Working Together to Increase Student Satisfaction: Exploring the Effects of Mode of Study and Fee Status
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Working Together to Increase Student Satisfaction: Exploring the Effects of Mode of Study and Fee Status.

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Working Together to Increase Student Satisfaction: Exploring the Effects of Mode of Study and Fee Status.

This study extends our knowledge on co-creation of value in higher education. The paper examines the relationship between support, co-creation of value and students’ satisfaction, as well as moderating factors including mode of study and fee-status, via 979 survey responses from undergraduate students. Analysis using partial-least squares (PLS) found support to be important in determining co-creation of value and, in turn, student satisfaction. Results indicated that student satisfaction is positively influenced through students accessing support mechanisms and their active involvement in co-creation of value activities. Our findings further reveal that fee-paying students are more satisfied when they participate in co-creation activities and access support mechanisms. No significant differences between transnational and domestic students are found.

Keywords: co-creation; student engagement; satisfaction; higher education; transnational education; tuition fees; partial-least squares (PLS)

Introduction

In the United Kingdom, the recent White Paper: *Success as a Knowledge Economy* (Department for Business, Innovation and Skills 2016) lays out plans for a Teaching Excellence Framework (TEF) that will rely on student satisfaction metrics, and which will be tied to university funding through tuition fee rates. However, a recent survey by Havergal (2016) of 15,221 undergraduates at UK higher education institutions (HIEs) indicates that this TEF initiative is happening against a background of rising dissatisfaction since 2012, with 35% of English-domiciled students believing that their time at university was either poor or very poor value for money (Neves and Hillman 2016). Now, more than ever, therefore, there is the need for HEIs to increase their understanding of those aspects of the student experience that influence satisfaction.
One way for HEIs to deepen their understanding of student satisfaction is to consult students on their experiences of higher education (HE) (Hill, Lomas, and MacGregor 2003). However, the number of studies that consider the ‘total student experience’ rather than just a course or departmental specific focus are few and far between (Williams and Kane 2009). Moreover, few studies offer comparative results between fee-paying and non-fee-paying students, thus highlighting a contextual gap. Therefore, in this paper we explore the experiences of undergraduate students studying at a global HEI, by developing a conceptual framework highlighting the importance of support (Hill et al. 2003; Smith 2004), co-creation (Judson and Taylor 2014; Vargo and Lusch 2008) and satisfaction (Arambewela and Hall 2008; Sanchez, Bauer, and Paronto 2006) as key components of the student experience; moderated by mode of study and fee status. Our main research question is: Does support, co-creation of value and satisfaction differ in terms of students’ mode of study and fee-status? In addition, we introduce support as a key antecedent of co-creation in HE and consider whether there is a positive relationship between co-creation and student satisfaction.

**Theoretical Background**

This study uses the concept of co-creation, which is a theoretical construct, originating from the business marketing literature, which has previously been adapted for use in studies of higher education. The basic premise of co-creation is that value is created through joint working between customers and firms (Prebensen, Vittersø and Dahl 2013; Prahalad and Ramaswamy 2004). Co-creation is further posited as ‘the process by which mutual value is expanded together’ (Ramaswamy 2011, 195). However, due to the traditional power imbalance within HE systems, students are ‘inadequately empowered’ to proactively participate in the process (Chung and McLarney 2000, 485), which has resulted in calls for HEIs to provide students with opportunities for empowerment (Lizzio and Wilson 2009; Judson and Taylor 2014).
‘Student engagement’ is often associated with co-creation since it requires students to actively contribute to the value of their experience (Astin 1984; Healey, Flint and Harrington 2014). For example, Nystrand and Gamoran’s (1991) study into fostering student engagement, emphasises the need to create an environment of ‘reciprocity’ between staff and students allowing for added value. This indicates that a certain level of support from the HEI is required to facilitate student participation in co-creation activities.

The creation and delivery of customer value is central to the delivery of customer satisfaction (Kotler 2003). Thus, the involvement of students in co-creation activities within HE has significant potential to increase student satisfaction. Vargo and Lusch (2008) argue that value is a self-perception, rather than being located within the actual service. This means that HEIs do not provide value to students, rather students actively participant in a joint process of value creation. For example, Diaz-Mendez and Gummesson (2012) explain that the value students expect and obtain from their experience is not entirely based upon the quality of teaching received, but also based on their ability to learn within the range of their own capabilities. They go on to illustrate that measuring teaching quality is complex and requires ‘significant efforts beyond simple indicators’ (ibid: 574). This notion is further supported by other research which identifies teaching quality as being a vague and controversial construct that is interpreted differently by different people (Cheng and Tam 1997; Harvey and Green 1993).

