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Keep up the good work in research universities: An importance-performance analysis

Siti Falindah Padlee

Vaughan Reimers (Corresponding author)

Safiek Mokhlis

Marhana Mohamed Anuar

Azlinzuraini Ahmad

Email address: vaughan.reimers@federation.edu.au

[Federation University Australia](#)

Abstract

The objective of this study was to measure academics' perceptions towards three key dimensions of a higher education institution (HEI), two of which - research and internationalisation – have received relatively scant attention in the context of service quality. Using five Malaysian universities as its context, and importance–performance analysis (IPA) as its method of analysis, the study found that the five universities performed well in relation to 14 of the 26 attributes. However, for each of the three dimensions there was a common theme in regards to the service attributes that fell short of expectations. In the case of teaching quality, this theme related to learning, for research quality it was research collaboration, and for internationalisation, it was international recognition. This study makes two key contributions to new knowledge. Firstly, it measures academic perceptions towards service quality as it relates to research and internationalisation, and secondly, it measures such perceptions using IPA.

Keywords: Service Quality, Importance–Performance Analysis, Academics, Research Universities

Introduction

Higher Education serves as a vital industry, not only providing value to individuals in the form of job securement and higher income earnings, but also providing broader public benefits via its impact on socio-economic development (Senthilkumar & Arulraj, 2011). Based on the notion that Higher Educations Institutions (HEIs) are a part of the service industry, the provision of exceptional service quality is regarded as being essential in attracting and retaining a key university stakeholder: students (Angell et al., 2008).

However, this raises an issue over service quality as it applies to other stakeholders. In their review of the HEI literature, Sultan and Wong (2010) recognised identifying the critical dimensions of HEI service quality as a key research gap. A fundamental service of HEIs is the creation and dispersal of knowledge via teaching *and* research (Alcaide-Pulido et al., 2017). Of these however, only teaching has received significant research attention in the field of HEI service quality. HEIs must deal with a wide variety of stakeholders, including students, parents, employers, industry and government. In this context, students are often considered to be the primary consumer of HEI services, with the remaining stakeholders serving as secondary customers (Senthilkumar & Arulraj, 2011).

Such a view, however, is not universally accepted. On the one hand, recognising students' as a HEI's most important customer may encourage the adoption of strategies that lead to the attraction and retention of students. But on the other hand, it may also lead to the neglect of service quality as it relates to other stakeholders (De Jager & Gbadamosi, 2013). In support of

this, one of the defining characteristics of universities is the vital role they play in undertaking research (Geiger, 2004). Yet this has been largely overlooked in the service quality literature. Similarly, the increasingly internationalized environment of higher education has resulted in a globalized education landscape (Tan et al., 2016). In this context, internationalisation has also been largely ignored as a dimension of service quality.

The strong emphasis on teaching, to the apparent exclusion of research and internationalisation, is perplexing given the strong links these three service dimensions share. Research, for example, can serve as an antecedent to teaching quality. Academics who do research often understand the field better than those who do not, and so are better able to explain the learning material to students (Hyman & Jacobs, 2010). Research active academics are also likely to be more in touch with breaking developments in their field (Homden, 2017), and to include this material in their classes (Hyman & Jacobs, 2010). In doing so, students can gain a competitive edge in the employment market by receiving direct access to knowledge that might otherwise have taken several years to filter through the academic journal and textbook process. Moreover, the textbooks and other learning resources provided to students are typically the end result of academic research (Homden, 2017).

Similarly, internationalisation shares close ties with both teaching and research. It is conducive to teaching because by integrating an international dimension into the curriculum it can improve program content, while also helping produce graduates who are globally employable (Ma & Yue, 2015). Internationalisation also shares close ties with research because international research collaboration can lead to greater research quality (Gao, 2015). In fact, due to its potential to have a global impact, Marginson and Van der Wende (2007) went so far as to describe research as the most internationalised of all higher education services.

