are influenced to the degree which significant individuals are affecting their use of the ZOOM application. These significant individuals may be main stakeholders in any phases of higher education institutes, for example, Heads of Department, Deans, other colleagues and administrators, and even students (Hu et al., 2020).

Facilitating conditions (FC) refers to the sense of whether resources and assistance are accessible to accomplish a behavior, and it encompasses both technological and organizational components aimed at removing barriers to technology use in higher education (Hu et al., 2020). It is the extent to which an individual believes that there is organizational and technical infrastructure support in place to facilitate the adoption or use of a new technology. As according to Venkatesh et al. (2003), the importance of FC becomes nonsignificant in predicting the intention when there is a presence of performance expectancy and effort expect-

tancy as issues related to facilitation are also captured in EE construct as well. In this study, FC refers to the perception of academicians of whether knowledge, resources, and technical assistance are available when utilizing the ZOOM application in online teaching.

Accordingly, based on the standard UTAUT model, the following hypotheses are inferred,

- H1: PE is positively related to BI to use ZOOM.
- H2: EE is positively related to BI to use ZOOM.
- H3: SF is positively related to BI to use ZOOM.
- H4: FC is positively related to BI to use ZOOM.
- H5: BI is positively related to Usage of ZOOM.

3 Conservation of resource theory and COVID-19 anxiety

COVID-19 anxiety is considered here as one of the important moderators that might have an important effect on behavior intention. The COVID-19 pandemic is a global problem (Wimalawansa, 2020) in which every country is dealing with an infectious disease called Covid-19 (Ahorsu et al., 2020). According to Wang et al. (2020), the common symptoms are fatigue, myalgia, dry cough, dyspnea, and the most common symptom which gives an impression of Covid-19, fever. The mortality rate is persistent even if prevention measures are applied. With the exceptionally high rate of infection and increasing death numbers, people instinctively started to worry about COVID-19 (Ahorsu et al., 2020). According to Lin (2020), it has been already reported that, people fear approaching the individuals who might be contaminated by Covid-19, even if the individuals have recovered from COVID-19. The introduction of COVID-19 and its pandemic existence have heightened global concerns, often contributing to anxiety. Anxiety and fear are among the features of the pandemic that are common to infectious diseases (Ahorsu et al., 2020). Fear in a term of explanation means that it is directly related to its channel (rapidly and invisibly) and propagation rate including its morbidity and mortality (Ahorsu et al., 2020). Given the high levels of anxiety, when responding to COVID-19, people cannot think rationally and logically which will eventually give an impact in many daily activities including work related action (Lin, 2020).

The conservation of resources theory (COR) (Hobfoll et al., 2015) is used to gain a more thorough understanding of the impact of COVID-19 anxiety on ZOOM behavior intention and usage. This theory not only emphasizes teachers' views but also takes environmental contingencies into account. Both of these elements can be examined using COR theory. Human beings' basic motive, according to COR theory, is to create, defend, and foster their resource pools in order to secure themselves and the social relationships that support them. The theory suggests that people lay out strategies for avoiding resource depletion, preserving existing resources, and getting the resources needed to

engage in suitable actions. According to COR theory, resources are critical in determining individuals' assessments of events as stressful, and resources define how people cope with stressful situations. Infectivity of the COVID-19 virus due to close proximity and contact can cause sicknesses and death to loved ones and self. Other factors like loss of jobs or income can come into view as well when calculating prevention of resource loss. As such, when faced with anxieties about the COVID-19, academicians, in attempts of self-preservation, cope by looking for alternate solutions that will reduce viral exposure, according to COR theory. Once presented with the option of teaching online via the ZOOM application, it is believed that this option will be viewed favorably by academicians in this context. As such the frequently researched factors (i.e., PE, EE, SF and FC) influencing their intention to use and actual usage of technology will be more efficacious. Therefore, the moderating effects of COVID-19 Anxiety are expected to be positive such that strong BI will be experienced when CA is higher. Therefore,

- H6a: CA positively moderates the relationship between PE and BI.
- H6b: CA positively moderates the relationship between EE and BI.
- H6c: CA positively moderates the relationship between SF and BI.
- H6d: CA positively moderates the relationship between FC and BI.

