

Article

# The Perceived Value of Remote Access Online Learning: An Instrument Construction and Validation Case Study

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**Abstract:** The fundamental nature of the transaction between the student-as-consumer and the university-as-service provider changed during the COVID-19 pandemic as educational activities switched to a remote-access online learning format. Educational practices were primarily shaped in response to a public health crisis rather than the knowledge related needs and expectations of students relative to a society in flux. As students and universities emerge into the post-pandemic landscape and in-person education returns, it is important to assess the broader consequences of such dramatic educational shifts and to understand how students-as-consumers experienced remote access online learning. The current article reports on the construction and validation of a short-survey measure used to model factors impacting the perceived value of remote access online learning from the perspective of Japanese university students. The study examines the contribution of measures pertaining to the ability to self-regulate, the provision of university support services, the perception of the learning management system, and the anticipated impact on future career opportunities. Through the application of structural equation modeling, the predictor variables accounted for 73.1% of the variance observed in the perceived value of remote access online learning. Furthermore, the tested measurement model affirmed six out of the eight hypotheses. The results are discussed in relation to educational provisions in the post-pandemic society from the perspective of student-as-consumer and university-as-service provider.

**Keywords:** higher education; Japan; online education; perceived value; student-as-customer



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## 1. Introduction

The impact of the COVID-19 pandemic upon the perceived value of higher education within post-pandemic societies has been speculated upon across various disciplines. Due to the cultural and structural reforms witnessed over the past few years, there remains an expectation that “the COVID-induced virtual mode will bring about a series of transformations in the concept of higher education institutions, their clientele, and practices” [1] (p. 94). The higher education landscape is currently in a state of flux, with powerful corporate, administrative, and bureaucratic forces competing for dominance. In an exploration of the “corporate response” to the pandemic by universities in the United Kingdom, it has been stated that institutions are consumed by “pandemia”, wherein the “processes and protagonists of neoliberal governmentality and market reform” [2] (p. 651) have been emboldened with little consideration given to the resultant human collateral. Similar conclusions have been documented within Australian higher education. In a study into the experiences of academic staff during the pandemic, the authors detail widespread evidence of “work-related stress, digital fatigue, and a negative impact on work-life balance”. The authors further highlight the ruthlessness of “neoliberal policy architecture and the myopia of quasi-market reform” [3] (p. 2231). Now more than at any point in recent history, the disruptions observable within higher education draw attention to questions of value as they pertain to the instabilities of post-pandemic society.

The measurement of value derives from marketing and the forecasting of consumer behavior and consumption trends [4], yet the concept is now commonplace within ed-

educational discourse as academic considerations within higher education are encroached upon by corporate, administrative, and bureaucratic imperatives. Contemporary higher education stands as a neoliberal service economy wherein student appraisals of service are quantified for the purpose of gaining a competitive advantage over rival institutions within free-market economies. Value can be defined as the consumer's assessment of a product or service based on what is given and what is received [5]. Value is not inherent to the commodity but rather derives from its exchange value, or the price decided within a competitive free-market economy, and its use value, or the ability of the commodity to satisfy the appraised utility as configured by the individual consumer. The term perceived value has been used as a more multifaceted appraisal of this exchange pertaining to the "cognitive trade-off between benefits and sacrifices" [6] (p. 966). Perceived value drawn in relation to a commodity is understood as inherently subjective and constructed relative to individual judgments, opinions, expectations, evaluations, and outcomes in context [7]. When consumer options are restricted, such as during the switch to remote access online learning, it is important that attention be given to understanding perceived value in the curtailed experience from the perspective of the student-as-consumer (see [8]).

Numerous studies have sought to understand the experiences of university students during the pandemic in countries such as China [9], Greece [10], Romania [11], the Philippines [12], and the United Kingdom [13]. Studies into perceived value are often configured as research into student satisfaction. For example, in a study with Chinese university students, student interaction and engagement were identified as significant predictors of online learning satisfaction [14]. In a study with Korean university students, student satisfaction with online learning was understood in relation to the usefulness of instructor feedback and an individual preference for online learning [15]. In a study with Pakistani university students, links between student satisfaction within online learning and academic achievement were drawn, with those reporting higher levels of online learning satisfaction also achieving higher levels of achievement [16]. Several other studies have framed online education relative to a broad range of perceived benefits and challenges (see [17,18]). What these studies demonstrate is that the assessment of perceived value in remote access online learning can be derived from a multitude of factors and related variables appraised by the individual relative to the parameters of their own respective learning environment.

