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An Understanding of Student Satisfaction

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An Understanding of Student Satisfaction

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A dissertation submitted in partial fulfilment of the requirements of
Dublin Institute of Technology for the degree of
M.Sc. in Computing (Data Analytics)

July 2015

Declaration

I certify that this dissertation which I now submit for examination for the award of MSc in Computing (Data Analytics), is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the test of my work.

This dissertation was prepared according to the regulations for postgraduate study of the Dublin Institute of Technology and has not been submitted in whole or part for an award in any other Institute or University.

The work reported on in this dissertation conforms to the principles and requirements of the Institute's guidelines for ethics in research.

Signed: *L. Sweeney*

Date: *10 July 2015*

Abstract

Retention is a challenge for all third level institutions and retention rates remain higher than colleges would like them to be, this has intensified in recent years as participants in higher education has increased and diversified. Third level institutions which would not only benefit from increased fees but also through low cost word of mouth promotion and an enhanced reputation. As such, an important concern for colleges is retaining students and understanding the reasons why students may choose to leave a program. While student satisfaction and retention is a well researched topic there remains questions to be answered in terms of the factors that lead to non-completion. The aim of this research is to gain a greater understanding of the factors that lead to dissatisfaction and non-completion among third level students in Ireland. This research analyses data from 10,110 respondents of the Eurostudent survey, a survey of student attitude and satisfaction sent to all third level students in Ireland. A predictive model was developed and analysed using regression analysis and decision tree analysis. In line with literature, satisfaction with the student's college, teaching quality, teaching staff, facilities, finances, accommodation and friendship, feeling interested, calm and in good spirits and the extent to which student exercise were found to be significant predictor variables of student satisfaction. In contrast to literature, this study did not find social status or income are predictors of student satisfaction.

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1. Introduction

1.1 Background

Retention is a challenge for all third level institutions (Meling et al., 2012). This has intensified in recent years as participants in higher education has increased significantly (Fleming, 2009) and diversified (Berger and Lyon, 2005). While a certain percentage will always be expected to drop out of college, an effort should be made to keep this to a minimum (Osman et al., 2010), research consistently demonstrates that it costs more to attract a new customer than retain an existing one (Gemme, 1997), this is also the case for third level institutions which would not only benefit from increased fees but also through low cost word of mouth promotion and an enhanced reputation (Kara and DeShields, 2004).

As such, an important concern for colleges is retaining students and understanding the reasons why students may choose to leave a program (Gibson, 2010). While student satisfaction and retention is a well researched topic (Braxton and Hirschy, 2005) there remains questions to be answered in terms of the factors that lead to non-completion (Moxley et al., 2001). As a result, retention rates are higher than colleges would like them to be and more knowledge in the area is needed (Berger and Lyon, 2005).

1.2 Research Project

This research project aims to fill this gap in research and provide greater understanding of the factors that lead to dissatisfaction and non completion of third level students in Ireland. Specifically, the research question is:

What are the factors that impact student satisfaction among third level students in Ireland?

To answer this, the research has specified the following four research objectives.

1.3 Research Objectives

1. Gain an understanding of the level of student satisfaction among third level students.

This objective seeks to undercover the extent to which third level students studying in the Ireland are satisfied with their experience of third level education. Measures of satisfaction are in line with previous studies in the area.

2. Gain an understanding of the factors that impact on student satisfaction.

A review of current literature has identified a number of factors that impact on student satisfaction including financial anxiety, quality of lecturers and teaching, student involvement, learning resources, facilities, and social life. This research will aim to uncover the extent to which these factors impact student satisfaction and uncover additional factors that may exist.

3. Develop a prediction model of student satisfaction.

A proposed model of student satisfaction is developed drawing on recent literature in the area. The model will be tested using decision tree and regression analysis.

4. Analyse the relationship between satisfaction and future study plans

This research will assess the relationship between student satisfaction their post completion intentions, specifically their intention to go onto further study. It will also assess the relationship between satisfaction and student perception of their career prospects.

1.4 Research Methodology

The data for this research consists of the responses from third level students in Ireland to the fifth round of the Eurostudent project. This survey involved 27 participating countries from a broad geographical spectrum. The Eurostudent survey was co-ordinated in Ireland by Insight Statistical Consulting, an independent marketing research organisation, on behalf of the Higher Education Authority and

the Eurostudent consortium. Data was collected from April 22nd 2013 to May 31st 2013 and represents the most recent Eurostudent data available.

This survey was open to all third level students in Ireland. All full-time and part-time students in higher education received a link to the survey from their respective colleges. A reminder was issued during May before the closing date on May 31st 2013. In addition to responding via this email, students were also able to complete their return by visiting is.gd/eurostudent or clicking the link on their virtual learning environment or learning management system, e.g. Moodle or Blackboard. The survey was promoted using various social media. All students who completed the survey had the opportunity to win one of 10 €100 vouchers (one4all or equivalent).

The data set comprises of 271 variables containing a wealth of information about students and their experience in third level education including financial anxiety, their evaluations of their third level institution including programme effectiveness, effectiveness of lecturing staff, their involvement and motivation in their study, their evaluation of college facilities, social life, travel distance to institution, workload, study abroad, accommodation, health and wellbeing (including alcohol consumption, smoking and exercise levels), work status of guardians and demographic information such as age, gender, nationality, children and income. This information is available across 10,100 students.

Analysis of the data set is carried out in SPSS. A number of tests are carried out including correlation, cross tabulation and Anova tests. Analysis of the proposed predictive model of student satisfaction is carried out using regression analysis and decision tree analysis. An explanation of these tests and results are provided in the findings chapter of this project.

1.5 Scope and Limitations

This research uses secondary data. The Eurostudent data set, a survey which assesses the attitudes of all third level students in Ireland provided rich data for the analysis. However, it was not tailor made for the current study and did not directly measure retention or students intention to remain in third level education to completion. The data set did however; provide data in relation to future study intentions and student's perceptions of their employment prospects which provided interesting findings.

1.6 Outline of Project

This project is structured into five chapters, following the Introduction chapter; the Literature review provides an in-depth analysis of current literature in the area. It first defines student retention and reviews retention rates in third level education in Ireland. Retention theories from Aston (1991), Tinto (1975) and Bean (1980, 1983) are reviewed. Attention then turns to student satisfaction and the relationship between student satisfaction and retention. Next, the chapter analyses the factors that impact student satisfaction and retention including academic achievement pre-enrolment, social factors, financial factors, external factors, work commitment and institutional factors.

The next chapter, the Methodology describes the objectives of this research and the methodology used to meet these objectives. It justifies the approach chosen and explains the data set used in the project.

The Findings chapter describes the findings of the data analysis carried out on the Eurostudent survey dataset. The chapter first describes the variables that were selected for this project and the reasons for their selection. The data set is described and findings are analysed under each objective. The proposed prediction model of student satisfaction is analysed using regression analysis and decision tree analysis.

The final chapter, the Conclusion discusses the main findings of the research and the contributions made by this project. It also outlines the limitations of the project and discusses possible future research.

2. Literature Review

2.1 Introduction

Participants in higher education has increased significantly over the past decade and it is now, for many countries, including Ireland, the norm to progress to higher education as a logical step after graduation from secondary school (Fleming, 2009). The types of students served by colleges and universities has changed over time, moving from a small, selective, generally homogenous group of privileged individuals to a diverse spectrum of individuals (Berger and Lyon, 2005). The third level student population represents a diverse group in terms of age, gender, class, sexual orientation, race, ethnicity, culture and learning orientations and styles (Moxley et al., 2001). As the student population has grown and diversified so to have the retention issues (Berger and Lyon, 2005).

Students from non traditional academic backgrounds and under-represented groups have been encouraged to participate where some institutions have made a strong point of including 'access' in their missions. This widening of participation brings with it an increased risk of non-completion (Yorke, 1999). This was outlined in A National Audit Office Report 'The sector has been seeking to both increase and widen participation to include more students from groups that have been less well represented in higher education, while bearing down on non-completion. There is a balance to be achieved between these priorities as increasing and widening brings in more students from under-represented groups who may been more support to complete their courses' (NAO, 2007).

The transitions from post-primary to higher education is a major stage in the lives of school leavers. It is a step into the unknown for most, they are expected to form mature decisions about course choices and to adapt to a completely different social and learning environment (McCarthy, 2000). Many students who endeavour to earn a college degree fail to persist until graduation (Roberts and Styron, 2010).

Student satisfaction and retention is a well researched topic (Braxton and Hirschy, 2005) yet there is still so much we do not know (Tinto, 1993) about this complex personal, social and academic enterprise (Moxley et al., 2001). Despite the extensive body of literature on the topic (Tinto, 1993), issues remain unresolved (Berger and Lyon, 2005) and there is still much to be learned about the complexity of the factors (Tinto, 1993) that give rise to this ill structured problem of non-competition (Braxton and Hirschy, 2005). As a result, retention rates are higher than colleges would like them to be and more knowledge in the area is needed (Berger and Lyon, 2005).

Retention is a challenge for all third level institutions (Meling et al., 2012), especially among first years (Osman et al., 2010; Bennett and Kane, 2009; Moses et al., 2011) with more than half of students that drop out doing so in their first year (Cox et al., 2005). While a certain percentage will always be expected to drop out of college, an effort should be made to keep this to a minimum (Osman et al., 2010), research consistently demonstrates that it costs more to attract a new customer than retain an existing one (Gemme, 1997), this is also the case for third level institutions which would not only benefit from increased fees but also through low cost word of mouth promotion and an enhanced reputation (Kara and DeShields, 2004). As such, an important concern for colleges is retaining students and understanding the reasons why students may choose to leave a program (Gibson, 2010).

