

E-teaching satisfaction in a black swan moment: the effect of student engagement and institutional support

Effect of
student
engagement

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Firdaus Basbeth

STM, IPMI, Jakarta, Indonesia

Roselina Ahmad Saufi

*Universiti Malaysia Kelantan Kampus Pengkalen Chepa,
Pengkalan Chepa, Malaysia, and*

Khaeruddin Bin Sudharmin

DRB-HICOM University of Automotive Malaysia, PEKAN, Malaysia

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Abstract

Purpose – Assessing the impact of hygiene factors on faculty motivation and satisfaction in online teaching will advance the literature. It will especially demystify that both factors (hygiene factors and motivator) can cause job satisfaction in online education. The purpose of this paper is to firstly determine the level of faculty motivation and satisfaction in online teaching. Secondly, this study analyses the extent to which hygiene factors affect motivation and faculty satisfaction with online teaching.

Design/methodology/approach – The population of this study consists of university faculty in Indonesia and Malaysia. The sample is randomly chosen in 50 higher education institutions in Indonesia and Malaysia. The sample size is 206. The participants completed a survey, including perceived student engagement, institutional support, motivation, faculty satisfaction and demographical questions. To test the model, PLS-SEM was used using SmartPLS3 software. The hygiene factors construct was operationalized as a second-order construct consisting of first-order construct: student engagement and institutional support.

Findings – There were no statistically significant differences concerning institutional support and motivation by country of residence. However, there were significant differences in student engagement and faculty satisfaction by country residence. Concerning satisfaction and motivation, the most satisfied and motivated was the faculty member in Indonesia. Hygiene factors were found as the antecedent to faculty motivation and faculty motivation multiplying hygiene factors' effect on job satisfaction. The results showed that student engagement has the highest impact on faculty satisfaction, followed by motivation. Work motivation mediates the relationship between hygiene factors and faculty satisfaction.

Research limitations/implications – This study has limitations; firstly, causal inferences are not warranted as the data is cross-sectional. However, a future direction is to analyse the causal relationship between the hygiene factors, and motivation factors on faculty satisfaction using a formative first-order construct through a longitudinal study. Secondly, the results' generalizability is another limitation of this study because the sample comprised only Indonesia and Malaysia faculty across 51 higher education institution in big cities in the island of Java in Indonesia and Malaysia peninsular only; however, the factors determined in this study represent the job-related aspects taken from the literature and the researchers' experiences; other parts influence faculty satisfaction with online teaching. Therefore, identifying other elements is a future path.

Practical implications – When managers aim at increasing faculty satisfaction, the priority should be given to improve the performance of indicators with the highest effect but a relatively low in performance. All of this implies that higher education institution first needs to find ways to increase motivation by rewarding



faculty in many forms, and improve the quality of instruction. Secondly, implementing policies and make some decisions that require an investment such as providing a learning management system.

Social implications – Indonesia and Malaysia higher education institutions may ameliorate faculty satisfaction with online teaching in several ways. Firstly, before the online course begins, higher education institutions should attempt to have faculty believe teaching online is worthwhile and understand the institution itself also believes it is significant. Administer training for faculty, especially regarding increasing connections with and between students, gives faculty the time needed to design an online course and provide faculty with a course management system with multiple capabilities. Secondly, during the online course, higher education institutions should support technical issues and try to have faculty believe they have an accommodating work schedule and independence with the online course.

Originality/value – This research firstly contributes to the literature by establishing the relationship between hygiene factors and motivation, and hygiene factors and satisfaction, which did not exist according to the two-factor theory in the past. Secondly, the authors provide evidence of motivation constructs as a mediating variable. Thirdly, this study broadens the literature scope by including faculty in two countries (Indonesia and Malaysia). It includes faculty from 51 higher education systems (e.g. public and private four-year universities), includes graduate school in seven big cities in two countries, Indonesia and Malaysia.

Keywords Student engagement, Institutional support, Faculty satisfaction, Faculty motivation, E-teaching satisfaction

Paper type Research paper

1. Introduction

According to [Houlden and Veletsianos \(2020\)](#), the energy surrounding the higher education experience and student learning was placed on the three significant responsibilities of faculty, teaching, research and community service. A faculty member has many duties, such as teaching, learning, writing, research, service and handling work–life balance ([Houlden and Veletsianos, 2020](#)). Many schools and colleges were closed due to the worldwide pandemic outbreaks. Several academic institutions in the past were reluctant to adopt online teaching and learning, but now they have to do so. The obligation to hold online courses during the COVID-19 pandemic has increased workloads on faculty members and stress from teaching in online classes. Even if online teaching offers faculty flexibility, growth opportunities, the development of new skills and new technology knowledge, online education is complex and demanding, leading to burnout ([Hogan and McKnight, 2007](#)). According to [Allen and Seaman \(2016\)](#), the problem with online education is faculty members face significant challenges in using learning management systems and developing effective online learning environments ([Hodges et al., 2020](#); [Rapanta et al., 2020](#)). A study by [Luongo \(2018\)](#) suggested that higher education institutions may need to change their attitudes towards providing professional development options as well as clear guidelines for teaching distance learning courses.