On 7 April 2020, the Japanese government declared a partial state of emergency for seven prefectures. This was then extended to all 47 prefectures on 16 April. The resultant school closures prompted a case-by-case response with significant disparities in educational provisions. Some schools were able to immediately switch to remote access online learning, while others were dependent on posting printed learning materials to students. Approximately 90% of Japan's 800 universities postponed the regular April start to the spring semester, with individual faculty often required to create and implement online solutions and associated learning materials in the absence of coherent institution-wide strategies. By 1 July 2020, all universities had begun teaching, with 83.8% offering some form of remote access online education, supported by an additional \$95 million in supplementary funding for setting up and conducting such classes [19]. Now, as students and universities emerge into the post-pandemic landscape and in-person education returns, it is important to assess the broader consequences of such dramatic educational shifts and to understand how students-as-consumers experienced remote access online learning. The current article reports on the construction and validation of a short-survey measure used to model factors impacting the perceived value of remote access online learning among Japanese university students. The study examines the contribution of measures pertaining to the ability to self-regulate, the provision of university support services, the perception of the learning management system, and the anticipated impact on future career opportunities. The article first presents the relevant literature before outlining the hypothesized model of interactions to be tested. The methods used in the current study are then detailed, followed by the outcome of the structural model testing. A discussion of the results is then provided, along with a conclusion.

## 2. Literature Review

### 2.1. Self-Regulation

Learning requires proactive effort and engagement at the discretion of the individual student, alongside the management of the self in response to the demands of the specific learning context [20]. Self-regulation can be defined as “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment” [21] (p. 453). Three learning processes are often cited as relevant to self-regulated learning: metacognition, or an awareness of one’s own strengths and weaknesses within a specific situation; motivation, or the behavioral intent to engage in persistent action in terms of working toward an objective; and strategic action, or the ability to engage in flexible learning strategies based on situational and task demands [22]. Self-regulation is linked to a wide range of learning variables, including achievement, problem-solving, persistence, help-seeking, motivation, metacognition, and learning strategies [23–28]. The actions and activities undertaken in service of self-regulation are a negotiation between the characteristics of the individual student and the learning environment. The shift to remote access online learning can be expected to place greater autonomous demands upon students than those experienced when within the context of a face-to-face classroom or lecture situation [29]. Students who can successfully manage this negotiation are thus believed to be those able to “direct their learning processes and attainments by setting challenging goals for themselves. . . , by applying appropriate strategies to achieve their goals. . . and by enlisting self-regulative influences that motivate and guide their efforts” [30] (p. 664). Through appropriate processes of self-regulation in response to situational change, it is anticipated that a cycle of positive experience and appraisal will be created.

### 2.2. University Support Services

It has been discussed how online learning environments require sufficient student support provisions, as “disruptions to technology or a lack of support services can pose a significant barrier to student engagement in learning” [31] (p. 5). While the increase in online educational provision has facilitated greater access to opportunities within higher education, a greater number of students have become susceptible to poor academic performance and withdrawal due to inadequate university support services. The removal of face-to-face social interactions within the communal environment of the university campus has been anticipated to have significant negative effects on the self-discipline, study motivation, and mental/physical wellbeing of students [32]. Subsequent research across various national contexts has shown that the switch to remote access online learning prompted increases in mental health complaints from students [33–35]. In Japan, university student dropout rates increased significantly due to a lack of motivation to study online, an inability to create friendships with other students, feelings of isolation and loneliness, and difficulties paying tuition fees. Japanese scholars further noted that the pandemic had “negative impacts on everyday learning and exacerbated pre-existing disparities among vulnerable populations” [36] (p. 140). Given the cultural preference for face-to-face formal teaching situations, Japanese students were not adequately prepared for the demands of remote access online learning in terms of the mental health consequences brought about by the sudden disruption to regular social interactions, routines, and support networks. Japanese students who started university during the pandemic have also been subject to various forms of “academic distress” due to the new online learning environment [37]. At times of increased stress, social isolation, and interpersonal disruption, the provision of university support services stands as an important variable in understanding perceptions of value in remote access online learning.