Finally, not visually shown in the conceptual model (Fig. 1) are the moderated mediations which account for the indirect effects of the independent variables PE, EE, SF and FC on Usage through BI which are moderated by CA. Therefore,

- H7a: CA positively moderates the mediation effects of BI in the relationship between PE and Usage.
- H7b: CA positively moderates the mediation effects of BI in the relationship between EE and Usage.
- H7c: CA positively moderates the mediation effects of BI in the relationship between SF and Usage.
- H7d: CA positively moderates the mediation effects of BI in the relationship between FC and Usage.

Fig. 1 Conceptual Model

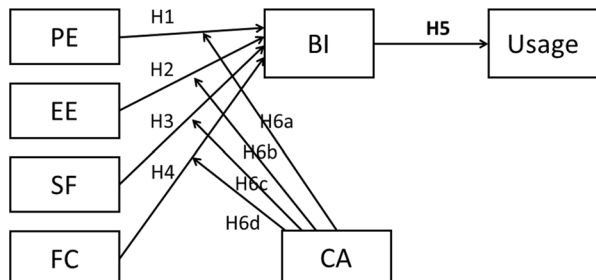


Table 1 Measurements

Items		Reliability
Performance Expectancy: Davis, 1989; Davis et al., 1989; Venkatesh et al. (2003)		0.784
PE1	Using ZOOM makes it easier to teach the course content.	
PE2	I find ZOOM useful for teaching and learning.	
PE3	ZOOM increases communication between academician and learners.	
PE4	Using ZOOM enables me to accomplish tasks more quickly.	
Effort Expectancy: Kim & Lee (2020)		0.769
EE1	I have the skills that I need to use the ZOOM in my institute.	
EE2	I find ZOOM clear and easy to use.	
EE3	It is easy for me to become skillful at using ZOOM.	
EE4	Learning to operate and use ZOOM is easy for me.	
Social Factor: Venkatesh et al. (2003) and Kim & Lee (2020)		0.768
SF1	My students think that I should use ZOOM.	
SF2	Most staff in my school think ZOOM is important.	
SF3	People who are important to me think that I should use the app.	
SF4	The principals and supervisor think that I should use ZOOM.	
Facilitating Conditions: Venkatesh et al. (2012) and Kim & Lee (2020)		0.812
FC1	I have the resources necessary to use ZOOM in school.	
FC2	I have the knowledge necessary to use ZOOM.	
FC3	The application is not compatible with other systems I use. (reverse)	
FC4	When I encounter difficulties in using ZOOM, a specific person (or group) is available to provide assistance.	
Behavioural Intention & Usage: Venkatesh et al. (2012)		0.759
BI1	I intend to continue to use ZOOM in the future.	
BI2	I intend to attend a training programmed on using e-learning technologies in the future.	
BI3	I plan to continue to use ZOOM frequently.	
Usage: Venkatesh et al. (2012)		
US1	How often do you use ZOOM	
COVID-19 Anxiety: Ahorsu et al. (2020)		0.856
C1	I am most afraid of coronavirus-19.	
C2	It makes me uncomfortable to think about coronavirus-19.	
C3	I am afraid of losing my life because of coronavirus-19.	
C4	I cannot sleep because I'm worrying about getting coronavirus-19.	
C5	My heart races or palpitates when I think about getting coronavirus-19.	

4 Methodology

The current study is a quantitative research to test the hypotheses deduced from the theory used to develop a model. The measurements adapted in this study are shown in Table 1 with the reliability statistic indicated. For Usage, respondents select

1 = below one hour per week, 2 = one hour per week, 3 = two to three hours per week, 4 = four hours per week, 5 = Above 4 hours per week. The other measurements used a 5-point Likert scale ranging from *1 = Strongly disagree to 5 = Strongly Agree.*

5 Respondents

An anonymous online survey was conducted to solicit academicians to complete the form during the period December 2020 to January 2021. A total of 215 valid cases were collected, 141 respondents were female and 75 were male. The majority were between 32 to 41 years old (62.1%). The education level that was included in the demographic question was certificate/diploma, bachelor, Masters, and PhD. 25.5% has a bachelor's degree whereas more than 72% has a master's degree or higher. Only 2% of respondents have a certificate and/or diploma qualification. All the respondents are academicians at various levels of position in their academy in Malaysia. Finally, 86.5% of academicians in the survey reported using at least 4 hours of ZOOM per week for teaching. In conclusion, the profile of the respondents confirm they are suitable for this study. Tables 2 and 3 shows summaries of the statistics.