Due to the multiple stakeholders involved in higher education, it is important that the measurement of quality perceptions extend beyond any single stakeholder group. One of the defining qualities of a service is inseparability and the notion of co-production involving both the service provider and the service consumer (Brochado, 2009). This highlights the importance of providing not only a demand-side perspective (e.g. that of the service consumer), but also that of the supply-side (e.g. service provider) as well. Unfortunately, whilst the former has received much research attention, the latter has not (Iacovidou et al., 2009). This serves as a key oversight because in HEIs, academics are a primary source of service delivery (Latif et al., 2017). Moreover, academics are more likely to support service quality initiatives that reflect the attributes they regard as important (Watty, 2006). Teacher practice, for example, is more likely to improve when teachers are actively involved in quality assessment (Mincu, 2015). This notion not only applies to teaching, with academics also having direct responsibility for research quality (Erus et al., 2015). Measuring academic perceptions towards research is particularly important because research serves as a key determinant of academic job satisfaction (Albert et al., 2018).

This study therefore seeks to address the gaps in the research literature by focusing on research and internationalisation as key dimensions of HEI service quality. In order to provide a relative point of comparison, it also includes one of the most commonly employed focal points for service quality: teaching. Moreover, in order to counter balance the strong emphasis placed by previous research on just one of the various stakeholder groups – students – this study focuses on the service quality perceptions of academic staff. The rest of this paper is structured as follows. First, a review of the literature provides insight into the nature of the three

aforementioned service dimensions. This is followed by a discussion of the methodology, the presentation of results and suggestions for further research.

REVIEW OF THE LITERATURE

Service quality

The service attributes of a university serve as an important indicator and reflection of a HEI's performance. The measurement of HEI performance, in turn, is based largely on the perceptions of stakeholders (Eagle & Brennan, 2007). Teaching quality, for example, is vital for HEIs because it serves as a key determinant of student satisfaction, and in turn, loyalty, re-enrolment and positive word-of-mouth (Chong & Ahmed, 2012; Braun & Zolfagharian, 2016). The results of measuring service quality perceptions can be used by HEIs to help them continuously improve their output (Voss et al., 2007), and in doing so, ultimately improve their performance and reputation (Neale, 2009).

A university provides a wide array of services and these can be grouped into two key categories: *main* and *ancillary*. The *main* service provided by a university is teaching, while one of the key *ancillary* services it provides is research (Neale, 2009). Incorporated within each of these two categories is internationalisation, which contains both teaching and research elements. Previous research on service quality has been criticized for its over-emphasis on teaching to the exclusion of other services (Abdullah, 2006). In order to address this research gap, this study not only focuses on the *main* HEI service (e.g. teaching), but also research and internationalisation. Each of these is discussed in the sections that follow, beginning with teaching.

Teaching

Teaching quality accounts for the vast majority of research into HEI service quality, and to some extent, for good reason. It is an important service dimension because it serves as a vital source of competitive advantage in a market where universities must compete for increasingly discerning students (Calvo-Porrall et al., 2013). This factor, in combination with the growing competition amongst HEIs to increase enrolments, has led to the adoption of a student-centric approach to service delivery (Latif et al., 2017). Empirical evidence supports this approach, with numerous studies highlighting the impact of teaching quality on student satisfaction (De Jager & Gbadamosi, 2013; Khoo et al., 2017; Santini et al., 2017), and in turn, student loyalty and positive word-of-mouth (Khoo et al., 2017; Santini et al., 2017).

Research

Research services include research collaboration and the production of intellectual property and patented commercial products (Gulbrandsen & Smeby, 2005). Such services have become increasingly important in the higher education sector (Mamiseishvili & Rosser, 2010), due in no small part to their influence on a university's reputation (Soutar & Murphy, 2009). Yet, in spite of this, research has been largely overlooked as a dimension of HEI service quality.

This is somewhat bemusing for multiple reasons. Firstly, the fact that research is a process of discovery that may not result in tangibles (Atkinson & Gilleland, 2006) means that it meets the service criterion of intangibility. Moreover, the variable nature of research and, in many cases, its limited lifespan, means that it shares similarities with heterogeneity and perishability respectively; two other key service characteristics (Brochado, 2009).

Secondly, research has become such a distinct role of universities, that the two are now virtually synonymous (Geiger, 2004), to the point where in the context of the modern knowledge economy, universities have become leaders in research and innovation (Best College Reviews, 2018; Universities UK, 2015). In fact, technological developments such as fibre optics, computers and the internet, and medical advances relating to Hepatitis B, AIDS and stem cell research were all the work of university researchers (Best College Reviews, 2018; Universities UK, 2015).