### 2.3. Learning Management Systems

Technology played an essential role in the provision of learning materials to students during remote access online learning, and diversified propositions were used within schools and universities to mitigate the disruption caused by restrictions on social interaction. While the pandemic witnessed the emergence of new modes of communication and remote working solutions such as Zoom, traditional learning management systems such as Blackboard and Moodle were heavily relied upon [38,39]. The student relationship with Moodle has been documented in numerous studies. For example, in a study with Spanish university students, Moodle use was influenced by perceived ease-of-use and the attitude of the user toward technology [40], while perceived ease-of-use was positively related to an intention to continue using the system [41]. Links between attitudes toward technology and the intention to continue system use were also reported in a Moodle study in Eastern Europe [42]. The technological component of remote access online learning has further served to highlight inequalities in software and hardware provisions, factors that often contribute to increased dropout and incompleteness rates among certain socioeconomic classes [43,44]. In a study of student satisfaction with online learning, personal factors and individual differences were not directly responsible for variations in satisfaction outcomes, but rather aspects of the learning management system had the greatest influence [45]. These factors are amplified when classes are delivered asynchronously or in situations where students and teachers are not required to be online in the same virtual space at the same time. The interface through which remote access online learning is experienced by students is crucial to fostering successful learning outcomes. Teachers are thus required to be both pedagogically informed and technologically competent. Although teachers in Japan have a strong professional identity and status within society, this does not often translate into competence with information-technology devices and other technological mediators in education. Student perceptions concerning the learning management system used during the pandemic are therefore believed to have a significant impact on perceptions of value in remote access online learning.

### 2.4. Future Career Impact

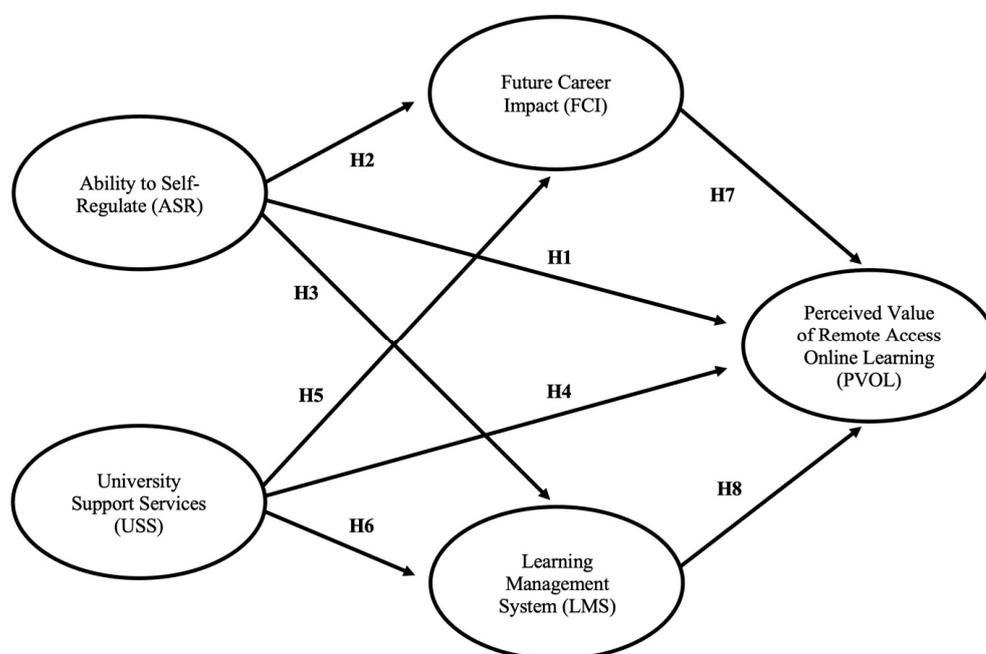
For many students, higher education is an investment in their own future [46]. Acquiring skills and knowledge within a particular domain is undertaken with the expectation that a future employer will exchange such commodities for a monetary reward in the form of a salary. Perceptions of value in education have been linked to the outcomes and opportunities through which successful learning is enabled [47]. The education provided by the university must therefore align with competencies demanded by the free market, meaning that universities should always be aware of societal demands and changes over time. For example, universities are now being challenged to provide appropriate guidance and support for students in relation to the contributions of artificial intelligence and how the workplaces of the near future will require skills and attributes significantly different from previous decades. The nature of employment and indicators of employability have shifted dramatically to a state of “career shock” and can be characterized by a state of fluid instability and greater automation [48]. The incorporation of “work-integrated learning” has been suggested as a process through which universities can better facilitate employment for graduates [49]. It is also believed that the skills developed from remote access online learning will become more integral to a wider variety of future employment sectors, especially with the rise of remote working practices [50]. Others have pointed toward the rise of digital communication and its associated competencies as a replacement for face-to-face interpersonal skills [51]. Concerns over future employment opportunities have also been cited as a reason for increased drop-out rates among certain demographics. In Japan, for example, 11,852 students dropped out of the Japanese university system between April and August 2021 [52]. A total of 701 such students cited the pandemic as the primary reason, including an inability to adapt to online student life, a loss of interest and motivation in learning, and financial constraints caused by the pandemic [53]. In the same article, the

author cites an interview with Shigeru Yamamoto, a professor at Taisho University, who suggests that many students are questioning the purpose and value of university education given the changing employment landscape and the greater shift toward online mobile working solutions. Yamamoto states that such students are “wondering how to meet future demands that cannot be met at university”. It is therefore expected that factors believed to impact future career opportunities will be significant when perceptions of value in remote access online learning are made.

