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IMPORTANCE-PERFORMANCE ANALYSIS

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Performance indicators are now an established feature of the tertiary sector, being employed to evaluate teaching as well as research. The measurement of performance as such provides only limited data in informing the allocation of resources to the teaching enterprise, a shortcoming that becomes more marked in the circumstance of limited resources. A two-axis model is described which goes some way to addressing this deficiency.

Keywords: importance-performance, performance indicators, two-axis model

INTRODUCTION

Ramsden [1] employs two axes to delineate four university models, following the framework introduced by McNay [2]. One axis represents "policy definition" and the other axis represents "control of implementation". The four quadrants created by the intersection of the axes are designated *A. Collegium* (loose policy, loose control), *B. Bureaucracy* (loose policy, tight control), *C. Corporation* (tight policy, tight control) and *D. Enterprise* (tight policy, loose control). The focus of the University, its standards and its evaluations of them, decision-making processes, management style, and the view held of students all vary across the models. The views of academic leaders support the perception that at present the collegium culture is declining, the corporate and enterprise cultures are burgeoning, and the bureaucratic culture is either steady or waning [3].

A two-axis model is widely useful in management and delivery in higher education. For example, the ubiquitous, but often one-dimensional "performance indicators" may be combined with another factor, namely "importance", to yield additional insight into existing processes and inform strategies for change. Such "importance-performance analysis" was originally developed as a marketing resource [4].

The four quadrants in importance-performance analysis are characterised as

A. Concentrate here - high importance, low performance;

B. Keep up the good work - high importance, high performance;

C. Low priority - low importance, low performance;

D. Possible overkill - low importance, high performance.

Concerning policy direction, the areas may be distinguished in which further effort is needed (*A*: high importance-low performance), in which too much effort is expended (*D*: low importance-high performance), and in which effort is currently appropriate (*B*: high importance-high performance and *C*: low importance-low performance). The analysis assists in the judicious allocation of resources, in particular, away from the second regime and into the first. It may be seen as a fore-runner of "value

innovation" [5], in which emphasis is placed on aspects clients value rather than industry standards. In this paper, a quantitative importance-performance analysis is reported for first-year and second-year university mechanics classes.

METHOD

Performance indicators are now an established feature of the tertiary sector and are used in the appraisal of both teaching and research. Teaching performance is measured in a variety of ways. In this report the student evaluation of teaching will be employed. At the University of Wollongong a central unit administers standard teaching surveys. Surveys have been routinely conducted (a) for all courses taught by a Department on a biennial or triennial basis; (b) for all courses taught in at least three sessions by staff seeking promotion; and (c) at the request of a staff member as a diagnostic service. The surveys (a) and (b) employ the same standard suite of questions. Much data has been collected over many years and averages are available for the university as a whole and for each faculty and unit. Further background to the survey rationale, processes and outcomes has been provided by Huntley-Moore and Panter [6]. This standard student evaluation instrument was used to measure performance here.

Importance was measured by administering a survey using the questions listed in Table 1. These "importance" questions are based on the "performance" questions in the standard student survey. For each question, responses were sought on a five-point Likert scale ranging from "very unimportant" (1) to "very important" (5).

TABLE 1. Questions used in "importance" survey.

	How important to you is it that
Q1	the aims of this subject are communicated clearly?
Q2	preliminary information about the content of the subject is clear?
Q3	information about the assessment requirements is clear?
Q4	various parts of the subject (e.g. lectures, tutorials etc.) are integrated?
Q5	the proportional allocation of marks to different activities is fair?
Q6	you understand the material in the subject?
Q7	you feel enthusiastic about attending the lectures in this subject?
Q8	the subject material is interesting?
Q9	the lecture material is presented clearly?
Q10	the sequence of topics within each lecture is organised logically?
Q11	the quantity of material presented is appropriate?
Q12	the lecturer stimulates you to think about the subject?
Q13	the lecturer demonstrates understanding of the subject?
Q14	the lecturer has an interest in assisting students to learn?

