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Research notes

What business school characteristics are correlated with more favourable National Student Survey (NSS) rankings?

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ABSTRACT

The reliability and importance of business school rankings has long been debated, however most of the discussion has centred on research rankings. With the introduction of the National Student Survey (NSS) the spotlight has been shone on student satisfaction with teaching. With a rumoured teaching excellence framework on the horizon, it is pertinent to analyse the variables correlated with higher NSS satisfaction scores. This paper finds that the variable significantly correlated with higher NSS satisfaction scores in the subject group of Management, Marketing, Business Studies and Human Resource Management is the value added by a higher education institution. The level of learning resources in business schools do not significantly explain any of the variation between student satisfaction levels. The percentage of staff who are an A on the REF is not significantly correlated with NSS scores, nor is spend per student. While not removing all concerns, these findings should at least help quell some misgivings around the appropriateness of using NSS data as a measure of the quality of teaching in business schools.

1. Introduction

A rise or fall in league tables can have significant consequences for a tertiary institution. As a result, understanding those higher education institution characteristics that are significantly correlated with higher scores on the National Student Survey (NSS) becomes increasingly important. This is due in part to the emergence of rankings using NSS data constructed by third parties such as media outlets, which shine a spotlight on student satisfaction levels. The 'University League Table' as produced by the Guardian is one such ranking (with the Times Higher Education World University Rankings being another with a teaching component) which directly uses student satisfaction levels from the NSS as components in determining their 'Guardian Score out of 100' which they use to rank universities in the UK. Additional university rankings in the UK include 'The Complete University Guide' compiled by Mayfield University Consultants, and 'The Good University Guide' published by The Times/The Sunday Times. All three of these rankings use NSS results as inputs into their final rankings. In addition, the NSS results are displayed in a form suitable for potential students on the Unistats website. It is also not an uncommon sight to see student satisfaction levels for a particular institution reported on their website, or even on the backs of buses.

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The traditionally admired universities, arguably, have little need for marketing. A national awareness that they have produced many of the country's most renowned scholars for centuries- and later employed them – is proof enough that an education at such a place is expected to be worthwhile. However, other universities, particularly those who comprise the group known as the United Kingdom's 'new universities', that have evolved since 1992, are more reliant on positive promotion in order to be able to compete for students. Therefore, the benefits of being favourably ranked on the NSS (22 questions answered by final year undergraduates) can be significant. Recent discussions in the UK around a framework to recognise the highest quality teaching have coincided with attempts to create a "nuanced benchmarking system" (Canning, 2015 p. 56), including the construction of a raw weighted student satisfaction score (WSSS) and a normalised weighted student satisfaction quotient (WSSQ). The calculation of the WSSS and standardising of the WSSQ can be found in the appendix of Canning's paper, however a brief summary is given below:

> *"The main components of the model are the proportion (min, 0, max 1) who agreed or strongly agreed with each of the questions for a particular course, a weight for each of the questions (derived from Marsh and Cheng's (2008) factor analysis) and an adjustment for overall subject differences. This overall score is then multiplied by 100 to avoid the overuse of decimal places. This calculation has been performed for all 4128 courses which appeared in the National Student Survey (2014). The resulting WSSS scores are then standardised to a mean of 100 and a standard deviation of 15. An average course will score 100" (Canning, 2016).*

The objective of Canning's work is to allow courses to be ranked on absolute and relative performance, hopefully leading to a "more considered use of NSS data" (Canning, 2015 p. 56). This paper attempts to contribute to the current discussion by asking the research question 'what are the important higher education institution characteristics that are significantly correlated with higher scores and rankings on the NSS in business related subjects?' The recent work of Canning (2015) is also examined. Business related subjects were chosen as the focus as they are a readily identifiable subset of subjects clustered within most universities. The research outlined below suggests the biggest differences in NSS satisfaction ratings found is at the course level within universities. This makes a comparison of a specific subset of subjects between universities more appealing.