Does technology usage in online learning foster student engagement and improve faculty members' satisfaction in reality? A survey of 13,451 faculties in seven countries found only 9% preferred teaching online courses ([Educause, 2017](#)). A study by ([Paulsen and McCormick, 2020](#)) found that online learning student interaction was lower than that of face-to-face learners. Student engagement and institution support in a pandemic with a short window of preparation is a challenge. Recent studies (e.g. [Czerkowski and Lyman, 2016](#); [Martin and Bolliger, 2018](#)) have shown some of the main difficulties reported by a faculty member in online learning arise from shortcomings in the organization, related to institutional support, student interaction and engagement during online learning.

These factors have the potential to influence faculty satisfaction in the online environment and can be grouped: student-related; instructor-related; and institution-related ([Bolliger and Wasilik, 2009](#)). As ([Bolliger and Wasilik, 2009](#)) stated, faculty satisfaction is

considered an essential factor of quality in online courses, as it is one of the five pillars of quality, together with student satisfaction, learning effectiveness, access and institutional cost-effectiveness (Moore, 2005). In the past decades, researchers have conjectured the effects of the students' interaction on faculty member motivator and satisfaction in online learning and the institution's support in technology, although not very extensively. According to Herzberg (1968), two factors theory, external (hygiene factors) such as administrative policy and interpersonal relations, do not directly relate to motivation and satisfaction. What motivates faculty are task factors such as achievement, recognition, the work itself, responsibility, growth and advancement.

Thus, faculty satisfaction with online teaching is essential because they attract students to enrol for online learning and ensure student satisfaction (Bolliger *et al.*, 2014). Faculty satisfaction with online teaching affects other faculty attitudes and behaviours, such as how likely they are to enhance online teaching performance quality (Erichsen *et al.*, 2014). Finally, faculty satisfaction with online education demonstrates influences student attitudes and behaviours (Al-Samarraie *et al.*, 2017), motivation (Bolliger and Wasilik, 2009), student-instructor interaction (Erichsen *et al.*, 2014) and thereby, may influence student satisfaction with online education (Bebegali-Mirabent *et al.*, 2018; de Lourdes Machado-Taylor *et al.*, 2016).

The paper aims to ascertain the viability of Herzberg's theory in the context of online learning in three ways. In the first place, this study determines how motivation influences the faculty's satisfaction, secondly, to what extent hygiene affects faculty motivation and faculty satisfaction with online teaching. Thirdly, to test the mediating role of motivation in the relationship between hygiene factors and satisfaction. This research broadens the literature scope by including faculty from all public and private universities, various disciplines, two-level degrees and two South-East Asian countries (Indonesia and Malaysia). Assessing the impact of hygiene factors on faculty motivation and satisfaction in online teaching will advance the literature. It will especially demystify that both factors (hygiene factors and motivator) can cause job satisfaction in online education, and hygiene factors as an antecedent to faculty motivation and multiplying hygiene factors' effect on job satisfaction. Firstly, this study's purpose focuses on hygiene factors and work intrinsic motivators on faculty satisfaction, ascertaining the impact of hygiene factors on faculty satisfaction and determining faculty motivation's mediating effect. Secondly, the study also to find out whether degree programs and country of residence affects faculty satisfaction.

2. Literature review

2.1 Herzberg theory of motivation and its consistent result

According to Herzberg's two-factor theory (1959), two separate sets of conditions responsible for workers' motivation and satisfaction (Kumar, 2016). Hygiene factors mean that they are considered to be maintenance factors necessary to avoid dissatisfaction, but by themselves do not provide satisfaction. Hygiene factors work to remove barriers in the work environment rather than directly related to work motivation (Herzberg, 1968). These dimensions include administrative policy, company policy, relations with supervisors or peers, salary, working conditions, institutional support, interpersonal relations, fringe benefits and cost-of-living pay (Lalwani and Lalwani, 2017).

On the other hand, another set of conditions called "motivator" when it is present, workers feel motivated. The factors include work itself, leadership responsibility, passion, achievement, acknowledgement, advancement and personal growth. Based on his explanation, a lack of hygiene might lead to dissatisfaction, but might not lead or provide satisfaction. Leidecke and Hall (1974) generalized that hygiene factors' consist of those at

the lower levels of Maslow's need hierarchy: physiological, safety and social. Hygiene factors can only bring an employee's job satisfaction up to neutral.

Although numerous studies have been carried out worldwide using this theory, unfortunately, their findings tend to differ. Some found hygiene factors such as salary to be a motivator categorized under hygiene and sometimes found under motivators (Teck and Waheed, 2011). In further testing Herzberg's motivation-hygiene theory's, Ghazi *et al.* (2013) found that they were satisfied with motivators and hygiene factors among Pakistan's faculty members. The finding is a contradiction to Herzberg's theory. Yusoff *et al.* (2013) claimed that the factors, which, according to Herzberg, serve or should cause job dissatisfaction, however, serve as factors that affect job satisfaction (Ismail Hussein *et al.*, 2017).

Despite Herzberg's contribution to organizational theory and his explanations of the factors that motivate workers and the causes of their dissatisfaction, some setbacks have been found when applying this theory in other contexts. It is worth remembering that his theory was created and tested in the American context in business settings. Hence, such inconsistency may occur due to the theory's global usage in a very different context, settings, samples, sample size, methodologies and data analyses (Kanta and Srivalli, 2019). In the digital era, specifically in online teaching, hygiene factors become a critical and essential, which can strongly influence the motivation and satisfaction because the nature of work itself and the interaction depends on the digital tools used. Herzberg's two-factor theory needs to be revisited because it did not explain hygiene factors' effect on motivation and satisfaction; however, some evidence was found that hygiene factors affect job satisfaction and faculty motivation.

