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What determines students' choices of elective modules?

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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.

Keywords: module choice, curriculum design, factor analysis.

JEL codes: A22

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**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*. 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.

However, little is known about why students choose specific modules; 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, provide information and guidance to students to improve their decision making processes, and thereby allow us to improve the retention, engagement and success rates of all students, including vulnerable groups within society, such as the ethnic minorities of Maori and Pacific Peoples in New Zealand or African American students in the United Kingdom. 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. The purpose of this research is to present a case study that was designed to acquire information that would enhance knowledge of student choice mechanisms and it draws on a large primary dataset comprised of students following a wide range of majors within a new university business school. 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.

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.

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[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.

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.

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 simply be capturing more immediate achievement measures.

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

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.

A complete investigation of programme choice should consider prior concerns (i.e. when students are applying for university programmes) and hence should simultaneously consider all available substitutes, such as other programmes within a university, other universities and other programmes offered at other universities.[2] Although the marketing of universities can affect this complex and potentially unfathomable choice for prospective students, university departmental members may be more interested in understanding student motivations for module choice when they are *in situ*.[3] 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 teachings. 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.

A programme level analysis is also important when considering different majors within a programme. It is highly likely that the student's underlying characteristics influence their choice of programme, major and elective and that there may be systematic differences between majors within a common business programme. 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.

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[2] 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.

[3] 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.

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 proceed to identify whether these motivating forces are common across individuals following the same major, whether the motivating forces differ across the lines of gender and age groups, and whether there are systematic differences across students following different majors. Our results illustrate strong 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 literature highlights the importance of motivations and expectations that may be student-specific, it was considered most appropriate to identify these facets through the use of a distributed individual-level questionnaire (see Appendix A). 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 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 experiences. 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 effort levels, motivations and expectations on a student's own ability in the 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 city to university city), which may impinge on the time available to devote to active learning. The results that this study does generate will therefore require replication over time, across economies and across 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.[4] 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 is in 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.[5]

SIFE students read out the information section of the survey (shown in Appendix A) and informed students that participation in the survey was entirely voluntary. As a token of the researchers' appreciation, SIFE students also made known that there were 3 x $50 movie vouchers available as a prize draw.[6] After the respondents had completed the questionnaire, SIFE students then collected all questionnaires and deposited then in the research project leader's office.

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, the reality is that most students were enrolled in either one to two elective modules. AUT has a modular system that has a high degree of prescription at all levels for each major to ensure coherence and 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 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 (specifically question 20) 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 question 21, 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 had three sections and included questions on work / life motivations and perceived expertise, programme level information and motivations, and elective motivations specific to the module in which they were asked to complete the questionnaire. While this research makes use of information from all sections of the questionnaire, it is the final section that is of core interest here.

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

[5] 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.

[6] All respondents were entered into the prize draw – students had to retain the prize draw slip inside the booklet they were given in order to be in the draw to win. These prize slips could not be linked back to any individual or questionnaire and required the matching of the student slip with the winning slip. This prize process separated the winning draw from the student responses.

As shown in Appendix A (question 21), there were a range of reasons students could select for choosing the module they were enrolled in, and the option of stating other motivations was also available if students chose to tick and complete the 'other' option. The list of motivating variables was derived from the literature discussed above and augmented based on staff discussions within AUT and within the research team. 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 the statements relating to each type of motivation.

Method of analysis

Once the data were collated on a spreadsheet, 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 variables called components[7] or factors and it can be helpful for increasing knowledge of the structure and interrelationships between variables (Hair *et al.*, 2006, p.101). The primary purpose of factor analysis is to define the underlying structure among the variables included in the analysis. It is a statistical tool that can identify the underlying structure of the relationships 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 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 between each group of variables 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' options 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 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.

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

The two maths / writing preference motivations 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, which is not unexpected if students select modules based on their interest and the perceived module difficulty.

Removal of the two 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 *ImpressiveOnCV* 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 *ModuleInteresting* 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.[8] 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[9]; 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 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.[10] 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

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[8] 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.

[9] 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).

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

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 reasons why students choose AUT over other tertiary alternatives within New Zealand (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 sample.[11] 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.

{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[12]). 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 second group of majors, which includes Management and Finance, with less defined career pathways, the intrinsic motivations dominate.

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

[12] 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 would be fruitful.

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 at the time of enrolment.[13] 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. Furthermore, NZ data suggest that only 40 percent of students graduate with a degree level qualification within four years of enrolling (Dye, 2005). This means that by using enrolment at 25 as the criteria, approximately 60 percent of those students enrolling in degrees would not be graduating before 30 years of age and would therefore be classified as mature in this study.

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.

{Insert Table 7 about here}

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.

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[13] A number of other studies made the mature classification based on age at graduation as 30 years. See for example work in the United Kingdom by Elias (2004), Purcell (2001a, 2001b) and Rowley (2001). Whether students are significantly more mature at the age of 30 than they are at the age of 25, and how this will influence module choice, could be the subject of future research.