To introduce the reader to the topic this chapter will first define student retention and review retention rates and third level education in Ireland. Retention theories from Aston (1991), Tinto (1975) and Bean (1980, 1983) are reviewed. Attention then turns to student satisfaction and the relationship between student satisfaction and retention. Next, the chapter analyses the factors that impact student satisfaction and retention including academic achievement pre-enrolment, social factors, financial factors, external factors, work commitment and institutional factors.

2.2 Definition of student retention

The success of any college depends on its ability to retain its students (Thompson and Prieto, 2013). Retention is generally measured as remaining in study until graduation (Cox et al., 2005) or continuation to the following year of entry (Bennett and Kane, 2009). Non continuation could be due to withdraw for personal reasons or failure to progress due to unsatisfactory performance at examinations.

The importance of student success in higher education is incontestable, whether one's standpoint is that of a student, a programme team, a department, an institution or a higher education system (Yorke and Longden, 2004). Governments around the world are increasingly calling higher education to account for the money that is invested in institutions (Yorke, 1999). As such, retention rates are an important concern for every third level institution (Mathews and Mulkeen, 2002). Retention rates are often used as an indicator of the effectiveness and efficiency of an institution or education system (Yorke and Longden, 2004). It is perceived as a reflection of quality (Mathews and Mulkeen, 2002). Retention rates are one of the most common ways students, parents and stakeholders evaluate the effectiveness of colleges. A positive reputation in terms of retention rates increases the college's ability to attract the best students and faculty (Hagedorn, 2005). Institutions have to know, not only who leaves but why (Tinto, 1993).

The consequences of exiting higher education is not trivial for the individual either, the occupational, monetary and other social rewards of higher education are lost (Tinto, 1993), along with a feeling of disappointment (Ni Bhriain, 2000). Parents of students may experience anxiety and disappointment and also experience financial loss (Ni Bhriain, 2000). The failure of undergraduate students to complete their studies is a cost to a government which funds higher education institutions and students through contribution to fees and or maintenance (Yorke, 1999; Bhriain, 2000). Significant savings can be experienced when retention rates increase (Hagedorn, 2005). Levitz (2011) reported that institutions spend a significant amount of money recruiting new students.

It is important to differentiate between voluntary and involuntary withdrawal. Voluntary departure occurs when a student decides not to re-enrol, involuntary departure occurs when the student is not permitted to re-enrol as a result of exam results for example (Berger and Lyon, 2005). Many terms have been used to refer to voluntary departure including student mortality, college drop outs, student attrition, college retention and student persistence (Berger and Lyon, 2005).

Non completion is difficult to define (Berger and Lyon, 2005) and there is no shared definition (Fleming, 2009), it is to some extent, a riddle (Cook and Rushton, 2008). Measuring college retention is complicated, confusing and context dependent (Hagedorn, 2005). Irish policy and research refers to the terms 'completion' and 'non-completion', completion is defined as finishing a programme within the typical duration plus half the duration again (Fleming, 2009). This refers to institutional completion. Institutional departure occurs when a student leaves a particular institution whereas system departure occurs when a student leaves higher education system (Berger and Lyon, 2005). This may result in inflated figures. One study found that 73% of those that left college had returned to college and of them 76% went on to another institution while 24% remained in the same institution (Yorke, 1999).

Hagedorn (2005) describes four types of retention. Institutional retention refers to the percentage of students that return to the same institution. System retention refers to the percentage of students that remain within the system, thus if a student moves from one college to another they are classified as retained. Hagedorn (2005) acknowledges that this is difficult to measure. Academic discipline retention refers to the percentage of students that remain within a specific discipline. Lastly, course retention refers to the percentage of students that remain with the course.

2.3 Retention Rates in Ireland

According to the OECD, Ireland has one of the highest rates of survival of third level students (Fleming, 2009). One study found retention rates in Ireland of 83% among ISCED 5A programs and 69% among ISCED 5B programs. ISCED 5A programmes are largely theory based and are designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements, while ISCED 5B programmes are typically shorter and focus on practical, technical or occupational skills for direct entry into the labour force (Fleming, 2009).

A recent Higher Education Authority (HEA) report found that, while university non-progression rates remain consistent at 9%, they increased from 16% to 17% among institute of technology students. The report shows variations between course categories, teaching and healthcare courses under all headings had highest retention rates. However, construction and related courses below honours degree level at institutes of technology had the highest dropout rates of 40%, overall non-progression rates in construction courses jumped from 20% to 28% in the three-year period (Murray, 2014).

There is also a difference among college, the highest non-progression rate in the IT sector was at Waterford IT (21 per cent) while the best (4 per cent) was at Letterkenny. There was less variation in the university sector: Trinity had the lowest number of students dropping out (8 per cent) while DCU had the highest (11 per cent). Teacher training college St Pat's in Drumcondra had the lowest non-progression rate in the country at just three per cent (Brophy, 2013). The report also identified a worrying trend among males, with the proportion dropping out by second year up from 17% to 19%, while women's non-progression rates remain unchanged at 13% (Murray, 2014). The following section analyses the cause of non progression.

2.4 Retention theories

To gain an understanding on the factors that impact on retention the following section reviews the theories of retention. The first theory is Astin (1991) Input-Environment- Attrition theory followed by the widely accepted and influential Interactionalist Theory by Tinto's (1975). This is followed by Bean's (1980, 1983) Model of Work Turnover to Student Attrition.

2.4.1 Astin's (1991) Input – Environment – Attrition Theory

Astin (1991) described an Input – Environment – Output model; inputs have a direct impact on outcomes as well as an indirect impact through environmental factors (Yorke, 1999). Astin argued that student involvement has a major impact on student's learning and development. As such, the effectiveness of educational policy or practice is directly related to its capacity to increase student involvement (Braxton and Hirschy, 2005). A more detailed model is provided by Tinto.

2.4.2 Tinto's (1975) Interactionalist Theory

Theory relating to non-completion has been developed to the greatest extent in the US (Yorke, 1999). Tinto's (1975) Interactionalist Theory is the most widely accepted (Cook and Rushton, 2008) and influential model of student retention (Yorke and Longden, 2004; Yorke, 1999). According to the theory, a student's decision to withdrawal is the culmination of a longitudinal process that determines a student's ability to integrate into the academic and social aspect of an institution. The theory argues success in third level education results from a student successfully going through three stages of separation, transition and incorporation. The student must first separate from his/her former environment. A transition period follows where a student adjusts to the new environment and is a time of risk, anxiety and new experiences. The final stage of incorporation represents full integration and acceptance by the new environment (Cook and Rushton, 2008).

The theory argues that a student's characteristics such as family background, individual attributes and school experience (Yorke and Longden, 2004) affect the student's intentions, goals and commitments to the institution. Having experienced third level education, the level of student flexibility (how adaptable the student is), congruence (match between students social and academic experience and expectations), difficulty and isolation influences their decision to remain in college or not (Cook and Rushton, 2008). In conclusion, the level of student integration into academic and social aspects of the institution determines whether they will complete the programme (Mathews and Mulkeen, 2002), this is determined as a result of the students interactions with the social and academic dimensions of the college (Braxton and Hirschy, 2005). Academic integration is dominated by the student's academic performance and the quality of formal and informal interactions with academic staff. Social integration, on the other hand refers to the ease of making friends and the presence of a sizable number of students with similar lifestyles and values (Cook and Rushton, 2008).

Figure 1.1 A simplified form of Tinto's Model of Institutional Departure
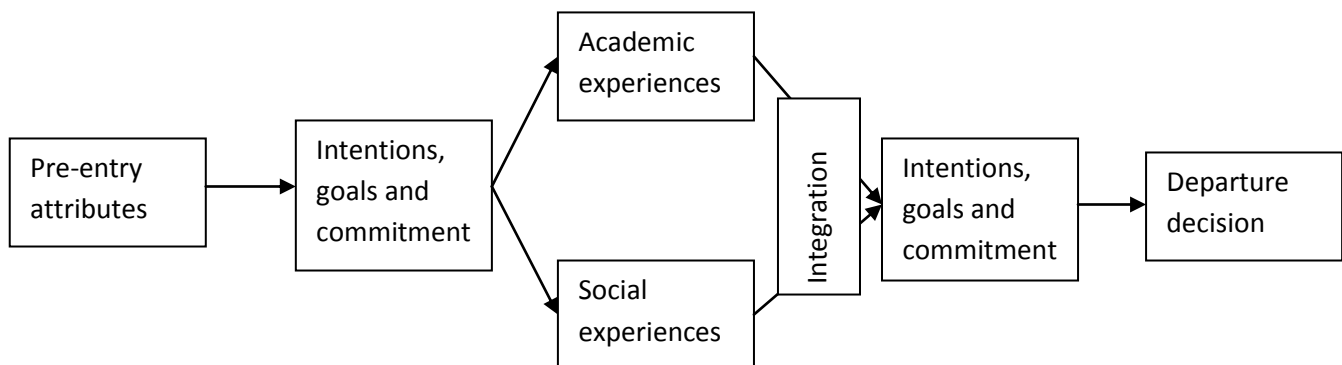
Source (Yorke, 1999: 9)

Tinto's model has been criticised for inadequate attention to the impact of external factors (Yorke, 1999). However, in further work, Tinto acknowledges the influences of financial resources, connection with an external community (such as family and

work) and the classroom experiences of the student impact their decision to persist (Braxton and Hirschy, 2005).

