

ASSESSING ONLINE FACULTY SATISFACTION AT TRADITIONAL HIGHER EDUCATION INSTITUTIONS: THE FSOTS AND ITS PSYCHOMETRIC PROPERTIES

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ABSTRACT

Drawing from existing literature, we constructed the Faculty Satisfaction with Online Teaching Survey (FSOTS) and administered it to 320 faculty teaching online in Qatar during the first 18 months of the COVID-19 pandemic. Descriptive statistics, including mean, standard deviation, Cronbach's alpha, composite reliability, exploratory factor analysis, and confirmatory factor analysis (CFA), were calculated to evaluate the structure and reliability of the instrument. The suitability of the CFA model was assessed by several fit indexes. Statistical analyses were performed using SAS 9.4. The results indicate that the FSOTS is a valid and reliable instrument for measuring online faculty satisfaction at traditional institutions.

Keywords: *online faculty, faculty satisfaction, emergency remote teaching, instrument validation, Qatar, higher education faculty*

INTRODUCTION

Online learning at higher education institutions (HEIs) has consistently grown since the 1990s. With the advent of the internet, personal computers, and mobile devices, many universities have utilized and maximized this way of learning (Simonson, et al, 2019). Decades of research and practice have resulted in highly interactive learning environments, best practices in online teaching and learning, a plethora of sophisticated digital learning tools, a nuanced understanding of student and faculty attitudes toward various aspects of online learning, highly trained instructional designers, quality standards and rubrics, and well-developed online courses and programs (Kentnor, 2015; Means et. al, 2014; Sadeghi, 2019). The result has been a remarkable increase in the number of fully online programs and degrees at colleges and universities and an increasingly beneficial and flexible learning environment for both

students and faculty. Prior to 2020, more than 30% of students at U.S. HEIs were enrolled in online courses (Seaman et al. 2018; U.S. Department of Education, 2019). In 2021, this number had increased by 93% from fall 2019 to fall 2020 (NC-SARA, 2021). Amirault's (2012) prediction that the growth and proliferation of online programs certainly signals a major structural change may be in the offering for higher education institutions seems truer than ever (p. 261).

Traditional HEIs

The global COVID-19 health crisis caused unprecedented effects on HEIs across the globe (Gonzalez-Cacho & Abbas, 2022). It was estimated that one-half of faculty who were forced into teaching online and remote courses had never previously done so (Garrett et al., 2020). Moreover, HEIs varied markedly in their readiness and capacity to address the pandemic's impact on their operations (Perifanou & Economides, 2022). Fully online

universities, for obvious reasons, required relatively little change to their courses and programs, while many universities with existing robust online offerings were able to apply resources and personnel to mitigate some of the negative effects of the crisis (Piña, 2022). However, “traditional” HEIs—defined as brick-and-mortar institutions offering no fully online programs or degrees—were put in a desperate situation, lacking adequate contingency plans and the necessary resources, infrastructure, and adequately trained faculty and staff for online teaching and learning (Alshboul et al., 2021; Coman et al., 2020; Nandy et al., 2021; Newsome et al., 2022; Salmi, 2020). Unable to quickly pivot to well-designed online learning, such institutions were forced into emergency remote online teaching (Hodges et al., 2020; Newsome et al., 2022).

Faculty Satisfaction

Faculty satisfaction has long been recognized by researchers as an essential component of quality online education (e.g., Bolinger & Wasilik, 2009; Marasi et al., 2022; Quraishi et al., 2010). The two-factor theory of employee satisfaction developed by Frederick Herzberg proposed that employee satisfaction could be attributed and influenced by two broad factors: (a) hygiene factors—such as work relationships, working conditions, work rules and regulations, supervisor competence and salary—that can serve to reduce satisfaction, and (b) motivating factors—such as recognition, advancement opportunities, personal and professional growth, and increases in responsibility and authority—that can serve to increase satisfaction (Herzberg, et al. 1993). The two-factor theory has been used as the basis for studies of employee satisfaction in healthcare (Alrawahi et al., 2020; Kacel et al., 2005), business (DeShields Jr. et al., 2005; Sithole & Solomon, 2014), and education (Ghazi et al., 2013; Marasi et al., 2022), and it serves as the primary theoretical foundation for this study.

