

Exploring and Developing an Instrument for Online Social Support Construct

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Abstract

In this study, a social support tool for online communities was looked into to examine how doctoral students connected, communicated, and supported one another. Thus, thirteen online social support items from previous research and diverse industries were gathered for this study. These items were then modified to be especially helpful to PhD candidates in the education sector. 100 randomly selected students from an online social support group made up of PhD students from public universities around Malaysia participated in this study after the items had undergone expert validation. Internal reliability was attained for both of the components that were produced using the Exploratory Factor Analysis (EFA).

Keywords: Online Social Support, Exploratory Factor Analysis, Efa, Phd, Instrument, Reliability

Purpose of the Study

This study's primary goal is to evaluate a multidimensional tool used to gauge the degree of online social support received by doctorate students in higher education. In order to make sure the instrument items suited the goals of this study, they were modified from earlier literature. The content validity, criterion validity, and face validity of the instrument were investigated in accordance with the recommendations made by Anuar et al., (2023). In order to confirm its validity and reliability, the exploratory factor analysis (EFA) test was used.

Background

At the moment, there are several online support groups available. Studies on online social support groups for PhD students have been difficult to find, nevertheless. In reality, concerns over the worrisome incidence of attrition among PhD candidates as a result of a lack of social support in tertiary education have grown significantly.

Year	Graduates		
	Students	Graduates	Quit
2022	-	-	2,797
2021	42,834	3,681	2,364
2020	37,501	3,407	2,017
2019	36,329	3,827	2,683
2018	35,362	4,121	1,866
2017	33,838	4,040	1,595
Jumlah	185,864	19,076	13,322

Figure 1: The total number of doctorate students enrolled, graduated, and dropped out between 2017 and 2022

With more people obtaining doctorates around the globe, universities are becoming more and more appealing as places for PhD students looking for the best possible education. As of 2021, in Malaysia, the total number of doctorate students enrolled in Malaysian public universities is 42,834, according to System MyMoheS KPT (2023). Based to the 2023 report of the Malaysian Department of Statistics eStatistics, 19,076 PhD students obtained their degrees between 2017 and 2021. This figure is a long way from the real goal of 60,000 PhD holders by 2023 (Chun et al., 2021). The table presented in Figure 1 indicates an upward trend in the annual percentage of PhD students discontinuing their studies. The lowest number of PhD students graduating is in 2020, during the COVID-19 pandemic.

The online social support among PhD students, particularly in Malaysia, is less researched by academics than the physical social support that many people always receive. The perspectives of learners need to be thoroughly studied while examining online social support (Apgar, 2020). With the widespread use of the Internet, more and more people are beginning to seek out and receive social support from online communities, despite the fact that social support activities typically take place within established and close relationships (Kumar et al., 2022; Canhilal et al., 2022). The lack of face-to-face social support resources makes this online social support extremely helpful for students (Baines et al., 2022), especially doctoral students who must constantly deal with loneliness and isolation. As a result, doctorate students can deal with their academic challenges and concerns by using online social support. In addition, PhD students need to have access to good online social support in order to improve their emotional intelligence and, as a result, their ability to effectively manage their own stress and, as a result, their drive to learn. The vast majority of universities in Malaysia use online social support groups as a teaching tool. However, Luan et al. (2023) noted that little work has been done to yet to transfer research into examining the surroundings of this new communication medium. Careful research would be beneficial to comprehend the effects of online social support on regulating one's emotional intelligence in order to increase motivation for learning, especially as the Internet becomes more widely used.



Figure 2: Important contribution to the Sustainable Development Goals

One of the crucial components that aid doctoral students in managing their own emotion and stress (English et al., 2022; Shuo et al., 2022) in order to increase motivation for learning is social support, which was defined as information leading the individual to believe that s/he is cared for and loved, esteemed, and a member of a network of mutual obligations (Cobb, 1976; Reimnitz et al., 2023).

PhD completion is not just dependent on intelligence quotient (IQ). In order to learn, doctorate students must be motivated. Low emotional intelligence is the root cause of low motivation (Tang & He, 2023). Apart from the Malaysian Ministry of Higher Education (MOHE), there is also a local professional organisation (like Organisation of 2MW Sdn. Bhd.) that works to support and encourage PhD students in Malaysia to finish their studies by providing them with simple, clear, and high-quality methods of managing their academic work. Apart from self-directed learning and self-efficacy, online social support is one of the strategies that PhD students can use to raise their emotional intelligence (EQ). As in Figure 2, the Ministry of Higher Education's 2021-2025 Digitization Strategic Plan policy with the empowerment of digital technology is in line with the Sustainable Development Agenda, that is, good emotional health and well-being (the third goal) along with quality education (the fourth goal).