### 3. Materials and Methods

#### 3.1. Hypothesized Model

The current study tests the hypothesized model shown in Figure 1. The model is inclusive of the factors outlined in previous sections believed to contribute to perceptions of value in remote access online learning. The hypothesized model situates the ability to self-regulate and the provision of university support services as exogenous variables dependent upon factors not considered within the current study (e.g., individual differences among students and broad-ranging administrative decisions, constraints, affordances, etc.).



**Figure 1.** The hypothesized model in the current study.

Self-regulation is a crucial learning variable relevant to the individual learner and the situational demands made during the pandemic. The switch to remote access online learning places greater autonomous demands upon students, meaning that successful learning outcomes and experiences are connected to the ability to negotiate these increased demands. Therefore, students with the ability to self-regulate will positively appraise the perceived value of remote access online learning (H1). The skills developed from remote access online learning have been forecast to become more integral to a wider variety of future employment sectors in the post-pandemic society. However, many students within the Japanese context are now questioning the purpose of university education given the changing employment landscape, the shift toward online mobile working solutions, and greater labor casualization. It is anticipated that the ability to self-regulate during periods of instability will allow such students to remain focused in the pursuit of career goals and expectations. Such students will not be derailed or demotivated by the disruption caused by the pandemic. Therefore, students with the ability to self-regulate will positively appraise the pandemic as having no negative impact and/or as enhancing their future

career opportunities (H2). Throughout the remote access online learning period, various technologies have played an essential role in providing access to educational materials. This requires students to engage more frequently with technological provisions as a means of educational continuance. The learning management system used is therefore expected to be adopted into the self-regulation strategies of students as a tool to facilitate the achievement of goals and objectives. Therefore, students with the ability to self-regulate will positively appraise the learning management system (H3).

The provision of university support services is crucial within online learning environments due to increased isolation and disconnect from peer support and academic guidance, increased mental health challenges, and the demands of negotiating the interface between the technological provision and the learning materials. The appraisal of university support services is expected to play a significant role in the overall estimation of the student as to the utility of remote access online learning when calculating the trade-off between benefits and drawbacks. Therefore, students who believe that the university provides appropriate support services will positively appraise the perceived value of remote access online learning (H4). The role afforded to the provision of university support services can also be expected to feature as a variable relating to achievement and successful course completion, both of which are fundamental as students work toward securing future employment opportunities after graduation. Students who experience significant difficulties in completing their studies due to factors associated with remote access online learning can be expected to attribute such difficulties to deficient university support services. Therefore, students who believe that the university provides appropriate support services will appraise the pandemic as having no negative impact or as enhancing their future career opportunities (H5).

The interface through which remote access online learning is experienced is crucial to fostering successful learning outcomes and student retention. Although teachers in Japan have a strong professional identity and status within society, this does not often translate into competence with information-technology devices and other technological mediators. Given the lack of preparedness among Japanese students for remote access online learning, it is expected that technical deficiencies will exist, making students more reliant upon the adequate provision of university support services. Therefore, students who believe that the university provides appropriate support services will positively appraise the learning management system (H6).

The education provided by the university must somewhat align with competencies demanded by the free market, thus meaning that universities should always be aware of societal demands and changes over time. Employment practices and the desirable indicators of employability have shifted dramatically due to the pandemic. Many Japanese students are questioning the purpose of university education given the changing employment landscape and the greater shift toward online mobile working solutions. Appraisals of future career opportunities are expected to be significant in the perception of value in remote access online learning. Therefore, students who appraise the pandemic as having no negative impact and/or as enhancing their future career opportunities will positively appraise the perceived value of remote access online learning (H7). With the technological component of online education highlighting inequalities in terms of software and hardware provisions, factors that often contribute to increased dropout and incompleteness among certain socioeconomic classes, it is expected that student appraisals of the technological interface will impact the perceived value of remote access online learning. Therefore, student appraisals of the learning management system will positively inform the perceived value of remote access online learning (H8).