Determinants of Satisfaction for Faculty New to Online Teaching

Faculty at traditional institutions who are fully immersed in classroom-based instruction can feel disoriented in a fully online or remote environment. Providing development support and training can help to mitigate this disorientation (Strawser & Bunag, 2018). Developing and teaching online courses require different sets of skills

and techniques compared to teaching courses in a physical classroom (Stickney et al., 2019). Faculty new to online teaching can face multiple obstacles, including how to manage an increased workload, concerns about administration and technical support, and anxiety about lack of experience in online teaching (Luongo, 2018). Those new to teaching remotely or online need access to sufficient training and instructional support to do their job. Institutional support also includes access to instructional designers, quality standards, rubrics, and examples of well-designed courses. When problems occur, faculty can feel isolated. Knowing that technical help is available when they need it increases faculty confidence and satisfaction (Stickney et al., 2019; Strawser & Bunag, 2018).

Besides confidence in institutional support, the confidence that faculty feel about the adequacy and reliability of the institution’s technology infrastructure and the technology skills that they and their students display are critical to their successful implementation of online learning (Cifuentes et al., 2018). Well-trained and well-supported faculty and those with skills and expertise in classroom management are more likely to exhibit positive online ability and behavior, including greater likelihood to integrate online technologies into their teaching and to require students to use online technologies in their learning (Pomerantz & Brooks, 2017). A study by EDUCAUSE on the views and use of technology by 13,451 higher education faculty found that, while faculty prefer not to teach online, they believe that adopting the tools and technologies that enable online teaching and learning would improve their teaching (Pomerantz & Brooks, 2017). Faculty satisfaction with online teaching influences their commitment to quality and student motivation (Bolliger & Wasilik, 2009; Waskilik & Bolliger, 2009).

The pandemic experience has forever altered the expectations of both students and faculty. Students, for example, expect greater flexibility in the delivery of courses with options to take in-person, hybrid, and online courses in the same term. Likewise, faculty are expecting to have flexibility to teach remotely at times, and university administration may expect faculty to teach in-person, hybrid, and online courses in the same year or even in the same semester (Daumiller et al., 2021; Garrett et al., 2020). To ensure the success of online learning in higher education, there

is a need to understand the experiences of faculty teaching online during the challenging conditions brought on by the pandemic in different contexts and geographic locations. More specifically, there is a need for evaluation tools developed for and tested among faculty teaching at traditional HEIs.

Accordingly, the current study sought to develop a measure for evaluating faculty satisfaction with the online learning that occurred at traditional HEIs in Qatar following three semesters of the COVID-19 pandemic. The aim was to develop an instrument to help gauge how faculty at traditional HEIs feel about their work environment (hygiene), and their satisfaction (motivating factors) with regard to online teaching and learning (Hertzberg et al., 1993), and to develop a tool that can offer insight on areas where traditional HEIs may need improvement. Consequently, this study sought to explore the following research questions:

- Can a reliable and valid survey instrument be constructed using hygiene and motivational factors of faculty at traditional HEIs?
- Which factors are associated with the highest levels of faculty satisfaction at traditional HEIs?

The results of this study have particular significance for higher education administrators, practitioners, and researchers in higher education.

This study contributes to the ongoing body of research dedicated to enhancing online teaching and learning at traditional HEIs in the post-pandemic era.

METHODOLOGY

Research Design

This study employed a quantitative research design, which allowed for the collection and analysis of numerical data to explore faculty satisfaction with online teaching following three semesters of forced online learning due to the COVID-19 pandemic. The study utilized a survey instrument to collect data on faculty perceptions of key aspects of online teaching at traditional HEIs. The central phenomenon under investigation was faculty satisfaction with online teaching, and the study examined various quantitative variables, including developmental support and training, technology and technology skills, online ability and behavior, and overall preference.