2. Literature review

When discussing the NSS, researchers have been divided in their assessment of the survey. A summary by Child (2011) of a 2010 major review of the NSS states the future role of the NSS is to provide information for prospective students, to provide information for quality assurance processes, and to support enhancement activities within institutions. Clearly the NSS is designed to help measure and improve teaching and learning activities within tertiary institutions. Currently, campus universities do perform strongly on the NSS, with 86% of the 321,000 students who responded satisfied with their course according to Grove (2015), who quotes Madeleine Atkins, chief executive of the Higher Education Funding Council for England stating the NSS had been "fundamental to driving change in our universities and colleges" (2015, p. 2). The same publication also quotes the universities minister Greg Clark saying "It is vital that higher education institutions further enhance teaching quality and improve the experience they offer to students" (2015, p. 2). Some research such as that of Hazelkorn (2011) suggests rankings were transforming universities and that "global rankings have raised the competitive bar" (p. 29). Hazelkorn (2011) goes on to state there has been a noticeable change in institutional behaviour as a result of the prominence rankings have achieved, creating a 'strong drive to improve comparative position (p. 309). It is also suggested by Hazelkorn (2011) that traditional schools maintain an advantage when it comes to ensuring student satisfaction; believing rankings favour older, better resourced, highly selective universities who have accumulated comparative advantages over time. An initial advantage held by traditional universities can become self-perpetuating, with Wilkins and Huisman (2012) claiming that "Rankings have a significant impact on a school's ability to attract top scholars, the most able students and research funding" (p. 367); while Giora and Corley (2002) claim that the extra revenue gained through higher rankings can in turn lead to better future research performance.

Child (2011) also highlights a number of academics who have criticised the validity of the NSS, including Harvey (2008) who claimed it was manipulated, shallow and methodologically worthless, along with Atwood (2010) who described the NSS as a statistically risible exercise. Alternatively, Child (2011) also reports the *Teaching Quality Information Review* describing 'a general level of acceptance' with the NSS (p. 7). Child (2011) concludes that while there is evidence for using the NSS to enhance teaching, it is difficult to separate that objective from the performance indicator and public information objectives. There is however some evidence suggesting that institutions are in fact using student feedback to attempt to improve the student experience, and enhance the quality of teaching (Richardson, Slater, & Wilson, 2007). Interestingly, prior research (Bótas, 2008; Dill, 2007; Pascarella, 2001) evaluating teaching quality has found there to be no direct relationship between institutions with the best resources and facilities, and students experiencing high quality teaching and learning in those institutions, and that rankings tend to favour institutions with more resources rather than those with the best educational practices. The rankings referred to have tended to be research based however, rather than teaching based. This paper contributes to this literature (Bótas, 2008; Dill, 2007; Pascarella, 2001) by attempting to identify if there are any higher education institution characteristics that are significantly correlated with higher scores and rankings on the NSS in business related subjects.

When specifically discussing Business Schools, Wilkins and Huisman (2012) believe that "Most UK business schools appreciate that rankings have an impact on their reputations and the number of quality applicants they receive, and they set objectives and implement strategies to improve their positions in league tables" (p. 369). With this in mind, recent results of the NSS suggest the nation's business schools are doing a good job on the teaching front, with high overall levels of student satisfaction. This appears to be the case for both students of new (pre 1992) and older (post 1992) universities. Reinforcing the previous findings mentioned above, Wilkins and Huisman (2012) maintain that upward mobility in rankings can be limited for business schools due to large historical differences in starting positions. Once again however, the rankings they discuss place a greater emphasis on institution reputation and research, where the NSS is asking questions purely related to teaching. Wilkins and Huisman (2012) conclude that rather than all business schools trying to replicate top ranked business schools, they tend to 'adopt the behaviour and actions of other schools in the same category of university' (p. 370), such as post 1992 universities.

In his 2007 paper, Peters describes applications increasing significantly in institutions that reach a number one ranking. Significantly, Peters (2007) suggests there has been an improvement in the performance of business schools due to increased external scrutiny bought about by the existence of rankings. Some researchers such as Corneul (2012) have suggested a danger in business schools focusing too much on rankings and reputation at the expense of strategic investment in teaching and learning. Other researchers have questioned the reliability of research based rankings, especially those where a significant percentage of weighting in ranking calculations is given to a subjective reputation survey (O'Loughlin, MacPhail & Msetfi, 2015; Usher & Savino, 2007; Dill & Soo, 2005; Rauhvargers, 2011; Clemens, Powell, McIlwaine, & Okamoto, 1995). While others such as Marsh, Rowe, and Martin (2002) have suggested benchmarking should be done at the university or course level. Using NSS data, Cheng and Marsh (2010) found there to be much greater variation in student response between courses (but within a university) than between universities. The differences between universities were highly stable however.