### *3.2. Participants and Context*

Participants were undergraduate students enrolled at a Japanese university. Students were invited via email to participate in the study and complete an online Japanese-language measure relating to remote access online learning during December 2021. Consenting students who completed the survey measure were awarded a participation fee of approxi-

mately \$7 each. After the 30-day data collection period, a total of 286 complete responses from consenting students were gathered and carried forward for analysis. The data consisted of responses from 221 (77.3%) male students and 65 (22.7%) female students aged between 18 and 25 years (mean = 20.1 years, SD = 1.37). At the time of data collection, the students had been learning through remote access online learning for approximately 18 months. The students had experienced a range of asynchronous and synchronous situations and material formats based on course of study and teacher. Common to all students was the availability of the Moodle platform, often combined with the use of Zoom.

### 3.3. Instrument Development and Scale Validation

The survey instrument was developed relative to the themes outlined in previous sections and was informed by the current literature and the situation-specific demands of the learning environment. A total of 15 items were devised to represent five hypothesized latent variables, inclusive of the criterion variable (perceived value of remote access online learning). As the devised measure was untested, the population of 286 students was split 50/50 into two gender-equal samples. Sample 1 (n = 143) comprised data from 110 male (76.9%) and 33 female (23.1%) students, while Sample 2 (n = 143) comprised data from 111 male (77.6%) and 32 female (22.4%) students. Using the data from Sample 1, 12-survey items (excluding the criterion variable) were subject to an exploratory factor analysis with IBM SPSS v27.0 using maximum likelihood extraction based on eigenvalues greater than one and direct oblimin rotation (see Table 1). Factor coefficients <0.40 were suppressed. The exploratory factor analysis returned a four-factor solution (three items per factor) consistent with the hypothesized composition of each factor. The four-factor solution accounted for 73.28% of the cumulative variance. The adequacy of the data was then affirmed through the Kaiser–Meyer–Olkin index (0.798), Bartlett’s test of sphericity (chi-square = 721.122, DF = 66,  $p = 0.000$ ), and commonality extraction values for each item >0.40. Convergent validity was affirmed through the 12-items having factor loadings >0.50. Discriminant validity was affirmed through a unified four-factor solution with no cross-loading items and a factorial correlation matrix that showed correlations <0.70. Construct reliability was affirmed through Cronbach’s alpha values >0.70.

**Table 1.** Reliability and validity assessments (Sample 1 n = 143).

Construct/Indicators	Loading	M	SD	CA
<b>Future Career Impact (FCI)</b>				0.78
1. I have not reconsidered my future career plans	0.832	4.25	1.33	
2. It has not become more difficult to find future employment	0.815	4.15	1.28	
3. Future career opportunities have not been negatively impacted	0.589	4.48	1.20	
<b>University Support Services (USS)</b>				0.77
1. I received adequate administrative support	0.880	3.75	1.04	
2. I received adequate technical support	0.705	3.48	1.09	
3. I received adequate faculty support	0.660	3.95	1.33	
<b>Ability to Self-Regulate (ASR)</b>				0.82
1. I was able to be self-motivated	0.829	4.29	1.60	
2. I was able to concentrate on studying	0.806	4.21	1.38	
3. I was able to follow a clear study plan	0.746	3.78	1.22	
<b>Learning Management System (LMS)</b>				0.77
1. It was sufficient to support learning	0.839	4.07	1.18	
2. It was easy-to-use	0.723	4.13	1.30	
3. It was used without problem	0.643	3.73	1.43	

Note: M = Mean, SD = Standard Deviation, CA = Cronbach’s Alpha. The original survey items were presented to student only in Japanese. The English translations shown above were undertaken by the author.

In order to validate the factor structure shown in Table 1, the data from Sample 2 was subject to confirmatory factor analysis procedures and measurement model testing using IBM AMOS v27.0 (see Table 2). The four-factor solution was assessed for convergent and

discriminant validity. All indicators returned loadings between 0.61 and 0.89, which exceeds the >0.50 standard for convergence. Cronbach's alpha values were either good > 0.80 or satisfactory > 0.70. Construct validity was affirmed through average variance extracted values > 0.50 combined with composite reliability values >0.70. While two factors returned average variance extracted values of 0.47 (<0.50), they were deemed acceptable given that the composite reliability values were >0.70. The discriminant validity of the data was tested by determining whether the square root of the average variance extracted values was greater than the off-diagonal correlations between the other factors. Assessments of model fit were made using the chi-square, normed chi-square, goodness-of-fit index, comparative fit index, Tucker–Lewis index, and the root mean squared error of approximation with 90% confidence intervals. The returned model showed an acceptable goodness-of-fit to the data:  $\chi^2 = 67.684$  (DF = 48)  $p < 0.032$  CMIN/DF = 1.410, GFI 0.930, CFI 0.964, TLI 0.950, RMSEA 0.054 (90% CI, 0.017–0.082).