[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.

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.

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 selecting to study for 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 female youth and those female and mature, both 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
ModuleInteresting		0.680	0.473
ModuleEasier			0.784
ModuleRelevantCareer		0.781	
FriendsTakingModule	0.645		
Highmark	0.340		0.557
Space	0.728		
LecturersReputation	0.770		
ClassConvenient	0.600		
ImpressiveOnCV	0.485	0.408	
WantedtoLearn		0.840	
AssessmentStructure	0.459		
ModuleChallenging	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
ModuleInteresting	.778			.479
ModuleEasier				.797
ModuleRelevantCareer	.814			
FriendsTakingModule		.757		
Highmark		.480		.473
Space			.654	
LecturersReputation		.781		
ClassConvenient			.815	
ImpressiveOnCV	.416		.650	
WantedtoLearn	.831			
AssessmentStructure		.490		
ModuleChallenging		.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
ModuleInteresting	.628			.442
ModuleEasier			.307	.807
ModuleRelevantCareer	.747	-.329		
FriendsTakingModule		.905		
Highmark		.524		.543
Space		.676		
LecturersReputation		.678		
ClassConvenient			.873	
ImpressiveOnCV	.424		.467	
WantedtoLearn	.832			
AssessmentStructure		.346		
ModuleChallenging	.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	29%	17%	8%	507
	(1)	(2)	(3)	
Mature	37.5%	20%	8%	206
	(1 and 3)	(2)	(4)	
Male and Young (<25)	18%	30%	8.5%	221
	(2)	(1)	(3)	
Male and Mature (≥25)	32%	18.5%	9%	94
	(1)	(2)	(3)	
Female and Young (<25)	26%	28%	8%	286
	(2 and 3)	(1)	(4)	
Female and Mature (≥25)	31%	27%	8%	112
	(2 and 3)	(1)	(4)	

Appendix A – Questionnaire

STUDENT'S PAPER SELECTION PROCESS
2011 Survey

AUT
UNIVERSITY
Faculty of Business and Law

This questionnaire is about what motivated you as a Bachelor of Business student to enrol in this paper.

Please complete as many of the questions in this booklet that you can. This survey should take no more than 10 minutes to complete. It is worth noting that your first response to a question is often the best response. Once you have finished, please hand in this survey to your surveyor.

Please be assured all replies are confidential. Your responses will remain 100% anonymous.

As a token of my appreciation, there are 3 x $50 Event Cinema Vouchers up for grabs. All respondents will be entered into the prize draw – please retain the draw slip that you have been given. The prize draw will take place 31 July 2011, and you will be notified soon after.

By completing this questionnaire you indicate your consent to participate.

Many Thanks.

Gail Pacheco, Phone: (09) 921 9999 ext. 5708. Email: gail.pacheco@aut.ac.nz

Course Code: _____ **Course Title**: _____

Please fill in this unique respondent identifier:

First letter of your place of birth (i.e. town / city)	*Day of your birth (two digits) e.g "04" if born 4th September*	*First letter of your mother's name*	*Last digit of your student ID number*

Part 1: This section gathers general demographic information

1) Are you: male / female *(please circle one)*

2) Which age range do you fall within? *(please circle one)*

≤19   20-21   22-24   25-29   30+

3) With which ethnicity do you most identify?: *(please tick all that apply)*

☐ European   ☐ Maori   ☐ Pacific Peoples   ☐ Asian

☐ Middle Eastern / Latin American / African   ☐ Other _____

4) Is English your native language? Yes / No *(please circle one)*

5) Has anyone else in your immediate family studied at university? (please tick all that apply)

☐ Father   ☐ Mother   ☐ Brother or sister

6) Are you studying: full-time / part-time *(please circle one)*

7) Are you a domestic / international student? *(please circle one)*

8) When were you first enrolled in your current degree? | Semester: | | Year: |

The possible answers for questions 9 to 11 are:

D   C-   C   C+   B-   B   B+   A-   A   A+

9) What was your average grade last <u>semester</u>?

10) What was your average grade last <u>year</u>?

11) What was your average grade for the 1st year of your BBUS?

12) On average, how many hours do you work in paid employment per week during the semester:

13) How important are the following:

		Very important	Important	Neither important nor unimportant	Unimportant	Very unimportant	Not applicable
a)	Career development	1	2	3	4	5	N / A
b)	Personal development	1	2	3	4	5	N / A
c)	Job satisfaction	1	2	3	4	5	N / A
d)	Financial reward	1	2	3	4	5	N / A
e)	Status and respect	1	2	3	4	5	N / A
f)	Valued by employer	1	2	3	4	5	N / A
g)	Socially useful job	1	2	3	4	5	N / A
h)	International experience	1	2	3	4	5	N / A
i)	Leisure time	1	2	3	4	5	N / A
j)	Involvement in local issues	1	2	3	4	5	N / A
k)	Environmental issues	1	2	3	4	5	N / A
l)	Current affairs	1	2	3	4	5	N / A
m)	Family and other relationships	1	2	3	4	5	N / A

14) How far do you agree / disagree with the following statements?