6 Limitations

Statistical analysis using data from single-respondent sources is prone to common method bias although preventive actions were taken like the use of attention question in the survey, sectionizing the survey questions with clear headings and labels, and the use of marker variable. However, two or more information sources were not available due to resource limitations for this research. Furthermore, guaranteeing anonymity for survey respondents and assuring the respondents that there are no right or wrong answers served to reduce socially desired and consistent responses across questions. Also, the number of survey questions were kept to the minimum to avoid repetition which may cause respondent fatigue. Finally, reverse coded questions also helped to mitigate common method bias.

Sample sizes in quantitative research are seldom deemed sufficient for generalization of findings. In this case, post-hoc power analysis reveals negligible Type 2 error and high level of power statistics above 0.99. Since this study focuses on predominantly model testing, the sample size of 215, given the model complexity, may be reckoned as fit for purpose. Nonetheless, it is wise to err on the side of caution when making generalization to the population.

Finally, research publication on the UTAUT model and its variants is overwhelming. This paper is unable to cover comprehensively the relevant literature. As such, only a sampling of representative papers related to the claims made in this paper were cited.

7 Results

Regression statistical analysis was conducted using Hayes process Macro with Model 7 in SPSS based on 5000 bootstraps of the sample. Bootstrap inference of the model was used to avoid concern for nonnormality issues for the *a* and *b* paths. Robust standard error HC4 was used for heteroscedasticity-consistent inference. Table 4 shows the correlation statistics while Tables 5, 6, 7 and 8 show the regression results. Figure 2 displays the moderation results of COVID-19 Anxiety for four sets of relationships. CA correlates negatively with BI while positively with SF. The results support all the hypotheses related to CA in moderating the relationships between PE and BI ($\beta=0.63$, $p<0.01$, R^2 change 0.09), EE to BI ($\beta=0.56$, $p<0.01$, R^2 change 0.05), SF to BI ($\beta=0.66$, $p<0.01$, R^2 change 0.13), and FC to BI ($\beta=0.45$, $p<0.01$, R^2 change 0.05). Furthermore, the hypotheses H7a and H7c related to the moderated mediating effects of CA are supported: PE (Index value=0.45, $p<0.05$), SF (Index value=0.55, $p<0.05$) but the hypotheses H7b and H7d are not supported: EE (Index value=0.14, $p>0.05$), FC (Index value=0.05, $p>0.05$). Figure 2 shows that in all the four cases, where CA is high, the slopes of the lines are steeper indicating positive moderations. Such higher behavior intentions were registered with increasing level of its predictors.

8 Discussion

PE ($R^2=0.61$) and SF ($R^2=0.59$) both predict BI and usage of ZOOM for online teaching in the context of the COVID-19 pandemic. However, EE predicts neither behavior intention to the use of ZOOM most likely because in this context the use of the ZOOM application is not a novelty as online communication tools are already widely popular in Malaysia (Kamisan & Bakar, 2021). Since usage of such technology as ZOOM is not in the infancy stage, saliency of effort expectancy is lower and not considered an important factor in predicting intention to use (Hu et al., 2020; Venkatesh et al., 2003). Since it is an easy tool to use and widely popular, as observed by the high usage hours per week, EE does have a direct relationship with ZOOM actual usage. Although some studies confirm the FC to BI relationship by applying a modified version of the UTAUT model (for examples, Hu et al., 2020; Jacob & Pattusamy, 2020; Jameel et al., 2021; Kamalasena & Sirisena, 2021), the original UTAUT model does not include this direct relationship (Venkatesh et al., 2003; Yahaya & Ahmad, 2019). This study supports that the original model is indicating no direct relationship between FC and BI but instead supports the consistent positive relationship between FC and technology usage (for two recent examples, García Botero et al., 2018; Sarkam, 2019).