2.2 Effect of hygiene factor on faculty satisfaction

Following Herzberg's theory, student engagement and institutional support are categorized as hygiene factors in this study. Institutional support in online learning refers to the service institution for faculty members to develop and improve their teaching effectiveness, including provisional technicians, graphic designers, teaching assistance and training in applying educational technology and teaching methods. Lion and Stark (2010) found that factors that can affect an online course's success include highly interactive environments, institutional guidance, institutional tools, institutional incentives and classroom climate. During the past decade, few research studies were identified in a higher education institution that examined the institutional support that affects faculty satisfaction. Some researcher confirmed that organizational support influences their work motivator and lead to job satisfaction (Chuo *et al.*, 2011). When faculty experience technical difficulties or do not have access to adequate technology and tools, their satisfaction is likely to decrease. Lee (2001) noted that support from the institution appears to be factors that contribute to faculty member satisfaction in distance education. Faculty also, expect reliable infrastructure and technology (Fredericksen *et al.*, 2000; Panda and Mishra, 2007; Simonson *et al.*, 2019; Moore, 2005). Moreover, when the organization is perceived as more supportive, faculty satisfaction is higher (Allen *et al.*, 2003).

While the faculty's satisfaction affected by institutional support is becoming more transparent, the literature on its relationship with student engagement is scarce (Paulsen and McCormick, 2020). In the online environment, lack of face-to-face contact with students and lack of group interaction can cause students to feel isolated from other students and their instructors, reducing their participation level (Almeda and Rose, 2000). Paulsen and McCormick (2020) reported student collaborative learning and interaction with their faculty member are more significant than online learning. The research suggests that face-to-face

learning allows us to engage in a greater sense of community, not found in online interactions.

The term engagement defined by some scholars in many multiple components are present: behavioural engagement, emotional engagement and cognitive engagement (Henrie *et al.* (2015); Fredricks *et al.* (2004), our interest focussed on the description of behavioural engagement by Fredricks *et al.* (2004), who stated that behavioural indicators included attendance, assignment completion and interactions. Student engagement (perceived) refers to the extent to which faculty expectations and beliefs regarding student achievement, connection and conduct in an online course are attained. According to Marasi *et al.* (2020), student interaction significantly influences faculty satisfaction with online teaching. Further research found that the student factor is the most critical factor affecting the faculty's satisfaction and institution-related issues are also crucial as they can influence satisfaction and motivation (Bolliger and Wasilik, 2009). According to Ang *et al.* (2018), student engagement affects faculty member satisfaction. A study by Wang and Tran (2015) on teachers' job satisfaction among Vietnamese secondary school teachers indicated that teachers tended to be satisfied with the school policies, management, working conditions and professional development, but were dissatisfied with aspects of human relations, compensation and the safety aspect of the institution. This relationship or prediction contradicts Herzberg's theory, which predicts that job satisfaction could only be achieved by motivator factors (Ahmed *et al.*, 2010; Nadim *et al.*, 2012).

According to Mustapha (2013) there is a positive relationship between financial reward to job satisfaction in among lecturers in four public universities in Kelantan, Malaysia. In non-educational settings, Teck and Waheed (2011) using Herzberg's theory, reported that hygiene factors are dominant motivators to improve job satisfaction among sales workers in the Malaysian retail sector. Among hygiene factors, work conditions were reported to be the most significant factor in motivating sales workers, followed by recognition, company policy and salary. Similarly, in non-education context, Juariyah and Saktian (2018) found that hygiene factors have positive significant impact on employees' job Satisfaction.

As previously mentioned that this study used of institution support and student engagement as hygiene factors, and there is a shred of evidence from the previous study that student engagement and institutional support has a positive effect on faculty satisfaction; therefore, we hypothesize that:

H1. Hygiene factors have a positive effect on faculty satisfaction.

2.3 Effect of hygiene factors on motivation

The various result reported from the study using Herzberg's theory, for instance, Cader and Anthony (2014) found that the monetary incentives, autonomy and responsibility and recognition influence the faculty member motivation. His study also showed that motivators have no significant difference in motivating faculty than hygiene factors. Oladotun and Öztüren (2013) conducted a study on motivational factors and reported that an excellent working condition led to innovative contributions to the job and eagerness to work. According to Amzat *et al.* (2017) motivators were affected by the employees' relationship with supervisors (hygiene). Hence, in light of the above mentioned, we hypothesized the following:

H2. Hygiene factors have a positive effect on motivation.

2.4 Effect of motivation on faculty satisfaction

According to (Sloan Consortium, 2006), the factor influencing faculty satisfaction is a work motivator when faculty feel that they can promote positive student outcomes. Faculty members are satisfied when they are recognized for the work that they are doing (Moore, 2005). Motivators include self-gratification, intellectual challenge and an interest in using technology (Panda and Mishra, 2007). Lee (2001) noted that motivator and commitment appear to be factors that contribute to faculty member satisfaction in distance education. The findings seemed to match with the previous research on faculty satisfaction; in the distance education environment, faculty motivation and satisfaction were stronger when faculty members felt that their school supported them. Marasi *et al.* (2020) stated that motivation significantly influences faculty satisfaction with online teaching, and a study by Bolliger and Wasilik (2009) concludes that instructor-related factors directly impact instructor satisfaction. The study by Stokowski *et al.* (2018) found a significantly positive correlation between job satisfaction and intrinsic motivation. The more intrinsically motivated faculty are, the more satisfied they are with their job. Previous studies contend that motivation leads to satisfaction (Lechuga, 2014; Winger and Birkholz, 2013). The recent study by Stokowski *et al.* (2018) found that motivation and job satisfaction are significantly and positively correlated.