As was already said, an increasing number of people are turning to the Internet to ask for or provide social support (Canhilal et al., 2022). Online social support provides several benefits over social assistance that is provided in person. First, the Internet significantly widens people's social networks by removing geographical and temporal barriers (Wang et al., 2022). Second, the anonymity offered by online environments promotes the discussion of delicate issues (Tseng et al., 2022; Zhang & Liu, 2022). Additionally, the Internet enables doctorate students to communicate with group members and might enlighten them by offering them fresh viewpoints. Several earlier studies have looked into the effects of social support provided online. Online social support was found to be an efficient way to reduce stress and foster emotional intelligence by Zhang et al. (2022), Shuo et al. (2022), and Azpiazu et al. (2023). Participating in an online forum might benefit doctoral students in two ways: it could help them deal with problems in their daily lives, and it could give them a sense of community.

Methodology

An online social support group using Telegram application consisting of 701 doctoral students from Malaysian public universities were chosen. The chosen online social support group satisfies this need, as respondents were recruited from that group, which was made up of doctorate students, to investigate an online social support. This is done to guarantee that the group of respondents is homogeneous. For the EFA, Anuar et al. (2023) and Bahkia et al. (2019) suggested utilising a minimum of 100 samples to produce valid results. A total of 105 students were selected for the study using the simple random sampling method, and all of them received an email with an online survey created using a google form. All 701 doctoral students in the group were numbered from 1 to 701. A random 105 numbers from the range of 1 until 701 were generated using a number generator from the internet. The 105 random generated numbers of respondents were chosen and emailed. All emails were retrieved by requesting them from the company that provide online social support for doctoral students after signing an NDA form. The results are generalizable to the target population since the simple random sampling approach used offered every member of the target population an

equal chance to be chosen. Manual emailing was used to send the Google Forms questionnaire link. Out of 105 questionnaires, a total of 100 were valid for analysis.

Instrument

A 10-point interval Likert scale was used to score the 13 questionnaire items. The 10-point interval scale offers the respondents more response alternatives that coincide with their particular assessment of a question, as stated by Ehido et al. (2020) and Muda et al. (2020). A score of one indicates "strongly disagree," while a score of ten indicates "strongly agree." The instrument's items were modified from those used in earlier research (Ismail, 2017; Awang, 2018; Azmi et al. 2021; Shaharuddin et al. 2021; Bahkia et al. 2019). In addition, the questionnaire requested demographic information from the respondents, including their age, gender, education financing, university name, current semester, current academic year, and mode of study. For this reason, experts in the field were sought out. The items in the questionnaire underwent a thorough evaluation for validity and reliability. According to Van Horn et al. (2023), validity is the extent to which a score accurately reflects a concept, whereas reliability is the degree to which a measure is not subject to random errors and a reliable instrument provides consistent results. It can therefore be characterised as the measurement method's accuracy and a sign of the scale's ability to accurately measure the intended quantity (Pandey & Pandey, 2021). There are three ways to evaluate validity: face validity, content validity, and criterion validity. The degree to which a measure accurately captures the essence of a particular concept is known as face validity. Content validity, which is closely related to face validity, concerns whether a measure contains a descriptive set of items to represent a particular notion. The level of correlation between a measure and other common measures for an exact construct is what Rönkkö & Cho (2022) and Babin et al. (2020) defined as criterion validity. Experts analysed the items on the questionnaire.

The Exploratory Factor Analysis (EFA) Procedure

For the goal of gathering information for the pilot project, the updated questionnaire was given to the 105 respondents who were selected at random. To determine and quantify the dimensionality of the items measuring the construct, the EFA was used with the data that had been gathered. In order to ascertain whether the items would produce distinct dimensions of earlier studies, many researchers, like Awang et al. (2023); Awang (2018); Musa et al., (2023) and Shkeer & Awang (2019), have emphasised the use of EFA for each construct. If items are adapted from distinct domains to a new field of study, the dimensionality of the items may change. The dimensionality may also alter as a result of variations in the population's socioeconomic condition and cultural background, as well as the passage of time (duration) between the current study and earlier ones. In other words, the current study is anticipated to yield new aspects, especially given that it is being undertaken in a novel setting (Awang, 2018, 2023; Bahkia et al., 2019).

EFA for Online Social Support

The construct of online social support was represented by 13 items in the questionnaire for this study. Table 1 displays the descriptive statistics for each item used to measure the construct. As advised by (Awang et al., 2016; Hoque et al., 2018; Bahkia et al., 2019), a wide range of options were provided on an interval scale from 1 (strongly disagree) to 10 (strongly agree). To comprehend the distribution of the data, the standard deviation was determined. Based on the values for the error and variance to determine the mean, standard deviation

determines the normal distribution of the data. The means and standard deviation cuts for each item are displayed in Table 1.