Recognising the important research role universities perform, many governments have made HEIs their centrepiece in helping transform the regions they serve into competitive knowledge-based societies (Calvo-Porrall et al., 2013). This, in turn, has served to highlight the importance of research quality because HEIs have become the agents of billions of dollars in research grants (Atkinson & Gilleland, 2006). It also emphasises the need for excellence in a system that is reliant upon performance-based funding schemes, and subsequently, the need to provide value in exchange for the billions of dollars of research income that the sector attracts (Lee & Worthington, 2016).

Research quality is also vitally important because of its impact on university rankings. The three main international rankings are the World University Rankings, the QS World University Rankings and the Academic Ranking of World Universities, each of which uses research as its main ranking criterion (Bekhradnia, 2016). These rankings, in turn, can then influence students' choice of university (Chavan et al., 2014).

Internationalisation

Internationalisation refers to the process of integrating an international, intercultural, and global dimension into the purpose, functions and delivery of higher education (Knight, 2004). It is a multi-dimensional construct comprising such sub-dimensions as student/faculty exchange between countries, the integration of an international perspective into teaching and research, international cooperation and communication between HEIs, and the creation/fostering of an international reputation (Ma & Yue, 2015; Teichler, 2017).

The importance of internationalisation stems from globalisation and the resulting need to provide an internationalized higher education that prepares students for a global environment (Delgado-Marquez et al., 2013). Many HEIs have internationalised their operations in order to enhance their curriculum with international content (Altbach & Knight, 2007) and in pursuit of the financial revenue generated by recruiting overseas students (Gao, 2015). Empirical research validates the importance of such initiatives, with studies having found that internationalisation influences a university's reputation (Delgado-Marquez et al., 2013; Gao, 2015). Research has also found that internationalisation can influence student satisfaction (De Jager & Gbadamosi, 2013).

Importance–Performance Analysis

Service quality is often defined in terms of meeting or exceeding customer expectations. Such a definition highlights the importance of the disconfirmation paradigm, which in the specific context of this study, refers to the difference between the importance service providers assign to service attributes versus their perceptions of service quality delivery (Angell et al., 2008). In order to undertake this comparison, this study employed importance–performance analysis (IPA). Originally developed by Martilla and James (1977), IPA has since been used to assess service quality in higher education (i.e. Angell et al., 2008; Iacovidou et al., 2009). Of particular appeal to this study was its relative novelty when applied to internationalisation, given that the

vast majority of previous studies in this field have been limited to the case study method (Gao, 2015; Kehm & Teichler, 2007).

IPA involves a four-step process:

1. Identifying the attribute to measure.
2. Separating the importance measure and the performance measure.
3. Positioning vertical axes on a grid.
4. Analyzing the importance–performance grid.

The operation of this technique is based on the results of the mean gap between importance and performance. Each attribute is placed into one of four quadrants, I, II, III or IV (refer Figure 1). The first quadrant, *Concentrate here*, indicates low performance on attributes that are very important, highlighting that immediate improvement is needed. The second quadrant, *Keep up the good work*, represents high performance on attributes of high importance thereby indicating that the current quality should be maintained. The third quadrant, *Low priority*, represents low importance and low performance, suggesting that these attributes require only a limited amount of attention. Lastly, *Possible overkill* represents high performance on attributes of low importance, thereby indicating an opportunity to redirect resources to areas of greater priority.

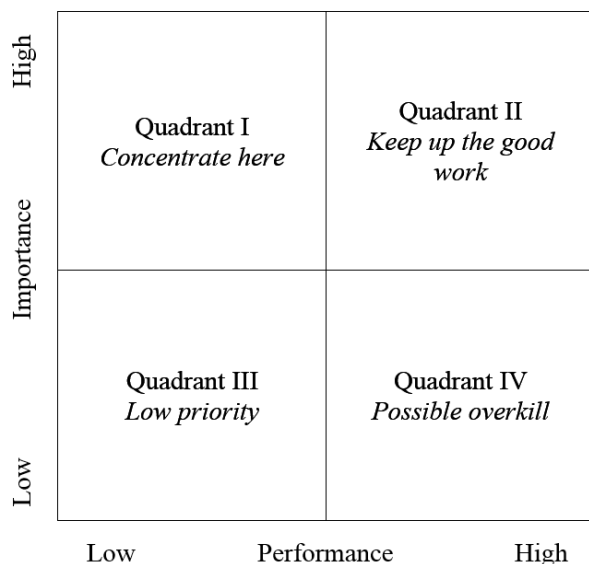


Figure 1: The Importance–Performance Analysis Matrix.