**Table 2.** Reliability and validity assessments (Sample 2 n = 143).

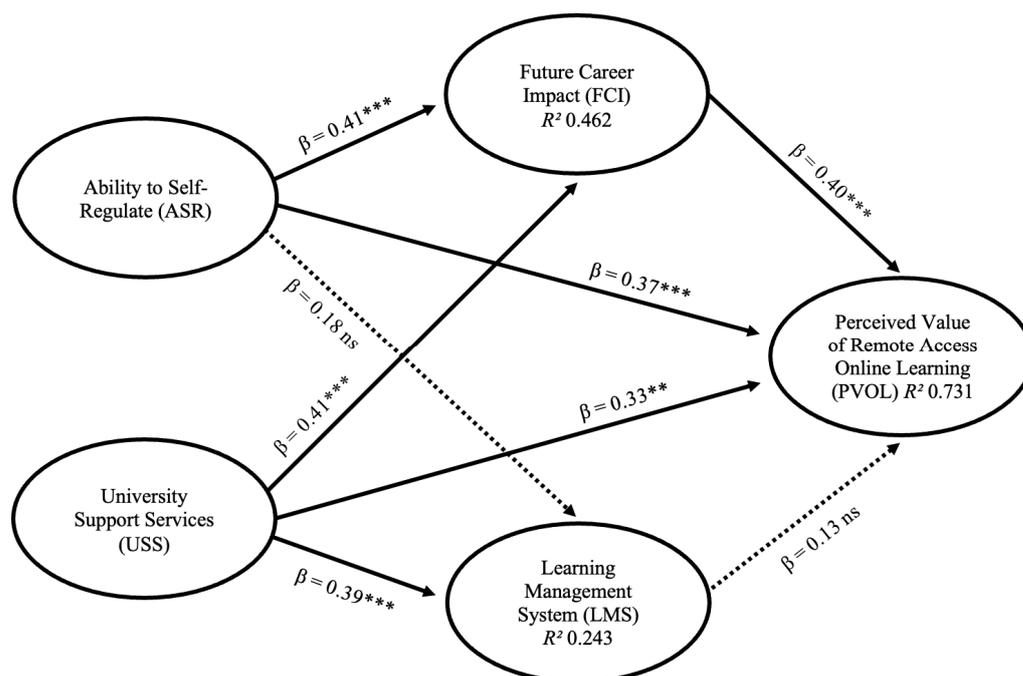
Construct/Indicators	M	SD	AVE	CR	CA	1	2	3	4
Future Career Impact (FCI)	4.24	1.01	0.47	0.73	0.72	(0.68)			
University Support Services (USS)	3.62	0.88	0.47	0.72	0.70	0.42 **	(0.68)		
Ability to Self-Regulate (ASR)	4.43	1.12	0.59	0.81	0.80	0.42 **	0.29 **	(0.76)	
Learning Management System (LMS)	3.91	1.06	0.56	0.79	0.78	0.24 **	0.37 **	0.25 **	(0.74)

Note: M = Mean, SD = Standard Deviation, AVE = Average Variance Extracted, CR = Composite Reliability, CA = Cronbach's Alpha. The discriminant validity indicators are those values shown in brackets. Method ML: [ $\chi^2 = 67.684$  (DF = 48)  $p < 0.032$  CMIN/DF = 1.410, GFI 0.930, CFI 0.964, TLI 0.950, RMSEA 0.054 (90% CI, 0.017–0.082)]. Correlations are significant at \*\*  $p < 0.01$ .

## 4. Results

### Structural Model Testing

The fundamental nature of the transaction between the student-as-consumer and the university-as-service provider changed during the COVID-19 pandemic as educational activities switched to a remote-access online learning format. Educational practices were primarily shaped in response to a public health crisis rather than the knowledge related needs and expectations of students relative to a society in flux. This proposition is further complicated by the fact that most universities did not reduce their tuition fees during the pandemic, which implies that the anticipated benefits of the education provided remained unchanged despite huge social disruption and the reconfiguration of traditional employment practices. The criterion variable in the current study was a three-item latent construct referred to as the perceived value of remote access online learning (PVOL) (mean = 3.20, SD = 1.23) ( $\alpha = 0.88$ ). The three items used to represent the construct included: remote access online learning was useful in contributing to meeting course aims and expectations (mean = 3.13, SD = 1.35); remote access online learning was comprehensive in content, depth, and/or assessment (mean = 3.01, SD = 1.45); and remote access online learning satisfied my current learning needs (mean = 3.45, SD = 1.30). The hypothesized structural model was tested and returned an acceptable fit:  $\chi^2 = 125.250$  (DF = 81)  $p < 0.001$  CMIN/DF = 1.546, GFI 0.901, CFI 0.951, TLI 0.937, RMSEA 0.062 (90% CI, 0.039–0.083). The tested model accounted for 73.1% of the observed variance in the criterion variable and is shown in Figure 2.