Table 1:

The mean and standard deviation for items measuring Online Social Support (SSDT) Construct

Item	Statement	Mean	Std. Deviation
SSDT1	<i>My friend(s) show me where to find things I need online.</i>	7.9300	1.85459
SSDT2	<i>Online, I belong to groups of people with similar interests.</i>	8.3100	1.97303
SSDT3	<i>When I'm online, my friend(s) help me understand my situation better.</i>	7.7200	2.08932
SSDT4	<i>I am part of groups online.</i>	8.7700	1.47611
SSDT5	<i>Online, my friend(s) make me feel like I belong.</i>	7.9300	1.96049
SSDT6	<i>Online, my friend(s) provide me with helpful information</i>	8.3100	1.60614
SSDT7	<i>When I'm online, my friend(s) give me useful advice.</i>	8.0800	1.69181
SSDT8	<i>Online, my friend(s) would tell me where to find help if I needed it.</i>	7.9800	1.82563
SSDT9	<i>My friend(s) show that they care about me online.</i>	7.9800	1.82009
SSDT10	<i>Online, my friend(s) say or do things that make me feel good about myself.</i>	8.0200	1.67561
SSDT11	<i>My friend(s) help me learn new things when I'm online.</i>	7.9600	1.62630
SSDT12	<i>If I had a problem, my friend(s) online would suggest an action I could take to solve it.</i>	7.8100	1.77351
SSDT13	<i>I can rely on others online to help me with things I'm working on</i>	7.7600	1.81531

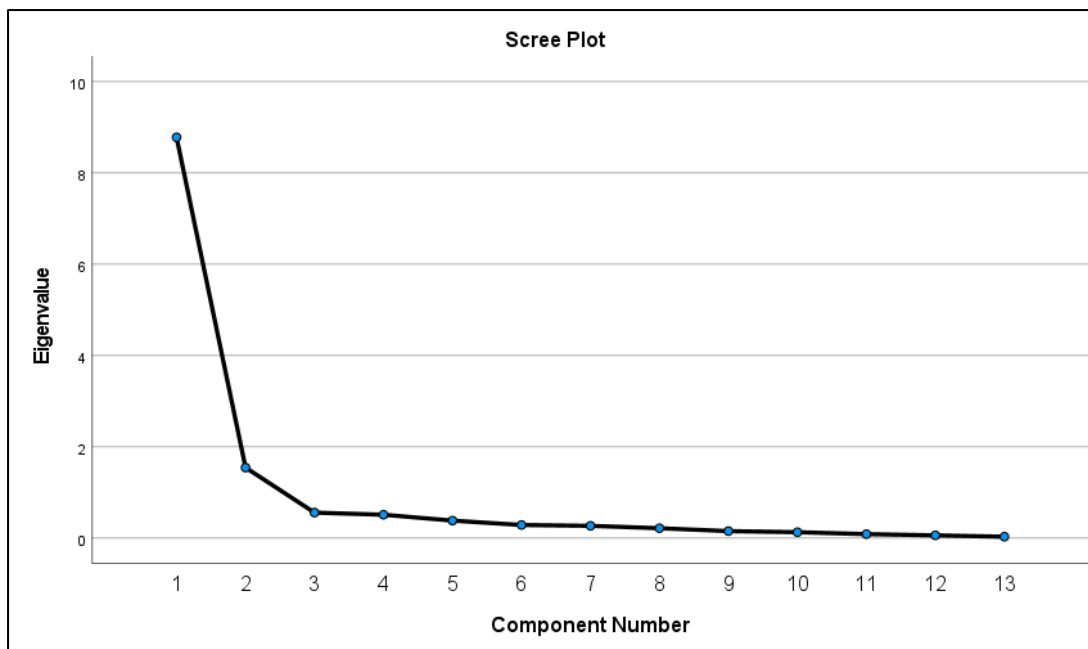
The results of Table 2 show that the Bartlett's test of sphericity was significant (p-value 0.05). In addition, the Kaiser-Meyer-Olkin (KMO) metric for gauging sample adequacy has risen above the necessary value of 0.6 (Awang, 2012, 2018; Muda et al., 2018; Awang et al., 2023). As a result, the data are sufficient for the data reduction procedure, as shown by the results of the two tests (Bartlett's test significance and KMO > 0.6).

Table 2:

The KMO and Bartlett's Test Score

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.911
Bartlett's Test of Sphericity	Approx. Chi-Square	1765.829
	df	105
	Sig.	.000

The components from the scree plot in the EFA technique are shown in detail in Figure 1. As a result of this process, the 13 items were divided into two components. Every component is a set of measuring tools. Awang (2010, 2012) and Hoque et al. (2018) claim that the rotated component matrix will indicate which items correspond to which components.