Previous literature illustrates that historical differences between universities make it hard for newer or less prestigious business schools to move up rankings that are more research and reputation focussed. This paper focuses on teaching satisfaction levels of students graduating from higher education institutions, rather than research outputs. It also focuses on a range of relatively modern business subjects, with a view to establishing whether teaching based rankings are as influenced by factors such as reputation as research based rankings are. The following research question is therefore asked: What are the important characteristics of higher education institutions that are significantly correlated with higher scores and rankings on the NSS in business related subjects?

3. Method

Prior research (Cheng & Marsh, 2010) mentioned in the introduction suggested that between institution differences on the NSS were rather small, albeit relatively stable over time, with the biggest differences found at the course level within higher education institutions. It was therefore decided to examine the influences on a readily identifiable subset of subjects clustered within most business schools, specifically management, marketing, business studies and human resource management, using 2014 NSS data (provided by 321,000 students). The NSS which consists of 22 questions (shown in Table 1) has been conducted at institutions across the UK since 2005, asking final year undergraduate students for feedback on their experience of their course.

Student responses are on a Likert scale of 1–5 (5 – Definitely agree, 4 – Mostly agree, 3 – Neither agree nor disagree, 2 – Mostly disagree, 1 – Definitely disagree). 2014 NSS data was obtained from the Higher Education Statistics Agency, downloaded from http://www.hefce.ac.uk/lt/nss/results/2014/. Data was aggregated for Business Studies, Management, Marketing and Human Resource Management across the 22 questions. For each question, an institution was given a score representing the percentage of students who definitely or mostly agree with each statement.

Only data for students who have not already completed a degree was used, to prevent previous experiences at a higher education institution influencing current satisfaction levels. This resulted in a sample of 263 departments (including 136 post 1992 departments) that met the threshold of having 50% of eligible students complete the NSS, consisting of 94 Business Studies, 76 Management Studies, 66 Marketing and 27 Human Resource Management Departments.

Exploratory factor analysis was used to group the results from the 22 questions on the NSS into factors, resulting in four factors with eigenvalues greater than one being identified. These four factors accounted for 76% of the variance. An index was then created for each of the four factors, by summing the percentage of students who definitely or mostly agreed with each NSS statement in a factor. For example, the *feedback* index contained seven items. If 100% of students in a university definitely or mostly agreed with all seven statements in the *feedback* index, the university would receive a score of seven. An average of 80% agreement across the seven items in the *feedback* index would yield a score of 5.6 and so on. These indices were then used as variables in subsequent regression analysis.

The descriptive statistics for the four factor indices are shown in Table 2.

These four indices were then included in a series of ordinary least squares (OLS) regressions along with additional variables for Business Studies, Management, Marketing and Human Resource Management, from the Guardian's 'University League Table' mentioned earlier. These variables were downloaded for each university from http://www.theguardian.com/education/ng-interactive/2014/jun/02/university-league-tables-2015-the-complete-list.

The additional variables included:

Table 1
NSS question for the year 2014.

Question	Statement
Teaching and learning	
Q1	Staff are good at explaining things
Q2	Staff have made the subject interesting
Q3	Staff are enthusiastic about what they are teaching
Q4	The course is intellectually stimulating
Assessment and feedback	
Q5	The criteria used in marking have been made clear in advance
Q6	Assessment arrangements and marking have been fair
Q7	Feedback on my work has been prompt
Q8	I have received detailed comments on my work
Q9	Feedback on my work has helped me clarify things I did not understand
Academic support	
Q10	I have received sufficient advice and support with my studies
Q11	I have been able to contact staff when I needed to
Q12	Good advice was available when I needed to make study choices
Organisation and management	
Q13	The timetable works efficiently as far as my activities are concerned
Q14	Any changes in the course or teaching have been communicated effectively
Q15	The course is well organised and is running smoothly
Learning resources	
Q16	The library resources and services are good enough for my needs
Q17	I have been able to access general IT resources when I needed to
Q18	I have been able to access specialised equipment, facilities or rooms when I needed to
Personal development	
Q19	The course has helped me present myself with confidence
Q20	My communication skills have improved
Q21	As a result of the course, I feel confident in tackling unfamiliar problems
Q22	Overall I am satisfied with the quality of the course