The direct effect of CA on BI is negative but its moderating effect in the four relationships between the four predictors and BI are positive. This shows the ameliorating effects of the CA moderation in strengthening the relationship of the predictors with BI. Therefore, although the effect of PE on BI is not significant in the context of this research, it is clear that CA made a difference in

term of a positive moderating effect on the direct relationship PE-BI and also the mediating relationship of PE-BI-Usage. Similar results were observed for EE, SF, and FC except that the moderated mediations were not significant for EE and FC. While EE and FC make not much difference in influencing BI and usage of ZOOM in the amidst the pandemic, anxiety about the virus does significantly strengthen the influences of the four predictors on behavior intention and strengthen the influences of PE and SF on usage of ZOOM. These results support the arguments put forth in this paper that academicians will conserve resources in light of the threats of the COVID-19 pandemic by disproportionately favoring technology like ZOOM as a viable alternative in terms of behavior intention and actual usage.

8.1 Theoretical implications

Although recent studies investigate the UTAUT model among academicians (for examples, Gunasinghe et al., 2019a, b, c; Sarkam, 2019), what remains lacking is a proper account for the intentions and behaviors of technology adoption among academicians in the midst of the ubiquitous COVID-19 virus. This study offers a theory to adequately explain the relationships that is supported by the outcomes of the statistical analysis. Based on COR theory, academicians mitigate resource loss from the threats of COVID-19 through recalibrating their evaluation of options and adopt alternatives that most likely result in the conservation of their

Table 2 Profile of Respondents

Demographics		Percentage
Gender		
Female	141	65.3
Male	75	34.7
Age		
26-31	34	15.7
32-36	85	39.4
37-41	49	22.7
42-46	40	18.5
47-53	8	3.7
Education Level		
Certificate/Diploma	5	2.3
Bachelor	55	25.5
Masters	135	62.5
PhD	21	9.7
Position		
Tutor/Teaching Assistant	56	25.9
Lecturer/Senior Lecturer	135	62.5
Assoc/Professor	24	11.6

N=215

Table 3 Usage of Zoom by Academicians

Hours per week	Count	Percentage
Below 1	6	2.8%
1	23	10.7%
2 to 3	0	0.0%
4	33	15.3%
Above 4	153	71.2%
Total	215	100.0%

resources. According to Hobfoll et al. (2015), over time, the accumulation of resource losses is more powerful and quick than the buildup of resource gains. Loss and gain spirals are the result of these losses and gains compounding on themselves. Faced with the COVID-19 virus, while bombarded daily by negative news about the virus on social media and mainstream media, the pressure to mitigate resource loss by adopting technological solutions increases in order to avoid big gatherings of students in close proximity such as face-to-face instructions in lecture halls and workshop rooms. Fear and anxiety associated with the COVID-19 pandemic threatens resources like human relationships (death of friends and relatives), threats to jobs, security, and finances, and threats to overall physical (sicknesses) and psychological (stress) well-being. Since the threat is existential and the resource loss is real, academicians embrace the use of technologies like ZOOM, MS Teams, and Google Classroom more readily. With the support of research evidence like the significant positive moderating effects and positive moderated mediating effects in the UTAUT model, this study is the first to apply the conservation of resource theory to explain in a more adequate manner the phenomenon of widespread adoption of the ZOOM application as an online learning alternative to traditional face-to-face in-person instructional approach among Malaysian academicians during the COVID-19 pandemic.

8.2 Practical implications

Anxious and stressed academicians and students are alike widespread in the current context of COVID-19 (Ghasemi et al., 2021; Toh et al., 2022). For decision-makers like managers and leaders in higher education institutions involved in promoting the adoption of technology, the COR perspective allows practitioners to better understand academicians’ struggle to maintain resilience (Hobfoll et al., 2015) in the face of the virus. Based on PE, attention should be given to those technologies that offer viable alternatives that exhibit high performance expectancy that helps to boost the quality and outcomes of academicians’ roles in activities like delivering instructions, conducting research, rendering pastoral services to students, and producing publications. Without sufficient support, these four roles drain resources from academicians. All the activities related to the four roles can be supported with relevant technologies. Furthermore, based on SF, providing social support by nurturing relationships among friends and

Table 4 Correlation Analysis

Variable	Mean	Std. Dev	1	2	3	4	5	6
Usage	4.403	1.116	–					
PE	4.189	0.646	.418**	–				
EE	4.362	0.532	.593**	.749**	–			
SF	3.832	0.757	.354**	.691**	.613**	–		
FC	4.057	0.724	.674**	.664**	.748**	.672**	–	
BI	4.168	0.640	.502**	.714**	.735**	.671**	.692**	–
CA	3.492	1.188	–.346**	0.082	0.001	.279**	–0.085	0.069