Supporting Herzberg's prediction and assumption, results of research Juariyah and Saktian (2018) motivators have a significant positive effect on employees' job satisfaction. Hence, we hypothesized the following:

H3. Motivation has a positive effect on faculty satisfaction.

2.5 Mediating effect of motivation

A study of Gheitani *et al.* (2019) and Zaman *et al.* (2013) revealed a direct effect of work ethics on job satisfaction and motivation significantly mediates the relationship between work ethics and job satisfaction. Work ethics, according to two theories, is categorized as hygiene factors. Another study by Suifan (2019) found that work motivation was positively mediate the relationship between work environment factors and job satisfaction. As previously stated that hygiene factors have a positive effect to motivation (Abdul Cader and Anthony, 2014; Amzat *et al.*, 2017; Oladotun and Öztüren, 2013) and motivation has a positive effect to satisfaction (Bolliger and Wasilik, 2009; Marasi *et al.*, 2020; Stokowski *et al.*, 2018); hence, the following is hypothesized:

H4. Motivation mediates the relationship between motivation and faculty satisfaction.

3. Research method

The population of this study consists of faculty around Indonesia and Malaysia. The sample is randomly chosen in 50 higher education institutions in Indonesia and Malaysia. In each country we sent an invitation email to complete the survey and a follow-up email one week later. The survey consisted of the 20 items resulting from the preliminary investigation and demographical questions. The sample size is 206. The participants completed a survey, including perceived student engagement, institutional support, motivation, faculty satisfaction and demographical questions. The questionnaire was measured on a five-point Likert-type scale (1 = strongly disagree, 5 = strongly agree) accessing the participants' contentment level with

online teaching. Items in the questionnaires were designed in light of the theoretical background. Student engagement, institutional support, motivation and faculty satisfaction questionnaire was measured with five items on each dimension and were adapting based on [Bolliger and Wasilik \(2009\)](#) and [Marasi et al. \(2020\)](#). Motivation in this study referred to intrinsic motivation and was measured using Herzberg criteria; passion, the work itself, advancement, responsibility, achievement and personal growth. The dimensions of satisfaction considered in this study were chosen after an extensive review of the literature. These dimensions are delivery methods, compensation for online teaching, the opportunity to explore online teaching technology, reliability of communication tools and online teaching flexibility.

To test the model, a partial least square technique in structural equation modelling (PLS-SEM) was used using SmartPLS3 software. This tool is particularly suitable for small samples with complex models, a prediction-oriented method that does not require strong theory ([Henseler et al., 2014](#)). The hygiene factors construct was operationalized as a second-order or sub-construct consisting of first-order construct: student engagement and institutional support.

4. Result

4.1 Respondent profile

The sample size is 206, involving higher education in Indonesia (103) and Malaysia (103) from 51 public and private universities in big cities such as Jakarta, Bandung, Putrajaya, Penang, Kota Bharu and Kuala Lumpur. Most participants indicated they are female (52%), 40 years or older (68%), possess a doctoral degree (81%) and work full-time (85%). The mean age is 50, with a range from 30 to 67. The sample consists of all ranks, including lecturers (8%), assistant professors (41%), associate professors (33%) and full professors (14%). Most participants teach undergraduate (72%) and graduate (28%) level online courses.

4.2 Descriptive statistics

Reported in [Table 1](#) is the descriptive analysis of the primary constructs. All the constructs were captured on a five-point Likert-type scale, anchoring 1 (*strongly disagree*) to 5 (*strongly agree*). Although the Indonesian response average was above Malaysia's response on all constructs, the table shows that the total response was above the middle point of 3, ranging from 3.10 to 3.61. Such findings gave an overall indication of a somewhat positive attitude amongst the respondents for most of the constructs examined. There was no significant difference between faculty satisfaction in Indonesia and Malaysia and between undergraduate and graduate. All standard deviations values were all below 1. While the student engagement constructs charted the highest value of standard deviation (0.844), the construct of faculty satisfaction reported the lowest (0.624). Given that most of the constructs had reasonably small standard deviation values for both countries, the low variance was suggestive and data points were gathering around the mean. With scores less

Mean comparison between faculty member's residence	Total		Indonesia		Malaysia		<i>t</i>	Sig. (2-tailed)	Remarks
	Mean	SD	Mean	SD	Mean	SD			
Student engagement	3.10	0.844	3.29	0.846	2.91	0.803	3.28	0.001	Significant
Institutional support	3.43	0.783	3.52	0.813	3.34	0.744	0.20	0.094	Not Significant
Motivation	3.55	0.693	3.63	0.707	3.46	0.671	1.900	0.059	Not significant
Faculty satisfaction	3.61	0.624	3.76	0.606	3.46	0.606	3.59	0.000	Significant

Table 1.
Mean comparison between faculty member by country

spread out around the mean, it also indicated a somehow homogeneous response to all constructs' sample.