**Conceptual Framework and Hypotheses Development**

The proposed conceptual model centres on co-creation of value within the experiences of undergraduate students studying at the selected HEI. It reveals support as the antecedent of co-creation, and satisfaction as the consequence. This model incorporates both academic and non-academic matters pertaining to student life in order to grasp the entire student experience. We
conceptualised co-creation of value as a higher-order multi-dimensional construct comprising of two sub-scales including: joint creation and student participation. *Joint creation* highlights the importance of staff and students working together to create the student experience (Prahalad and Ramaswamy 2004), whilst *student participation* emphasises the active involvement of students within the process (Astin 1984). Without these two sub-factors, co-creation of value cannot take place (Nysveen and Pedersen 2014). This model supports the notion that satisfaction is difficult to pinpoint to an exact component since the diversity of the student population will be a factor in what is considered most pertinent to individuals. Figure 1 shows the research model, which demonstrates the relationships between constructs (i.e., support, co-creation of value and satisfaction), and the moderating effect of mode of study and fee status.

![Conceptual framework](image)

**Figure 1.** Conceptual framework.

**Effect of Support on Co-creation**

Mechanisms that support co-creation have been found to increase the quality of the consumers’ experience (Franke and Schreier 2010). Support can be considered as the opportunities that the
university and individual staff offer to empower students, as well as to enhance student satisfaction and retention (Lizzio and Wilson 2009; Tinto 1997). Research indicates that support is multifaceted, and has identified a range of support mechanisms that encourage student participation in co-creation activities (Smith 2004; Lizzio and Wilson 2008; Nambisan and Baron 2007; Dhillon, McGowan and Wang 2008).

**Effect of Co-creation on Satisfaction**

We propose that co-creation of value is an essential component of the student experience. Education is not one sided, and it is stressed that students need to actively participate in order to achieve desired outcomes. Nystrand and Gamoran’s (1991) results proved that co-creation, or in their terms ‘substantive engagement’, has a strong, positive effect on achievement and is therefore fundamental to the achievement of student satisfaction.

**Effect of Support on Satisfaction**

A focus on student satisfaction metrics has become increasingly important for universities due to both the impact of national student satisfaction surveys on league tables and rankings, and the linking of satisfaction with retention (Sanchez et al. 2006). Indeed, such measures of student experience have become ‘commonplace’ (Douglas, McClelland, and Davies 2008), with attention focusing on a range of activities that are deemed to constitute ‘academic life’ (Blackmore, Douglas and Barnes 2006). Previous studies have indicated that there are a vast number of variables that influence student satisfaction: teaching quality (Douglas et al. 2008); support services (Lent et al. 2007); learning environments (Lizzio, Wilson and Simons 2002); assessment and feedback matters (James and Casidy 2016); student representation (Lizzio and Wilson 2009); and induction and peer support programmes (Rønning 2002) In particular, Arambewela and Hall (2008) found that support has an influence on postgraduate student satisfaction, while Hill et al. (2003) found that students perceive the two greatest influences of
a quality education to be the quality of individual lecturers and the student support systems. We propose, therefore, that there is an indirect relationship between support from the university and student satisfaction. By including this indirect relationship, we indicate the complexity of satisfaction that can be influenced by a number of variables.

**Moderation Effect of Mode of Study and Fee Status**

Although support and co-creation of value are proposed as having a positive impact on student satisfaction, universities should pay attention to differences amongst diverse student groups. There are two significant results of academic capitalism and the marketisation of HE that are often discussed in the literature (Scott 1998; Slaughter and Rhoades 2004). These are the appearance and increase of tuition fees (Kandiko and Mawer 2013; Klemenčič 2014); and the growth of transnational education (TNE) (Kauppinen 2012; Kosmützky and Putty 2016; Wilkins 2016). Very few studies have committed to comparing the differences of mode of study and fee status of students, thus this research decided to look at both groups.