Setting and Population

This quantitative study took place at a large, national university in Qatar during spring 2021 following the third semester of forced online learning due to the COVID-19 pandemic. We invited 14 public and private HEIs in the country to participate, of which the following institutions consented: Qatar University, Community College of Qatar, College of the North Atlantic-Qatar, University

Table 1.
Demographics of Participating HEIs

Institution	Sector	Total Faculty	Male	Female	Qatari	Non-Qatari
Qatar University	Public	1375	884	491	351	1024
Community College of Qatar	Public	162	102	60	9	153
College of North Atlantic-Qatar	Public	178	81	97	2	176
University of Calgary-Qatar	Private	54	12	42	0	54
Qatar Finance and Business Academy of Qatar with Northumbria University	Public	5	3	2	2	3
Virginia Commonwealth University School of the Arts in Qatar	Qatar Foundation	60	37	23	2	58
AFG College with the University of Aberdeen	Private	19	15	4	0	19
Stenden Qatar-University of Applied Sciences	Private	17	8	9	1	16
Total		1870	1142	728	367	1503

Source: Qatar Planning and Statistics Authority (2019; www.psa.gov.qa)

of Calgary-Qatar, Qatar Finance and Business Academy of Qatar with Northumbria University, Virginia Commonwealth University-Qatar, AFG College with the University of Aberdeen, and Stenden Qatar-University of Applied Sciences. The study sample consisted of full-time faculty teaching at the previously mentioned HEIs during the first year and a half of the pandemic. Table 1 details the demographics of the institutions that participated in the study.

Approvals

The study was approved by both the Institutional Review Board (IRB) of Qatar University and by the Ministry of Education and Higher Education (MOEHE) of the government of Qatar. Faculty at the participating HEIs were invited by the MOEHE to participate in an online survey via their institutional email address. Data were gathered from April to May 2021. The survey included informed consent and was voluntary with the option to exit at any time. The study population consisted of 1,870 faculty of which 1,142 (61.07%) were male and 728 (38.93%) were female. Additionally, the study population was comprised of 1,503 (80.37%) non-Qatari faculty and 367 (19.63%) Qatari faculty. The IRB did not permit the researchers to ask respondents to identify their institution; consequently, this study deals with aggregate data from those institutions who confirmed their participation.

Sample

This study employed a quantitative research design, and the representative sample consists of 320 faculty to study their satisfaction with online teaching following three semesters of forced online learning due to the COVID-19 pandemic. Table 2 provides the demographic characteristics of the study sample. As illustrated below, the sample was comprised of $n = 199$ (62.2%) male faculty and 121 (37.8%) female faculty of which 10% were Qatari and 90% were non-Qatar, which is representative of the population. In addition, 68.4% of the study participants taught undergraduate courses, while 31.6% taught graduate courses. Finally, the sample included faculty from different academic disciplines, where the majority were teaching in non-STEM fields (53.8%). The survey response rate was 17.11 percent, and the sampling margin of error was $\pm 5\%$.

Table 2.
Demographic Characteristics of Faculty

Characteristic	N	%
<i>Gender</i>		
Male	199	62.2%
Female	121	37.8%
<i>Nationality</i>		
Qatari	32	10.0%
Non-Qatari	288	90.0%
<i>Level of courses</i>		
Undergraduate	219	68.4%
Graduate	101	31.6%
<i>Academic Discipline</i>		
STEM	148	46.3%
Non-STEM	172	53.8%

Survey Development

We developed the Faculty Satisfaction with Online Teaching Survey (FSOTS) to explore faculty perceptions regarding key aspects of online teaching at traditional HEIs. The survey was developed out of an extensive review of the literature regarding various factors found to influence faculty satisfaction. These factors included: adequacy of training and support (Howe et al., 2021; Marasi et al., 2022; Pomerantz & Brooks, 2017; Stickney et al., 2019); access to technical support (Cifuentes et al., 2018; Piña, 2016; Pomerantz & Brooks, 2017; Strawser & Bunag, 2018; Stickney et al., 2019); adequate technology infrastructure and reliability (Bolliger & Wasilik, 2009; Piña, 2016; Wasilik & Bolliger, 2009); faculty technology skills (Cifuentes et al., 2018; Howe et al., 2021; Marasi et al., 2022); student technology skills, (Bollinger & Wasilik, 2009; Marasi et al., 2022; Wasilik & Bolinger, 2009); faculty ability to build online courses and online assessments (Howe et al.; Luongo, 2018; Perifanou & Economides, 2022); faculty ability to instruct and assist students online (Bolliger & Wasilik, 2009; Marasi et al., 2022; Strawser & Bunag, 2018); online classroom management (Bolliger & Wasilik, 2009; Pomerantz & Brooks, 2017) and faculty preference in teaching online vs. on-campus (Cifuentes et al., 2018; Luongo, 2018; Pomerantz & Brooks, 2017).