**Figure 2.** The tested structural model. Method ML: [ $\chi^2 = 125.250$  (DF = 81)  $p < 0.001$  CMIN/DF = 1.546, GFI 0.901, CFI 0.951, TLI 0.937, RMSEA 0.062 (90% CI, 0.039–0.083)]. Full lines denote significant paths, while broken lines indicate non-significant paths (ns). \*\*  $p \leq 0.01$ , \*\*\*  $p \leq 0.001$ .

## 5. Discussion

As students and teachers negotiate the post-pandemic landscape and in-person education returns, it is important to assess the broader consequences of such dramatic educational shifts and to understand how students-as-consumers experienced remote access online learning. The current study has reported on the construction and validation of a short-survey measure used to model factors impacting the perceived value of remote access online learning from the perspective of students at a Japanese university. In service of these aims, the current study examined the contribution of measures pertaining to the ability to self-regulate, the provision of university support services, the perception of the learning management system, and the anticipated impact on future career opportunities. The predictor variables accounted for 73.1% of the variance observed in the perceived value of remote access online learning. The tested measurement model provides initial support for six out of the eight proposed hypotheses. Furthermore, the tested model indicates that students with the ability to self-regulate positively appraised the perceived value of remote access online learning ( $\beta = 0.37^{***}$ ) (H1) and appraised the pandemic as having no negative impact and/or as enhancing their future career opportunities ( $\beta = 0.41^{***}$ ) (H2). The tested model also indicates that students who believed that the university provided appropriate support services positively appraised the perceived value of remote access online learning ( $\beta = 0.33^{**}$ ) (H4) and appraised the pandemic as having no negative impact and/or as enhancing their future career opportunities ( $\beta = 0.41^{***}$ ) (H5).

From the perspective of self-regulation, these outcomes contribute further to the established benefits of successful self-regulation documented within the literature, such as achievement, problem-solving, persistence, help-seeking, motivation, metacognition, and learning strategies [23–28]. The form which successful self-regulation takes may further be assumed to relate to a combination of metacognitive, motivational, or strategic action considerations relative to the context-specific demands placed upon the student. It also appears that the ability to adapt to the switch to online education and derive opportunities and benefits from the experience in terms of future career opportunities is an important consideration in the perception of value in remote access online learning. Students who were able to self-regulate under shifting circumstances upheld the perception

that the shift to remote access online learning was not detrimental to their future career opportunities. Moreover, students who appraised the pandemic as having no negative impact and/or as enhancing their future career opportunities positively appraised the perceived value of remote access online learning ( $\beta = 0.40^{***}$ ) (H7). This outcome may be connected to the comparatively minimal disruptions observed in Japanese society during the pandemic (e.g., the absence of government-ordered lockdowns or excessive restrictions on movement). Alternately, it may relate to the fact that all students in the current study were information systems students meaning that an expected future career would be within a sector suffering less disruption and reformation due to the pandemic than other white-collar employment sectors. Therefore, an investment in remote access online learning combined with the expectation of significant future career opportunities reflects the give-and-get dynamics within the transaction between student-as-consumer and university-as-service-provider. Such dynamics are “conceptually tautological because the existence of high value perception automatically implies the existence of high get perception” [54] (p. 321).