Research Instrument

A questionnaire served as the research instrument for this study. It consisted of four sections: Section 1: Academic perceptions of the importance of university attributes, Section 2: Perceived quality of these attributes, Section 3: Overall performance, and Section 4: Demographics of the respondents. The three service dimensions described in the preceding section – teaching, research and internationalisation – were measured using 26 items adopted and modified from previous studies (e.g. Donald & Denison, 2001; Van Damme, 2001; Hodgkinson & Brown, 2003; Dill & Soo, 2005). The scale items in Sections 1 to 3 were rated on a seven-point rating scale. In Section 1, attribute importance was measured using 1 = extremely unimportant, 7 = extremely important, in Section 2, perceived attribute quality was measured using 1 = strongly disagree, 7 = strongly agree, and in Section 3, overall performance

was measured using 1 = very dissatisfied, 7 = very satisfied. Section 4 was designed to obtain the characteristics of the sample, namely gender, age, years of service, position at the university, and the academic discipline in which they were employed.

Sampling

Malaysia served as the geographic context for this study. The globalization of HEIs has motivated Malaysian universities to improve their service quality, particularly in the area of research. Based on the QS World University Ranking for 2016-2017, only five universities in Malaysia were ranked in the top 400 (Top Universities, 2017). Each of these five universities were classified by the Ministry of Higher Education (2015) as Malaysian Research Universities (MRUs). These five MRUs were specifically selected for this study because their research capabilities were compatible with one of the key goals of this study: measuring academic perceptions towards research service quality.

Simple random sampling was used to identify potential participants for this study. The number of academic staff in these five universities totals 9512 persons, from which a total of 600 academics were randomly selected by enumerators across the participating universities. This process resulted in 341 questionnaires being completed and returned: a response rate of 56.8%.

Data Analysis

Descriptive statistics were employed to measure variable means. The mean difference between the perceived importance and the performance level for each attribute item was compared using a paired sample t-test. For the IPA grid analysis, the performance of all attribute items was plotted on the x-axis while importance was plotted on the y-axis. In order to categorize the results into two groups (e.g. low and high scores) the coordinates for each item (x, y) were marked with a dot. The mean value of importance was set as the reference value for the y-axis while that of performance was set as the reference value for the x-axis.

Demographic Characteristics of the Respondents

Of the 341 respondents, 47.8% were male and 51.6% were female (Table 1). The largest age group were those aged 35-39 years old, followed by the 30-34 age group. Just over half of all participants (e.g. 54.6%) reported 6-15 years of service at their current university. About half of the participants were senior lecturers.

Table 1: Sample Characteristics

	Category	Frequency	Percent
Gender	Male	163	47.8
	Female	176	51.6
	Missing	2	.6
Age	29 years old and below	26	7.6
	30-34 years old	68	19.9
	35-39 years old	75	22.0
	40-44 years old	67	19.6
	45-49 years old	47	13.8
	50-54 years old	42	12.3
	55-59 years old	11	3.2
	60 years old and above	4	1.2
	Missing	1	.3

Years of service in current university	< 6 years	92	27.0
	6–10 years	110	32.3
	11–15 years	76	22.3
	16–20 years	29	8.5
	>20 years	34	10.0
Title of position	Emeritus Professor	3	.9
	Professor	22	6.5
	Associate Professor	48	14.1
	Senior Lecturer	171	50.1
	Lecturer	96	28.2
	Others	1	.3
Academic discipline	Language	22	6.5
	Economics/Accounting/Business	27	7.9
	Engineering	50	14.7
	Computers/ICT	20	5.9
	Education	22	6.5
	Islamic Studies	21	6.2
	Management	34	10.0
	Dentition	1	.3
	Science	47	13.8
	Applied Science	16	4.7
	Sciences of Health/Science Associates	3	.9
	Pure Science	10	2.9
	Arts	31	9.1
	Architecture	8	2.3
	Technology	7	2.1
	Law	3	.9
	Others	17	5.0
Missing	2	.6	