We identified four overarching themes to

construct the FSOTS: (1) Developmental Support and Training, (2) Technology and Technology Skills, (3) Online Ability and Behavior, and (4) Overall Preference. The survey consisted of 15 Likert-type items using a scale of 1 to 5 (1 = *strongly disagree* to 5 = *strongly agree*). We constructed the individual survey items based on the relevant literature and the survey underwent a thorough review by an expert panel of faculty, staff, and administrators from three institutions. The panel was comprised of individuals with extensive experience in survey design, course/instructional design, or online pedagogy. The review process resulted in the rewording of several items to be more user-friendly. The FSOTS was utilized as the primary data collection tool for this study to explore faculty satisfaction with online teaching at traditional HEIs in Qatar and to answer the research questions of the study. The FSOTS items are provided in Table 3, and information on the 15 individual items is provided in Table 4.

Data Analyses

Besides the demographic characteristics presented in Table 2 above, several descriptive statistics

were calculated, including the mean and standard deviation of survey items and factors. To measure the internal consistency of survey dimensions, Cronbach's alpha and composite reliability were evaluated. An exploratory factor analysis (EFA) was utilized to assess the construct validity of the instrument. We also examined the average variance extracted (AVE) to assess the convergent validity. Moreover, Fornell and Larcker's (FL) criterion and the Heterotrait-Monotrait (HTMT) ratio of correlations was used to measure discriminant validity. Finally, a confirmatory factor analysis (CFA) was applied, and the suitability of the CFA model was assessed by several fit indexes such as the standard root mean square residual (SRMR), root mean square error of approximation (RMSEA), goodness of fit index (GFI), comparative fit index (CFI), and the minimum discrepancy per degree of freedom (CMIN/DF). All statistical analyses were performed using the statistic software SAS 9.4.

RESULTS

Table 4 provides the descriptive statistics for the 15 items included in the FSOT survey. The mean

Table 3.
FSOTS Items

Dimension / Items	Description
Developmental Support & Training	
DST1	In general, I received adequate support/training to create an online course.
DST2	In general, I was able to access technical support services during my online teaching when needed.
Technology & Technology Skills	
TTS1	I had adequate internet access/devices to teach online courses.
TTS2	I had the technology skills needed to teach online courses.
TTS3	In general, my students had the technology skills needed to succeed in my online courses.
TTS4	There were frequent technical problems in my online classes that interfered with my teaching/student learning.
Online Ability & Behavior	
OAB1	I am confident in my ability to build an online course.
OAB2	I am confident in my ability to create effective assessments in the Learning Management System (LMS) used at my institution.
OAB3	I am confident in my ability to teach online courses.
OAB4	During my online courses, I was generally able to help my students when they had questions.
OAB5	In general, I was able to accurately observe students' engagement during online classes.
OAB6	In general, I was able to manage group discussions effectively during online classes.
OAB7	During the period of online teaching, I generally had live (synchronous), video-based class meetings with my students.
Overall Preference	
OP1	I prefer online teaching over face-to-face teaching.
OP2	I would like to have the option to teach some or all of my courses online in the future.

value for the Developmental Support and Training factor was 3.92 (SD = 1.09), and its item means ranged from 3.86 to 3.95. The mean value for the Technology and Technology Skills factor was 3.82 (SD = 1.33), and its item means ranged from 3.30 to 4.10. Regarding the Online Ability and Behavior factor, the mean was 4.09 (SD = 1.80), and its item means ranged from 3.65 to 4.29. Finally, the mean value for the Overall Preference factor was 3.14 (SD = 1.38), and its item means ranged from 2.90 to 3.35.