** $p < 0.01$ **Table 5** Regression Results (Performance Expectation as Predictor)

Relationships	B	SE (HC4)	t	p	LLCI	ULCI	R2
PE-> BI	–0.2705	0.2639	–1.0249	0.3066	–0.7908	0.2498	0.6072
CA-> BI	–2.6505	0.5903	–4.4899	0.0000	–3.8142	–1.4868	
PExCA-> BI	0.6254	0.1372	4.5595	0.0000	0.3550	0.8958	0.0936*
PE-> Usage	0.5048	0.5546	0.9102	0.3637	–0.5884	1.5980	0.2589
BI-> Usage	0.7233	0.1803	4.0121	0.0010	0.3679	1.0786	
	Effect	BootSE	BootLLCI	BootULCI			
PE-> BI-> Usage, CA low	0.2567	0.0970	0.0970	0.4697			
PE-> BI-> Usage, CA high	0.7090	0.1856	0.3746	1.1046			
Moderated Mediation Index	0.4523	0.1451	0.2115	0.7722			

* R^2 change**Table 6** Regression Results (Effort Expectancy as Predictor)

Relationships	B	SE (HC4)	t	p	LLCI	ULCI	R2
EE-> BI	–0.5240	0.3505	–0.1494	0.8814	–0.7433	0.6386	0.5922
CA-> BI	–2.3937	0.8322	–2.8764	0.0044	–4.0341	–0.7533	
EExCA-> BI	0.5646	0.1860	3.0359	0.0027	0.1980	0.9312	0.0497*
EE-> Usage	1.0240	0.1903	5.3802	0.0000	0.6489	1.3992	
BI-> Usage	0.2498	0.1477	1.6915	0.0922	–0.0413	0.5410	
	Effect	BootSE	BootLLCI	BootULCI			
EE-> BI-> Usage, CA low	0.1280	0.8590	–0.0069	0.3265			
EE-> BI-> Usage, CA high	0.2690	0.1637	–0.0169	0.6241			
Moderated Mediation Index	0.1411	0.0946	–0.0087	0.3601			

* R^2 change

Table 7 Regression Results (Social Factor as Predictor)

Relationships	B	SE (HC4)	t	p	LLCI	ULCI	R2
SF->BI	-0.4936	0.3781	-1.3055	0.1931	-1.2388	0.2517	0.5949
CA->BI	-2.6954	0.7386	-3.6492	0.0003	-4.1514	-1.2394	
SFxCA->BI	0.6618	0.1922	3.4437	0.0007	0.2830	1.0406	0.1302*
SF-> Usage	0.0473	0.0931	0.5080	0.6120	-0.1363	0.2309	
BI-> Usage	0.8373	0.1542	5.4344	0.0000	0.5339	1.1417	
	Effect	BootSE	BootLLCI	BootULCI			
SF->BI-> Usage, CA low	0.1410	0.1180	-0.0470	0.4108			
SF->BI-> Usage, CA high	0.6954	0.1381	0.4318	0.9711			
Moderated Mediation Index	0.5545	0.1519	0.2702	0.8649			

*R2 change

Table 8 Regression Results (Facilitating Conditions as Predictor)

Relationships	B	SE (HC4)	t	p	LLCI	ULCI	R2
FC->BI	-0.1722	0.3065	-0.5617	0.5749	-0.7764	0.4320	0.5371
CA->BI	-1.6823	0.6595	-2.5507	0.0115	-2.9824	-0.3822	
FCxCA->BI	0.4482	0.1558	2.8766	0.0044	0.1411	0.7554	0.0465*
FC-> Usage	0.9657	0.1441	6.7003	0.0000	0.6816	1.2497	
BI-> Usage	0.1189	0.1601	0.7427	0.4585	-0.1966	0.4344	
	Effect	BootSE	BootLLCI	BootULCI			
FC->BI-> Usage, CA low	0.0328	0.0494	-0.5410	0.1464			
FC->BI-> Usage, CA high	0.0861	0.1097	-0.1328	0.2949			
Moderated Mediation Index	0.0533	0.0724	-0.827	0.2075			

*R2 change

exemplary leadership role models will influence desirable behaviors and offering encouraging words will also help to add resources. An occupational hazard among Malaysian academicians is stress (Noor, 2016). These strategies, besides being supported by the UTAUT model, also offer therapeutic effects as they provide a protective environment according to the COR theory. This is what Hobfoll et al. (2015) calls an “enrich and stable caravan passageway” (p. 176) where academicians can flourish. Furthermore, since prevention of resource loss has more saliency than attaining resource gain, desirable intentions and behaviors can be better realized.