As shown in Table 1, there were no statistically significant differences concerning institutional support and motivation by country of residence. Using *t*-test at a significance level of 0.05, it was evident that these differences in satisfaction among faculty in a different country were statistically not significant ($p = 0.094$ and 0.059). However, there were significant differences in student engagement and faculty satisfaction by country residence. Using *t*-test at a significance level of 0.05, it was evident that these differences in satisfaction among faculty in a different country were statistically significant ($p = 0.0001$ and 0.000). Concerning satisfaction and motivation, the most satisfied and motivated was the faculty member in Indonesia (mean = 3.76 and 3.63) (Table 2).

There were no statistically significant differences concerning hygiene factors, motivation and satisfaction by faculty who teach in undergraduate and graduate. The *t*-test revealed statistically n significant differences between degree level ($p > 0.005$). Also, the faculty member expressed more motivation in undergraduate level (mean = 3.63) than those in graduate-level.

4.3 Measurement model evaluation

The second-order of hygiene factors' construct was specified using the repeated-indicator approach, meaning that hygiene factors was directly measured by all the first-order constructs' manifest variables. Manifests variables were repeated to represent the higher-order construct (Becker et al., 2012). The use of repeated indicators approaches to specify hygiene factors in this study was amenable to the prerequisite that all indicators of the first- and second-order constructs were reflective (Rajala and Westerlund, 2010). Reflective measurement models were examined in terms of reliability and validity. Both were assessed at the indicator and construct level. Our model using reflective measurements and the criteria for reflective measurement model evaluation includes internal consistency; convergent validity; and discriminant validity (Hair et al., 2014).

The internal consistency reliability is the reliability at the construct level. In this study, it was examined using composite reliability. Composite reliability was preferably interpreted over Cronbach's alpha (Chin, 1998 b). Cronbach's alpha assumes that all indicators are equally weighted or in other words, have the same loadings. This assumption underestimates the internal consistency reliability of latent variables in PLS-SEM. Conversely, composite reliability overcomes this deficiency by prioritizing indicators according to their reliability during model estimation, making it more suitable for PLS-SEM (Hair et al., 2014). This study followed Hair et al.'s (2014) recommendation that composite reliability should be above 0.70 in general (Straub et al., 2004, p. 401; as cited in Urbach and Ahlemann, 2010).

Table 2.
Mean comparisons
between degree level

	Undergraduate		Graduate		<i>t</i>	Sig. (2-tailed)	Remarks
	Mean	SD	Mean	SD			
Student engagement	3.29	0.846	2.91	0.803	-1.091	0.277	Not significant
Institutional support	3.37	0.789	3.59	0.746	-1.912	0.057	Not significant
Motivation	3.63	0.707	3.46	0.671	0.660	0.510	Not significant
Faculty satisfaction	3.61	0.645	3.62	0.573	0-0.194	0.846	Not significant

Convergent validity is the extent to which “a set of indicators represents the same underlying construct, which can be demonstrated through their unidimensionality” (Henseler *et al.*, 2014, p. 299). In this study, convergent validity was examined using indicator reliability and average variance extracted (AVE). Indicator reliability item’s variance represents how much of the variation in an item is explained by the construct. Hair *et al.* (2014) recommended that the indicator’s outer loadings should be higher than 0.708. As seen in Table 3, most indicators’ outer loadings were above 0.708, but some loadings included were between 0.40 and 0.70.

Further, items with small outer loadings (< 0.40) must be immediately removed as suggested by Hair *et al.* (2014). Consequently, one item was eliminated from the institutional support construct (IS3), two items from faculty satisfaction JS2 and JS4, two items from motivation construct WIM2 and WIM3, one item deleted in institutional support one item in student engagement. As for AVE, they were all above the suggested threshold value of 0.50 (Hair *et al.*, 2014) and thus, convergent validity was established. As can be seen in Table 1, the outer loading, Cronbach’s alpha, rho_A and composite reliability values are larger than 0.7 for all indicators, and AVE values are larger than 0.5. Therefore, internal consistency and convergent validity were established.

After confirming the convergent validity, the study proceeded to examine the discriminant validity of the constructs. Discriminant validity occurs when a construct is established empirically to be distinct from other constructs (Hair *et al.*, 2014). We evaluate the cross-loading criterion (Chin, 1998; Fornell and Larcker’s, 1981) and heterotrait-monotrait (HTMT) criterion. The first method to establish discriminant validity was the examination of the cross-loadings of the items. In this case, an item’s loading on a construct must be greater than all of its cross-loadings with other variables. A report on cross-loading from the SmartPLS3 revealed that the above criteria were met and, therefore, discriminant validity was established. By the cross-loading criterion approach, discriminant validity is supported when the standardized

Variables	Indicator	Outer loading	Cronbach’s alpha	rho_A	Composite reliability	Average variance extracted (AVE)
<i>First-order construct</i>						
Institutional support	INS1	0.767	0.790	0.790	0.864	0.613
	INS2	0.798				
	INS4	0.780				
	INS5	0.786				
	INS3	0.40				
Faculty satisfaction	JS1	0.851	0.766	0.780	0.864	0.679
	JS3	0.804				
	JS5	0.816				
	JS2	0.40				
	JS4	0.40				
Student engagement	SENG1	0.857	0.881	0.881	0.918	0.737
	SENG2	0.876				
	SENG3	0.848				
	SENG4	0.853				
	SENG5	0.40				
Motivation	MOT1	0.756	0.701	0.708	0.834	0.626
	MOT4	0.834				
	MOT5	0.780				
<i>Second-order construct</i>						
Hygiene factors	Student Engagement	0.839	0.867	0.874	0.896	0.768
	Institutional Support	0.912				