a) Staff-student ratio (the number of students per member of teaching staff)
b) Spend (the amount of money spent on each student, given as a rating out of 10)
c) Average entry tariff (the typical UCAS scores of students currently studying in that department)
d) The value-added score uses an indexing methodology to compare students' individual degree results with their entry qualifications, to show how effective the teaching is (It is given as a rating out of 10).
e) The career score (the percentage of graduates who find graduate-level jobs, or are studying further, within six months of graduation)
f) The % of staff with an 'A' for Business and Management Studies on the REF. Data on the 2014 REF was obtained from http://results.ref.ac.uk/Results/ByUoa/19.
g) Universities were also classified according to whether they were 'new' (post 1992) universities or 'old' (pre 1992).

Separate OLS regressions were run to establish if any relationships existed between the indices developed from the factor analysis, with further OLS regressions establishing if any correlations existed between the seven variables a to g outlined above. Finally, OLS regressions were run to establish any correlations between the indices developed and the additional variables, using an index as the dependant variable, with the seven additional variables as the independent variables.

Further OLS regressions were run to establish correlations between the WSSQ metric (a relative performance variable) mentioned in the introduction and the seven variables a to g outlined above, with separate OLS regressions establishing correlations between the factor indices and the WSSQ score. Lastly, an OLS regression was run using WSSQ score as the dependant variable and each of the 21 individual NSS questions as independent variables, to establish the relative importance of each question to the overall WSSQ ranking.

For all of the analysis, the data and variables related to business school subjects (management, marketing, business studies and human resource management) only rather than the institution as a whole. The analysis and results therefore examine the influences on business school NSS rankings rather than institutional NSS rankings. For all of the OLS regressions carried out the data met the assumptions of linear regression, with no evidence of excessive multicollinearity.

Table 2
Descriptive statistics for factor indices.

N = 263	Mean	Standard deviation
Feedback index	5.33 out of 7 (76%)	0.33
Organisation index	3.27 out of 4 (82%)	0.18
Learning resources index	2.55 out of 3 (85%)	0.11
Teaching quality & learning outcomes index	6.55 out of 7 (94%)	0.29

4. Results

When exploratory factor analysis was applied to the 2014 National Student Survey results for Business Studies, Management, Marketing and Human Resource Management combined, four factors were identified with eigenvalues greater than one, accounting for 76% of the variance. An oblique rotation was applied given the correlation between questions in the National Student Survey. Table 3 below shows the factor loadings for the four factor solution.

Based on the questions contained in each factor, the four factors were named *feedback*, *learning resources*, *organisation* and *teaching quality & learning outcomes*, with the *feedback* factor explaining the majority of the variance, explaining 53.5%.

All questions had the majority of their correlation coefficients fall between = ±0.30 to ±0.90, with the exception of 16, 17 and 18 (the three questions making up factor two – *learning resources*). However, deleting variables 16, 17 and 18 only increased Cronbach's alpha very marginally from 0.951 to 0.954, so were not removed. Bartlett's Test of Sphericity is significant at the level of $p < 0.001$ (Approx. Chi-Square 5772.150). There was a Kaiser-Meyer-Olkin Measure of Sampling Adequacy of $0.931 > 0.50$, with the anti-correlation matrix revealing cut-offs above 0.50. The same factor analysis was run without the 'overall' question 22 – Overall I am satisfied with the quality of the course. Excluding this statement did not change any of the variables included in each factor (other than question 22 not being in factor four), and resulted in only very minor changes to the factor loadings. As a result, question 22 was included in the factor analysis.