Table 4.
Descriptive Statistics of FSOTS Items

Dimension / Items	Mean	SD
Developmental Support and Training	3.92	1.09
DST1	3.86	1.08
DST2	3.95	1.10
Technology and Technology Skills	3.82	1.33
TTS1	4.10	1.09
TTS2	4.08	1.09
TTS3	3.59	1.18
TTS4	3.30	1.22
Online Ability and Behavior	4.09	1.81
OAB1	4.20	1.02
OAB2	4.00	1.04
OAB3	4.28	1.00
OAB4	4.29	1.04
OAB5	3.65	1.16
OAB6	3.70	1.14
OAB7	3.92	1.15
Overall Preference	3.14	1.38
OP1	2.90	1.38
OP2	3.35	1.41

Construct Reliability

Cronbach's alpha coefficients and composite reliability of the different factors were high. According to Table 5, Cronbach's alpha coefficients range from 0.870 to 0.950, and composite reliability values range from 0.912 to 0.963. These values are greater than the threshold of 0.7, which shows internal consistency reliability (Alhaza et al., 2021).

Table 5.
Construct Reliability

Dimension	Cronbach's Alpha	Composite Reliability
Developmental Support and Training	0.920	0.961
Technology and Technology Skills	0.870	0.912
Online Ability and Behavior	0.950	0.961
Overall Preference	0.924	0.963

Exploratory Factor Analysis

After reverse coding the negatively worded items in the survey, the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy coefficient and Bartlett's test of sphericity were evaluated. For the KMO coefficient, a value greater than 0.6 implies good applicability, and for Bartlett's test, a high significant p -value ($p < .001$) indicates an appropriate dataset for factor analysis (Field, 2013). The KMO value of the FSOTS items was 0.88, and Bartlett's test of sphericity was chi-square ($df = 4198.79$ (105) with a p -value < 0.001 , indicating that the survey data were suitable for factor analysis. The exploratory factor analysis (EFA) was applied using the principal axis factoring procedure with varimax rotation, and four components with eigenvalues greater than one were extracted and accounted for 80.74% of the overall variance. Based on Table 6 below, the first factor, Online Ability and Behavior, accounted for 47.86% of the total variance and included seven items. The factor loadings range between 0.752 and 0.914. The second factor, Technology and Technology Skills, accounted for 16.78% of the total variance and included four items with factor loading ranging from 0.682 to 0.781. The third factor, Developmental Support and Training, accounted for 8.99% of the total variance and included two items with factor loadings of 0.869 and 0.875. Finally, the fourth factor, Overall Preference, accounted for 7.11% of the variance and included two items with factor loadings of 0.825 and 0.836. The factor loading for all survey items were greater than the threshold of 0.4 as suggested by Yong and Pearce (2013).

Table 6.

Exploratory Factor Analysis Results of FSOTS Items

Survey Items	Factor 1	Factor 2	Factor 3	Factor 4
	Online Ability and Behavior	Technology and Technology Skills	Developmental Support and Training	Overall Preference
DST1	0.160	0.177	0.875	0.109
DST2	0.216	0.236	0.869	0.132
TTS1	0.113	0.770	0.177	0.169
TTS2	0.200	0.781	0.111	0.139
TTS3	0.124	0.780	0.156	0.139
TTS4	0.155	0.682	0.060	0.151
OAB1	0.891	0.189	0.069	0.129
OAB2	0.811	0.168	0.037	0.094
OAB3	0.914	0.190	0.130	0.151
OAB4	0.880	0.210	0.144	0.168
OAB5	0.777	0.079	0.098	0.112
OAB6	0.752	0.150	0.179	0.125
OAB7	0.795	0.049	0.120	0.120
OP1	0.227	0.280	0.153	0.836
OP2	0.274	0.314	0.120	0.825
Variance	47.86%	16.78%	8.99%	7.11%
Eigenvalue	7.179	2.517	1.348	1.066
KMO	0.88			
Bartlett test	chi-square = 4198.79; df = 105; p-value < 0.001			

Discriminant Validity

Discriminant validity was assessed using FL criterion and the HTMT ratio of correlations. According to Fornell and Larcker (1981), the square root of AVE value of each construct should be greater than the absolute value of their correlation coefficients. Table 7 illustrates that the square root of AVE on the main diagonal for the constructs are greater than their correlation coefficients' absolute values below the main diagonal in the corresponding rows and columns. Moreover, the discriminant validity was tested using HTMT ratio of correlations with a maximum of 0.548 for values above the main diagonal as shown in Table 7. These values indicate that the discriminant validity was accepted since they were less than the threshold of 0.85 as suggested by Hamid et al. (2017).