Teaching and Learning Attributes

The results of the IPA of the five teaching and learning attributes are presented in Table 2. For three of the five attributes, the performance scores were significantly lower than the importance scores. More specifically, performance fell short of importance for A1: ‘The methods of learning used in class’ ($p < .001$), A3: ‘Up-to-date teaching materials’ ($p < .001$), and A4: ‘A pleasant teaching and learning environment’ ($p < .001$). For these three attributes, the results imply there is a significant gap between perceived importance and perceived performance with regard to teaching and learning quality at MRUs.

Table 2: Importance–Performance Ratings for Teaching and Learning Attributes

Attribute	Importance		Performance		Gap (I-P)	t-test
	Mean	SD	Mean	SD		
A1 The methods of learning used in class (seminar, group discussion)	6.23	.853	6.03	.895	.202	3.998***
A2 The technology used in the teaching and learning process	5.94	.988	5.86	.927	.082	1.495
A3 Up-to-date teaching materials (books, magazines, journals)	6.16	.959	5.96	1.071	.208	3.655***
A4 A pleasant teaching and learning environment	6.24	.817	5.98	.970	.261	4.456***
A5 Size of the class	5.83	1.064	5.74	1.086	.085	1.255
Average	6.13	.532	5.99	.634		

*** $p < .001$

An IPA graph (Figure 2) was subsequently developed to visually depict academics' ratings of the importance and performance of the five teaching and learning attributes. The intersection in the IPA was made by using the mean level of importance of 6.13 and the mean level of performance of 5.99.

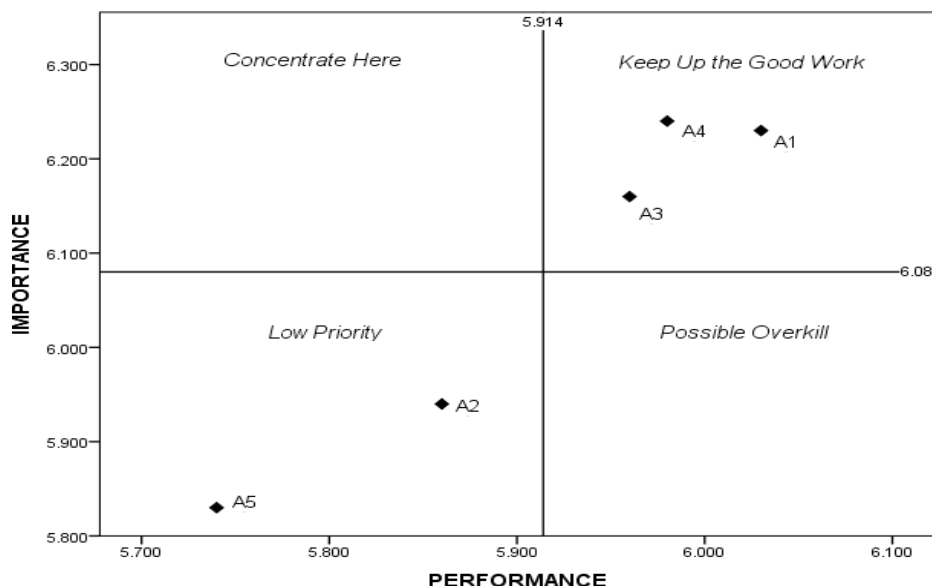


Figure 2: Importance–Performance Grid for Teaching and Learning Attributes.

The following findings were derived from the IPA results shown in Figure 2:

Concentrate Here: No scale items fell into this quadrant.

Keep Up the Good Work: Falling into this quadrant are scale items A1: ‘The methods of learning used in the class,’ A3: ‘Up-to-date teaching materials,’ and A4: ‘A pleasant teaching and learning environment’, which suggests that academics attach a high degree of both importance and satisfaction to these attributes. Thus, these attributes should be constantly maintained so that universities can enhance their competitive advantage.

Low Priority: Falling into this quadrant were scale items A2: ‘The technology used in the teaching and learning process’ and A5: ‘Size of the class,’ which suggests that academics do not attach a high degree of either importance or satisfaction to these attributes. Therefore, limited attention needs to be given to these attributes.