Drawing on Tinto's model, Braxton and Hirschy (2005) argue that important distinctions exist between residential and commuter colleges and universities. They argue that the social communities in commuter colleges is less structured and clarified than residential colleges. Students in commuter colleges also experience conflicts between attending college and other obligations such as work and family. As such the departure process may be different for students in commuter and residential colleges (Braxton and Hirschy, 2005). A study of UCD student by Matthews and Mulkeen (2002) found those students commuting were more likely to leave than those living in Dublin.

Beatty-Guenter (1994) model focused on the strategies to reduce retention. Similar to Tinto, she argued colleges and students need to adapt to each other to maximise retention. There are five components of strategies. The first is termed 'sorting' and they include pre-entry strategies such as marketing and promotion, the admissions process, attendance strategies and support for 'at risk' students. Supporting strategies assist students such as pastoral care, financial support and child care. Connecting strategies encourage students to identify more closely with the college such as student mentoring. Transforming strategies attempt to change student attitudes and behaviours such as study skill development and tutorial support (Cook and Rushton, 2008).

2.4.3 Bean's (1980, 1983) Model of Work Turnover to Student Attrition

Bean (1980, 1983) adapted Price and Mueller's (1981) model of employee turnover in work organisations to the problem of student department from colleges and universities (Braxton and Hirschy, 2005). According to Bean (1980, 1983) a number of variables influence satisfaction, which in turn influences a student's intention to leave. This in turn has a direct impact on a student's decision to remain in college or not. As such student's beliefs influence attitude which in turn influences behaviour

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(Yorke, 1999). It is argued that participation, communication, distributive justice, grades, practical value, development, courses and membership in campus organisational are said to influence student satisfaction (Braxton and Hirschy, 2005).

Ozga and Sukhandan (1998) carried out qualitative research in the UK. They argued that previous models placed too much emphasis on the fault of the student and argued that the reasons for non completion are evenly distributed between the student and the institution. They argued there are two categories of factors leading to non completion, student preparedness and compatibility of choice (Cook and Rushton, Yorke, 1999). Students who lack the appropriate preparation for life at university will find it more difficult to make the necessary personal and academic adjustment (Cook and Rushton, 2008).

2.5 Definition of satisfaction

Although there is little debate over the need to satisfy students, arriving at a precise meaning of what that entails is unclear (Guolla, 1999). From service marketing literature, customers are thought to be satisfied when the quality of service they receive matches or exceeds their expectations (Hill, 1995). Thus, in higher education, student satisfaction occurs when perceived performance meets or exceeds the students' expectations (Mark, 2013). As students evaluate service quality, they typically cannot help but compare the performance they experience with the performance they expected (Wright and O'Neill, 2002).

The expectations of students may be influenced by their individual needs, communication from the institution, word of mouth communication and other non institutionally sanctioned sources such as the student evaluation website ratemyprofessor.com (Wilkins et al., 2012).

The SERVQUAL scale developed by Parasuraman et al. (1988) which compares service performance to expectations has been one of the most commonly used scale to measure service quality. However, it has been criticised for poor reliability and validity (Clemes et al., 2007). Cronin and Taylor (1992) developed the SERVPERF instrument as an alternative, this ignores expectations and measures only customer experience. Many researchers argue SERVPERF performs better than SERVQUAL (Clemes et al., 2007).

2.6 Impact of satisfaction on student retention

'Similar to the important of satisfying customers to retain them for profit-making institutions, satisfying the admitted students is also important for retention' (Kara and DeShields, 2004: 1). A common view is that satisfied students are more likely to be loyal to the university, thus remaining in a program and possibly maintaining contact and support of an institution after graduation (Gibson, 2010). Therefore higher education should focus on student satisfaction due to its potential influence on student motivation, recruitment, effort and retention (Alzamel, 2014; Frederickson, 2012). A study carried out by Aritonang (2014) found student satisfaction is a positive and significant predictor of student loyalty. Kara and DeShields (2004) similarly reported a positive link between satisfaction and retention among students. Thus, an understanding of the factors behind the student satisfaction may provide colleges with the tools needed to improve the quality of their services (Stukalina, 2014) and could give a college a competitive advantage (Enache, 2011).

Focusing on specific factors, Roberts and Styron (2010) found that those that did not return had statistically significantly lower perceptions of social connectedness and satisfaction with faculty than students that returned. Focusing on student satisfaction with their course, Langbein and Snider (1999) found that compared to mid-rated courses, enrolment in poor rated courses significantly reduces the probability of retention, however, surprising, enrolment in top rated courses also significantly reduces the probability of retention. They argue a possible explanation is that the

satisfaction of students in the top rated courses is short lived and they soon look elsewhere for better courses.

2.7 Impact of satisfaction on student performance

The loyalty and satisfaction of customers are regarded as strong tools for gaining competitive advantages in any business environment (Alzamel, 2014). This is no different for third level institutions. According to Smayling and Miller (2012) industrial psychologists and management theorists that been examining the linkage between job satisfaction and job performance for at least fifty years, they quote William Shakespeare who wrote 'To business that we love, we eagerly arise, and go to with delight'. Although it seems intuitively obvious to extent this to students and argue that the happy student will be a more productive student, empirical tests of that assumption are curiously sparse (Rode et al, 2005).

Smayling and Miller's (2012) study examined the relationship between satisfaction and performance of 359 student interns and found a positive relationship existed. Drawing on Karasek and Theorell's (1990) Job demands – Control – Support model Chambel and Curral (2005) found levels of satisfaction have a direct impact on student performance and mediate the relationship between academic work control and performance. extending beyond satisfaction with their university to include satisfaction with family, housing and leisure to what Rode et al. (2005) term 'life satisfaction', their study found a positive relationship between satisfaction and performance among students. Focusing on teams, Zeitun et al. (2013) found a statistically significant positive relationship exists between satisfaction and performance of the team among third level students.

Utilising structural equation modelling Saenz et al. (1999) found that student's experience was positively associated with their academic performance and specifically there was a positive relationship found between student integration into third level education and their performance. These findings were later supported by

Valentine (2003). Drawing on findings from 372 students across twelve public and four private universities, Martirosyan et al. (2014) reported a significant relationship between student satisfaction and academic performance.

2.8 Factors impacting student satisfaction

No institution should seek to attain a 100% retention rate. Some students will honestly feel that having experienced third level education that it is not for them or the particular course is not what they are looking for (Mathews and Mulkeen, 2002) and leaving college may be in the best interest for some students (Tinto, 1993). It has been argued that no single factor explains non completion rates in Ireland; there are a range of academic, personal, financial and institution specific factors (Carpenter, 2000).

Studies have identified multiple factors contributing to a student's decision to leave college. Many studies report wrong course choice (Yorke, 1999; Healy et al., 1999; Baird, 2002; Davies and Elias, 2003; McCarthy, 2000) or wrong institution choice (Davies and Elias, 2003) as a factor impacting a student's decision to leave college early.

There are many factors external to the institution which may cause dissatisfaction among students and disruption to their education such as serious illness, financial problems or family issues (Thompson et al., 2013; Osman et al., 2010). Health variables such as smoking and alcohol (Cox et al, 2005) student motivation, effort and anxiety about their personal ability (Sargent et al., 2011) have been shown to impact student satisfaction and retention. In addition, gender may impact on student retention; according to Moses et al. (2011) females are more likely to persist to completion than males.

There are also a number of factors within the control of the institution that can impact satisfaction. According to Alzamel (2014), Bennett and Kane, (2009), Priya Raina et al. (2013) and Meling et al. (2012) these include quality of education; facilities and staff; design, assessment and delivery of service; cost of education; nature of the learning environment; reputation of the institute; recognition of the institution and its programmes. These factors are discussed individually in the following sections.

2.8.1 Academic achievement pre-enrolment

Academic achievement prior to enrolling in college has consistently been reported as a factor impacting student completion (Astin and Oseguera, 2005). Jones (1990) found that students who entered university with high grades at secondary school are less likely to withdrawal or fail, Richardson (1995) found this was also the case among mature students. Matthews and Mulkeen (2002) study of UCD students and Healy et al. (1999) study of students at three Institutions of Technology reported similar results. According to Bean (2005) institutions enrolling students with the highest academic achievements have the highest retention rates. Similarly, studies have reported a student's inability to cope with demands of third level education as an important contributor to non completion (Yorke, 1999; Davies and Elias, 2003).

2.8.2 Social factors

According to Stukalina (2014) a university is a social place that contributes to the socialisation of students as well as the development of their personalities, as such, students must be regarded as active members of the academic community and such involvement impacts on student satisfaction. College, for most students, is not only a time of academic pursuits but also an opportunity to explore or enhance themselves as social beings (Roberts and Styron, 2010). The social lives of students and their exchanges with others inside and outside the institution are important in retention decisions (Bean, 2005; Roberts and Styron, 2010). Ethington (1990) also found academic and social integration has a direct and positive effect on completion.

According to Bean (2005: 227) "Few would deny that the social lives of students in college and their exchanges with others inside and outside the institution are important in retention decisions". Yorke (1999) study of UK students found unhappiness with the social environment contributes to non-completion. Langbein and Snider (1999) also found that students that are more involved in college life and less likely to leave. Consequently, it is imperative for higher education administrators to work diligently to provide students with opportunities to get involved with campus and activities (Tinto, 1993). Roberts and Styron (2010) found that those that did not return to college had statistically significant lower perceptions of social connectedness than those that remained in their course.

Drawing on Pace (1980) work, Tinto (1993) outlines that what a student gets out of college depends not only on what the college does but also the quality and degree of effort the student makes. Student involvement in college, both academically and socially can positively impact on completion rates (Lenning, 1980). In addition, parent's educational background (Bean, 2005) and income have been seen to directly and indirectly affect a student's completion (Astin and Oseguera, 2005).