Table 3.
Measurement model evaluation

loading of an indicator exceeds all its corresponding cross-loadings (Chin, 1998). A second method used to establish discriminant validity was Fornell–Larcker’s criterion (Hair *et al.*, 2014). It stated that construct-level discriminant validity is set if the AVE’s square root is greater than other intercorrelations within the row and column of a particular construct. As shown in SmartPLS3 report of Fornell–Larcker’s criterion was established, providing evidence for the constructs’ discriminant. With this, discriminant validity indicates the extent to which a given construct is truly distinct from other constructs by empirical standard and that this construct is unique and captures phenomena not presented by other constructs in the model (Hair *et al.*, 2014). The third method used to evaluate discriminant validity is the HTMT ratio of the correlations. In short, HTMT is the ratio of the between-trait correlations to the within trait correlations. Technically, the HTMT approach is an estimate of what the actual correlation between two constructs would be, if they were perfectly measured (i.e. if they were entirely reliable). This actual correlation between two constructs close to 1 indicates a lack of discriminant validity (Henseler *et al.*, 2015). After running bootstrapping with SmartPLS 3, HTMT report was generated as in Table 4, which illustrated how discriminant validity was established for this model. All values are below 0.9; therefore, discriminant validity was established for the model. Discriminant validity problems occur when the HTMT values are above 0.90 (Henseler *et al.*, 2015).

4.4 Structural model evaluation and hypothesis testing

The primary criteria for evaluating the structural model in PLS-SEM are the collinearity issues (VIF), the strength of the relationship (path coefficient), coefficient (R^2), the (f^2) effect size and the predictive relevant (Q^2) (Hair *et al.*, 2014). The first evaluation is testing the collinearity before assessing the structural model is crucial because path coefficients in a structural model are estimated based on each endogenous latent variable’s OLS regression on its corresponding predecessor constructs. If estimations were produced from significantly collinear predictor variables, the path coefficients might be biased (Hair *et al.*, 2014). As reported by the software, the VIFs of all tested predictor constructs were found well below the acceptable threshold of 5 (Hair *et al.*, 2014). Hence, the possibility of structural estimations being biased by collinearity was not an issue.

The second step in the evaluation of the structural model is the effect size (f^2). The f^2 assesses predictor variables on the dependent variable (Hair *et al.*, 2014). The f^2 values range from 0.02, 0.15 and 0.35, correspondingly, to small, medium and large effect sizes (Cohen, 1992). The results showed for the current study that the lowest f^2 value was hygiene to faculty satisfaction (0.071) which correspond to a small and not significant effect size. The remaining constructs were considered to have a large effect on motivation. The third evaluation of structural modelling is path coefficients or the relationships between the construct. The path coefficients values range between -1 and $+1$ with coefficients closer to

Table 4.
Heterotrait-monotrait
(HTMT) ratio

Construct	1	2	3	4
1. Faculty satisfaction				
2. Institutional support	0.709			
3. Student engagement	0.699	0.647		
4. Work intrinsic motivator	0.871	0.696	0.827	

zero considered weakest. Results in Figure 1 showed the most essential path coefficients of hygiene factor on motivation (0.728), followed by the path coefficients of motivation on faculty satisfaction (0.535) and the lowest in the path coefficient of hygiene factor on faculty satisfaction (0.259).

The fourth evaluation is the coefficient of determination (R^2) which measures the dependent variable's variance explained by the independent variables. According to (Hair et al., 2014), R^2 value ranges between zero (0) and one (1), with higher R^2 implying a greater level of predictive accuracy (Hair et al., 2014). R^2 values range between 0.75, 0.50 and 0.25, respectively, indicate the substantial, moderate and weak value (Hair et al., 2014). The R^2 values of motivation and faculty satisfaction were reported (0.530) and (0.555), as shown in Table 2 and by applying Hair et al.'s (2014), it is considered moderate. The fifth step is to test the predictive relevance (Q^2) of a model, "The Q^2 values estimated by the blindfolding procedure represent a measure of how well the path model can predict the originally observed values" (Hair et al., 2014, p.183). In this study, the Q^2 statistics were computed using the blindfolding procedure to obtain $Q^2 = 1 - SSE/SSO$ in the construct cross-validated redundancy report. The omission distance of 7 was used. If Q^2 is positive, the model has predictive validity (Hair et al., 2014). The report from SmartPLS3 revealed that Q^2 value of for motivation (0.320), faculty satisfaction (0.364), which were all above 0.30 according to Hair et al. (2014) the values 0.35 show considerable enormous predictive relevance. Therefore, the result provides evidence of a sizeable predictive relevance Q^2 .