Dimensions and Total Variance

The two components that arose from computing the eigenvalue are displayed in Table 3 is results as being bigger than 1.0. The range of numbers value covered from 1.544 to 8.779. The first component's explained variance was 67.530% while the second's was 11.877%. According to Awang (2010, 2012), Hoque (2018), Yahaya et al. (2018), and Bahkia et al. (2019), the total explained variation while assessing this construct was 79.407%, which was acceptable as it exceeded the minimum threshold of 60%.

Table 3:
The Total Variance Explained for the Construct

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.779	67.530	67.530	8.779	67.530	67.530	5.811	44.701	44.701
2	1.544	11.877	79.407	1.544	11.877	79.407	4.514	34.706	79.407

Extraction Method: Principal Component Analysis.

The 13 items underwent VariMax (Variation Maximisation) rotation as part of the Principal Component Analysis (PCA) extraction procedure. In Table 4, the two elements and the corresponding items that were discovered through the EFA process are shown. Items with lower factor loadings would be eliminated (Awang, 2010, 2012; Yahaya et al., 2018; Bahkia et al., 2019). Items should have a factor loading of at least 0.6 in order to be kept. The factor loadings for the rotated items are all, as Table 5 demonstrates, greater than 0.6.

Table 4:*The components and their respective items*

	Component	
	1	2
SSDT1	.636	
SSDT2	.688	
SSDT3	.837	
SSDT4	.760	
SSDT5	.856	
SSDT6	.862	
SSDT7	.902	
SSDT8	.891	
SSDT9		.797
SSDT10		.804
SSDT11		.856
SSDT12		.888
SSDT13		.726

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Component 1 and Component 2 were executed by the combined items.

Internal Reliability of the Instrument

Finally, using the Cronbach's alpha value, the internal reliability of the kept items was calculated. The internal reliability describes the level of efficiency with which a specific group of items measures the relevant construct. Cronbach's alpha must be better than 0.7 for the items to attain internal reliability (Awang, 2010, 2012). For each component, the Cronbach alpha score is shown in Table 6.

Table 5:*The Construct's Internal Reliability*

Component	N of Items	Cronbach's Alpha
1	8	.959
2	5	.927
All Items	13	.959

Because each item's Cronbach's alpha score was higher than 0.7, it was determined that each was internally reliable.

Conclusion

Particularly in the setting of doctorate students at public universities in Malaysia, the present study makes a contribution to the measurement of the online social support construct. Two dimensions of online social support were extracted. Furthermore, these dimensions were assessed using 13 items, and the reliability measurements for the two Online Social Support dimensions/components produced high Cronbach's alpha values, which satisfied the Bartlett test's requirements (significant), yielded acceptable KMO scores (> 0.6), and had factor loadings that were higher than the required minimum of 0.6. The acquired results

demonstrated that the items taken into consideration were relevant for this investigation. The online social support instrument is internally consistent and stable across the sample thanks to the stringent scale improvement and validation techniques used in this investigation.

Contribution

This study makes a contribution to the field of tertiary education studies by assessing and testing questions that are appropriate for testing the notion of online social support in the context of PhD students. A questionnaire was developed and validated. The field has benefited from this instrument's methodological contribution. Items were modified and adapted from a variety of sectors to meet the tertiary education field. The instrument has undergone validation for reliability, content validity testing, and face validity testing.

This research is anchored in the social exchange theory which delves into the nuances of online social support by examining how individuals navigate virtual relationships, balancing the give-and-take of support within the context of digital interactions. This research is significant in advancing both theoretical and practical knowledge like addressing a gap in literature, contributes to the advancement of measurement methods in the field of social sciences and can enhance the quality of virtual social support, promoting healthier online environments. The significance of this research is not confined to a single discipline. It has the potential to bridge insights across various fields such as psychology, communication studies, sociology, and digital media studies. This cross-disciplinary approach contributes to a holistic understanding of online social support.

Recommendations

This tool is recommended for utilisation in higher education, especially for PhD studies. Future research in the field of postgraduate education is also encouraged to examine additional factors and pose more queries that help understand the numerous components of the construct online social support. The results of this inquiry can also be expanded by using this instrument in additional populations and a variety of sectors, as well as in other disciplines of knowledge. Since the doctorate students in this study were from public institutions, it is advised to utilise this instrument and examine the results in private universities in Malaysia or even in other nations. Using other analysis techniques (e.g. ANOVA) to compare between two or more online social support groups for postgraduate students using the instrument of this study is another suggestion for future investigation.

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