Extrinsic versus Intrinsic Motivation: Does major choice make a difference?

Mary R Hedges,[1*] Gail A Pacheco[2] and Don J Webber[3]

[1] *Centre for Longitudinal Research, University of Auckland, New Zealand*
[2] *Department of Economics, Auckland University of Technology, Auckland, New Zealand*
[3] *Department of Accounting, Economics and Finance, University of the West of England, Bristol, UK*

Abstract

Prior literature emphasises supply side issues concerning the modularisation of university programmes such as curricula issues and enhanced learning opportunities. Comparatively little is known about the demand side, such as why students choose specific modules. This article presents an investigation that was specifically designed to improve understanding of the factors that contribute to student module choices and draws on a large primary dataset comprised of students following a wide range of majors at a new university business school. The dataset allows for differences between the relative importance of extrinsic and intrinsic motivations between majors to be identified and some implications of this to be discussed.

Keywords: module choice; curriculum design; factor analysis.

JEL codes: A22

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Corresponding author: Mary Hedges, Centre for Longitudinal Research, The University of Auckland, Auckland, New Zealand. Email: m.hedges@auckland.ac.nz

1. Introduction and background

The merits and costs of the modularisation of university programmes has been the subject of a great deal of academic literature over the last twenty years. Much of this research centres on curricula issues, discusses fragmentation of previously cohesive degrees, and / or examines the effects on staff workload. Although literature highlights the supply side enhanced learning opportunities that modularity potentially offers students, comparatively little is known about demand side student module[1] choice considerations, which may include intrinsic or extrinsic motivations that could differ in relative importance across gender and across students following different majors. This article presents an investigation that was specifically designed to improve understanding of the factors that contribute to student module choices.

While a modular system can result in significant benefits for students, it is important to recognise that a vital condition for the realisation of these gains is the ability of students to act responsibly, and often autonomously, when making a whole of different parts (Bell, 1993). If there are no modifications in the organisation, structure, or teaching quality within and across modules concomitant with modularisation then students reactions may negate the potential benefits of modularisation: students may not select the best modules for them if they are provided with insufficient, partial or incorrect information (Roper, 1994). Greater understanding of student motivations underpinning module choices would allow us to devise interventions that more effectively assure and enhance learning and teaching quality while ensuring relevance in the learning experience.

Understanding why students choose specific modules has received little attention in the literature. This is an inconvenient truth given that most academics recognise module selection can seriously affect students' engagement, learning behaviours, peer groups, individual and group achievement, and the links to the post-education job marketplace. Developing understanding of motivations behind students' modular choices could allow universities to improve their provision and suite of modules. For instance, the rise in massive open online courses (MOOCs), aimed at large-scale interactive participation independent of geographical location, makes understanding student motivation behind module choice even more pertinent. As universities endeavour to stay relevant through assembling a more diverse range of learning experiences, there is likely to be a concomitant rise in students' ability to assemble their individual program for certification. Consequently, having a more robust understanding of student motivation is important to ensure that the coherence and standard of that learning experience are not compromised.

If a better understanding of student motivation allows universities to provide more directed information and guidance to students during their decision making processes (with respect to their module choice), the flow on effects are potentially increased levels of engagement, retention, and improvements to the success rates of all students. Better module success rates inherently lead to better degree completion rates, which is an important potential positive outcome of this research given the rising proportion of DNCs (Did Not Completes) across business schools[2]. The purpose of this research is to present a case study (within a new university business school) that was designed with the intent to better

[1] The terms *modules* and *papers* are used interchangeably in this article. Both refer to a single module in a single subject area rather than to a cohesive programme of study such as a degree.

[2] While this assertion is based on confidential internal reports it is supported by statistics and modelling provided by the Ministry of Education in New Zealand that relates the massive growth in the tertiary sector with lower rates of completion. For example only 40% of domestic students starting a qualification in New Zealand had completed that qualification 5 years later (Scott, 2006)

understand the demand side motivations for elective module choice in the tertiary context. Improved knowledge of student choice mechanisms should spawn information that could help shape and enhance curricula relevance and permit increased flexibility for students across programme pathways –stated objectives of modularisation (Bell, 1993).

Student motivations

The existing literature emphasises three main factors contributing to module choice: intrinsic motivations, extrinsic motivations and module characteristics. These are discussed in turn.

It is conventional to assume that students choose modules that they expect to find interesting. Entwistle (1981) and Elton (1988) argue that *intrinsic motivations* have large potential benefits, as students are more likely to work enthusiastically and independently, engage with material, understand meanings, make connections with previously studied material and with real life situations, etc. In other words, if students are intrinsically motivated then they will be 'deep' or 'meaning oriented' learners. Similarly, Ramsden (1992, p.81) argues that the "opportunities to exercise responsible choice in the method and content of study" is a factor encouraging a 'deep' approach to learning, while Howorth (2001, p.28) suggests that "Students who choose out of interest will learn more, enjoy more and as a bonus they may also get higher grades because they will have a better understanding of the subject."