A large first-year class studying mechanics as the first part of a general introductory physics subject required for electrical, computing and telecommunications engineering was polled concerning the importance of the various items in Table 1. General characteristics of the student population that enrolls in this subject have been given in earlier reports of teaching innovations [7, 8]; in brief, the majority were male, the majority were studying full-time, and the most-represented discipline was electrical engineering. A smaller second-year class of physics majors studying mechanics at a higher level was also polled. At a later time, the standard teaching survey was administered to each class.

RESULTS AND DISCUSSION

Figure 1 shows how the fourteen survey questions were ranked according to importance (vertical axis) and performance (horizontal axis) by the first-year students. The most conspicuous feature of the scattergram is that all the data fall in the top right-hand corner. This is the area of high-importance/high-performance and associated policy direction "keep up the good work". Such a result is very pleasing for the teaching staff. However, it may be interpreted to mean that the students are not very discerning. For example, regarding importance, every item was ranked, on average, as being between "important" and "very important". There were no "neutral" items, let alone "unimportant" or "very unimportant" ones.

Likewise performance was in all areas above average, where average is taken to mean the mid-point (3) of the Likert scale. The discussion below considers the data in more detail, but the broad result is clear: on an absolute scale the students rank highly both the importance of all items in Table 1 and the teacher's performance in all areas.