Table 7.

Measurement Statistics for Instruments' Discriminant Validity

Constructs	DST	TTS	OAB	OP
Developmental Support and Training (DST)	0.962	0.426	0.376	0.383
Technology and Technology Skills (TTS)	0.385	0.849	0.393	0.548
Online Ability and Behavior (OAB)	0.358	0.363	0.883	0.469
Overall Preference (OP)	0.355	0.492	0.445	0.964

Confirmatory Factor Analysis

The convergent validity of the survey items was evaluated through a confirmatory factor analysis (CFA). The standardized factor loading for all survey items should be greater than 0.7 (Benitez et al., 2020). As shown in Table 8, the

standardized factor loadings of all the survey items range between 0.799 and 0.968. Moreover, to assess the convergent validity, we examined the average variance extracted (AVE), which should be greater than or equal to 0.50 (Henseler et al., 2015). Table 8 illustrates the AVE values range from 0.721 to 0.929.

Table 8.
Measurement Model Results

Construct	Item	SL	SE	t	AVE
Developmental Support and Training	DST1	0.955	0.010	95.183	0.926
	DST2	0.968	0.006	152.895	
Technology and Technology Skills	TTS1	0.865	0.023	37.980	0.721
	TTS2	0.865	0.020	44.119	
	TTS3	0.860	0.022	39.331	
	TTS4	0.799	0.026	30.855	
Online Ability and Behavior	OAB1	0.927	0.013	71.596	0.780
	OAB2	0.857	0.021	41.204	
	OAB3	0.951	0.007	136.390	
	OAB4	0.937	0.012	80.291	
	OAB5	0.825	0.023	36.458	
	OAB6	0.831	0.023	35.785	
	OAB7	0.836	0.025	33.653	
Overall Preference	OP1	0.962	0.005	193.624	0.929
	OP2	0.966	0.004	234.671	

Model Fit

Multiple goodness of fit indices were utilized to validate the model, namely, SRMR, RMSEA, GFI, CFI, and CMIN/DF. Generally, threshold values less than 0.08 and 0.07 for SRMR and RMSEA, respectively, are desired for a good fit (Cangur & Ercan, 2015; Steiger, 2007). Moreover, a value greater than 0.9 for both GFI and CFI indexes indicates good levels of model fit, and CMIN/DF less than 3 indicates an acceptable fit between theoretical model and sample data as suggested by Kline (1998). As reported in Table 9, the value of SRMR was 0.048,

the value of RMSEA was 0.062, the GFI value was 0.954, the CFI value was 0.964, and the CMIN/DF value was 2.768. Thus, the overall fit of this model was adequate according to all five fit indices.

Table 9.
Fit Indices for the CFA Model

SRMR < 0.08for	RMSEA < 0.07	GFI > 0.90	CFI > 0.90	CMIN/DF < 3
SRMR	RMSEA	GFI	CFI	CMIN/DF
0.048	0.062	0.954	0.964	2.768

DISCUSSION

In this study, we sought to develop and validate a measure for evaluating the satisfaction of faculty at traditional HEIs with online learning using literature-based hygiene and motivational factors. Multiple statistical analyses indicate that the FSOTS is a psychometrically sound instrument that is valid and reliable for use among practitioners and administrators.

Online Ability and Behavior

The category of online ability and behavior was rated the highest (mean = 4.09) among those faculty who participated in the study, which suggests faculty were generally satisfied with how well they were able to deliver online learning during the pandemic. Contrary to these findings, recent studies suggest that faculty at traditional HEIs are not completely confident in their readiness for or ability in online learning. For example, a multi-center study by Hosny et al., (2021) investigating the readiness of medical teachers for online teaching post-COVID concluded that instructors felt a need for improvement in online teaching, course design, and using learning management systems. Similarly, studies investigating university instructors at Arab HEIs during and after the pandemic found that many faculty lacked confidence in the skills and competencies needed to teach professionally online (Albrahim, 2020; Khtere & Yousef, 2022). To reconcile our study findings with the existing literature, we point out that the online ability of faculty comprises multiple dimensions including knowledge, skills and competencies, teaching practices, experience, and institutional support (Christensen & Knezek, 2017; Hung, 2016). Because our study was concerned primarily