The last step in data analysis used SmartPLS to test the hypothesized relationships by assessing the path coefficients' significance using bootstrapping computations. The bootstrapping process obtains the significance of path coefficients by calculating empirical t -values, which if more extensive than the critical value (t distribution values), then the coefficient is considered significant at a particular probability of error. This study used critical values for one-tailed tests: 1.65 (significance level = 5%) (Hair et al., 2014). Based on the bootstrap resampling procedure with 5,000 subsamples (Table 5).

As shown in Table 5, all t -values in the relationship between constructs in the model are above 1.65, p -values smaller than 0.05, and confidence interval bias-corrected 5% and 95% does not include zero, therefore, supported $H1$, $H2$ and $H3$.

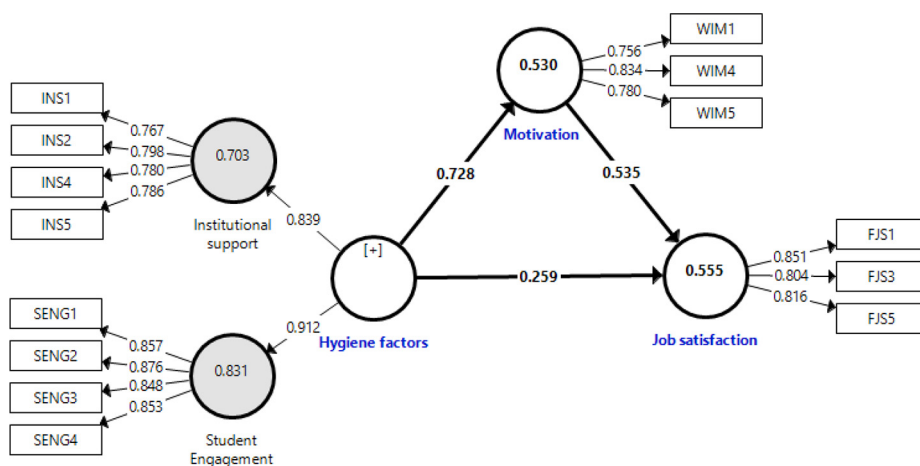


Figure 1. Research model

4.5 Importance-performance map analysis

The importance-performance map analysis (IPMA) approach is used to permits the identification of determinants with a relatively high importance and relatively low performance. These become major and high priority improvement areas with the goal to in turn increase the performance. The IPMA report showed that although hygiene factors have the most substantial total effect (0.74); however, the construct’s highest performance is the work intrinsic motivation (57.06), followed by hygiene factors (54.75). The highest performance of indicators in work motivation construct are WIM1 (62.37) “Technical problems do not discourage me from teaching online”, followed by WIM4 (55.95) “I find it intrinsically rewarding”.

Figure 2 shows the highest performance indicators of hygiene factors INS1 (64.19) “The technology that the institution provides for online teaching is reliable”, and INS5 (59.22) “Institution gives training to the student; therefore, faculty can devote more time to teaching online only”.

Hence, when managers aim at increasing the faculty satisfaction, the priority should be given to improve the performance of indicators with the highest effect but a relatively low in performance, which are: WIM5 “I believe it is meaningful” and SENG3 “the students’ completion of course assessments in an online course meets my expectations”.

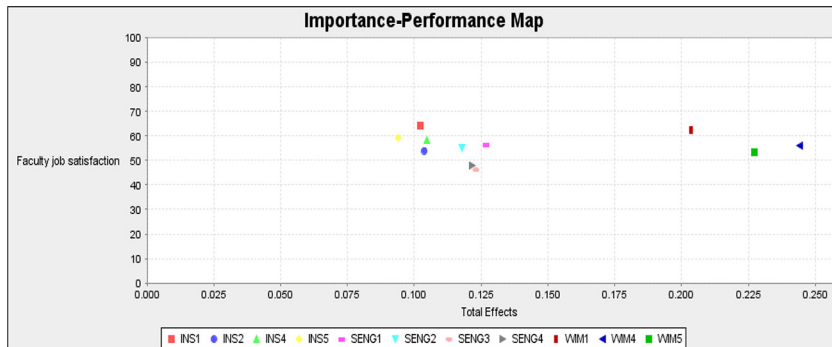
5. Discussion

Results indicate faculty are satisfied with online teaching overall, which is consistent with previous research (Bolliger and Wasilik, 2009; Marasi et al., 2020). Despite the presume that faculty has a higher satisfaction level teaching postgraduate student due to interaction level

Table 5. Hypothesis testing

Relationship	Std. Beta	t-value	p-value	Bias CI		Remarks
				5%	95%	
Hygiene factors → faculty satisfaction	0.259	3.483	p < 0.001	0.139	0.377	Supported H1
Hygiene factors → motivation	0.728	21.743	p < 0.001	0.663	0.775	Supported H2
Motivation → faculty satisfaction	0.535	8.142	p < 0.001	0.424	0.638	Supported H3
Hygiene factors → motivation → faculty satisfaction	0,390	7.944	p < 0.001	0.309	0.470	Supported H4

Figure 2. Indicator important-performance map



than teaching undergraduate, this research found that faculty satisfaction value has no significant difference for faculty teaching mainly for undergraduate and graduate students. The *t*-test regarding this item demonstrates no strong association with whether faculty teaching graduate online is more satisfied than teaching undergraduate. Also, there is no difference in satisfaction for faculty teaching in Indonesia or Malaysia.