2.8.3 Financial factors

Representing a complex issue, the financial situation of the student is likely to affect their decision to leave college (Tinto, 1993). Financial concerns are commonly cited as an important reason students give for their departure from college (Astin and Oseguera, 2005). This was cited as a factor leading to non completion in studies conducted in the US (Lenning, 1980), the UK (Yorke, 1999; Davies and Elias, 2003) and Ireland (Healy et al, 1999; McCarthy, 2000). Murdock (1987) found financial aid promotes persistence. Langbein and Snider (1999) found that more financial aid significantly increases the probability that a student will remain within college. According to Archuleta *et al.* (2013) adverse financial situations and financial anxiety can contribute the students' dissatisfaction.

2.8.4 External factors

Events which occur elsewhere in a student's life (Tinto, 1993) or those beyond the control of the student may force them to leave college such as family responsibilities, taking care of children or aging parents can take precedence over academic pursuits (Bean, 2005).

2.8.5 Work commitments

Astin and Oseguera (2005) argue that working full time can impede persistence among third level students; however, working part time or employment on campus does not have the same negative effect.

2.8.6 Institutional factors

Elliot (2002) argues that quality of education is an important factor; he went on to argue that students want to experience intellectual growth. Similarly, Frederick (2012) argued that being intellectually challenged is associated with student satisfaction. According to Kuh et al. (2005) the relationship between students and faculty is vital to student success. According to Pascarella and Terenzini (2005) the more contact a student has with a faculty member, the more likely it is that the student will persist until graduation. Roberts and Styron (2010) found that those that did not return to college had statistically significant lower perceptions of faculty approachability than those that remained in their course. Kara and DeShields (2004) also report a positive relationship between faculty performance and student satisfaction. Bean (1990: 159) remarks that 'putting the best instructors in introductory level courses is ... a good way to keep student enrolled in school".

Research carried out by Loveland and Bland (2013) found that class scheduling has a significant impact on student satisfaction. According to DeShields et al. (2005) skills developed such as critical thinking and moral awareness along with preparation for

the future are important factors impacting on student satisfaction. While Thomas and Galambos (2004) argue pre-enrolment factors such as the accuracy of information provided impact on satisfaction.

Wilkins et al. (2012) and Stukalina (2014) specifically state that student feedback is an important factor impacting on student satisfaction. In support of Alzamel (2014), Sopon et al. (2013) found that the reputation of the institution is an important contributor to student satisfaction.

2.9 Conclusion

In summary, a review of current literature has identified a number of factors that impact on student satisfaction including financial anxiety (Archuleta et al., 2013), programme effectiveness (Wilkins, 2012; Katiliute, 2011; Elliot, 2002; Alzamel, 2014), quality of lecturers and teaching (Wilkins, 2012; Katiliute, 2011; Alzamel, 2014; Frederickson, 2012; Frederickson, 2012), student learning (Wilkins, 2012; Katiliute, 2011; Frederickson, 2012; DeShields et al., 2005), student involvement (Stukalina, 2014) assessment and feedback (Wilkins, 2012; Alzamel, 2014), learning resources (Wilkins, 2012) facilities (Wilkins, 2012), canteen (Priya Raina et al., 2013), computer laboratory (Priya Raina et al., 2013), class schedules (Loveland and Bland, 2013), reputation of college (Sopon et al., 2013; Alzamel, 2014), cost of education (Alzamel, 2014) and social life (Wilkins, 2012).

3 Methodology

3.1 Introduction

In order to address the research objectives a clear and concise method of research must be chosen. Aaker et al. (2011:70) states 'A research design is the detailed blueprint used to guide a research guide towards its objectives'. According to Malhotra et al. (2012) marketing research is the systematic and objective identification, collection, dissemination, analysis, and the use of information that is undertaken in order to improve decision making processes which is related to identifying and solving problems. This chapter describes the objectives of this research and the methodology used to meet these objectives.

3.2 Research Question

It is important to begin by stressing what it is that the research is trying to find out (Punch, 2005); this is the first and key step of any research project (Burns and Bush, 2000). If the problem is not clearly defined, any research produced is not noteworthy or does not have any value (Tull & Hawkins, 1993). Thus, researchers must design their study according to the research question so that the research question matches the research methodology (Punch, 2005) i.e. an appropriate methodology is chosen for the particular research question(s).

Research Question:

What are the factors that impact student satisfaction among third level students in Ireland? The four research objectives are:

1. Gain an understanding of the level of student satisfaction among third level students.
This objective seeks to undercover the extent to which third level students studying in the Ireland are satisfied with their experience of third level education.

2. Gain an understanding of the factors that impact on student satisfaction.

A review of current literature has identified a number of factors that impact on student satisfaction including financial anxiety, quality of lecturers and teaching, student involvement, learning resources, facilities, and social life. This research will aim to uncover the extent to which these factors impact on student satisfaction and uncover additional factors that may exist.

3. Develop a prediction model of student satisfaction.

A proposed model of student satisfaction was developed as a result of an extensive research of literature in the area. The model will be tested using decision tree and regression analysis.

4. Analyse the relationship between satisfaction and future study plans

This research will assess the relationship between student satisfaction and their intention to go onto further study. It will also assess the relationship between satisfaction and student perception of their career prospects.

3.3 Research Approach

Saunders et al. (2007) equate the research approach to an onion; where the outer layer is research philosophy, the research approach lies within and leads to the research strategy layer.

3.3.1 Research philosophy

According to Saunders et al. (2007) a researcher's philosophical perspective impacts on all stages of the research process from how the problem is conceptualised, through to the decision relating to how the data should be analysed. A researcher's philosophical approach or paradigms underpin the research. Epistemology is the

study of the origin of nature and the limits of human knowledge. Key areas include; whether or not knowledge is possible, if knowledge is innate or acquired, and what is considered acceptable knowledge. (Carson et al., 2001). The two paradigms are Positivism and interpretivism. The positivist paradigm is rooted in natural sciences. "Reality is external and objective; its properties are measured objectively" (Saunders et al., 2007). Positivism is based on the premise that it is possible to capture reality through the use of scientific instruments.

The second paradigm is Interpretivism. Interpretists share the belief that subject matter of social sciences (people, institutions) differs from the subject matter of natural sciences and therefore needs a research approach that reflects this. In other words, we cannot understand why we do what we do, or how institutes behave, without understanding how individuals make sense of the world. Saunders et al. (2009) explain that interpretists attempt to understand the subjective reality of subjects. Studying this requires directness towards different cultures, ignoring of racial assumptions, with a willingness to learn about the culture of a subject. Intrepretism recommends the use of qualitative research and is time & context bound (Carson et al., 2001).

3.3.2 Research approach

The research approach can be divided into two broad groups. Deductive approach refers to the formation of abstract concepts that lead to concrete experience through empirical testing or observations. It is argued that positivist approach is more biased towards deductive (Saunders et al., 2007). Inductive approach refers to observation of concrete experiences and reflected upon to form abstract concepts. In this approach the researcher is considered to be part of the research process and generalisation of results will not occur (Saunders et al., 2007).

3.3.3 Research strategy

Major research strategies, from deductive to inductive approaches, include experiments, surveys, case studies, grounded theory, ethnology and action research. A research strategy can follow a qualitative or quantitative design. In some cases, a combination of both approaches can be undertaken, referred to as a mixed method research approach; this involves the collection, analysis, and integration of qualitative and quantitative data within a study (Polit and Beck, 2010). The battle between quantitative and qualitative methodologies has adorned many research journals (Gorman, 1999). It is hard to say when the battle got off the ground, but according to Oakley (1999) there is little evidence of it in the general methodology and professional literature before the 1960s, the battle then flourished in the 1970s and 1980s (Sale et al., 2002). The argument between the superiority of one research methodology over the other will not be continued here, instead each is described which will in-turn aid in the justification of the chosen methodology for this research. Indeed, the literature argues that such a discussion is inappropriate as neither research methodology is always superior to the other; each approach has its own strengths and weaknesses (Punch, 2005). The challenge is to match research method and paradigm to the purpose, questions and issues raised (Rocco et al., 2003).

Qualitative Research

According to Honiville and Jowel (1978; 9) "the essence of qualitative research is an unstructured and flexible approach to interviewing that allows the widest possible exploration of views and behaviour patterns." Malhotra and Birks (2007: 152) describe qualitative research as 'an unstructured primarily exploratory methodology based on small samples, intended to provide insight and understanding'. Aaker et al. (2011) argue that an exploratory research allows for flexibility, no preconceptions and consists of mainly qualitative methodologies. Furthermore, Saunders et al. (2003) notes that qualitative research not only provides an in- depth insight but it also is flexible and exploratory in nature. Examples of qualitative research include

interviews and focus groups (Collis et al., 2009). Qualitative data results can have a high degree of validity (Collis et al., 2009). However qualitative findings cannot be used to make generalisations of interest. The aim of qualitative data ultimately is to interpret and examine significant patterns that arise from the data (Malhotra and Birks, 2007).

Quantitative Research

Quantitative research is a research methodology that seeks to quantify the data and typically applies some form of analysis (Malhotra et al., 2012). It is mainly used to draw conclusions after testing a specific hypothesis and therefore is considered as conclusive. Malhotra (2007:171) states 'quantitative research seeks to quantify the data and typically forms some sort of statistical analysis'. Collis and Hussey (2009) argue that quantitative data contrasts with qualitative in that it is more precise and results in findings with a higher degree of reliability. According to Malhotra and Birks (2007) the advantages of quantitative research include reliable data and ease of measurement. While its disadvantages include respondent's unwillingness to answer sensitive or difficult questions, time consuming methods and little understanding of respondents feelings or beliefs.