The importance of sufficient university support services has been upheld in relation to positive perceptions of value and the minimization of the pandemic’s impact on future career opportunities. The multifaceted nature of university support services in Japanese higher education reflects a culturally based paternalistic approach wherein universities, staff, and faculty accept a significant degree of responsibility for the overall well-being of the student beyond immediate academic concerns. Staff and faculty are often required to perform duties more comparable to those of a counselor. In times of crisis and increased social isolation, the data in the current study suggests that the university support services provided had a significant positive impact on students. The broad scope of university support services is further affirmed in the outcome that students who believed that the university provided appropriate support services positively appraised the learning management system ( $\beta = 0.39^{***}$ ) (H6). In contrast, the tested model provides no support for the proposal that students with the ability to self-regulate positively appraised the learning management system ( $\beta = 0.18$  ns) (H3). This suggests that the ability to self-regulate in terms of motivation, concentration, and adherence to a clear study plan is not related to the belief that the learning management system was sufficient to support learning, was easy-to-use, or could be used without problem. This points to the potential difficulties involved in the sudden increase in the use of technology in education without adequate training and practice. This outcome can also be used to stress the importance of sufficient technical support from the university, as demonstrated in H6. As documented, Japanese students who started university during the pandemic have been subject to various forms of “academic distress” due to the new online learning environment [37]. In such cases, learning management systems and other such mediators may act as a hindrance or obstacle to otherwise successful self-regulating students. The degree to which self-regulation needs to be inclusive of technical competencies is a valuable area for possible future research. Finally, the tested model provided no support for the proposition that student appraisals of the learning management system positively informed the perceived value of remote access online learning ( $\beta = 0.13$  ns) (H8). This outcome further isolates the learning management system as a distinct entity from the other variables in the current study and suggests that perceptions of value are not derived from the technological components of remote access online learning.

Two primary discussion points can be extracted from the current study. First, the importance of fostering the ability to self-regulate among students working in remote locations appears crucial in facilitating a cycle of positive experience and appraisal. In many cases, the shift to online education during the pandemic was not accompanied by a pedagogical shift in materials design specific to the self-regulatory demands of the new learning environment. It was perhaps more common for traditional face-to-face materials to have simply been moved to an online delivery system in the absence of situation specific self-regulatory considerations. The deliverance of subject-specific knowledge should be

performed in alignment with prominent learning dynamics such as metacognition, motivation, and strategic action. Unfortunately, such educational or soft science considerations are easily marginalized within certain environments and rarely feature as central across all educational activities. It is therefore recommended that all students, especially when learning in remote isolation or through other online modes of delivery, are explicitly taught the importance of developing adaptive metacognitive strategies and are trained how to best self-monitor and seek help when problems are encountered (see [55]).

Second, there exists a clear distinction between interpersonal factors and those pertaining to technology in the perception of value in remote access online learning. The position of the learning management system within the tested model suggests that the technological component of online education is not as important as other factors, namely those connected to an ability to self-regulate and those connected to the adequate provision of university support services under shifting circumstances. This is an important distinction to make, as a great deal of research into student experiences during the pandemic has prioritized technology rather than individual learner characteristics and the promotion of adaptive learning behaviors. Across many teaching contexts, an interest in educational technology often eclipses the necessity to consider the pedagogical integrity of the learning materials and outcomes communicated via the technological mediator. With specific reference to the use of Moodle within Japanese higher education, it has been documented that “there remains a tendency among some educators to view Moodle use as a learning outcome rather than as a tool for the communication and assessment of more comprehensive learning objectives. Moodle plugins that undermine responsibility and adaptive self-regulated learning skills are often promoted as technological pacifiers to maladaptive behaviors in the absence of efforts that guide students toward achievement-related improvement” [56] (p. 4371). In the same study the author draws from this observation to call for more “diversified online solutions that attract and sustain topical interest while maintaining pedagogical integrity through the promotion of adaptive self-regulatory behaviors” (pp. 4371–4372). The experiences of students during the pandemic should once again alert educational technologists to the fundamental importance of using technologies that provide social interaction and opportunities for interpersonal communication without the technology itself creating barriers and obstacles that then require university support services.

## 6. Conclusions

At the present time, teachers and students are confronted with significant questions as to the direction and characteristics of post-pandemic education. Given the impact on employment practices and working routines, it now seems inconceivable, and ill-advised, that the provision of higher education can simply revert to the way things were prior to the pandemic. It has been argued that “post-pandemic white-collar workplaces will be built on new principles that leverage the learnings of employers and employees during this time while ensuring that the foundations of future workplace structures are resilient to ongoing change” [49] (p. 419). How higher education responds to these changes is critical in shaping student-as-consumer appraisals of value and in maintaining societal relevance. It has been forecast that “the re-designing of face-to-face course materials within the current landscape requires conceptual and philosophical reflection about the nature of teaching and learning, stakeholder roles, and the relationship between teachers, learners, and teaching materials within digital learning communities” [20] (p. 125). However, significant shifts and conceptual rethinks are unlikely within many higher education sectors wherein corporate, administrative, and bureaucratic interests continue to dominate. An immediate return to the way things were prior to the pandemic might appeal to the university-as-service provider in the short term as the path of least resistance, but such a regression is likely to be insufficient to sustain the needs and expectations of the student-as-customer of the very near future.

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