Arguably, *intrinsic motivation* is likely to dominate other motivations for module choice if the modules to choose from are equivalent in all respects other than the content. However, although elective modules usually provide the same number of credits, a perfect coordination of the assessment opportunities and perceived module difficulty is rarely possible. Hence, it is also necessary to get an understanding of the *module characteristics.* Such characteristics are wide and heterogeneous and include factors such as perceived ease of the module, space constraints, reputation of the lecturer, convenience of the class time scheduled, etc. In some cases these types of factors could also be linked with *extrinsic motivations*.

Extrinsic motivation refers to motivation that comes from outside an individual. Such motivating factors are based on the expectation (real or imagined) of external rewards (potential or actual), such as money, grades or praise. These rewards are expected to provide satisfaction and pleasure which the task itself may not provide. Thus, a student may choose a module they have little interest in if they believe that it will lead to a better job or better access to postgraduate study opportunities. *Extrinsic motivation* does not mean, however, that a student will receive no pleasure from working on or completing a task; instead it simply affirms that the pleasure a student may anticipate from some external reward will continue to be a motivator even when the content of the module holds little or no interest to them. For example, an extrinsically motivated student may dislike an assignment, may find the content or pedagogy boring, or may have no interest in the subject, but the possibility of a good grade will be enough to keep the student motivated in order for him or her to put forth the effort to do well on the task. Nevertheless, students motivated by extrinsic factors are more likely to resort to 'surface' or 'rote' learning which is, in-turn, associated with lower academic achievement; students simply regurgitating information in quantitative detail, in contrast to their deep learning counterparts who produce qualitatively structured outcomes (i.e. more meaningful work demonstrating understanding) (e.g. Watkins, 1983, Biggs, 1988, Biggs, 1989).

The discussion above highlights three specific categories of motivations. Although they have been presented separately it does not preclude a student choosing a module because

they have a combination of motivations; for instance, if a student had both *intrinsic* and *extrinsic motivations* then they will find it easier to achieve the external reward (Howorth, 2001). Interestingly, sometimes both types of motivations are reported by the same students: for example, Koceic *et al*. (2010) found that at least 10 percent of their student sample agreed to both of the following statements: "I chose the electives that I liked the most" and "I chose electives that were easy to pass according to senior students." Additionally, it is necessary to note that in the context of tertiary study, extrinsic motivations could be reflected in more tangible and immediate achievement measures such as grade. This would be consistent with the literature on time myopia among young people, that they value near events and discount future events significantly more highly than older adults (Ainslee, 1992). For this reason achievement and extrinsic motivation have been linked together throughout this paper.

Balance and learning styles

Despite the potential positive effects of modularisation, it is not exempt from concerns. Jenkins and Walker (1994) argue that modularisation may lead to intellectual incoherence and fragmentation which may imperil student capability and skill development. This concern is most likely to have some justification if the modules and / or programmes are poorly designed, such as when the modules on offer end up fostering extrinsic motivations that outweigh intrinsic motivations, which in turn may lead to surface learning. Student learning styles will almost certainly influence module choice, but the context of module choice may also influence the student learning style.

Jenkins and Walker (1994) found that students consider a mix or balance of modules in making module choices. A mixed strategy could be chosen to help build a balanced portfolio of skills or to balance workload. For example, a student may choose an easier elective to take in the same semester that they must take a core or compulsory module that they expect to find difficult, thereby allowing them to allocate their time unevenly and balance or maximise their desired grades. In its extreme form, this type of strategy would suggest the objective is either to get a pass with the least possible effort (most likely to be 'surface' learners) or to achieve and succeed at any cost (either / both 'deep' and 'surface' learners). In either case, it is an external reward that is driving this choice strategy.

Modules, Majors, Programmes and Universities

A complete investigation of module choice should consider prior concerns (i.e. when students are applying for universities and programmes within those universities) and hence should simultaneously consider all available substitutes, such as other programmes within a university, other universities and other programmes offered at other universities[3].

Similarly programme level analysis is important when considering different majors within a programme. It is highly likely that the student's underlying characteristics influence their choice of university, programme, major and elective. For example, a student who believes they have poor mathematical skills would choose a programme of study that does not require much maths and then prefer modules within that programme that are writing based rather than quantitatively based. In this study however, all of the students have already selected the same university and the same programme of study – a Bachelor of Business degree. While they differ in the major they have chosen to study it would be reasonable to

[3] This assumes the individual has made the decision to study at university and has decided to exclude other alternatives from the final selection, such as apprenticeships, employment or overseas experiences.

assume that they are similar in their underlying characteristics that caused them to select the same university and the same programme of study. Nonetheless, it is important to recognise there may still be systematic differences between majors within a common business programme, and consequently the following analysis also disaggregates findings by individual majors.