These four factors are in contrast to the six sections on the NSS survey. In pilots carried out as part of the development process, principal component analysis suggested seven components, captured by 19 questions. There has however been little subsequent factor analysis carried out, with Cheng and Marsh (2010) suggesting that 'previous consideration of reliability of NSS responses has been limited primarily to coefficient alpha estimates of reliability based on agreement between multiple items designed to measure the same factor' (p. 699). When compared to the question sections on the NSS survey, the *Feedback* factor equates to the assessment and feedback sections, the *learning resources* factor as the same questions as the learning resources section, the *organisation* factor has the questions from the organisation and management section plus one form the academic support section, while the *teaching quality & learning outcomes* factor equates roughly to the teaching and learning and the personal development sections.

OLS regressions were run on the four factor indices, to establish if there were any correlations between them. As shown in Table 4, the *teaching quality & learning outcomes* index is positively correlated with all of the three other indices. None of the *feedback*, *organisation* and *learning resources* indices were correlated with each other. Without confusing causality with correlation, this may be suggestive of the NSS questions contained in the *teaching quality & learning outcomes* index playing an important role in terms of relationships with NSS questions.

A series of multiple OLS regressions were then using data for business school characteristics within each institution, to establish any correlations with the four factor indices, with the results shown in Table 5.

Being a new university is correlated with a lower *feedback* index score and a lower *organisation* index score. Having a lower entry tariff is correlated with a higher *feedback* index score, while a higher *learning resources* index score is correlated with a higher entry tariff. However, both of these correlations while significant, had very small effect sizes, as reflected in their small coefficients. The only correlation with the career after 6 months variable was a negative one with the *learning resources* index, while the only correlation with the student staff ratio variable was a positive one with the *organisation* index. Neither the spend per student nor the percentage of staff in the 'A' ref band variables showed any significant correlations with any of the

Table 3
Factor loadings for four factor solution with oblique rotation.

	Loaded items	Loading
Factor one	I have received detailed comments on my work	0.915
Feedback	Feedback on my work has helped me clarify things I did not understand	0.876
	The criteria used in marking have been made clear in advance	0.833
	Feedback on my work has been prompt	0.831
	Assessment arrangements and marking have been fair	0.712
	I have received sufficient advice and support with my studies	0.572
	Good advice was available when I needed to make study choices	0.517
Factor two	I have been able to access general IT resources when I needed to	0.911
Learning	The library resources and services are good enough for my needs	0.880
Resources	I have been able to access specialised equipment, facilities or rooms when I needed to	0.873
Factor three	Any changes in the course or teaching have been communicated effectively	−0.881
Organisation	The timetable works efficiently as far as my activities are concerned	−0.871
	The course is well organised and is running smoothly	−0.840
	I have been able to contact staff when I needed to	−0.546
Factor four	My communication skills have improved	−0.996
Teaching quality & learning outcomes	The course has helped me present myself with confidence	−0.848
	As a result of the course, I feel confident in tackling unfamiliar problems	−0.839
	Staff have made the subject interesting	−0.612
	The course is intellectually stimulating	−0.516
	Overall I am satisfied with the quality of the course	−0.474
	Staff are enthusiastic about what they are teaching	−0.400

Table 4
OLS regression coefficients and t-statistics showing correlations between factor indices.

	Teaching quality & learning outcomes index	Learning resources index	Organisation index	Feedback index
Feedback index $R^2 = 0.587$	0.820*** (12.210)	−0.095 (−0.776)	0.163 (1.577)	
Organisation index $R^2 = 0.525$	0.394*** (8.911)	0.137 (1.870)		0.058 (1.577)
Learning resources index $R^2 = 0.121$	0.108** (2.569)		0.097 (1.870)	−0.024 (−0.776)
Teaching quality & learning outcomes index $R^2 = 0.700$		0.231** (2.569)	0.596*** (8.911)	0.446*** (12.210)

** and *** denote statistical significance at the 5 and 1% levels respectively.

Table 5
OLS regression coefficients and t-statistics showing correlations between factor indices and characteristic of business schools.