**Mode of Study**

For the purpose of this study, TNE is defined as any educational activity that occurs in a country foreign to the provider (McBurnie and Ziguras 2007). Previous research has indicated that TNE students have ‘limited’ services in comparison to domestic students (Altbach, 2010). This would suggest the potential for lower satisfaction rates, however, Wilkins, Balakrishnan and Huisman (2012) found that the quality is on or above par with national HEIs, and that TNE students are largely satisfied. A similar comparative study between domestic and TNE students was done by Nair, Murdoch and Mertova (2011), but, their comparison was between over 16,000 responses from domestic students and only 422 TNE students. The obvious difference in scale creates potentially significant comparison problems, therefore strengthening the need for further comparative research of these student groups.
**Fee Status**

We recognize that there are potential problems in considering students as customers/consumers (see Bunce, Baird and Jones 2016; Woodall, Hiller and Resnik 2014; Lomas 2007), and some research has found that students who pay fees dislike being identified in this way (Saunders 2014; Williams 2013). However, the rising number of students paying fees is incontestable and prior studies have both adopted and considered the consumerist model in higher education. Bunce, Baird and Jones’ (2016), for example, found that students in STEM subjects, who were responsible for paying their own fees, were positively associated with a consumerist view. They found that higher consumerism equated to lower academic performance, thus suggesting that fee-paying students will have a lower academic performance in comparison to non-fee-paying students. Such work has helpfully broken the ground in this area, but overall there is a relative lack of studies into student engagement that compare fee-paying and non-fee-paying students and the current work will contribute to that effort.

**Research Methods**

**Sample**

In order to measure the relationship between support, co-creation and satisfaction we utilised the University’s Annual Survey, a single annually delivered instrument that was introduced to reduce survey fatigue amongst students. The survey was sent to all undergraduate students (except those who were eligible for the UK National Student Survey) via email at a Scottish University. The survey was hosted by the University’s Registry and went live online on 26th February, and closed on 20th March in 2016. Students were informed that their responses would be used for academic research purposes and a prize draw was offered as an incentive to participate. Of the 10,157 students qualified to participate in the Annual Survey, there were 979 returns in total, resulting in an overall response rate of almost 10 per cent, which is
acceptable for online surveys in HE based on Sax, Gilmartin and Bryant (2003). 567 responses were from domestic students, with 412 responses from TNE students, with the majority of this student group based at international branch campuses (n=385), and a few from approved learning partners (n=25) and independent distance learners (n=2). In terms of gender distribution, 51.9 per cent of the respondents were female and 48.1 per cent male. 61 per cent of the responses were from fee-paying students (i.e., International and rest of UK students) and 39 per cent were non-fee paying (i.e., Scottish and EU).

Measures

Our research team had a small influence in the development of the questionnaire. Originally, the questionnaire was neither initially designed, nor data collected with particular analyses in mind, which inflicted some limitations on the subsequent dataset. However, we used real data in a non-laboratory environment, thus decreasing the limitations of data collected for academic research; including the dearth of realism, artificiality and generalisability (Wells et al. 2015; Levitt and List 2007). After consultation with the University’s Registry, we added the co-creation of value construct to the original survey as a means of understanding student engagement within the university.

Co-creation of value is conceptualised as a second-order reflective construct, measured through two sub-scales including students participation (3 items) and joint creation (3 items), adapted from Nysveen and Pedersen (2014). MacKenzie, Podsakoff, and Jarvis (2005, 715) argue that a higher-order measurement “faithfully represents all of the conceptual distinctions that the researcher believes are important, and it provides the most powerful means of testing and evaluating the construct”. It also represents co-creation of value’s multidimensionality reflected by two underlying constructs (Yu et al. 2016). The support construct was developed by looking at eleven existing questions in the questionnaire that were created by Registry. As with the majority of studies using real data, we were not surprised to find similarities between
eleven non-laboratory items. Our research team decided to delete four similar items in order to reduce chance of high correlations between the constructs (Hair et al. 2010). These four items also loaded very low and influenced reliability and validity of the support construct, and the conceptual model (See also Wells et al. 2015; Levitt and List 2007; Hair et al. 2010). We decided that support was a good label for these polls of items, which also supported similar co-creation experience studies (Bergmark and Westman 2016; Nambisan and Baron 2007). A single item was used for capturing students’ satisfaction. Students rated each statement for the above scales on Likert-scale ranging from 1 to 5, with 1 indicating strongly disagree and 5 strongly agree.