3.4 Questionnaire

Surveys are one of the most common and oldest research technique, Babbie (2004) reflecting on the Christian Bible notes that Jesus was born in Bethlehem because Joseph and Mary were travelling to Joseph's ancestral home for a Roman census. Today, the survey instrument has become a widely used and acknowledged research method worldwide. Hampton and Viela (2014) suggest that a survey is used for collecting information that should be representative of the views of the whole community or group whom you are interested in. It consists of asking structured questions (Malhotra and Birks, 2000) of a (supposedly) representative cross section of the population at a single point in time (Bailey, 1982). The survey may be mailed to respondents, conducted over the phone, electronically or involve a face-to-face meeting with the respondent.

'There is no better method of research than the sample survey process for determining, with a known level of accuracy, information about large populations' (Rea and Parker, 1992: 4). A similar argument was later made by Babbie (2004).

The first advantage of a survey is cost (Proctor, 2003; Rea and Parker, 1992; Birn, 2000). Questionnaires are especially advantageous when the research sample is widely dispersed (Bryman, 1988; Sanford and Hagedorn, 1981; Bailey, 1982). They are completed at the respondent's convenience (Rea and Parker, 1992); as such questionnaires can contain quite a lot of detail (Bryman, 1988). This is, however, dependent on the subject matter being of interest to the respondent (Proctor, 2003). The interviewer is absent from a mail (traditional and online) survey, so too is interviewer bias (Bailey, 1982; Birn, 2000). Moreover, the absence of an interviewer means that one of the largest cost elements in the survey is eliminated (Proctor, 2003).

One can provide greater assurance of anonymity to respondents (Bailey, 1982; Rea and Parker, 1992) making this research method more appropriate for social issues. The lack of face to face interaction removes any reluctance to reveal personal habits and feelings (Proctor, 2003). Lastly, Surveys are simple to manage and use (Malhotra, 2010), coding, analysis and interpretation of data are relatively simple (Malhotra and Birks, 2000).

However, there are also disadvantages to this method of data collection. While the absence of an interviewer eliminates bias it also eliminates the opportunity to aid respondents if they are having difficulty answering a question (Bryman, 1988; Birn, 2000), as such complex questions should be avoided (Bailey, 1982). The answer choices provided on a survey may not be an accurate reflection of how the participant really feels about the topic (Cherry, 2015). The respondent may lose interest or become distracted while answering the questionnaire and give up; therefore survey length is an important consideration (Bryman, 1988; Sanford and

Hagedorn, 1998). Also there is greater risk of missing data; partially answered questionnaires are more likely because of a lack of prompting or supervision (Bryman, 1988; Bailey, 1982). The method can suffer from low response rate (Bryman, 1988; Sanford and Hagedorn, 1998; Spence and Lozano, 2000; Rea and Parker, 1992) or biased response rate (Cherry, 2015). The survey from which data for this study has been extracted is the Eurostudent survey.

3.5 Eurostudent Database

Eurostudent is a network of researchers as well as data collectors, representatives of national ministries and other stakeholders who have joined forces to examine the social and economic conditions of student life in higher education systems in Europe. The beginning of Eurostudent goes back to the 1990s. In 2012, the fifth round of Eurostudent project started with an increased number of 27 participating countries from a broad geographical spectrum. The participants reach from Finland in the north all the way to Italy in the south and from Portugal in the west to Armenia in the east.

The work of Eurostudent is based on the conviction that cross-country comparisons facilitate learning about strengths and weaknesses of national higher education systems and thereby help countries to see their own higher education system in a new light.

The Eurostudent V survey was co-ordinated in Ireland by Insight Statistical Consulting, an independent marketing research organisation, on behalf of the Higher Education Authority and the Eurostudent consortium. Data was collected from April 22nd 2013 to May 31st 2013.

This survey was open to all third level students in Ireland. All full-time and part-time students in higher education received a link to the survey from their respective colleges. A reminder was issued during May before the closing date on May 31st

2013. In addition to responding via this email, students were also able to complete their return by visiting is.gd/eurostudent or clicking the link on their virtual learning environment or learning management system, e.g. Moodle or Blackboard. The survey was promoted using various social media. All students who completed the survey had the opportunity to win one of 10 €100 vouchers (one4all or equivalent).

For each round of the Eurostudent survey, two reports are produced - the Irish input into the European Report, and a separate Irish Report. Data for the Irish report has been obtained for this research; the data set contains information from 10,110 students (rows).

The columns (271) contain a wealth of information about students and their experience in third level education including financial anxiety, their evaluations of their third level institution including programme effectiveness, effectiveness of lecturing staff, their involvement and motivation in their study, their evaluation of college facilities, social life, travel distance to institution, workload, study abroad, accommodation, health and wellbeing (including alcohol consumption, smoking and exercise levels), work status of guardians and demographic information such as age, gender, nationality, children and income.

Figure 3.1 Eurostudent Survey sections
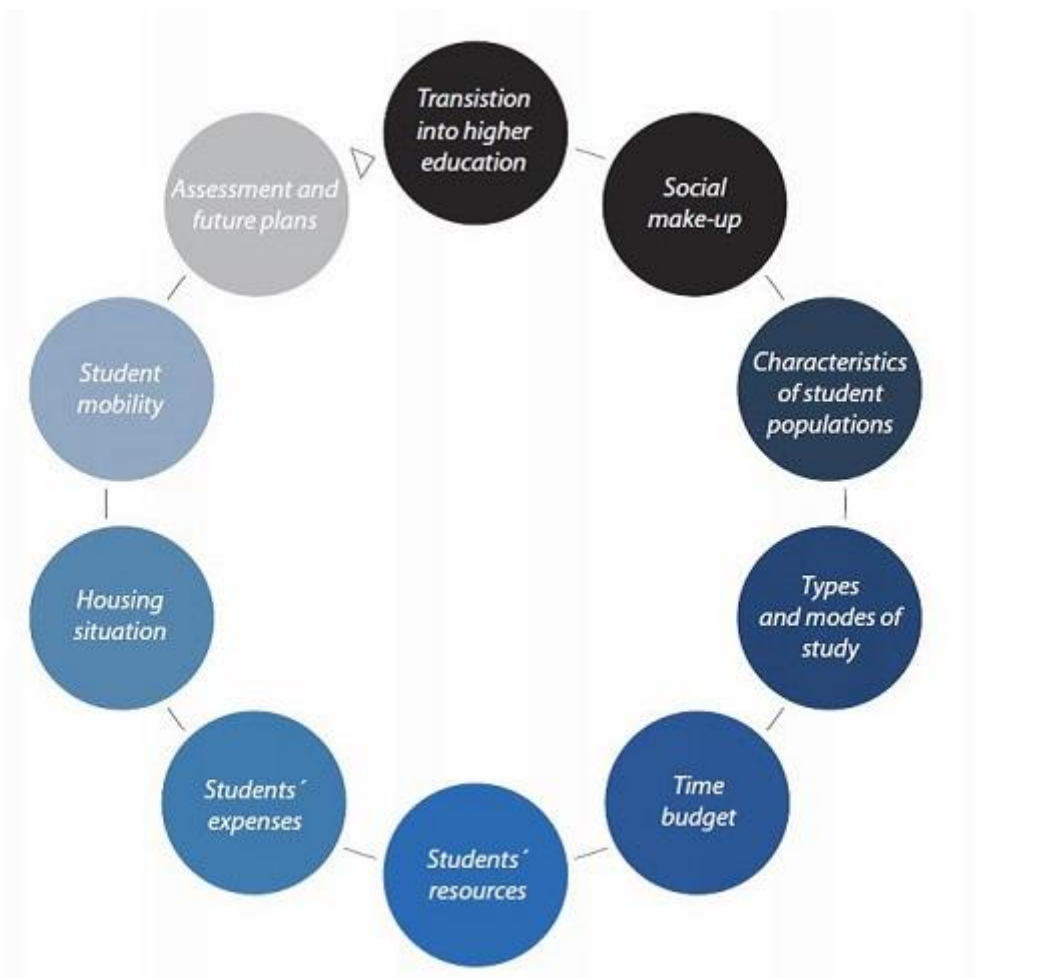
Source: Harmon and Foubert (2013)

3.6 Conclusion

This chapter has described the research question as: *What are the factors that impact student satisfaction among third level students in Ireland?* The four research objectives of this research are:

1. Gain an understanding of the level of student satisfaction among third level students.

2. Gain an understanding of the factors that impact on student satisfaction.

3. Develop a prediction model of student satisfaction.

4. Analyse the relationship between satisfaction and future study plans

This research will adopt a quantitative approach. Data from the Eurostudent survey will be analysed to meet the proposed objectives. This survey was open to all third level students in Ireland. Data was obtained from 10,110 students (rows) across 271 variables (columns). Analysis of proposed predictive model will be carried out using regression analysis and decision tree analysis. An explanation of these tests and results are provided in the next chapter.

4. Findings

4.1 Introduction

This chapter outlines the findings of the data analysis carried out on the Eurostudent survey dataset. The chapter first describes the variables that were selected for this project and the reasons for their selection. The data set is described in terms of programme type and duration, study area, gender, age, location and income of respondents. Findings are then analysed under each objective. The proposed prediction model of student satisfaction is analysed using regression analysis and decision tree analysis.