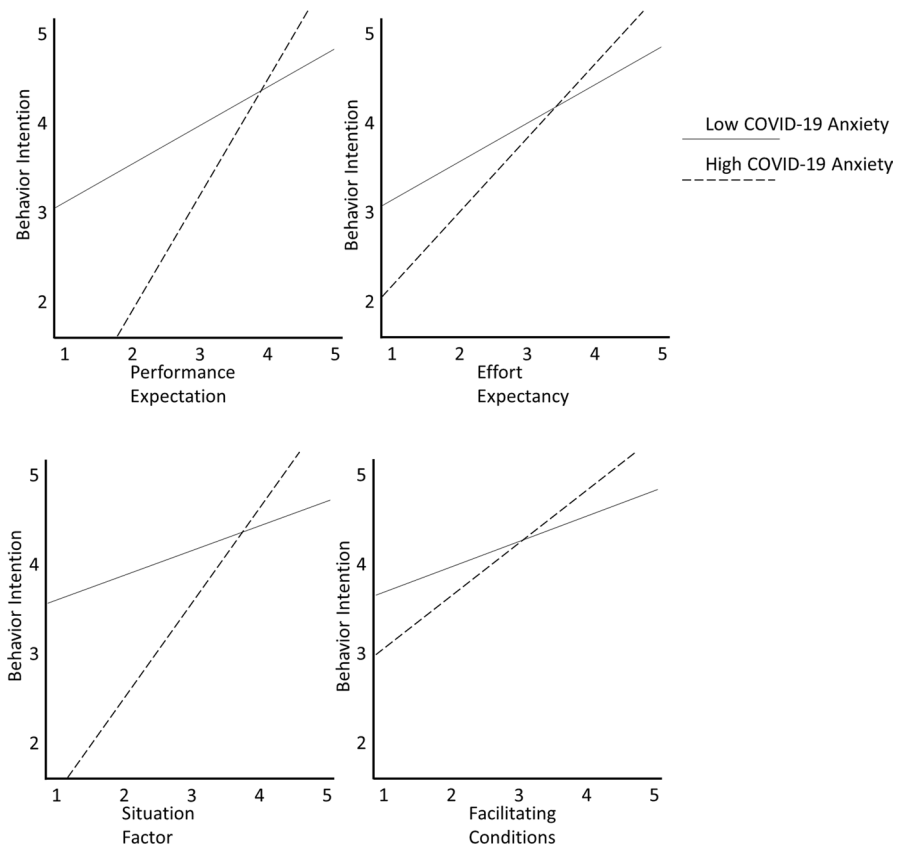


Fig. 2 Moderating Effects of COVID Anxiety

9 Future research

For future research, replication of this model with inclusion of other variables like hedonistic motivation, price value, habit, and other moderators like age, gender, voluntariness of use, and experience may be incorporated. For this study, it served the purpose to focus on the basic original UTAUT model since the main aim was to test the effects of COVID-19 anxiety on the model. However, future research should consider the COR theory with these additional variables as well to substantiate its explanatory power as claimed in this paper. A comparison of anxiety with new technologies in contrast to COVID-19 anxiety among academicians should be interesting.

Furthermore, when applying the UTAUT model among academicians, future studies should explore in more depth regarding the types of social factors and facilitating conditions directly relevant to the four roles of academicians, namely instructional role, pastoral role, research role, and publication role. Obviously, these roles require relevant technologies to achieve resource gain or prevent resource loss.

Authors contributions SYT conducted the analysis of data and discuss the findings. SAN and STP covered the major writing of the manuscript. All authors were involved in data collection and have read and approved the final manuscript.

Data availability Data from the corresponding author is available upon reason request.

Declaration

Competing interests The authors declare that they have no competing interests.

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