with developing and validating the FSOTS instrument, we did not consider the impact of these factors on faculty satisfaction with online ability. However, Martin et al., (2019) found a significant relation between experience and self-efficacy and concluded that more experienced teachers tended to overestimate their online ability. Similarly, Cutri & Mena, (2020) concluded that the relationship between experience and online ability was the highest among faculty with intermediate experience. Sailer et al., (2021) found that the online ability of faculty is greatly dependent upon their professional development, educational training, and the technical resources provided by the institution, while Guillén-Gámez et al., (2022) suggests instructors' online ability is largely determined by their digital competence. Study findings highlight the need for further research aimed at evaluating the online ability of faculty at traditional HEIs as well as exploring the factors that impact readiness for online teaching. Consequently, we encourage more investigations using the FSOTS instrument to explore possible relationships among these other dimensions in different settings.

Development Support and Training

Faculty who participated in this study rated their satisfaction with developmental support and training relatively high (mean = 3.92). It is important to point out, however, that the current study took place in the context of the global coronavirus pandemic where universities around the world were mandated to deliver instruction remotely, which essentially forced institutions to provide intensive, continuous support and training (Sumer et al., 2021). As faculty become increasingly expected to transition between in-person, hybrid, and fully online learning, will the caliber and availability of such support at traditional HEIs be adequate to meet these demands in the post-pandemic era? According to Mihai (2021), to be effective going forward, faculty development needs to go beyond an “emergency mode”; it needs to be organically embedded in universities' medium- to long-term strategies and be seen as an integral part of the academic career path. Faculty will require the skills to develop high-quality online courses and course structure that will promote the development of skills necessary for students' future careers (Abbas et al., 2022).

Technology and Technology Skills

Participants in this study also rated their satisfaction with technology and technology skills relatively high (mean = 3.82). These findings are consistent with other studies conducted throughout the pandemic, particularly in the Gulf region. For example, Elshami et al. (2021) surveyed faculty at University of Sharjah and found that nearly 74% of faculty were satisfied with their technology skills and the availability of technology needed for online learning. However, their thematic analysis of open-ended responses revealed that faculty were hindered by the increased workload and time required for the preparation of teaching and assessment materials, which suggests more support is needed for the development of online courses and learning environments as well as more collaboration with instructional designers at traditional HEIs, especially in the long term. The considerably high socioeconomic conditions present in the context of the current study likely have bearing on faculty satisfaction with access to the needed technology and technological devices, unlike in many developing countries. For instance, a study of university professors in India conducted by Selvaraja et al. (2021) found that 65% of respondents had to use their personal devices for online learning and nearly 15% had to purchase devices out of their own pocket to conduct online classes during the pandemic. Moreover, nearly half of the respondents struggled with network connectivity issues and disrupted electricity. Lin et al. (2022) found similar challenges between urban and rural online learners in China. Such findings emphasize important global challenges to online learning at traditional HEIs and the importance of evaluating faculty satisfaction at these institutions in different contexts.

Overall Preference

Finally, participants in this study generally did not have a strong preference for teaching online compared to in-person teaching ($m = 2.90$); however, faculty indicated a higher preference for having the flexibility to teach courses online ($m = 3.35$). In other words, study participants seemed to prefer in-person teaching to online teaching, but they would like to have the option to teach some of their classes online. These findings are consistent with the recent literature regarding online learning at traditional HEIs. For example, a study conducted by Almahasees et al. (2021) among higher

education students and faculty in Jordan found that while both students and faculty recognized the benefits of online learning, they believed it was less effective than in-person learning. Similarly, a study by Adedoyin and Soykan (2020) found that students and faculty had positive experiences with online learning but believed that blended learning offered the most advantageous circumstances. Saha et al. (2022) reported that while faculty perceived online learning as effective during the pandemic, more than three-fourths of study participants preferred blended learning in the postpandemic era, citing challenges with motivation and engagement as well as evaluation. Such findings suggest that traditional HEIs should move toward blended learning to meet the expectations of both students and faculty. Consequently, more studies are needed as institutions continue this transition.