	New Uni	Student staff ratio	Spend per student	Average entry tariff	Value added score	Career after six months	'A' band REF percentage
Feedback index $R^2 = 0.086$	−0.123** (−2.143)	0.000 (0.103)	−0.012 (−0.830)	−0.001*** (−2.622)	0.021** (2.012)	0.000 (−0.095)	−0.001 (−0.279)
Learning resources index $R^2 = 0.131$	0.015 (0.768)	0.000 (−0.096)	0.010 (1.958)	0.000** (2.195)	0.009** (2.518)	−0.001** (−2.120)	0.000 (0.041)
Organisation index $R^2 = 0.168$	−0.082*** (−2.684)	0.005** (2.084)	0.008 (0.987)	0.000 (−0.966)	0.015*** (2.702)	0.002 (1.727)	0.002 (1.129)
Teaching quality & learning outcomes index $R^2 = 0.056$	−0.077 (−1.550)	−0.001 (−0.289)	0.002 (0.166)	−0.001 (−1.207)	0.032*** (3.461)	−0.002 (−1.011)	0.001 (0.498)

** and *** denote statistical significance at the 5 and 1% levels respectively.

indices. The one variable that had a consistent significant correlation was the value added variable, which showed a positive correlation with all indices.

This was also the case when the overall WSSQ variable, which gives a relative ranking, was used as the dependant variable. As Table 6 shows the value added score was the only variable to show a correlation, in this case a positive one, with the WSSQ variable.

Remembering that a WSSQ score of 100 indicates an average score, the human resource departments in the survey averaged a WSSQ score of 100.85 between them. However, business studies, marketing and management all averaged a score slightly less than 100, with WSSQ scores of 96, 98 and 98 respectively. Aggregated, the four subjects returned an average WSSQ score of 97, with a considerable range of 56–128. This suggests that on average, relative to all subjects taught in universities and measured in the NSS, business subjects are slightly below the mean for all subjects in terms of student satisfaction with teaching.

Continuing to use WSSQ score as the dependant variable, Table 7 shows the results of a multiple OLS regression using the 21 individual questions (excluding the overall satisfaction with the course question) as independent variables to establish correlations between individual questions and business school WSSQ score.

Of the ten questions that show a correlation with the overall WSSQ score, the largest effect sizes are found in the three questions "staff have made the subject interesting", "the course has helped me present myself with confidence" and "the course is well organised and is running smoothly". The first and third of these questions are in the *teaching quality & learning outcomes* index, with the second variable in the *Organisation* Index. The three questions with the next biggest effect sizes are all in the *feedback* index: good advice was available when I needed to make study choices, I have received detailed comments on my work and I have received sufficient advice and support with my studies. The remaining variables with smaller effect sizes consist of two from the *feedback* index, and one each from the *organisation* and *learning resources* indices.

Given the prevalence of questions with significantly larger effect sizes in the *teaching quality & learning outcomes* and *feedback* indices, a multiple OLS regression was run regressing the WSSQ score against the four factor indices. As Table 8 shows, the *feedback*, *organisation* and *teaching quality & learning outcomes* indices were all significantly correlated to

Table 6
OLS regression coefficients and t-statistics showing correlations between a business school WSSQ score and characteristic of business schools.

	New Uni	Student staff ratio	Spend per student	Average entry tariff	Value added score	Career after six months	'A' band REF percentage
All business subjects $R^2 = 0.049$	−4.175 (−1.924)	0.179 (1.014)	0.225 (0.402)	−0.032 (−1.527)	1.138*** (2.813)	0.004 (0.056)	0.004 (0.041)

*** denotes statistical significance at the 1% level.

Table 7
OLS regression coefficients and t-statistics showing correlations between WSSQ score and individual NSS questions.

	WSSQ
Staff have made the subject interesting	40.273*** (3.161)
Assessment arrangements and marking have been fair	19.296*** (2.698)
Feedback on my work has been prompt	11.123** (1.997)
I have received detailed comments on my work	27.245*** (3.680)
I have received sufficient advice and support with my studies	23.373** (2.360)
Good advice was available when I needed to make study choices	27.247*** (2.765)
Any chances in the course or teaching have been communicated effectively	15.440** (1.975)
The course is well organised and is running smoothly	39.279*** (5.306)
The library resources and services are good enough for my needs	19.735*** (2.980)
The course has helped me present myself with confidence	32.843** (2.261)

** and *** denote statistical significance at the 5 and 1% levels respectively.

WSSQ score. The *learning resources* index however, was not correlated with the WSSQ variable. By removing the *learning resources* index, the R^2 only drops by 0.001 (with adjusted R^2 remaining constant on 0.919).