Possible Overkill: No questionnaire items fell into this quadrant.

Research Attributes

Table 3 shows the results of the IPA of the 13 research attributes. Analysis revealed that the performance scores were significantly lower than the importance scores in respect of B1: ‘The amount of funds for research purposes’ ($p < .001$), B2: ‘Research collaboration with local universities’ ($p < .001$), B3: ‘Research collaboration with renowned research universities’ ($p < .001$), B4: ‘Research collaboration with related industry’ ($p < .001$), B5: ‘Research collaboration with foreign institutions’ ($p < .001$), and B6: ‘Publication in top journals and proceedings’ ($p < .01$). In the one and only exception across the entire study, analysis for B10: ‘The number of conferences attended’ ($p < .001$) revealed that perceived performance significantly exceeded perceived importance. In summary, seven of the thirteen analyses revealed a significant gap between the perceived importance level and performance level in relation to perceived research quality at MRUs.

Table 3: Importance–Performance Ratings for Research Attributes.

Attribute	Importance		Performance		Gap (I-P)	t-test	
	Mean	SD	Mean	SD			
B1	The amount of funds for research purposes	6.15	.952	5.83	1.039	.326	5.606***
B2	Research collaboration with local universities	5.91	.938	5.72	1.015	.185	3.230***
B3	Research collaboration with renowned research universities	5.89	.973	5.62	1.063	.264	4.101***
B4	Research collaboration with related industry	6.03	.974	5.74	.951	.287	4.810***
B5	Research collaboration with foreign institutions	5.77	1.014	5.51	1.075	.267	4.215***
B6	Publication in top journals and proceedings	5.93	1.034	5.75	1.003	.182	2.734**
B7	The number of patented commercial products	5.59	1.184	5.48	1.172	.109	1.583
B8	The various research grants applied for	5.79	.990	5.73	1.008	.059	1.013
B9	The number of publications	5.74	1.041	5.70	1.040	.044	.676
B10	The number of conferences attended	5.33	1.204	5.55	1.093	-.226	-3.533***
B11	The value of projects granted	5.64	1.080	5.69	.986	-.053	-.818
B12	The consultation hours with industry	5.41	1.109	5.29	1.216	.114	1.831
B13	The number of intellectual properties produced	5.35	1.264	5.36	1.275	-.009	-.137
Average		5.73	.259	5.61	.164		

*** p <.001, ** p <.01

An IPA plot of the 13 research attributes was then created (see Figure 3). The intersection in the IPA was made by using the mean level of importance of 5.73 and the mean level of performance of 5.61.

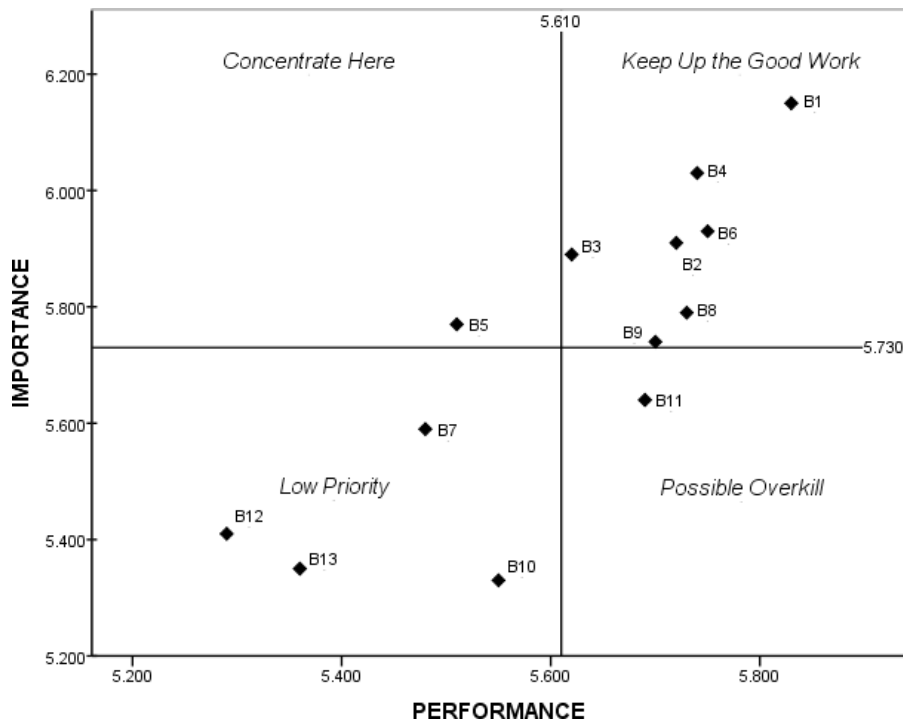


Figure 3: Importance–Performance Grid for Research Attributes.