**Analytical Strategy**

We used partial least squares (PLS) for analysing our data. PLS is appropriate for the early stages (exploratory) and predictive applications (Hair et al. 2014, Wells et al. 2016). PLS can be used in reflective, formative and higher-order models (Hair et al. 2014; Yu et al. 2016; Becker, Klein and Wetzels 2012). In doing so, as noted before, we echo Prahalad and Ramaswamy’s (2004) and Nysveen and Pedersen’s (2014) call for conceptualising co-creation as a higher-order measure which is composed of two first-order variables. Yu et al. (2016) suggest that PLS can be used in higher-order models in educational studies. Both the measurement and structural model were studied within SmartPLS 3.0 software (Ringle, Wende, and Becker 2014). The non-parametric bootstrapping technique was tested with 979 cases and 5000 subsamples (Hair et al. 2014).

**Results**

As the data for measuring model constructs were generated from a single source, Therefore, before data analysis, we assessed for CMV’s threat. Then, we followed a two-stage PLS methodology approach including measurement model and structural model (Hair et al. 2014).
For measurement model, we created two stages including: reflective measurements (i.e., support construct as well as first-order joint creation and student participation constructs) and higher-order measurement (i.e., co-creation as second-order construct). Finally, employing the procedure proposed by Yu et al. (2016), we investigated for effects of two moderating factors (i.e., mode of study and fee status) on relationships among constructs shown in Figure 1.

Common Method Variance (CMV)

Common method variance (CMV) potentially questions the validity of most results. Firstly, students were informed that their answers would remain anonymous. Secondly, we conducted two statistical tests: (1) We used Harman’s single-factor test to evaluate CMV by entering all the principal scales into an exploratory factor analysis (Podsakoff and Organ 1986). The eigenvalue unrotated exploratory factor analysis results detected three factors (F₁: 4.529; F₂: 2.054; F₃: 1.551). The highest portion of variance explained by one single factor was 32.352%. (2) Following Liang et al.’s (2007) procedure, we introduced a common method factor to the structured model in the PLS. The results reveal that none of the loadings of the indicators to common method factor was significant. The average variance explained by indicators was 0.621 while the average method-based variance was 0.011, yielding a ratio of 56:1. Therefore, CMV was not a concern for our research.

Measurement Model Stage One: Analysis of Reflective Measurements

We undertook tests for convergent and discriminant validity in order to ensure that the items of each construct assess what they are supposed to assess. Firstly, we employed composite reliability (CR), Cronbach’s Alpha (α), factor loadings and average variance extracted (AVE) to test convergent validity. For all reflective constructs, the factor loadings, composite reliability and Cronbach’s Alpha reached values above the required thresholds of 0.7 (Fornell and Larcker 1981; Hair et al. 2010). The AVE surpassed the threshold of 0.5 for all
constructs (Hair et al. 2010) (Table 1). Secondly, we tested discriminant validity in two ways: (1) we used Fornell and Larcker’s (1981) criterion, which requires a construct’s AVE to be larger than the square of its largest correlation with any construct (Table 2). (2) Following Henseler, Ringle, and Sarstedt’s (2015) approach, we used heterotrait-monotrait ratio of correlations (HTMT) approach. Henseler, Ringle and Sarstedt (2015) argue that the HTMT method shows greater performance, by means of a Monte Carlo simulation research, compared to the Fornell-Larcker’s criterion. If the HTMT value is below 0.85, discriminant validity must be documented between constructs. In our study, HTMT values of the first-order constructs ranged from 0.117 to 0.650. We also tested the HTMT\textsubscript{inference} criterion employing complete bootstrapping to check whether HTMT is significantly different from 1. HTMT\textsubscript{inference} showed that all HTMT values are significantly different from 1 (for first-order constructs ranged from 0.196 to 0.850), thus discriminate validity was established (See also Wells et al. 2016; Voorhees et al. 2016; Shafaei, Nejati and Abd Rzak 2016).

Table 1. Assessment of the measurement model.