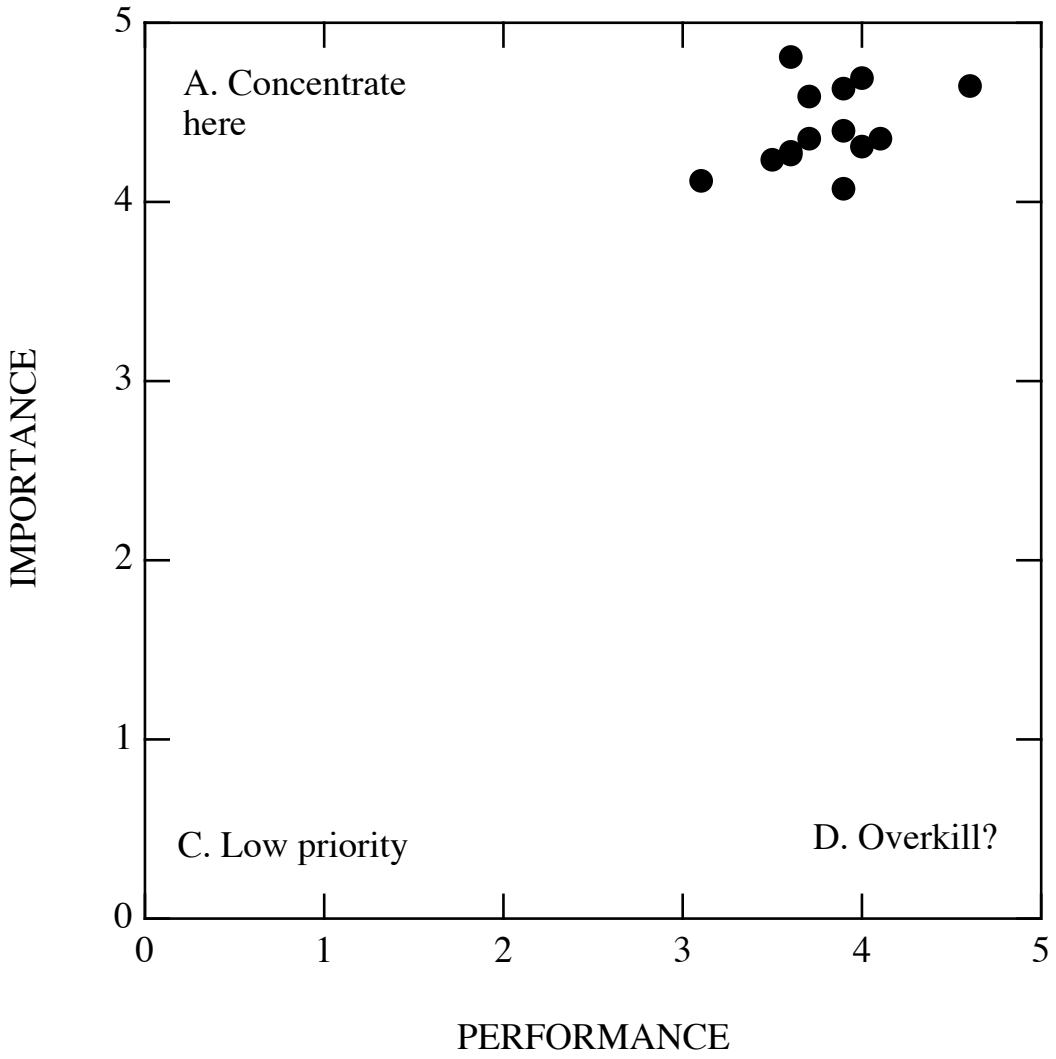

FIG. 1. Importance-performance analysis for first-year mechanics class.

The top right-hand corner of Fig. 1 is magnified in Fig. 2. The range of importance scores is now 4 to 5 and the range of performance scores is 2.5 to 5. This rescaling produces a scattergram similar in appearance to that encountered in marketing [4]. The items that fall around the edges of the diagram will be discussed in turn. Q4 concerns the integration of various elements of the subject – the lectures, laboratories and tutorials. The class is lukewarm about how these various elements mesh together, but regard the issue as relatively unimportant. Q7 concerns enthusiasm about attending lectures; Q8, the subject material being interesting; Q10, the sequence of topics being logically ordered. The class rates performance here as high, but these matters as being relatively unimportant. This suggests time spent on making the lectures inviting, interesting and coherent might be better spent elsewhere. Q13 concerns the lecturer demonstrating understanding of the subject. The class considers that the lecturer does demonstrate understanding and that this is quite important: the message here is to "keep up the good work". The area where

more effort might be expended – where relative importance exceeds the relative performance – is Q6, regarding understanding the subject material.