Although the marketing of universities can affect this complex choice for prospective students, university departmental members may be more interested in understanding student motivations for module choice when they are *in situ*.[4] Two strong reasons for this are that departmental members may perceive this to be more within their remit of improving the range and quality of their modules, and that it will have direct ramifications for their own teaching. Understanding how intrinsic motivations can be fed and how content can be shaped to attract extrinsically motivated students could result in actions that enhance student engagement, stimulate greater enthusiasm, encourage independence, and incite greater depth of learning.

Identifying different motivations behind the choice of elective modules has been the subject of several empirical studies, but these studies tend to investigate at the programme level rather than at the module level. For example, Hennessy *et al.* (2010), Howorth (2001) and Koceic *et al*. (2010) analysed the reasons for choosing programme and non-programme electives by specialist and non-specialist students and identify both intrinsic and extrinsic motivations. They suggested that a deep learner may adopt a surface learning strategy when the system encourages them to choose a module that they perceive to be much easier than others but not necessarily of interest.

The following empirical research adopts a student-level perspective. Based on primary individual-level data drawn from a questionnaire distributed to and completed by students attending all final year undergraduate modules available within a business school, we investigate the forces that motivate students to choose their elective modules. Our analyses then proceeds to identify whether these motivating forces are common or different across individuals following the same major, or across the lines of gender and age group. Our results illustrate asymmetries in module choice across students following different majors and a surprising lack of difference between males and females. The findings are essential for our understanding of student module choice and for the design of curricula at the undergraduate level.

2. Data and methodology

The existing literature identifies that more flexible modular courses are more common in universities that were formerly polytechnics with a history of professional and vocation expertise (Walker, 1994). Auckland University of Technology (AUT) which became a university on the 1st of January 2000 (previously called Auckland Institute of Technology) fits into this category, and the arguments for positive curriculum and learning opportunities were certainly behind the move towards greater modularity. AUT's modular system is now student-centred, emphasising student choice, module transferability, flexible course patterns and transparency to allow for a potentially enriched learning experience.

As the modularity literature highlights the importance of motivations and expectations that may be student-specific, it was considered most appropriate to identify these facets

[4] One can also anticipate that over the long run, changes within a degree programme will be documented and increasingly recognised by prospective students, thereby affecting the quality and characteristics of applicants.

through the use of a distributed individual-level questionnaire[5]. Many universities provide a limited range of elective modules to students in their first year of study and the motivational forces and expectations behind module choice may evolve over the years of university enrolment. To capture and measure the most developed set of motivations and expectations behind module choice the decision was taken to survey final year (third year full-time equivalent) undergraduate students only in the Bachelor of Business programme at AUT. It is clear that surveying at this stage of a students' academic pursuit will capture motivations and expectations that are potentially very different and therefore not comparable to students' earlier years of tertiary study. There are a number of reasons for this expectation.

Firstly, final year students may be more aware of the need for positive documentation and results to signal to future employers their higher competence levels, and this may lead to different motivating forces. Secondly, a student's understanding of the university system will evolve over time and therefore their expectations would be grounded on greater experience. Third, in spite of individual-level path dependencies in effort, expectations and motivations over time, previous achievement levels may enhance, diminish or have no effect on those factors in the students' final year of university study. Fourth, there may be different demands on students in their final year, such as additional time needed to devote to editing and updating their curriculum vitas and writing job applications (and the importance of this may evolve over the business cycle and vary from university to university), which may impinge on the time available to devote to active learning. Conversely these new demands could replace earlier demands such as adjusting to university study and/or a new city and/or new living arrangements (e.g. home, halls of residence, independent flatting). The results that this study does generate will therefore require replication over time, across different universities, economies and academic years.

Completion of the questionnaire by the cohort of third year undergraduate students was entirely voluntary. A team from the university's Students In Free Enterprise (SIFE) group volunteered to administer the survey, which was particularly helpful as this diminished the potential influence of various biases that could have occurred if the incumbent lecturer distributed the questionnaires.[6] SIFE students entered classes during the 2nd week of semester 2, (25-29 July, 2011) with the consent of the lecturers, and administered the questionnaire (which took approximately 10 minutes to complete). This timing is important as it is very close to when the students chose their modules and within the window of opportunity when the students are permitted to request a change in module. Therefore, the timing of the survey can still be considered to be in the period of choice for students, as AUT permits students to change papers, withdraw, and / or add papers to their schedule within the first two weeks of semester.[7]

There were approximately 2000 students eligible to complete this questionnaire, each of whom could have been enrolled in up to four elective modules in a single semester, although the reality is that most students were enrolled in only one to two elective modules at most. AUT has a modular system that has a high degree of prescription at all levels for each major to ensure coherence and that a core set of competencies is achieved within each major. When students enrol in a double major there is little room in their degree for many elective

[5] A copy of the questionnaire can be obtained from the author upon request.