<table>
<thead>
<tr>
<th>Construct item</th>
<th>Loading</th>
<th>\textit{t}-values</th>
<th>CR</th>
<th>AVE</th>
<th>(\alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{Co-creation of value – Student participation dimension}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often express my personal needs to staff.</td>
<td>0.741</td>
<td>40.946</td>
<td></td>
<td>0.641</td>
<td>0.706</td>
</tr>
<tr>
<td>I often suggest how this university can improve its services (e.g. academic, pastoral, commercial).</td>
<td>0.813</td>
<td>45.199</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I participate in decisions about how this university offers its services (e.g. academic, pastoral, commercial).</td>
<td>0.844</td>
<td>89.959</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>\textit{Co-creation of value – Joint creation dimension}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often find solutions to my problems together with staff (i.e. academic and non-academic solutions).</td>
<td>0.825</td>
<td>64.512</td>
<td></td>
<td>0.629</td>
<td>0.719</td>
</tr>
<tr>
<td>I am actively involved when this university develops new solutions for me (i.e. academic and non-academic solutions).</td>
<td>0.827</td>
<td>72.747</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This university encourages students to create solutions together. (i.e. academic and non-academic solutions).</td>
<td>0.722</td>
<td>29.843</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Support

My academic mentor provides me with guidance and support 0.726 34.308
I have regularly been in touch with my academic mentor over the past year 0.746 24.35
Good advice was available when I needed to make study choices (e.g. course choices). 0.701 32.143
The library resources (e.g. books, online services) have supported my learning well. 0.729 23.140
The timetable works efficiently as far as my activities are concerned. 0.754 16.773
Online blackboard is a useful learning resource 0.715 37.425
Feedback on my course has been timely (e.g. practical, assignments) 0.759 11.553

Satisfaction

How satisfied are you with your experience at this university? n/a n/a n/a n/a n/a

Table 2. Correlation between constructs.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Satisfaction</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Support</td>
<td>0.579</td>
<td>0.712</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Co-creation of value</td>
<td>0.310</td>
<td>0.429</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Joint creation</td>
<td>0.414</td>
<td>0.474</td>
<td>0.606</td>
<td>0.793</td>
<td></td>
</tr>
<tr>
<td>(5) Student participation</td>
<td>0.104</td>
<td>0.267</td>
<td>0.574</td>
<td>0.586</td>
<td>0.801</td>
</tr>
</tbody>
</table>

Note: AVE value for co-creation of value is absent as co-creation of value was specified as a higher-order model; Square root of AVE is shown on the diagonal of the matrix in boldface and inter-construct correlation is shown off the diagonal; n/a = not applicable.

Measurement Model Stage Two: Analysis of Co-creation of Value Higher-order Measurement

We performed three tests to ensure that our co-creation of value second-order construct represented reflectively by two first order sub-scales. Firstly, to confirm co-creation of value
as a second-order construct, we used PCA with an Oblique rotation. The results show that all items loading are above the minimum threshold ($\geq 0.5$), under the respective two factors. Secondly, for first-order constructs (i.e., student’s participation and joint creation), we checked CR, Cronbach’s Alpha, and AVE values. CR, Cronbach’s Alpha, AVE values were above the required threshold values (see Table 1). Finally, we used repeated measures approach for estimation of the hierarchal component models (HCMs) in PLS (Becker et al. 2012). Following HCMs steps, we used the manifest variables: (1) for the first-order constructs, including 3 items in students’ participation and 3 items for joint creation, we assigned items to their respective first-order construct reflectively; (2) for the second-order construct (6 items), all items were assigned to the co-creation of value construct. We found that the relationships between the co-creation of value construct and underlying factors including joint creation (0.906; $t = 136.782$) and students’ participation (0.874; $t = 84.855$) were significant. $R^2$ of each underlying factor was larger than recommended value of 0.5 (i.e., $R^2_{\text{students’ participation}} = 0.764$ and $R^2_{\text{joint creation}} = 0.820$), which reveals that the co-creation of value construct explains more than 50% of the variance in its respective single-order factors (see also Hair et al. 2014). Hence, the co-creation of value is a second-order construct represented reflectively by two first-order dimensions.