Implications

The FSOTS is a psychometrically sound instrument that can be used by researchers to investigate faculty satisfaction with developmental support and training, technology and technology skills, online ability and behavior, as well as faculty preferences.

How does the FSOTS compare with other instruments for assessing online faculty satisfaction? Bollinger and her colleagues (2013) developed and validated the Online Instructor Satisfaction Measure (OISM), a survey instrument administered to 168 faculty who were teaching online courses at a large public university with existing fully online programs and degrees. The OISM focused upon five factors: “Instructor-to-Student Interaction, Affordances, Institutional Support, Student-to-Student Interaction, and Online Course/Design/Development/Teaching” (p. 183). The OISM could be considered a valuable instrument to measure online instructor satisfaction in environments where online learning is well-established and where instructors are experienced in online teaching.

In contrast, the FSOTS was designed for situations in which online learning was not well-established for faculty with little or no previous online teaching experience, and with a greater focus on self-reflection than upon hygiene factors. The factors of Development Support and Training and Technology and Technology Skills in the FSOTS share some common criteria with the Institutional Support factor in the OISM. The FSOTS factors of Online Ability and Behavior, Technology and

Technology Skills, and Overall Preferences contain items that allow faculty to reflect upon instructors’ existing knowledge, skills, competencies, confidence, and preferences, while the OISM focuses more on faculty and student actions and interactions and the conditions under which instruction occurs. Thus, the FSOTS is centered primarily on the new online faculty experience, rather than upon the instructional environment of online learning.

Faculty teaching in remote environments at traditional institutions nearly a decade later under COVID conditions have done so under different circumstances and constraints than their more experienced online teaching peers (Garrett et al., 2020; Marasi et al., 2022). Additionally, the varying cultural and socioeconomic conditions in different countries around the world played an important role in the delivery of education throughout the pandemic (Newsome et al., 2022). Even within the same country, access to technology and digital literacy can vary widely between urban and rural learners (Lin et al., 2022) and, therefore, should be considered in the development of measures evaluating online teaching and learning experiences at traditional HEIs. Wealthier nations, such as Qatar, were less concerned with students’ access to the internet or the availability of devices and more concerned with developmental support and training, the technology skills of students and faculty, and online behavior (Newsome et al., 2022), while poorer countries, out of necessity, needed to focus on issues of access and connectivity (UNICEF, 2020). Therefore, it is important to have measures for evaluating online learning experiences at traditional HEIs that reflect these different circumstances. The OISM is a useful, valid, and reliable tool for institutions with established online programs and experienced faculty, while the FSOTS is more suited to institutions and faculty new to online learning.

CONCLUSION

This study developed and evaluated the Faculty Satisfaction with Online Teaching Survey (FSOTS), which gauges faculty satisfaction with some of the key aspects of online teaching identified in the literature, including Developmental Support and Training, Technology and Technology Skills, Online Ability and Behavior, and Faculty Preferences. Of the four factors measured by the

survey, Online Ability and Behavior was most associated with faculty satisfaction. The factor structure and psychometric properties of the FSOTS were examined in a sample of 320 faculty teaching online courses at HEIs in Qatar following the third semester of forced online learning due to the COVID-19 pandemic. Overall, the study results suggest that FSOTS is an appropriate instrument for investigating faculty satisfaction with the factors of online teaching specified in the current study and is psychometrically sound.

Limitations and Future Directions

It is important to point out that this study was conducted under what Hodges et al. (2020) describe as Emergency Remote Teaching in response to the global coronavirus pandemic, when instructors were teaching courses not designed as online courses. Consequently, instructors may have lacked sufficient time and/or adequate skills to develop effective instructional materials to create an ideal online learning environment. More studies are needed investigating the online ability and readiness for faculty teaching online, including implementation of the FSOTS among faculty at traditional HEIs teaching online, hybrid, flipped, and HyFlex courses to further validate the results of the current study. As adjunct faculty are increasingly employed to teach online, and often have fewer opportunities and resources for professional development in online teaching, additional studies are also recommended that include part-time and contingent faculty.

Nonetheless, the current study suggests FSOTS is an effective measurement tool; therefore, we encourage its use in future studies exploring faculty satisfaction with online teaching at traditional HEIs, as a self-evaluation tool for faculty, and as a tool to provide insight for faculty and online course developers.

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