The following findings were derived from the IPA results shown in Figure 3:

Concentrate Here: The only attribute that fell into this quadrant was B5: ‘Research collaboration with foreign institutions.’ This indicates that despite serving as an important service criterion, performance is falling short of expectations, thereby requiring that it be given top priority in any improvement strategy.

Keep up the Good Work: Falling into this quadrant were scale items B1: ‘The amount of funds for research purposes,’ B2: ‘Research collaboration with local universities,’ B3: ‘Research collaboration with renowned research universities,’ B4: ‘Research collaboration with related industry,’ B6: ‘Publication in top journals and proceedings,’ B8: ‘The various research grants applied for,’ and B9: ‘The number of publications per lecturer’. For each of these seven attributes, academics assign them a high degree of both importance and satisfaction, thereby indicating that their quality should be maintained.

Low Priority: Four attributes can be considered low priority as they were perceived to have both low performance and importance. The four in question were B7: ‘The number of patented commercial products,’ B10: ‘The number of conferences attended,’ B12: ‘The consultation hours with industry’, and B13: ‘The number of intellectual properties produced.’

Possible overkill: Falling into this quadrant was scale item B11: ‘The value of projects granted,’ which indicates that academics are not overly concerned about this attribute and yet attach a very high degree of satisfaction with it. This would suggest that the resources allocated to this attribute would be better invested elsewhere, such as in research collaboration with foreign universities (B5) for example.

Internationalisation Attributes

The results of the IPA of eight internationalisation attributes are shown in Table 4. For three of these eight attributes, performance scores were significantly lower than their associated importance scores. These three attributes were C5: ‘Recognition of academic certificates at the international level’ ($p < .001$), C6: ‘Recognition of academic excellence at the international level’ ($p < .01$), and C8: ‘Level of recognition and reputation of university at the international level’ ($p < .05$).

Table 4: Importance–Performance Ratings for International Standards.

Attribute	Importance		Performance		Gap (I-P)	t-test
	Mean	SD	Mean	SD		
C1 International standard of curriculum	5.82	.982	5.76	.953	.065	.988
C2 The number of branch campuses overseas	4.82	1.474	4.80	1.534	.018	.242
C3 Mutual recognition from international universities	5.57	1.040	5.48	1.078	.091	1.496
C4 A strong choice for international students	5.57	.972	5.60	1.060	-.021	-.299
C5 Recognition of academic certificates at the international level	5.93	.935	5.69	1.022	.246	4.527***
C6 Recognition of academic excellence at the international level	5.89	.983	5.71	1.017	.173	2.733**
C7 Programs offered to international students	5.62	1.017	5.60	1.055	.029	.477
C8 Level of recognition and reputation of university at the international level	5.94	.986	5.78	1.064	.164	2.432*
Average	5.66		5.56			

*** $p < .001$, ** $p < .01$, * $p < .05$

Here too an IPA graph was developed to visually depict academics' importance and performance ratings for the eight internationalisation attributes (see Figure 4). The intersection in the IPA was made using the mean level of importance of 5.66 and the mean level of performance of 5.56.