[6] The university's student union also supported this study. Ethical clearance was obtained from AUT's Ethics Committee (Ref. no.: 11 / 127).

[7] Timing the survey during this window of opportunity reduces the influence of ex-post rationalisation (See Nisbett and Wilson (1977)), whereby students have justified their reasoning for choosing a paper based on information post choice.

modules. This further reduces those taking electives. Once non-participants were accounted for, a total of 1,824 valid questionnaire responses were received.

The third part of the questionnaire asked the student to state whether that particular module was compulsory for their major or an elective. 1014 students indicated they were completing the questionnaire in a final year module that was compulsory for their major, 654 affirmed that the module was an elective, while the remaining responses were either 'don't know' or missing responses (104 and 52 respectively). For the sub-group of students that indicated that they didn't know or had a missing response to this question, they were assumed to be in an elective module if they then went on to answer the question which asked for the reasons / motivation for choosing the elective module. After accounting for cases of measurement error and data attrition, the final sample constituted 737 useable responses.

Questionnaire design

The questionnaire provided to students had three parts. The first of which gathered general demographic information about the student, such as their gender, age category, questions on work / life motivations and perceived expertise. Part two of the survey asked the student for information about what major(s) they were enrolled in, and their motivations for choosing that major. While this research makes use of information from both section one and two of the questionnaire, it is the final section that is of core interest here.

Part three of the survey informed the student that we were trying to better understand why students enrolled in their particular paper. Students were asked whether the paper they were surveyed in was compulsory for their major, and if not what their motivations for taking this elective module were. Students could select from a range of options that have been derived from the literature above and further augmented based on discussions with AUT staff. To minimise researcher bias, no attempt was made by researchers at the survey design stage to designate variables into particular categories, such as intrinsic motivations, module characteristics or extrinsic motivations. Also in line with the extant literature, a 5-point Likert scale was used to elicit the strength of a students' agreement (1) or disagreement (5) with each statement. There were 15 statements available to the student to identify the degree of their agreement or disagreement. Some of these were inverted statements of the same idea. Some examples of the statements used were: "I thought this paper would be more interesting than the alternatives", to "I thought I would be able to gain a high mark for this paper", and "The assessment structure for this paper was appealing".

Method of analysis

Once the data were collated, factor analysis was selected as the method of analysis. This method of analysis is broadly characterised as an interdependence analysis and can be applied to investigate the structure of relationships among variables, respondents or objects (Hair *et al*., 2006). Factor analysis can be used to reduce a larger number of variables into a smaller number of uncorrelated factors called components[8]. It can also be helpful for increasing knowledge of the structure and interrelationships between the variables (Hair *et al.*, 2006). The primary purpose of factor analysis is to identify the underlying structure of the relationships between the variables in our sample (e.g. intrinsic, module characteristics or achievement / extrinsic motivations) in a way that removes the multi-collinearity problems that plague studies that attempt to include all of these types of variables simultaneously. This

[8] There are two principal types of factor analysis, one of which is called Principal Component Analysis.

statistical approach groups together variables that are highly correlated into factors, which can then guide the development of new composite factors that capture all of this information in a broader way.

In essence, factor analysis generates a correlation matrix that identifies the degree of correlation between variables. These matrices can be conceptualised as the degree of overlap between sets in a Venn diagram expression. If we consider each variable as a separate set but that there is some overlap between pairs and / or groups of those sets then it is the degree of the overlap that is identified in the correlation matrix. From this matrix, groups of variables are put together in such a way that the overlap within each group is maximised while between each group is minimised. This step in the process wants to account for as much variance as possible, while keeping the number of factors extracted as small as possible. The researcher then has a number of methods for determining the appropriate number of factors retained and can use rotated or unrotated factors, depending on the desired ease of interpretation.

3. Results

The questionnaire provided information on 15 elective motivation variables. The 'Other' option was omitted from the analysis due to there only being 54 responses, of which approximately half (28) listed the module as a recommended elective for the New Zealand Institute of Chartered Accountants (NZICA) registration requirements, a further quarter (13) listed reasons already provided in the list and the final quarter (13) covered a wide range of other possible reasons. For this variable there was not enough consistency to enable any meaningful up-coding or interpretation.

The two motivation options related to students' preference for quantitative papers versus qualitative were also removed. Although these had quite high measures of sampling adequacy they were both found to have normal distributions and both created cross-loadings in the factor analyses, particularly between intrinsic motivations and module characteristics. This was not unexpected if students select modules based on their interest and the perceived module difficulty.