4.2 Data set

The current research study utilises the Eurostudent Survey 2013. Two variables were not provided, these relate to the college that the student attends and the type of college (University, Institute of Technology or Other). The file contains responses from 10,110 students (rows) and 271 variables (columns). The Eurostudent survey is a very detailed survey and the first task was to isolate those variables of interest to the current study and understand those variables. For example, the survey includes a section on international mobility which is not relevant to the current study. Drawing on the findings of the literature review, those variables selected as possible predictor variables are the following questions:

Table 4.1 Variables selected from Eurostudent Survey

How satisfied or dissatisfied are you with your current study programme concerning the following areas?
    Quality of teaching
    Organisation of studies and timetables
    Possibility to select from a broad variety of courses
    College administrators attitude towards students
    Teaching staff attitude towards students
    Study facilities

What was the highest level of education you obtained on graduating from the secondary school system for the first time?

How far is your place of residence from the college you are now attending?
How satisfied are you with your accommodation?
On a typical day during the semester, what is the time and distance you cover from where you live to your higher education institution?
To what extent are you currently experiencing financial difficulties?
Do you have a paid job or paid internship during the current semester?
How many hours do you spend on paid job or paid internship in a typical week during a semester?
How important are your studies compared to other activities?
What is your sex?
Do you have children?

Over the last two weeks:
    I have felt cheerful and in good spirits
    I have felt calm and relaxed
    I have felt active and vigorous
    I have woken up feeling fresh and rested
    My daily life has been filled with things that interest me

Please rate your satisfaction with the following:
    Your accommodation
    Your financial/ material well-being
    Your friendship
    The college you are studying in

How often do you drink alcohol?
Do you smoke?
How frequently do you exercise?

How often do you experience the following:
    Catch colds
    Suffer from headaches
    Have difficulty sleeping
    Have difficulty concentrating
    Feel stressed

What is the highest level of education your father and mother obtained?
How would you describe your parent's employment status?
Please try to estimate the gross ANNUAL income of your household.
Some people are considered to have a high social standing and some people are considered to have a low social standing. Thinking about your family background, where would you place your parents on this scale if the top indicated high social standing and the bottom indicated low social standing?

These variables measure the factors outlined in the literature as potentially impacting student satisfaction including health variables such as smoking and alcohol (Cox et al., 2005) gender (Moses et al., 2011), academic achievement prior to enrolling in college (Astin and Oseguera, 2005), social life (Bean, 2005; Roberts and Styron, 2010), parent's educational background (Bean, 2005) and income (Astin and Oseguera, 2005), financial difficulties (Astin and Oseguera, 2005; Yorke, 1999; Davies and Elias, 2003; Healy et al., 1999; McCarthy, 2000; Archuleta et al., 2013),

work commitment (Astin and Oseguera, 2005), faculty (Roberts and Styron, 2010; Kara and DeShields, 2004) and class scheduling (Loveland and Bland, 2013).

As this research aims to determine what factors predict student satisfaction the following question was selected as the target variable: 'Please indicate your satisfaction with the following: Your studies'.

The next step was to remove all respondents in which the target variable was missing, this removed 65 respondents. An analysis of each independent variable indicated a low level of missing variables (ranging from 0 to 1.9%). It was decided to remove all respondents in which possible predictor variables were missing, this removed 543 respondents and resulted in a dataset of 9,502 respondents.

 The survey asked students of their satisfaction with their accommodation twice, as these variables had a high correlation coefficient (0.80); it was decided to remove one. The column with the most missing responses was removed. 31 people had a negative age and these were removed.

4.3 Analysis of Variables

Representative of national statistics, the majority (92%) of students are full time students, studying through English (99%), have entered third level through the CAO (72%) and represent Irish citizens (89%). A minority are distance learning students (5%), mature students (26%) or have children (12%). Please see Appendix 1 for frequency tables.

The majority of respondents are undertaking an ordinary or honours degree (79%). Respondents at all levels of higher education are included in the survey.

Table 4.2 Programme Type of Respondents

		Frequency	Percent	Valid Percent
Valid	higher certificate	303	3.2	3.2
	diploma	103	1.1	1.1
	ordinary bachelor degree	1512	15.9	**15.9**
	honours bachelor degree	6036	63.5	**63.5**
	postgraduate cert/diploma	232	2.4	2.4
	taught masters degree	641	6.7	6.7
	research masters degree	98	1.0	1.0
	PhD	563	5.9	5.9
	Total	9502	100.0	100.0

Reflective of this and as indicated in table 4.3, the majority of students (81%) are undertaking a programme of 3 or 4 year duration.

Table 4.3 Programme Duration of Respondents

		Frequency	Percent	Valid Percent
Valid	1 year	726	7.6	7.6
	2 year	609	6.4	6.4
	3 years	2400	25.3	**25.3**
	4 years	5320	56.0	**56.0**
	5 years	313	3.3	3.3
	6 years +	126	1.3	1.3
	Total	9494	100.0	100.0
Total		9502	100.0	

The survey includes students at all stages of their current programme. 33% are currently in first year, 30% in second year, 23% in third year and 13% in fourth year, 1% are in year 5 or more of their programme. Please see appendix 1 for frequency table.

Broad spectrums of study areas are included in the survey. The most popular is humanities and art (22%), followed by science (16%) and business (14%). Please see frequency table in appendix 1.

Figure 4.1 Study Areas of Respondents
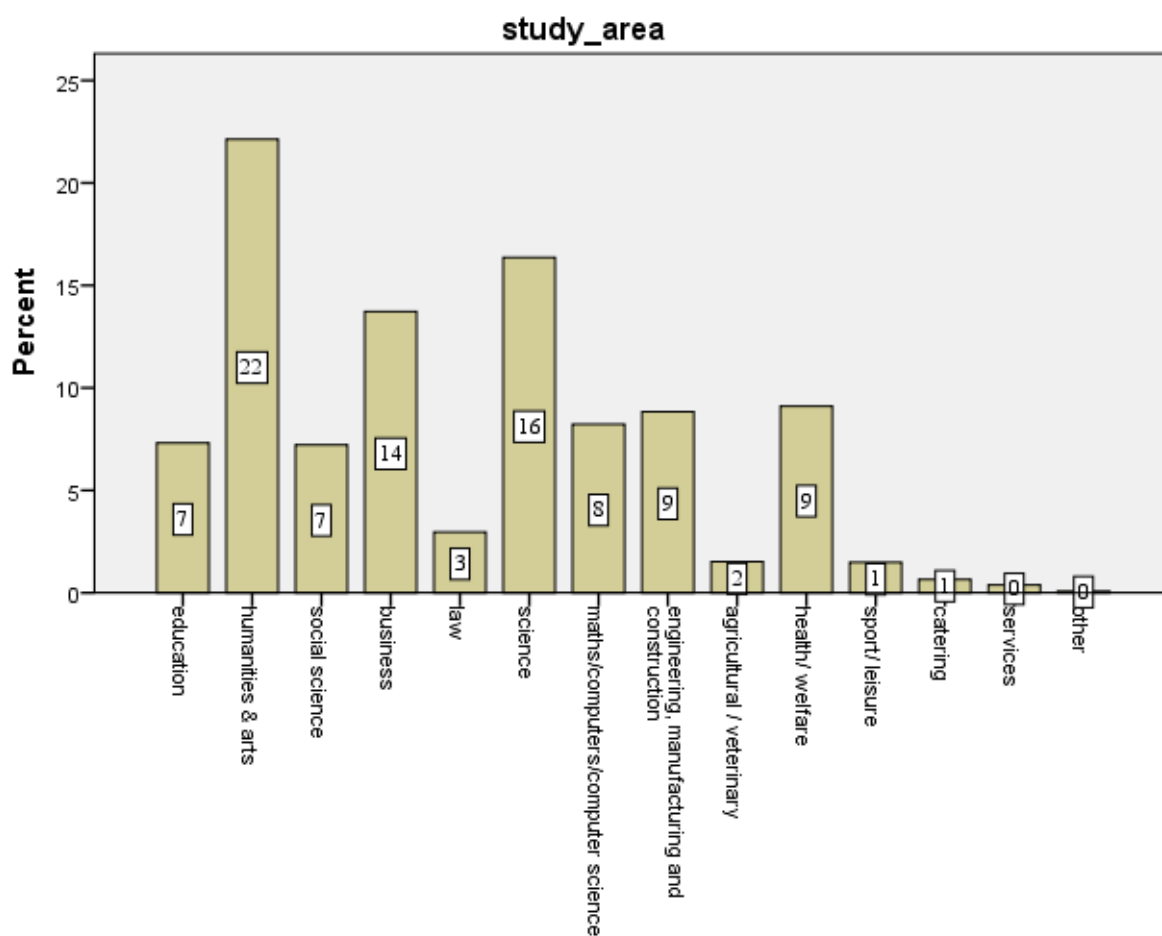
Satisfaction varies among study areas. It is lowest among engineering, manufacturing and construction (64%) and highest among agricultural/ veterinary.

Table 4.4 Study Area * Satisfaction Crosstabulation

		Satisfaction with study			Total
		dissatisfied	neither	satisfied	
	education	12.4%	17.1%	70.5%	100.0%
	humanities & arts	14.2%	15.1%	70.7%	100.0%
	social science	13.0%	13.1%	73.9%	100.0%
	business	13.0%	16.3%	70.7%	100.0%
	law	14.2%	15.6%	70.2%	100.0%
	science	14.3%	16.5%	69.2%	100.0%
	maths/computers/computer science	15.6%	17.1%	67.3%	100.0%
Study area	engineering, manufacturing and construction	17.9%	18.3%	**63.8%**	100.0%
	agricultural / veterinary	12.5%	10.4%	**77.1%**	100.0%
	health/ welfare	11.1%	19.1%	69.8%	100.0%
	sport/ leisure	12.1%	21.3%	66.7%	100.0%
	catering	12.9%	25.8%	61.3%	100.0%
	services	8.3%	19.4%	72.2%	100.0%
Total		13.9%	16.4%	69.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.557[a]	26	**.002**
Likelihood Ratio	51.236	26	.002
Linear-by-Linear Association	3.448	1	.063
N of Valid Cases	9502		

The Pearson chi square test was used to test the independence of these variables i.e. whether or not a stastically significant relationship exists between student satisfaction and area of study, the chi square test result of 0.002 (below 0.05) indicates a statistically significant relationship exists i.e. satisfaction is dependent on study area.