**Analysis of the Structural Model**

After approving the measurement model in two stages, first, we tested for Goodness of fit (GoF) index using procedures from Wetzel, Odekerken-Schröder, and van Oppen (2009). The overall GoF is 0.760, which indicates very good model fit. Second, we tested the Cohen’s effect sizes ($f^2$) (Cohen 1988). The rule of thumb is that the significant paths in the inner model should be above 0.02 which indicates satisfactory effects for the endogenous latent constructs (Henseler, Ringle, and Sinkovics 2009). The findings indicate that the $f^2$ in inner model were all above 0.02, therefore there is a satisfactory effect for latent constructs (see Table 3). Third,
the model explains 32% of co-creation of value and 54% of satisfaction.

Fourth, we used a nonparametric bootstrapping procedure to test the structural model (Hair et al., 2014). As seen in Table 3, the findings of the analysis provide empirical support for all the hypotheses. Support has a positive and significant impact on co-creation of value (H1: \( \beta = 0.429, p < .001 \)). Co-creation of value has a positive and significant impact on satisfaction (H2: \( \beta = 0.179, p < .001 \)). Support has a positive influence on satisfaction (H3: \( \beta = 0.547, p < .001 \)).

Table 3. Estimates of direct paths.

<table>
<thead>
<tr>
<th>Paths</th>
<th>Path coefficient</th>
<th>t-values</th>
<th>( f^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support ( \rightarrow ) co-creation of value</td>
<td>0.429</td>
<td>14.086</td>
<td>0.226</td>
</tr>
<tr>
<td>Co-creation of value ( \rightarrow ) satisfaction</td>
<td>0.175</td>
<td>5.450</td>
<td>0.070</td>
</tr>
<tr>
<td>Support ( \rightarrow ) Satisfaction</td>
<td>0.347</td>
<td>19.612</td>
<td>0.369</td>
</tr>
</tbody>
</table>

Note: t-values for the item loadings to two-tailed test: \( t > 1.96 \) at \( p < .05 \), \( t > 2.57 \) at \( p < .01 \), \( t > 3.29 \) at \( p < .001 \).

Finally, following Williams and MacKinnon (2008) and Walsh et al.’s (2015) recommendation, we conducted mediation analyses within the bootstrapping method. We used a 95% confidence interval (CI) of the parameter estimates based on resampling 5000 times. This method shows that if the direct effect between two constructs is significant, the findings show partial mediation. However, if the direct effect between two constructs respectively is not significant, that means the results show full mediation. In our study, support indirectly influences satisfaction through co-creation of value (i.e., CI: 0.322-0.443; indirect effect is: 0.375, \( t \)-value = 13.096). Since the direct influences were significant, the findings reveal that co-creation of value partially mediated the impact of support on satisfaction. Thus, H4 is supported.

**Moderation Tests**

We employed a PLS-based multi-group analysis (MGA) to test for moderation effects of mode
of study and fee status, and also to evaluate whether differences among groups are significant (Henseler et al. 2009; Yu et al. 2016). Table 4 demonstrates that the positive influence of support on co-creation of value was stronger for TNE students ($\beta = 0.511, p < .001$) than for UK students ($\beta = 0.385, p < .001$), but there were no significance differences between the two groups (MGA $p$-value = 0.121). The positive impact of co-creation on satisfaction was stronger for TNE ($\beta = 0.165, p < .001$) than for UK students ($\beta = 0.160, p < .001$), but there were no significance differences between the two groups (MGA $p$-value = 0.146). In addition, the positive influence of support on satisfaction was stronger for UK ($\beta = 0.604, p < .001$) than for TNE students ($\beta = 0.435, p < .001$), but there were no significance differences between the two groups (MGA $p$-value = 0.146). Thus, we cannot conclude if mode of study moderates relationships among support, co-creation of value and student satisfaction.

Table 4. Mode of study groups comparison test results.

<table>
<thead>
<tr>
<th>Paths</th>
<th>TNE</th>
<th>UK</th>
<th>Multi-group comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>t-value</td>
<td>Estimate</td>
</tr>
<tr>
<td>Support $\rightarrow$ co-creation of value</td>
<td>0.511</td>
<td>12.096</td>
<td>0.385</td>
</tr>
<tr>
<td>Co-creation of value $\rightarrow$ satisfaction</td>
<td>0.165</td>
<td>3.359</td>
<td>0.160</td>
</tr>
<tr>
<td>Support $\rightarrow$ Satisfaction</td>
<td>0.435</td>
<td>9.098</td>
<td>0.604</td>
</tr>
</tbody>
</table>

Note: $t$-values for the item loadings to two-tailed test: $t > 1.96$ at $p < .05$, $t > 2.57$ at $p < .01$, $t > 3.29$ at $p < .001$.