Removal of the maths / writing preference motivations and the 'other' category left 12 elective motivation variables on which to run the factor analysis. As shown in Table 1, the Kaiser-Meyer-Olkin MSA statistic indicates a large proportion of the variance of our variables is caused by the underlying factors and each of these motivation variables had high individual measures of sampling adequacy (MSA > 0.8). Further, the result of the Bartlett's test indicates that the variables are related and suitable for structure detection. These initial results suggest that our sample of 12 variables can collapse into a few factors.

{Insert Table 1 about here}

Both Varimax and Promax rotations were used. Varimax rotation aids interpretation as this option maximises high and minimises low correlations (Dancey and Reidy, 2002, p.21). However, Varimax is an orthogonal rotation and its success is dependent on the grouped factors being independent of each other. This is not necessarily the case in this instance where it is expected that extrinsic motivations may be related to either intrinsic or module characteristics; for this reason Promax rotation was also used. Promax is a non-orthogonal rotation and allows for some multicollinearity to remain between the factors. Although both types of rotation were run the results showed no difference in the factors produced. This means that any multi-collinearity present was contained within the groups of factors extracted rather than between them. However, only the Promax rotations will be reported here for

consistency with later analysis and because these rotations do minimise the cross-loadings that will be explained below.

Application of factor analysis generates the pattern matrix presented in Table 2, which reveals several important issues. First, the factors are not entirely independent. Four of the factors have cross-loadings that tell us there remain some overlaps between the factors. These cross-loadings make sense when we consider what each of the factors represents. The first could sensibly be described as *module characteristics*. Many of these are things that may vary even between two occurrences of the same module in the same semester. For example there could be two offerings of the same module, one at 8 am and one at 12 noon. The convenience of the class time could then be differentially preferred by students. A part-time student who works during the day could prefer the 8 am offering while the midday class could suit the full-time student who wishes to avoid the morning rush.

{Insert Table 2 about here}

The second component or factor is largely made up of *intrinsic motivations*; it captures student characteristics that most lecturers prefer: interested students who are keen to learn rather than just pass the exam and who are looking to be challenged. This also explains the cross-loading on the *Impressive on CV* variable. A student seeking to be the best that they can be (intrinsically motivated) would expect that to be reflected on their curriculum vitae but other students who are more extrinsically motivated would also be looking to having a CV that would enable them to get the job they wanted. This cross-loading therefore is expected, and this is further supported by low weightings in these factors.

The third component is *extrinsic* or *achievement motivations*, and is largely based around expected grade / performance. In the context of tertiary study, extrinsic motivations could simply be capturing more immediate achievement measures. The cross-loading on *Thought it would be more interesting* makes sense in this context: if a student finds a module interesting then the expectation is that they would be more engaged and perform better, as reflected in a higher grade. Similarly, the negative loading on the module being challenging also makes sense; when it is an intrinsic motivation then it would be positive, but when it is an extrinsic motivation then its effect would be negative (if a module is challenging then a student may learn more but the risk is a lower performance / grade).

To check the robustness of these results the full sample was then randomly split into two sub-samples and the same analysis run.[9] The grouping of variables into components remained the same along with the rankings of the components and the percentage of variance explained were the same to the second decimal place. Finally, to ensure that the best number of factors had been extracted Velicer's Minimum Average Partial (MAP) test (O'Connor, 2000) was also run. This test largely supplants the older method of the researcher making subjective decisions on the number of relevant factors based on: Latent roots or Eigenvalues[10]; where the cumulative percentage of variance explained by the eigenvalues is approximately 75 percent; and / or by looking at the scree plots and selecting the number of factors just before where the plateau levels out.

Velicer's MAP test considers how much common (shared by the variables) variance remains in the data after extracting *n* components. It starts by removing the first component and then re-calculating the matrix of partial correlations. The mean squared off-diagonal

[9] Given the number of responses the sample versus variable number was sufficient to allow this to be done. These results are not shown here for brevity but are available on request.

[10] Eigenvalues simply show the proportion of the variance accounted for by each factor. The sum of eigenvalues must therefore be the number of variables in the analysis (Dancey and Reidy, 2002, p422).

partial correlation coefficient is then computed. The first two components are then removed and the off-diagonal partial correlation coefficient re-calculated. This continues by removing each of the components in order. The number of components to retain is then the one that has the smallest mean squared off-diagonal partial correlation coefficient and those that come before it (O'Connor, 2000; Wuensch, 2012). Compared to using the rule of thumb that the Eigenvalue value should be greater than or equal to one, this method tends to extract less components or factors. Application of Velicer's MAP test identified two components as the correct number in every case.[11] This means most of the loading is on the first two components. However, we have reported the three components as these fit the *intrinsic, module characteristics, extrinsic / achievement* categories presented above and are illustrated in the results from the full sample in Table 3. Academics may be pleased with the result that students are least motivated by extrinsic / achievement factors. Having found consistency across the entire sample the next stage of the analysis was to explore if there were sizeable differences by gender, major or age.