There are more female (63%) than male (37%) respondents.

Figure 4.2 Gender of Respondents Pie chart

gender
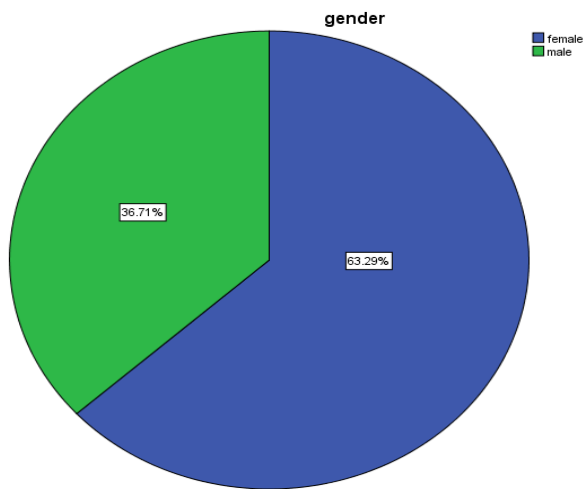
The average age of respondents is 25; the median age is slightly younger at 22 highlighting the fact that the respondents are skewed to the left as would be expected of a student population.

Table 4.5 Age of Respondent

Mean	25.48
Median	21.99
Std. Deviation	8.47
Skewness	2.05
Std. Error of Skewness	.025
Kurtosis	3.97
Std. Error of Kurtosis	.050
Range	44.42
Minimum	17.00
Maximum	61.42

Figure 4.3 Age of Respondent Histogram

Figure 4.3 Age of Respondent Histogram
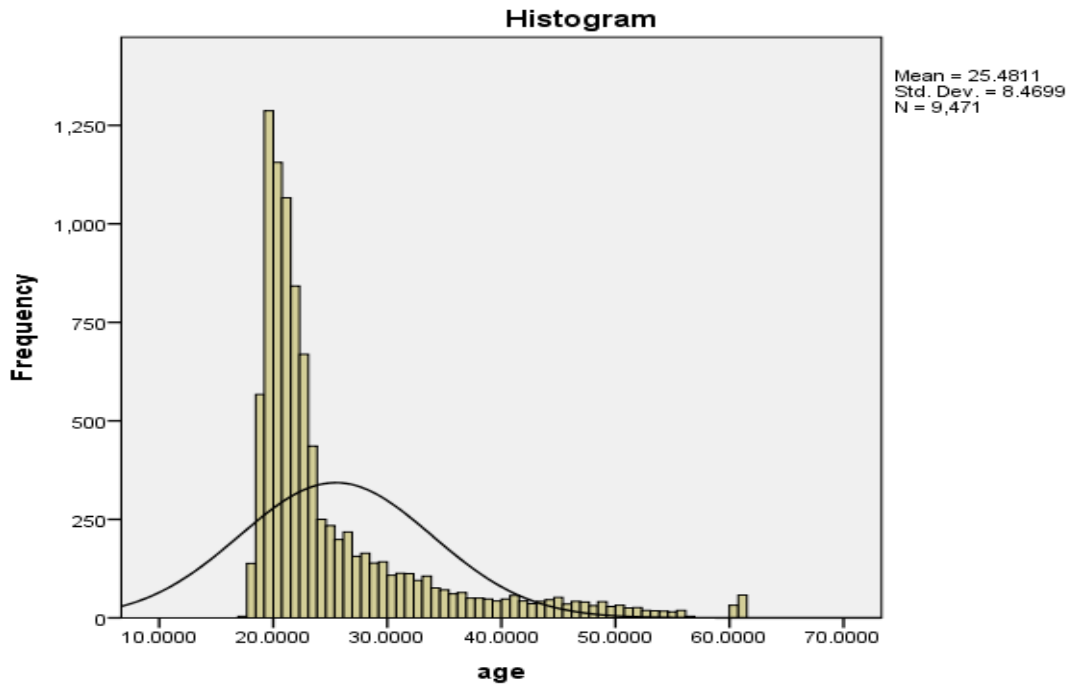
Respondents represented all counties of Ireland; the most popular was Dublin (25%), followed by Cork (11%). Please see frequency table in Appendix 1.

Figure 4.4 County of Respondent Histogram
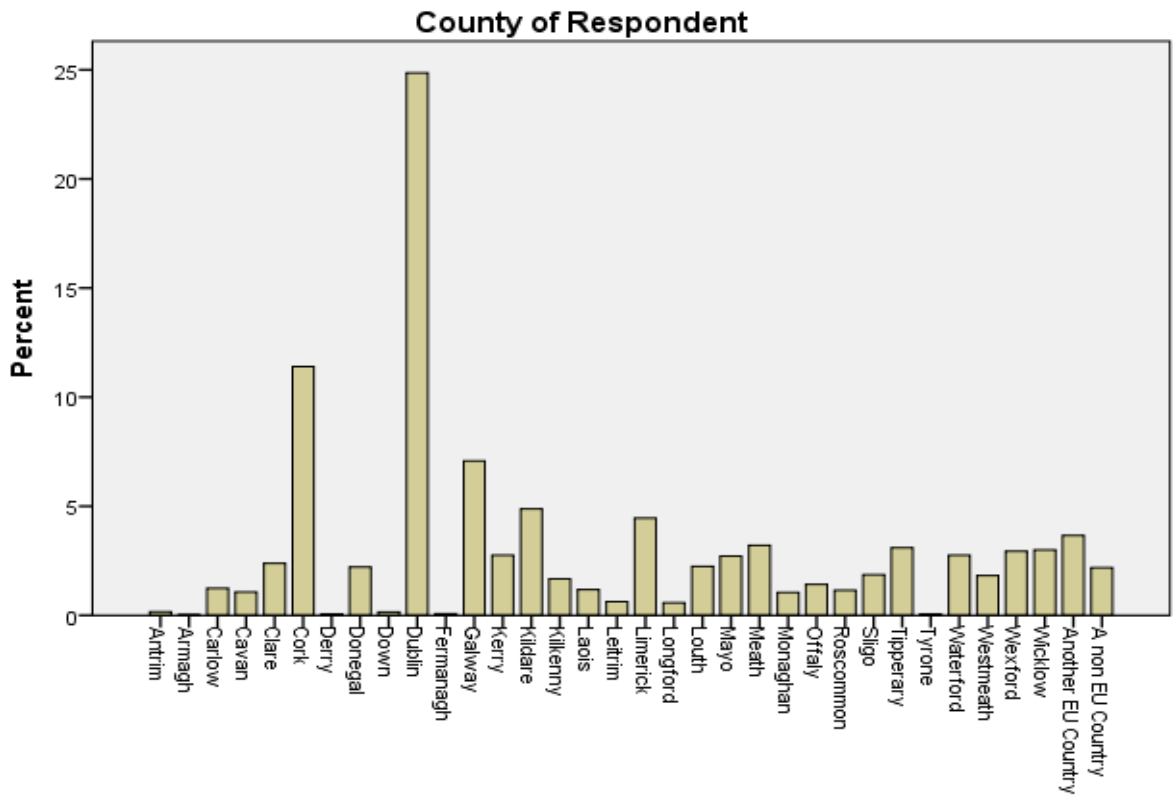
A total of 18.4% of respondents report to have a disability. 5.3% have mental health problems and 4.2% have a learning disability. Please see frequency tables in appendix 1.

Table 4.6 Percentage of Respondent with a Disability

Disability	Percentage
Mental health problems	5.3%
Mobility impairment	0.8%
Sensory impairment	2.5%
Learning disability	4.2%
Other	5.6%
Total	**18.4%**

Respondents represent a broad spectrum of income levels. 21% of respondents that indicated their income level reported a family income below €35,000, 41% indicated an income level of between €35,001 and €70,000, while 21% indicate their family income is above €70,000. The majority of students estimate their social standing or that of their parents to be middle, 38.8% believe it to be upper middle, and 20.2% estimate it to be above this. 28.9% estimate lower middle and just 12.3% estimate their social standing to be below this level.

Table 4.7 Income of Respondents

		Frequency	Percent	Valid Percent
Valid	greater than €90,000	720	7.6	7.7
	€70,0001 to €90,000	806	8.5	8.6
	€50,001 to €70,000	1398	14.7	14.9
	€35,001 to €50,000	1589	16.7	17.0
	€20,001 to €35,000	1540	16.2	16.4
	Less than €20,000	1273	13.4	13.6
	don't know	2036	21.4	21.7
	Total	9362	98.5	100.0
Missing	0	140	1.5	
Total		9502	100.0	

Table 4.8 Social Standing of Respondents

		Frequency	Percent	Valid Percent
Valid	high social standing	234	2.5	2.5
	2	206	2.2	2.2
	3	625	6.6	6.7
	4	804	8.5	8.6
	upper middle	3644	38.3	38.8
	lower middle	2716	28.6	28.9
	7	456	4.8	4.9
	8	319	3.4	3.4
	9	132	1.4	1.4
	low social standing	256	2.7	2.7
	Total	9392	98.8	100.0
Total		9502	100.0	

4.4 Analysis of Student Satisfaction

The first objective of this research is to assess the level of satisfaction among third level students in Ireland. As the table below indicates, there is an overall high level of satisfaction among students in higher education in Ireland. 14% are dissatisfied, 16.5% neither satisfied nor dissatisfied and almost 70% indicate that they are satisfied with their studies.