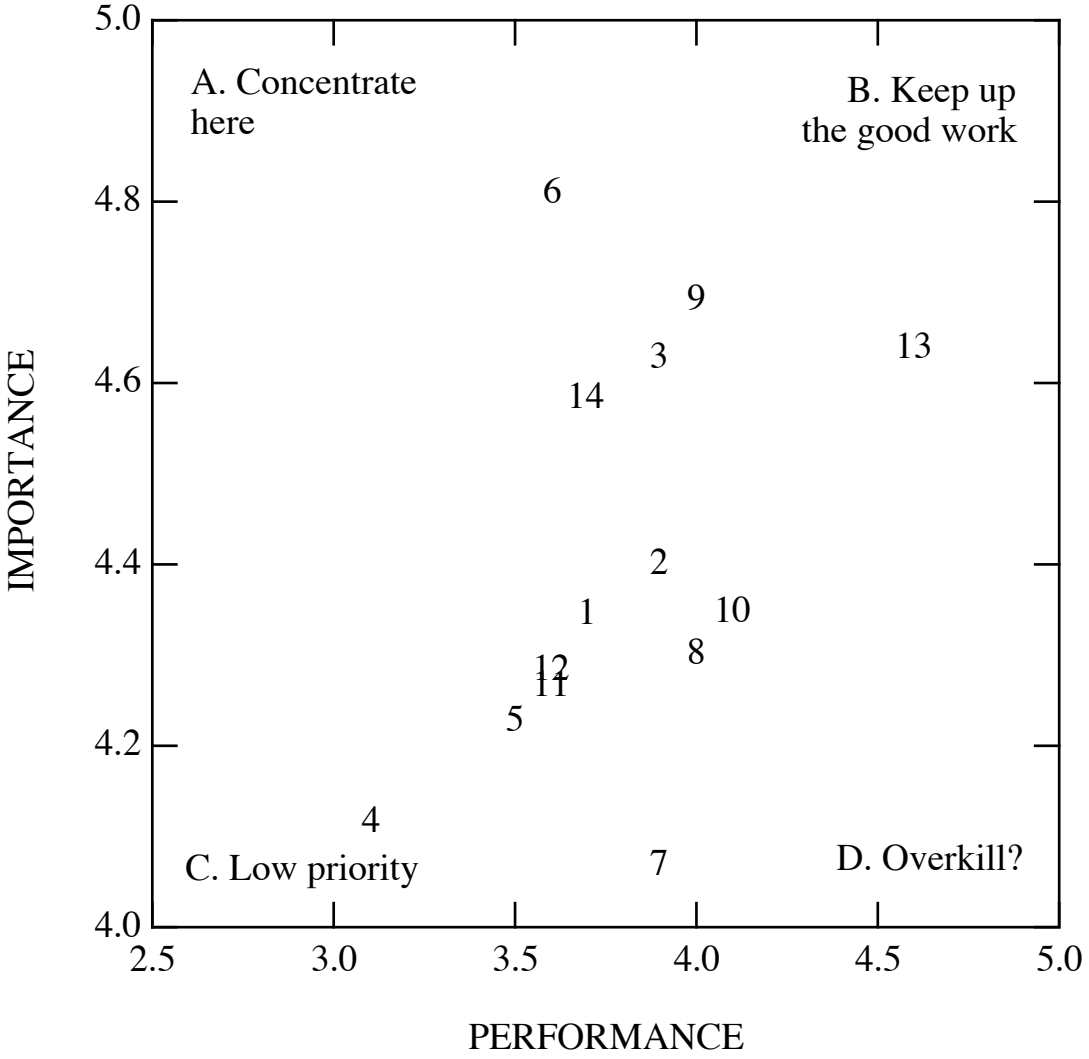

FIG. 2. Detail of top right-hand corner of importance-performance analysis for first-year mechanics class. The whole numbers correspond to the questions in Table 1.

The results for the second-year specialist mechanics class are given in Fig. 3. They are similar to the results for the generalist first-year class shown in Figs. 1 and 2. Again, the data all fall in the "keep up the good work" corner when plotted on the absolute scale 0 to 5 on each axis. Figure 3 shows only the importance range 3 to 5 and performance range 2.5 to 5, that is, only a subsection of the "keep up the good work" corner. The second-year students are more discerning than their first-year counterparts in evaluating importance, with a number of items now falling in the "neutral" to "important" range. The second-year students, like the first-year students, give the teaching above-average performance scores. Ranked least important in Fig. 3 is Q12, "The lecturer stimulates me to think about the subject", so a relatively poor performance here is of little consequence. Q4 has moved from "low priority" (Fig. 2) to "possible overkill" (Fig. 3). The second-year course is regarded as being better integrated than the first-year one, but the students still rank this aspect as relatively unimportant. In the "good work" corner are Q13, lecturer knowledge; Q3, clear statement about assessment, and Q9, lecture material clearly presented. It is again Q6

– understanding the subject material – where the students indicate that performance does not match relative importance.