{Insert Table 3 about here}

Gender

The literature does suggest that females are more likely to be intrinsically motivated while males are more likely to be extrinsically motivated (Kuh, 2010). Females constitute 54.4 percent of the elective sample, indicating that the sample is relatively evenly split along gender lines.

{Insert Table 4 about here}
{Insert Table 5 about here}

Based on the results presented in Tables 4 and 5 for both genders, the *module characteristics* factor (previously the first factor explaining almost 30 percent of the variance) is now split into two factors. Collectively these two factors still explain 26-28 percent of the variance but because they are now split their ranking falls to 2 and 3. This change then moves intrinsic motivation to first where it explains 27 percent of the variance for males and 30 percent for females. This difference is minimal but still does point in the direction of females being marginally more intrinsically motivated than their male counterparts.

This split in the *module characteristics* factor could broadly be described as a network / peer factor and a convenience factor (based on the variables it encompasses). This split also appears to be stronger for males, relative to their female counterparts. However, given that only the first two factors are significant it appears that it is the intrinsic motivations and the network / peer factor that were most important in module choice in this sample. This finding is consistent with other research that highlights that one major factor in why students choose AUT over other New Zealand Universities is in order to access industry networks not available to them through existing familial networks (see Hedges, 2010).

Majors

When the analysis was then run for individual majors the results generally reflect the full sample results, and in all cases only the first two factors are significant again reflecting that extrinsic / achievement motivations are less important for module choice in our student

[11] These results are not shown here for brevity but are available on request.

sample.[12] Rather than present full set of results, Table 6 reports the factors, the percentage of the variance explained by each factor and the factor ranking (in brackets).

{Insert Table 6 about here}

The majors are ranked in Table 6 according to the importance of the paper characteristics. This reveals that module characteristics and intrinsic motivations account for almost 50% of the variance for all majors, bar the small samples of Business Information Systems and Law[13]. The division of the variance weighting between these two factors does differ by major. Specifically, for Accounting, Economics, International Business, and MARS, module characteristics are dominant; while for Management and Finance majors, intrinsic motivations account for most variance. Apart from Economics, the first grouping of majors where module characteristics are most important, could all be described as 'professional' majors, with more clearly defined employment / career pathways. In comparison the intrinsic motivations dominate for the Management and Finance group and these majors have less defined career pathways. This result could imply that students enrolled in these less professional majors may have greater confidence in their own ability to make their degree work for them. Conversely it could be capturing different underlying personal characteristics related to confidence and a longer view and/or more strategic vision of their future.

Age

Finally, the analysis is re-estimated according to the age of the student. Mature students are defined here as being 25 years of age or over. This definition is chosen because it is in line with government policy that may affect the age profile of students in New Zealand. If the student is under the age of 25 then the student's parents are means tested for allowances;[14] once a student is 25 years of age or over then the parents' level of income is no longer taken into account.

The results for the age subsamples are shown in Table 7. Young students (aged 24 and lower) reflected the full sample results with module characteristics being the most important (29%), followed by intrinsic motivations (17%) and then extrinsic motivations (8%). The results corresponding to the subsample of mature students reveal that the module characteristics factor was split into network / peer effects versus convenience effects. Network effects were most important (29%) followed by intrinsic motivations (20%), a convenience factor (8.5%) and then extrinsic motivations (8%). Once again it is worth noting that only the first two factors are significant. Had the sample been larger it would also have been useful to consider whether this split was different according to whether the mature student was full-time or part-time. It could be reasonably expected that network effects would be more important for the full-time student and convenience effects for the part-time student trying to fit there study in around other commitments.

{Insert Table 7 about here}

[12] We are unable to investigate the gender split in motivations due to small sample sizes. This should be a topic of future research.

[13] According to Hair *et al* (2006), a factor analysis sample size should be approximately five times the number of variables. Based on this rule of thumb, it is difficult to know how representative our findings are for the majors of Business Information Systems and Law. Clearly, further research in these areas might be fruitful.

[14] While there are some exceptions available to this there are stringent criteria that must be met. This results in only an extremely small number of students qualifying in both absolute and percentage terms.