The research makes several contributions to faculty satisfaction with online teaching literature. Firstly, this research provides a better representation of faculty satisfaction with online teaching due to the sample being diverse. It includes faculty from 51 higher education systems (e.g. public and private four-year universities), includes graduate school in seven big cities in two countries, Indonesia and Malaysia. Secondly, the multiple job-related factors (hygiene and motivators) examined in different prior studies were combined and analysed in PLS-SEM using second-order constructs for hygiene factors consisting student engagement and institutional support, to create one cohesive model. Thirdly, the results show that job-related factors (both motivators and hygiene) influence faculty satisfaction with online teaching. Finally, motivators mediate the relationship between hygiene and faculty satisfaction, meaning that faculty satisfaction can be amplified through the use of motivation factors.

Additionally, this research contributes to the theoretical literature using a comprehensive instrument based on Herzberg's two-factor theory (Herzberg, Mausner and Snyderman 1959), by developing a connection from hygiene factors to motivation and also to satisfaction. The study reveals that Hygiene factors positively affect faculty motivation in online teaching, which confirms previous research (Chuo *et al.*, 2011) and Bolliger and Wasilik (2009). This study reveals that although hygiene factors influence faculty satisfaction, the performance is lower than the impact as indicated in the Impact and Performance Map. Interestingly, student engagement has a more substantial influence on faculty motivation and satisfaction than institutional support (hygiene), suggesting faculty are more satisfied when student engagements are at higher levels. For instance, when students participate, active communication and enthusiasm in their learning faculty are more satisfied. These findings may explain the Educause (2017) survey found that 79% of faculty agree online courses made higher education accessible to more students, but under half believe online classes provide an effective learning method because of minimal interaction. The finding of this study is consistent with prior research (Ang *et al.*, 2018).

Motivation (motivators) have a strong influence on faculty satisfaction with online teaching, which may explain the Educause (2017) survey finding of 79% higher education faculty believe online courses are worthwhile and purposeful (motivation) for greater reachability to more students at their convenience and pace. Additionally, motivators mediate the relationship between hygiene factors and faculty satisfaction significantly, which means that hygiene factors affect faculty satisfaction through motivator. The study demonstrated when faculty perceived higher student engagement and institutional support, they feel motivated and positively influencing faculty satisfaction with online courses (Bolliger and Wasilik, 2009).

6. Conclusion and implications

The COVID-19 pandemic in 2020 illustrates the need for providing support to faculty for online teaching. Higher education institutions across south-east Asia, and other countries, moved all courses online for the duration of the first odd semester. Faculty with no online teaching experience were given little notice, typically a week of preparation, to move onsite courses to an online format. Several experts referred to the transition as a "black swan" moment that could shift the teaching paradigm. All experts emphasized the importance of

institutional support and training to assist faculty in providing well-designed online studies. Indonesia and Malaysia higher education institutions may ameliorate faculty satisfaction with online teaching in several ways as given below.

This research reveals that motivators and hygiene influence faculty satisfaction with online teaching and motivators mediates the relationship between hygiene and faculty satisfaction, meaning that faculty satisfaction can be magnified through the use of intrinsic motivation factors. It was found that faculty believe that their work is meaningful gives the highest effect, but low in performance, and technical problems do not discourage me from teaching online because they considered the work is rewarding. All of this implies that higher education institution need to find ways to increase the intrinsic motivation by rewarding and recognizing faculty in many forms such as certificates of completion in teaching through difficult times, provide faculty with online education seminar in various topics such as increasing connections with and between students. Higher education institutions should support faculty with technical issues and try to have faculty believe they have an accommodating work schedule and independence with the online course. Higher education institutions should also consider implementing reasonable policies with online teaching to improve students' learning process for better online course success. For instance, improve the quality of instruction, commitment and continuation of online education for faculty.

The student assignment completion is also a factor that has high effect and low performance. This implies that higher education administrators should also consider implementing reasonable policies with online teaching and will have to make some decisions that requires an investment such as providing a learning management system (LMS) to be used especially in Indonesia, where the digital readiness in public institution is still low. LMS will enable faculty to balance between asynchronous and synchronous method of teaching and improve student engagement. Assignment can be asked to students to be completed and engage with on their own time (asynchronously), and there is also material to keep in faculty live sessions (synchronously). Asynchronous is good for students to engage with the material at their own pace, useful if prior knowledge of the material varies a lot across students, or they have to spend a substantial amount of time pondering and reflecting. Whilst synchronous learning is better in a class that exchanges of perspectives among students are important, so they can learn from each other and interactions will emerge as faculty play the role as mediator or facilitator.

7. Limitations and future directions

This study has three limitations; firstly, causal inferences are not warranted as the data is cross-sectional. However, a future direction is to analyse the causal relationship between the hygiene factors and motivation factors on faculty satisfaction with online teaching using formative first-order construct through a longitudinal study. Secondly, the results' generalizability is another limitation of this study because the sample comprised only Indonesia and Malaysia faculty across 51 higher education institution in big cities in the island of Java in Indonesia and Malaysia peninsular only. Also, the job-related factors may not be the same, and the findings may not be replicable in other countries. Consequently, a future path may involve determining whether these job-related factors apply in other countries. However, the factors determined in this study represent the job-related aspects taken from the literature and the researchers' experiences; other parts influence faculty satisfaction with online teaching. Therefore, identifying other elements is a future path.

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Corresponding author

Firdaus Basbeth can be contacted at: firdhab@gmail.com