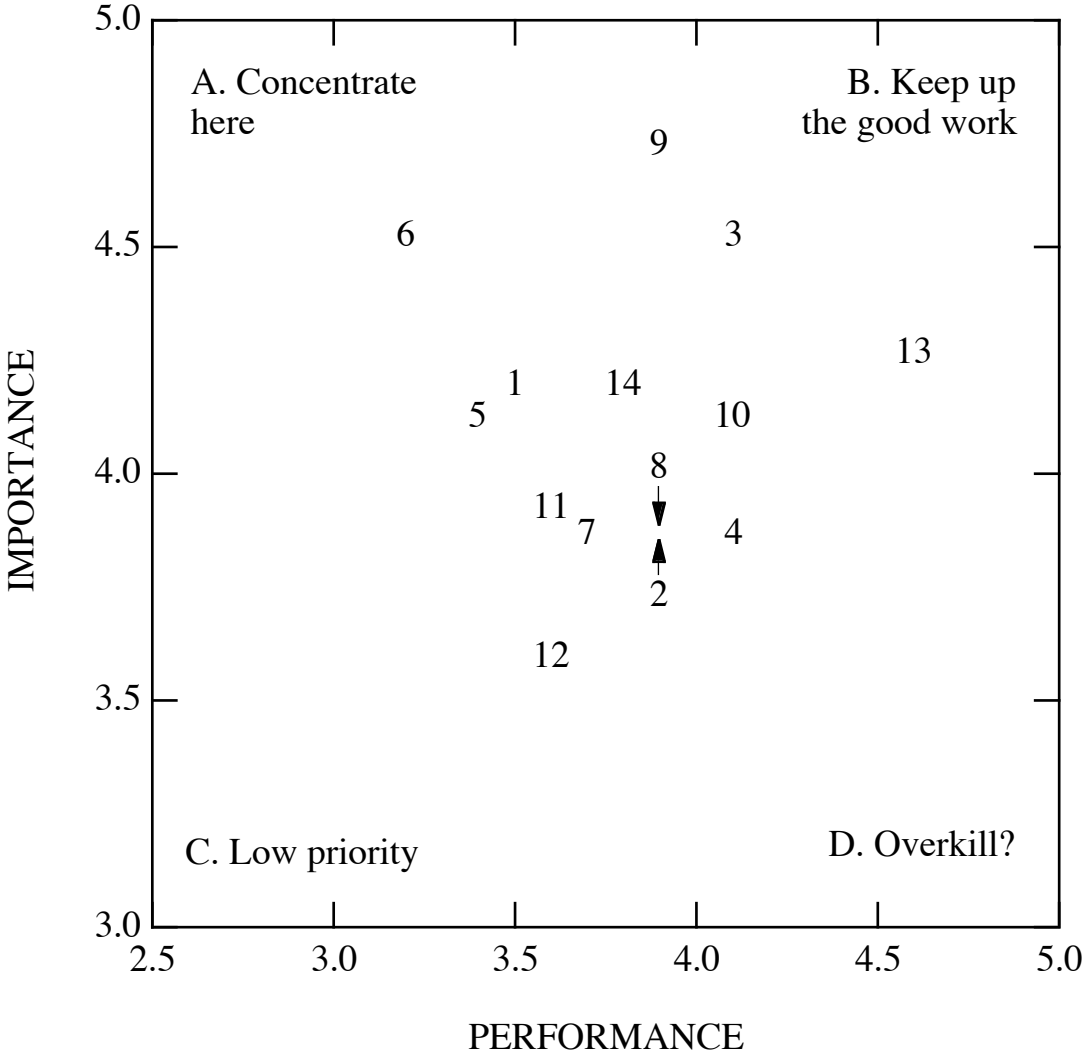

FIG. 3. Detail of top right-hand corner of importance-performance analysis for second-year mechanics class. Numbers correspond to the questions in Table 1.

Importance-performance analysis identifies where change is most needed. Resources should be shifted from *D: Possible overkill* to *A: Concentrate here*. In the specific case of the classes examined here, less effort might be expended on lively lectures, having a competent lecturer and integrating the course and more effort directed to assisting the students understand the subject matter.

An issue, which will merely be raised here, is the identity of those who judge the importance and performance. In the application of importance-performance analysis to marketing, the clients are clear – new car buyers, for example [4]. In the tertiary education sector, the identity of those whose opinions are sought is less clear and may include students, staff, professional organisations and employers. The data reported here has used students to judge both importance and performance. It is likely that academic staff would have a different view on the importance of, and their performance in, the different items listed in Table 1, but no formal examination of this question has been undertaken here.

CONCLUSION

The technique of importance-performance analysis has been discussed in the context of higher education evaluation and resource allocation. A quantitative case study involving first-year and second-year students has been used to illustrate the strengths and weaknesses of the method. Importance-performance analysis provides a broader basis on which to evaluate and drive change in higher education than by relying on performance indicators alone.

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