Table 5 illustrates that there were significant differences of the positive effect of support on both co-creation of value (group 1: $\beta = 0.508, p < .001$; group 2: $\beta = 0.301, p < .001$; MGA $p$-value = 0.013) and satisfaction (group 1: $\beta = 0.648, p < .001$; group 2: $\beta = 0.505, p < .001$; MGA $p$-value = 0.030). The positive influence of co-creation of value on satisfaction value was stronger for group 2 ($\beta = 0.229, p < .001$) than for group 1 students ($\beta = 0.138, p < .001$). The MGA results were significant (MGA $p$-value = 0.011). Thus, we conclude that fee status
differences exist with regards to the impact of three main relationships including: support on co-creation of value, co-creation of value on satisfaction, and support on satisfaction. These influences are significantly higher for group 2 (rest of the UK and overseas) than group 1 (Scotland and EU).

Table 5. Fee status groups comparison test results.

<table>
<thead>
<tr>
<th>Paths</th>
<th>Scotland and EU (Group 1)</th>
<th>t-value</th>
<th>Rest of the UK and overseas (Group 2)</th>
<th>t-value</th>
<th>p-value</th>
<th>Multi-group comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support → co-creation of value</td>
<td>0.301</td>
<td>5.052</td>
<td>0.508</td>
<td>15.375</td>
<td>0.013</td>
<td>Group 1 &lt; Group 2</td>
</tr>
<tr>
<td>Co-creation of value → satisfaction</td>
<td>0.138</td>
<td>3.898</td>
<td>0.229</td>
<td>3.328</td>
<td>0.011</td>
<td>Group 1 &lt; Group 2</td>
</tr>
<tr>
<td>Support → Satisfaction</td>
<td>0.505</td>
<td>15.874</td>
<td>0.648</td>
<td>13.277</td>
<td>0.030</td>
<td>Group 1 &lt; Group 2</td>
</tr>
</tbody>
</table>

Note: t-values for the item loadings to two-tailed test: \( t > 1.96 \) at \( p < .05 \), \( t > 2.57 \) at \( p < .01 \), \( t > 3.29 \) at \( p < .001 \).

**Discussions and Implications**

This study set out with two aims: to find out if student satisfaction is increased through support and co-creation; and does mode of study or fee-status influence student engagement with co-creation. The results provide evidence that student satisfaction is positively influenced through students accessing support mechanisms and actively engaging in co-creation of value activities such as active participation in decision-making and involvement in finding solutions to problems. Having considered undergraduate students’ involvement in co-creation activities that encompass the entire student experience, this study provides a broader picture of student co-creation experiences and how it relates to satisfaction. We believe our study is the first to explicitly test the interaction among support, co-creation of value and student satisfaction influenced by moderation factors and our findings show that interaction between these three constructs varies by fee status. Surprisingly, however, no significant differences between TNE
and domestic students are found in the conceptual model.

Douglas et al. (2008: 26) argue that satisfaction is not a ‘one size fits all’, thus the proposed model has tried to remain wide in its range rather than pinpointing one exact aspect of the student experience. This research is significant as it rejects the passive model of students as customers. Previous research argued that tuition fees and the reliance of satisfaction scores means limiting the academic quality as lecturers are pressurised to dumb-down content to ensure high customer satisfaction (Bunce et al. 2016; Naidoo and Jamieson 2005; Woodall, Hiller and Resnick 2014). However, this research indicates differently, that fee-paying students are more engaged in co-creation activities in comparison to non-fee-paying students. Our findings suggest fee-paying students are more invested in their student experience through active participation. For those that do pay increasingly high fees, research has found that students question whether or not their degree is value for money (Kandiko and Mawer 2013). We conclude that fee-paying students are more satisfied when they participate in co-creation activities and access support mechanisms.

The lack of any significant difference between domestic and TNE students supports other findings relating to TNE student experiences. For example, Wilkins et al. (2012) found that students at international branch campuses in the UAE were generally satisfied with their experiences. Moreover, the lack of difference may signify an institutional culture, in that domestic and TNE students are part of the same HEI. However, there are opportunities for further research in this area since the location and setting of the TNE provision will not be an exact replica of the parent institution (see Shams and Huisman 2012).