5. Discussion

While the NSS is separated into six sections, factor analysis suggests there are four main factors accounting for the majority of the variance between levels of student satisfaction in business school subjects. Once indices are constructed based on those four factors, not only does the *feedback* index have the least level of student satisfaction, it is also responsible for the largest amount of variance between business school subjects in universities in terms of the percentage of students who are satisfied. While these results suggest providing students with satisfactory feedback is often problematic, it is also an area where business schools can make the most gains in terms of ranking improvements. With the *feedback* index having the largest amount of variance between business school subjects, some areas of business schools clearly provide more satisfactory feedback than others. It may be the case that student satisfaction with feedback may be improved through greater sharing of feedback practices between subjects within business schools. While conclusions cannot be drawn about causality, the fact that the questions in the *teaching quality & learning outcomes* index are correlated with all other indices including the *feedback* index suggests they could play a potentially influential role.

As previously discussed, a common theme in the literature is that rankings tend to favour older universities, with more resources. This may well be the case in rankings which have a component based on reputation or research, however for business subjects in the NSS this is not the case. The quality and level of resourcing is not viewed as lacking in any university, as evidence by a reduction of only 0.01 in the R^2 when the *learning resources* index is removed as in Table 8, and the small increase in Cronbach's alpha when they are removed. The *learning resources* index explains very little of the variation in student satisfaction levels between higher education institutions. It is important to note that this is not to say learning resources are not important to student teaching satisfaction. Rather, learning resources do not significantly explain any of the variation between student satisfaction levels at different business schools. One intuitive explanation for this is that the standard of learning resources across institutions is relatively stable, given that all universities have a library, online platforms such as Moodle. Another possible explanation lies in the phrasing of the statements in the NSS relating to learning resources. Rather than asking students to rate the quality of IT, library and general facilities, students are asked how satisfied are they that these 'are good enough for my needs' or were able to be accessed 'when I needed to'. It is possible that in all universities, these basic needs are being met for the majority of students, even if some universities have better facilities than others. This lack of variation in student satisfaction of learning resources is highlighted by a lack of statistically significant correlation between the *learning resources* index and WSSQ score, a measure of relative levels of student satisfaction between business schools. In fact, removing the *learning resources* index from the statistical analysis did not alter the adjusted R^2 on the model, showing the vast majority of the WSSQ score was captured by the three indices excluding the *learning resources* index. This raises an interesting question for universities wishing to raise their NSS rankings. Once the basic level of learning resource needs are met, are any additional funds best invested in other areas, such as extra tutorial support to improve feedback, or should investment continue in cutting edge facilities? The findings of this paper tend to suggest the former.

When examining the correlations between higher education institution characteristics and each of the indices, the percentage of staff who are an A on the REF is not significantly correlated with NSS scores, nor is spend per student. The lack of a correlation between the proportion of highly ranked researchers in business schools and student satisfaction levels suggests that the number of high level researchers may not concern students and have limited bearing on the enjoyment and fulfilment experienced by students, who believe they have adequate resources and competent, knowledgeable teachers. A contributing factor here may be that the students surveyed are in the final year of an undergraduate degree. As students move into postgraduate study, the research profile of staff may be of greater importance to students.

Being a 'new' university is correlated with significantly lower ratings on *feedback* and *organisation* questions. This is an area of concern as it suggests students were less happy in new universities with an aspect of their study programme that specifically relates to the quality of teaching practice.

Table 8
OLS regression coefficients and t-statistics showing correlations between WSSQ score and individual and factor indices.

Index	WSSQ score with learning resources index (Adjusted $R^2 = 0.919$)	WSSQ score without learning resources index (Adjusted $R^2 = 0.919$)
Feedback	14.121*** (13.928)	14.061*** (13.871)
Organisation	17.552*** (10.375)	17.792*** (10.578)
Learning resources	2.473 (1.230)	
Teaching quality & learning outcomes	17.932*** (13.004)	18.199*** (13.392)

*** denotes statistical significance at the 1% level.

However, when using the WSSQ score (a measure of relative score rather than an absolute score), while being a new university is correlated with a lower score, it is not a statistically significant difference. Therefore, although on average business students at post-1992 universities are expressing a greater level of dissatisfaction with feedback practices than business students at pre-1992 universities, when comparing relative levels of satisfaction across all NSS questions, there is no significant difference.