The next line of investigation is whether there are observed differences between age groups, once further subdivided by gender. Table 7 results suggests that as males get older their intrinsic motivations for choosing modules begins to fall, and the importance of paper characteristics begins to rise. Specifically, for young males, intrinsic motivations account for 30% of total variance, and this falls to 18.5% for mature males. As a consequence, the importance of module characteristics rises and these explain 32% of the total variance for mature males. The reason for this difference may be associated with greater responsibility outside university-life and the importance of convenience so that the module can fit in with family and / or work-related constraints. The same change in pattern does not seem to be apparent for females as they get older. Instead, females appear to consistently cite intrinsic motivations behind module choice, with the paper characteristics factor increasing in weight only slightly (from 26 to 31%). These gender and age differences may reflect the levels of maturity of learning styles or the need for effort or achievement balance across modules, as highlighted by Jenkins and Walker (1994). Extrinsic motivations remain statistically insignificant and relatively unimportant as a factor in explaining module choices for both gender and as they age.

Implications

The results presented here are somewhat surprising given the sizeable literature which documents a sharp decline in intrinsic versus extrinsic motivation toward academic learning as students' progress through the education system (e.g. Harter, 1981; Lepper, et al., 2005); a phenomenon which has been attributed to the prevalence of extrinsic forces and incentives in the education system, such as tests and the importance attached to grades, which undermines a student's natural curiosity to learn (e.g. Harter, 1981; Eccles & Midgley, 1989; Biggs, 1989; Kohn, 1993; Lepper, et al., 1997). Rather, our results suggest that intrinsic motivations and/or peer network effects (a sub-category of module characteristics) dominate extrinsic motivations in student selection of elective 3rd year papers at university. This result holds across gender, age, and across the different majors, although differences across these sub-groups of students were identified in terms of whether intrinsic or the module characteristic effect was dominant.

This study has controlled for underlying student characteristics that may have influenced the students' choice of university and programme. It has also taken a student-level approach to module choice enabling differences in motivation to be identified between different majors. Although differences in motivation were found it is difficult to untangle the direction of the causality. Do students choose particular majors because of underlying characteristics or does the professional nature of some majors encourage certain motivations? While these questions cannot be answered within the scope of this study it does still raise a number of implications for curriculum design that could help untangle this web of causality in later studies.

For curriculum designers of elective modules in Accounting, Economics, International Business, and Marketing, it appears that module characteristics are at the forefront of student motivation. To enhance intrinsic motivation for these students, practices that promote personal autonomy, and relevance are paramount. Teachers can nurture this motivation for deeper learning through a variety of techniques, including: making content and particularly assessment, applicable to real life applications (e.g. greater use of business case studies); minimising prescriptive teaching by encouraging class discussions and student reflection on subject matter; setting assessments involving an element of problem solving;

encourage collaboration and interaction among students and/or teaching staff (i.e. interactive tutorials); and providing regular constructive performance feedback (Biggs, 1989; Sansone & Morgan, 1992; Lepper & Henderlong, 2000).

4. Conclusion

The existing literature on student module choice whilst in tertiary study emphasises supply side issues, such as curricula design and enhanced learning opportunities, but rarely examines why students demand particular modules. This study has contributed to the limited literature on this front, as it presents an investigation that was specifically designed to improve understanding of the factors that contribute to student module choices.

Building on the existing literature, the researchers constructed and implemented a questionnaire that was designed to elicit information on the importance of various motivating forces behind module choice. Analysis of an operational sample of 737 completed questionnaires distributed across all final year undergraduate students in a business school revealed the relatively low importance of extrinsic motivating forces that were largely expressed as an assessment focus.

In general, the results highlight the importance of intrinsic motivations and that these may vary in importance across individuals, which could then result in these students electing to study particular majors. The consistency in this factor's importance is reassuring given Ramsden's (1992) and Howorth's (2001) arguments that intrinsic motivations encourage a student to have a deeper approach to learning and that they will learn more and enjoy learning.

If teaching staff in business school departments are interested in improving the range and quality of their modules then it is worth emphasising that the success of their modules is related to the specific characteristics of the modules; attempting to shape, describe and market the module to encourage student herding behaviour (i.e. network / peer effects) and to attempt to encourage the timetabling staff to schedule the module when it is convenient to the most amount of students may be efforts that have important payoffs. For some students, these issues seem to be an overriding factor in module choice, but once overcome then the lecturing staff can proceed in feeding students' intrinsic motivations.

With respect to differences in results across sub groups divided along the lines of majors, gender or age, several interesting patterns emerge. Firstly, there appear to be minimal differences in motivations driving males and females in general. However, when this analysis is further disaggregated into youth and mature sub-samples we find that young males are in line with the full sample results in terms of being driven by intrinsic motivations, but that their older counterparts (males aged 25 and older) are much more likely to be dominated by module characteristics. There was no evidence of this difference in age for the females, with both the young and mature sub-groups first influenced by intrinsic motivations, and second by module characteristics. The results for majors showed that students within the disciplines of Management and Finance tended to be more intrinsically motivated relative to their peers in other disciplines.