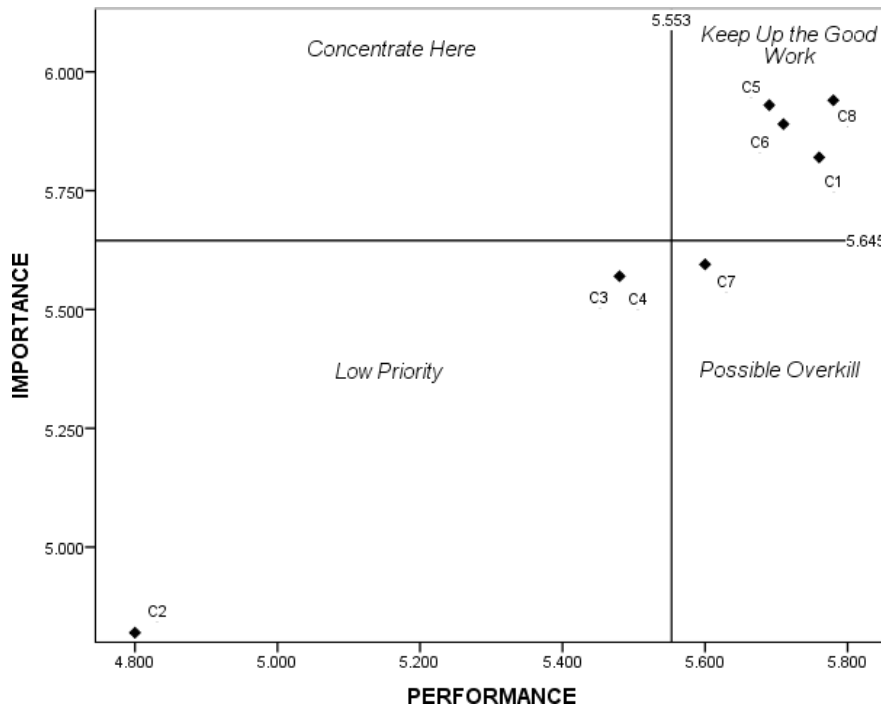


Figure 4: Importance–Performance Grid for Internationalisation Attributes.

The following findings were derived from the IPA results shown in Figure 4:

Concentrate here: No scale items fell into this quadrant.

Keep Up the Good Work: Falling into this quadrant were scale items C1: ‘International standard of curriculum,’ C5: ‘Recognition of academic certificates at the international level,’ C6: ‘Recognition of academic excellence at the international level,’ and C8: ‘Level of recognition and reputation of university at the international level’. In each case, academics attach a high degree of both importance and satisfaction to these attributes, thereby suggesting that their quality should be maintained.

Low Priority: Falling into this quadrant were scale items C2: ‘The number of branch campuses overseas,’ C3: ‘Mutual recognition from international universities,’ and C4: ‘A strong choice for international students,’ which suggests that academics do not attach a high degree of either importance or satisfaction to these attributes. Therefore these attributes are not a top priority with respect to service quality improvement.

Possible Overkill: Falling into this quadrant was scale item C7: ‘Programs offered to international students.’ This suggests that academics do not particularly value this attribute but attach a very high degree of satisfaction to it. Thus it would be advisable for universities to reduce the amount of expenditure and effort they allocate to this attribute.

Conclusion

Service quality in the areas of teaching, research and internationalisation is vital due to the fact that, in combination, they influence student satisfaction, university rankings and the international reputation of a HEI. Using five MRUs as its context, this study provides useful

feedback on the type of service attributes that HEIs should focus on in order to remain competitive in terms of attracting local students and in gaining repute in the international education market. IPA revealed that just over half of the attributes under investigation (14 out of 26) fell into the “Keep up the Good Work” quadrant. The next most frequent quadrant was “Low Priority” which accounted for almost one third of the attributes (nine out of 26). The three remaining attributes were split between “Possible Overkill” (e.g. *The value of research projects granted* and *Programs offered to international students*) and “Concentrate Here” (e.g. *Research collaboration with foreign institutions*).

The analysis also revealed some interesting patterns for each of the three service dimensions. For example, for three of the five teaching attributes, performance fell short of importance, with all three relating to learning methods, materials or environment. In regards to research quality, four of the six attributes for which performance fell short of importance related to research collaboration. Finally, for the three internationalisation attributes for which performance fell short of importance, all related to international recognition in relation to areas such as academic excellence or reputation.

Service quality improvements in the areas of teaching, research and internationalisation are essential if a HEI is to become more competitive, especially in terms of attracting students, improving its ranking and building its global academic reputation. From a practitioner’s perspective, the findings from this study not only provide guidance for HEI’s but also, for example, the Malaysian Government in its efforts to improve service provision across MRUs. By providing quality services, MRUs benefit from improved teaching quality and research collaboration with international and world-renowned institutions.

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