Arguably the most important figure, with regard to confidently promoting the likelihood of a satisfactory experience, is the variable consistently correlated with a higher absolute and relative score; the value added variable. A higher value added score is significantly correlated with higher satisfaction scores on all four indices, with the greatest effect size on the *feedback* and *teaching quality & learning outcomes* indices. The difference between the lowest and highest value added score would explain a difference of 0.2 and 0.32 on the five point likert scales for the *feedback* and *teaching quality & learning outcomes* indices respectively. When using the WSSQ score (a measure of relative score rather than an absolute score) the value added variable is the only business school characteristic which is significantly correlated with WSSQ score. The difference between the lowest and the highest value added score is an effect size of 11.38 on the WSSQ score (where an 'average' score is 100). This is a heartening result, as it suggests the biggest influence on the variance between different universities in terms of NSS scores and relative positioning is how much value that higher education institution adds. On average, the NSS data showed that students who partook in business studies courses were satisfied they had gained skills they believed to be correct, effective and could be used competently in the business world. The fact that student satisfaction levels are high across those with different characteristics suggests that universities who believe they may suffer for not having a long and prolific history of being a university should not be viewed negatively by those choosing an education provider. According to the findings of this study, if added value and course quality are of major concern, those attending a new university report no less satisfactory an education then those who attend more traditional universities.

When analysing correlations between individual questions on the NSS, and WSSQ scores (an alternative normalised score discussed earlier) for business schools, the NSS questions with the two largest effect sizes are found in the *teaching quality & learning outcomes* index and the *organisation* index respectively with a one point change on the five point likert scale for the statement 'staff have made the subject interesting' having a large effect size of over 40 on the WSSQ score. A one point change on the likert scale for the statement 'the course is well organised and is running smoothly' has an effect size of almost 40 on the WSSQ score. A one point change on the likert scale for the *teaching quality & learning outcomes* index statement 'the course has helped me present myself with confidence' has an effect size of over 32 on the WSSQ score. There is then a drop in effect size into the 23 to 27 point change on the WSSQ score range for three questions found in the *feedback* index, which revolve around not only feedback in class, but also feedback and advice on study choices. Two further questions found in the *feedback* index with smaller effect sizes are also significant' along with the sole significant question in the *learning resources* index.

It is encouraging that the questions with the biggest effect size on a higher education institution's relative ranking are to do with tuition rather than facilities, as the NSS is primarily geared towards measuring quality of teaching. Having prompt, detailed feedback, along with good appropriate course advice is beneficial for an institution's relative NSS ranking, as are well organised, smooth running, interesting courses that help students present themselves with confidence. For business schools in universities wishing to scale the NSS rankings, it is comforting to know that improving teaching can often be achieved without making costly improvements pertaining to resources or infrastructure, which in some cases may be too systemically entrenched, or costly, to address in the short to medium term. Improving teaching practices can include strategies such as making staff aware of past students' concerns, providing professional development and closer monitoring.

6. Conclusions and further research

In the context of students studying business subjects, students are generally satisfied, with the majority of between institution variation being due to differences in satisfaction levels regarding feedback. In answering the research question posed in the introduction, the value added by a higher education institution is the variable that is significantly correlated with higher scores and rankings on the NSS in business related subjects. This is a result that can lend some confidence to the notion that the NSS is actually measuring the quality of teaching practice, when measuring levels of student satisfaction with respect to teaching.

Further investigation into the rigour of the NSS could include comparison of actual teaching practices in a number of universities compared to the level of student satisfaction these teaching practices receive. The rumoured teaching excellence framework mentioned in the introduction may well attempt to address this.

In terms of international implications, a pilot of the questions contained in the NSS in other countries, with a similar analysis completed on the results would be an interesting study. This comparison would help establish how idiosyncratic a tertiary sector is to a particular country, and how transferrable measures of teaching quality and student satisfaction are across countries.

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