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not applicable
a)	I am ambitious	1	2	3	4	5	N / A
b)	I do not expect to get main fulfilment from work	1	2	3	4	5	N / A
c)	I live to work	1	2	3	4	5	N / A
d)	I work to live	1	2	3	4	5	N / A
e)	I expect to work continuously until retirement	1	2	3	4	5	N / A
f)	I expect to take career breaks for family reasons	1	2	3	4	5	N / A
g)	I expect my partner to take career	1	2	3	4	5	N / A

	breaks						
h)	I expect to change career several times	1	2	3	4	5	N / A

15) *Please rate on a scale of 1 – 100, where 100 is Excellent , 1 is poor and 50 average, how you would rate your own:*

Verbal / Written ability:	
Math ability:	
Organisational ability:	
Technical ability:	
Problem solving:	

Presentation skills:	
Own motivation:	
Ability to motivate others:	
Teamwork skills:	
Reflective ability:	

16) In preparation for lectures, do you usually visit AUT Online to download / print out / read lecture slides and other material?

☐ *Always*   ☐ *Sometimes*   ☐ *Rarely*   ☐ *Prac[ ]ally never*

Part 2: This section asks you to indicate why you selected the major(s).

---

17) What is your major(s): *(please tick those that apply)*

☐ *Accounting*   ☐ *Economics*   ☐ *Finance*   ☐
International Business
☐ *Management*   ☐ *Law*   ☐ *Marketing (MARS)* ☐ *Business*
Information Systems

18) Why did you choose these major(s)? *How far do you agree / disagree with the following statements?*

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not applicable
a)	I would be able to keep up with the other students in this major	1	2	3	4	5	N / A
b)	I thought this major would be easier than the alternatives	1	2	3	4	5	N / A
c)	I would rather choose a degree that I can complete, rather than a more difficult one, with potentially higher earnings	1	2	3	4	5	N / A
d)	I thought this major would be interesting	1	2	3	4	5	N / A
e)	I thought this major was something I would be good at	1	2	3	4	5	N / A
f)	I believe this major increases my chances for steady employment	1	2	3	4	5	N / A
g)	The potential career prospects are rewarding in terms of pay	1	2	3	4	5	N / A
h)	The job opportunities in this field look rewarding	1	2	3	4	5	N / A
i)	It is important for my current leisure	1	2	3	4	5	N / A

	activities						
j)	I was inspired by a lecturer	1	2	3	4	5	N / A
k)	A guidance counsellor / career office suggested it would be the appropriate major for me	1	2	3	4	5	N / A
l)	I have a family member / relative that works in this field	1	2	3	4	5	N / A
m)	A family member / relative encouraged me to take this major	1	2	3	4	5	N / A
n)	Other (please specify):	....					

19) I would like to study one of my majors at a higher level, if it were possible?　　　Yes / No

Part 3: Students enrol in papers for a variety of reasons. We would like to understand better why you enrolled in _this particular paper_.

20) Did you take this paper because it is compulsory for your major?　　　Yes / No

If you answered "yes" (i.e. this paper is compulsory) then this is the end of the survey. Thank you for your time.
If you answered "no" (i.e. this paper is not compulsory) then please proceed to the section below.

21) I decided to take this paper because:

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not applicable
a)	I thought it would be more interesting than the alternatives	1	2	3	4	5	N / A
b)	I thought it would be easier than the alternatives	1	2	3	4	5	N / A
c)	It seemed relevant toward my career aspirations	1	2	3	4	5	N / A
d)	I thought this paper would be highly quantitative	1	2	3	4	5	N / A
e)	I have friends taking this paper	1	2	3	4	5	N / A
f)	I thought I would be able to gain a high mark for this paper	1	2	3	4	5	N / A
g)	It was the only paper with space on it	1	2	3	4	5	N / A
h)	The lecturer's reputation attracted me to this paper	1	2	3	4	5	N / A
i)	I thought this paper would be challenging	1	2	3	4	5	N / A
j)	The time and day of this paper was convenient	1	2	3	4	5	N / A
k)	I thought this paper would look impressive on my C.V.	1	2	3	4	5	N / A
l)	I wanted to learn more about	1	2	3	4	5	N / A

	this subject						
m)	The assessment structure for this paper was appealing	1	2	3	4	5	N / A
n)	The emphasis in this paper is on writing, rather than math	1	2	3	4	5	N / A
o)	Other – please state	....					

This is the end of the survey. Thank you very much for your time.

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