Further research is necessary along these lines, not simply to identify whether these results can be replicated across other university business schools but also because student satisfaction and a university's reputation is at least partly based on motivations, expectations and student fulfilment. Universities and academics should strive to improve their knowledge of factors that contribute to student module choices and formulate strategies to enhance learning outcomes of students with a variety of motivations.

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Table 1: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.818
Bartlett's Test of Sphericity	Approx. Chi-Square	2055.305
	Df	66
	Sig.	0.000

Table 2: Pattern matrix

	Component		
	1	2	3
	Module Characteristics	Intrinsic Motivations	Achievement / extrinsic motivations
Thought it would be more interesting than alternatives		0.680	0.473
Thought it would be easier than alternatives			0.784
Relevant to my career aspirations		0.781	
Have friends taking this paper	0.645		
Thought I would gain a high mark	0.340		0.557
Only paper with space	0.728		
Lecturer's reputation attracted me to this paper	0.770		
Time and day of this paper was convenient	0.600		
Thought this paper would be impressive on CV	0.485	0.408	
Wanted to learn more about this subject		0.840	
Assessment structure of paper was appealing	0.459		
Thought this paper would be challenging	0.423	0.536	-0.357

Notes: Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.

Table 3: Total variance explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.449	28.742	28.742	3.449	28.742	28.742	3.078
2	2.193	18.279	47.021	2.193	18.279	47.021	2.539
3	1.038	8.654	55.675	1.038	8.654	55.675	1.697
4	.878	7.315	62.990				
5	.687	5.725	68.715				
6	.652	5.437	74.153				
7	.587	4.888	79.040				
8	.583	4.860	83.900				
9	.552	4.601	88.501				
10	.507	4.229	92.730				
11	.456	3.803	96.533				
12	.416	3.467	100.000				

Notes: Extraction Method: Principal Component Analysis.

Table 4: Male elective choice pattern matrix

	Component			
	1	2	3	4
	Intrinsic motivations	Network / peer effect	Convenience	Achievement / extrinsic motivations
Thought it would be more interesting than alternatives	.778			.479
Thought it would be easier than alternatives				.797
Relevant to my career aspirations	.814			
Have friends taking this paper		.757		
Thought I would gain a high mark		.480		.473
Only paper with space			.654	
Lecturer's reputation attracted me to this paper		.781		
Time and day of this paper was convenient			.815	
Thought this paper would be impressive on CV	.416		.650	
Wanted to learn more about this subject	.831			
Assessment structure of paper was appealing		.490		
Thought this paper would be challenging		.627		-.418

Notes: Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.

Table 5: Female elective choice pattern matrix

	Component			
	1	2	3	4
	Intrinsic motivations	Network / peer effect	Convenience	Achievement / extrinsic motivations
Thought it would be more interesting than alternatives	.628			.442
Thought it would be easier than alternatives			.307	.807
Relevant to my career aspirations	.747	-.329		
Have friends taking this paper		.905		
Thought I would gain a high mark		.524		.543
Only paper with space		.676		
Lecturer's reputation attracted me to this paper		.678		
Time and day of this paper was convenient			.873	
Thought this paper would be impressive on CV	.424		.467	
Wanted to learn more about this subject	.832			
Assessment structure of paper was appealing		.346		
Thought this paper would be challenging	.650			-.335

Notes: Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.

Table 6: Differences across majors

Major	Module Characteristics	Intrinsic Motivations	Achievement / extrinsic Motivations
Accounting	33%	17%	8.5%
(n = 160)	(1)	(2)	(3)
Economics	30%	18%	11%
(n = 77)	(1)	(2)	(3)
International Business	30%	17%	10%
(n = 70)	(1)	(2)	(3)
Marketing, Advertising, Retail and Sales	28%	19%	9%
(n = 235)	(1)	(2)	(3)
Management	20%	28%*	9%
(n = 261)	(2)	(1)	(3)
Finance	20%	27%	11%
(n = 114)	(2)	(1)	(3)
Business Information Systems	17%		30%
(n = 35)	(2)		(1)
Law	12%	30%*	18%
(n = 51)	(3)	(1)	(2)

Table 7: Age group and gender comparison

	Module Characteristics	Intrinsic Motivations	Achievement / extrinsic Motivations	Sample size
Young (<25)	29% (1)	17% (2)	8% (3)	507
Mature (≥25)	37.5% (1 and 3)	20% (2)	8% (4)	206
Male and Young	18% (2)	30% (1)	8.5% (3)	221
Male and Mature	32% (1)	18.5% (2)	9% (3)	94
Female and Young	26% (2 and 3)	28% (1)	8% (4)	286
Female and Mature	31% (2 and 3)	27% (1)	8% (4)	112