The recent White Paper’s proposal (Department for Business, Innovation & Skills 2016) to raise tuition fees based on teaching excellence has implications for all (not just fee-paying) students at UK HEIs. This paper highlights that support and co-creation opportunities are linked to student satisfaction, thus HE practitioners should focus on these aspects of the student
experience. Our results emphasise that students value institutional support mechanisms, such as academic mentors, resources and constructive feedback. In other words, support is an intrinsic part of the overall student satisfaction. Therefore, it is important that support must be available and accessible to all students (Hill et al. 2003; Smith 2004; Lea, Stephenson and Troy 2003). We propose that HE practitioners should ensure there are a range of support services and resources, at both institutional and departmental level (Dhillon et al. 2008) in order to reflect the diversity of an HEI’s student population. This will allow for students to confidently participate in co-creation activities, thus enhancing student satisfaction.

Our findings indicate that students value being involved in co-creation activities. We propose that HE practitioners ensure that students are actively involved in decision-making processes that affect the student experience, including how the university can improve its academic, pastoral and commercial services, as well as creating opportunities for students to work together with peers and staff to create solutions for problems (both academic and non-academic related) that may arise. This will allow for students to adapt their educational experience for their individual needs. In summary, co-creation pertains to a balance: within HEIs there is a need to achieve a suitable balance between the academic purpose of a HEI and the reality of students’ lives (Thomas 2002). As Kuh (2015) summarises, ‘it takes a whole institution to educate a student’. We support this notion as co-creation goes beyond the classroom to encompass the entirety of the student experience.

**Limitations and Further Research**

As with other research this study has some limitations. Since the results were derived from one UK HEI we cannot be completely assured of generalisability of our findings unless we repeat and apply our research in different populations, such as across multiple HEIs. In addition, we used different evaluations for testing CMV and correlation matrix to test possible
casualty issues in our self-reported questionnaire (Curran et al. 2016; Podsakoff et al. 2003), thus future studies should include qualitative interviews targeting different audiences in order to offer even more complete explanation of results.

Future research suggestions are as follows. We echo Yu et al.’s (2016) call for advancing higher-order model studies in educational studies. Also, there are opportunities for future research considering the elements of disengagement and dissatisfaction relating to co-creation, since this research has been generally positive in nature by focusing on student satisfaction as opposed to student dissatisfaction (Douglas et al. 2015). Specifically, as it has been noted that high levels of student participation can make students uncomfortable as it moves away from the norm (Lea et al. 2003), so could co-creation be a form of disengagement? Finally, despite our results evidencing no significant difference between domestic and TNE students, we suggest future comparative research into variances of experiences dependent on mode of study. Moving forward, we propose examining the conceptual framework through mixed methods research, to determine nuances in the constructs.
References


Dhillon, J. K., M. McGowan, and H. Wang. 2008. "How effective are institutional and
departmental systems of student support? Insights from an investigation into the
support available to students at one English university." Research in Post-Compulsory
Education 13 (3): 281-293.

Diaz-Mendez, M. and E. Gumnessson. 2012. "Value co-creation and university teaching
quality: Consequences for the European Higher Education Area (EHEA)." Journal of

satisfaction and dissatisfaction: an interpretive study in the UK higher education

framework of student satisfaction with their experience in higher education." Quality

importance of process effort and enjoyment." Journal of Product Innovation
Management 27 (7): 1020-1031.

Fornell, C., and D. F. Larcker. 1981. "Evaluating structural equation models with
unobservable variables and measurement error." Journal of Marketing Research 18

analysis: A global perspective. 7th ed. USA: Pearson.

Hair, J. F. Jr., G. T. M. Hult, C. M. Ringle, and M. Sarstedt. 2014. A primer on Partial Least

Education 18 (1): 9-34.

Havergal, C. 2016. More English students think degree was poor value for money. Times
https://www.timeshighereducation.com/news/more-english-students-think-degree-
was-poor-value-money

Healey, M., A. Flint, and K. Harrington. 2014. Students as partners in learning and teaching

validity in variance-based Structural Equation Modeling." Journal of the Academy of


Williams, J. 2013. *Consuming higher education: Why learning can't be bought.* London: Bloomsbury.