Figure 4.5 Student Satisfaction
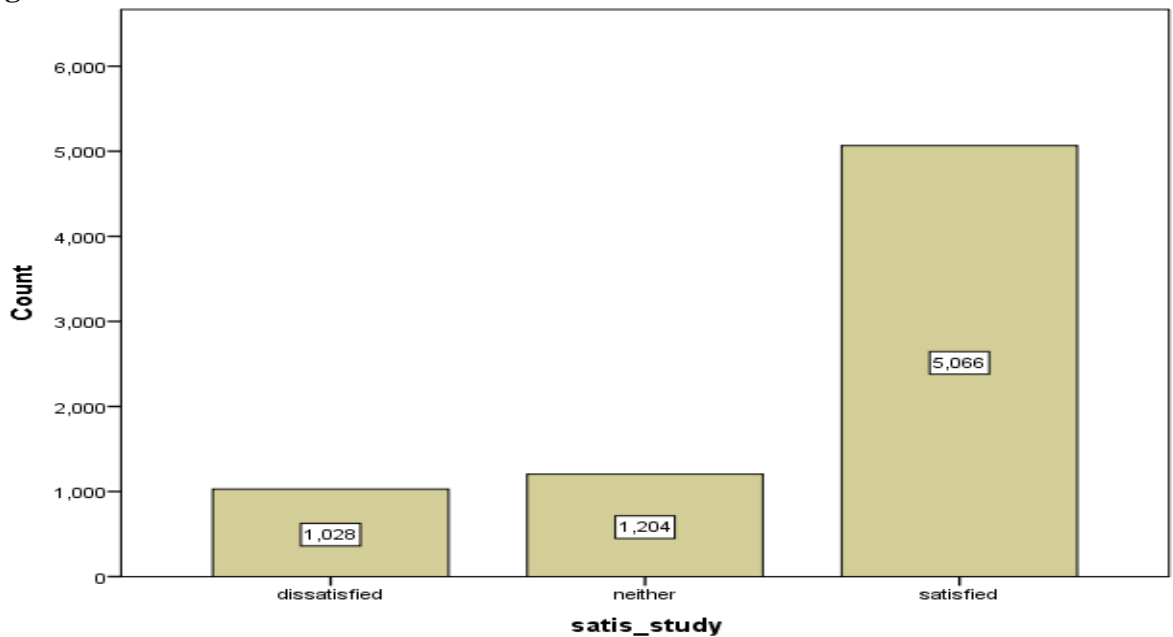
Satisfaction was higher among mature students and part time students. Pearson's chi square results indicate that the relationship is significant.

Table 4.9 Satisfaction * Mature Crosstabulation

		mature		Total
		yes	no	
Satisfaction study	dissatisfied	10.7%	14.9%	13.8%
	neither	14.7%	17.1%	16.5%
	satisfied	74.6%	68.0%	69.7%
Total		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.059[a]	2	**.000**
Likelihood Ratio	42.377	2	.000
Linear-by-Linear Association	40.766	1	.000
N of Valid Cases	9385		

Table 4.10 Satisfaction * FT / PT Crosstabulation

		FT / PT		Total
		full time	part time	
Satisfaction study	dissatisfied	14.3%	9.7%	13.9%
	neither	16.5%	16.0%	16.4%
	satisfied	69.2%	74.3%	69.7%
Total		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.596[a]	2	**.001**
Likelihood Ratio	14.719	2	.001
Linear-by-Linear Association	12.783	1	.000
N of Valid Cases	9502		

An Anova test was carried out to assess the relationship between satisfaction and age, the results indicate that satisfied students are slightly older (average = 25.8years)

than dissatisfied (average = 24.4 years) or those indicating that they are neither satisfied nor dissatisfied.

Table 4.11 Age * Satisfaction Anova Test

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
dissatisfied	1319	24.370892	6.9786262	.1921532	23.993932	24.747851
neither	1557	24.827520	7.7919283	.1974698	24.440185	25.214855
satisfied	6596	25.838530	8.9904997	.1106990	25.621525	26.055536
Total	9472	25.467969	8.5654556	.0880095	25.295451	25.640486

ANOVA

age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3131.898	2	1565.949	21.436	**.000**
Within Groups	691727.236	9469	73.052		
Total	694859.134	9471			

An analysis of satisfaction and programme type indicates that highest levels of satisfaction are among students undertaking a taught masters whereas lowest levels of satisfaction are among students undertaking an ordinary bachelor degree.

Table 4.12 Programme type * satisfaction Crosstabulation

		Satisfaction study			Total
		dissatisfied	neither	satisfied	
Programme type	higher certificate	9.9%	17.5%	72.6%	100.0%
	diploma	10.7%	15.5%	73.8%	100.0%
	ordinary bachelor degree	13.9%	18.1%	**68.1%**	100.0%
	honours bachelor degree	14.7%	16.4%	68.9%	100.0%
	postgraduate cert/diploma	9.9%	20.3%	69.8%	100.0%
	taught masters degree	12.0%	13.4%	**74.6%**	100.0%
	research masters degree	12.2%	16.3%	71.4%	100.0%
	PhD	12.3%	14.6%	73.2%	100.0%
Total		13.9%	16.4%	69.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.842[a]	16	**.025**
Likelihood Ratio	29.942	16	.018
Linear-by-Linear Association	3.737	1	.053
N of Valid Cases	9502		

4.5 Analysis of Predictor Variables and Target Variable

Objective two of this research aims to understand the factors that impact satisfaction. For this, an analysis was carried out between each potential predictor variable and the target variable of student satisfaction. There is a clear relationship present between satisfaction with the quality of teaching and student satisfaction. The cross tab below indicates that 91% of those that are satisfied with the studies are satisfied with the quality of teaching they experience, in comparison to just 61% of those that are dissatisfied. The chi square results indicate a statically significant relationship exists. This is in line with Elliot (2002) who argues that the quality of education is an important factor towards student satisfaction. Kara and DeShields (2004) also report a positive relationship between faculty performance and student satisfaction. Bean (1990: 159) remarks that 'putting the best instructors in introductory level courses is ... a good way to keep student enrolled in school'.

Table 4.13 Teaching quality * satisfaction Crosstabulation

		Satisfaction study			Total
		dissatisfied	neither	satisfied	
Teaching quality	dissatisfied	24.2%	9.6%	4.0%	7.8%
	neither	13.9%	15.1%	5.1%	8.0%
	satisfied	61.9%	75.2%	90.9%	84.3%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	732.328[a]	4	**.000**
Likelihood Ratio	611.725	4	.000
Linear-by-Linear Association	667.581	1	.000
N of Valid Cases	7298		

Similarly, those that are satisfied with their timetable and the organisation of their studies; the possibility to select from a broad variety of courses; college administrators attitude toward students; teaching staff attitude toward staff and

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facilities report higher levels of overall satisfaction. Chi square results indicate a significant relationship is present in all cases.

Table 4.14 Timetable * satisfaction Crosstabulation

		Satisfaction study			Total
		dissatisfied	neither	satisfied	
timetable	dissatisfied	35.5%	21.9%	12.3%	17.1%
	neither	16.1%	18.7%	10.9%	12.9%
	satisfied	48.3%	59.4%	76.8%	69.9%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	464.565[a]	4	**.000**
Likelihood Ratio	427.656	4	.000
Linear-by-Linear Association	442.122	1	.000
N of Valid Cases	7298		

This is in line with research carried out by Loveland and Bland (2013) which found that class scheduling has a significant impact on student satisfaction.

Table 4.15 Module Selection * Satisfaction Crosstabulation

		Satisfaction study			Total
		dissatisfied	neither	satisfied	
Module selection	dissatisfied	31.1%	19.6%	11.6%	15.6%
	neither	24.3%	28.8%	24.2%	25.0%
	satisfied	44.6%	51.6%	64.2%	59.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	299.673[a]	4	**.000**
Likelihood Ratio	272.365	4	.000
Linear-by-Linear Association	268.684	1	.000
N of Valid Cases	7285		

Table 4.16 Staff admin * Satisfaction Crosstabulation

		Satisfaction study			Total
		dissatisfied	neither	satisfied	
Staff admin	dissatisfied	32.7%	18.7%	11.9%	16.0%
	neither	20.0%	23.9%	15.3%	17.4%
	satisfied	47.3%	57.5%	72.8%	66.7%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	383.974[a]	4	**.000**
Likelihood Ratio	350.221	4	.000
Linear-by-Linear Association	355.986	1	.000
N of Valid Cases	7282		

Table 4.17 Staff Teaching * Satisfaction Crosstabulation

		Satisfaction study			Total
		dissatisfied	neither	satisfied	
Staff teaching	very dissatisfied	6.0%	1.5%	0.9%	1.7%
	dissatisfied	15.3%	7.0%	3.2%	5.5%
	neither	17.9%	17.1%	7.2%	10.4%
	satisfied	45.3%	51.7%	49.0%	48.9%
	very satisfied	15.5%	22.8%	39.7%	33.5%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	725.554[a]	8	**.000**
Likelihood Ratio	649.120	8	.000
Linear-by-Linear Association	656.596	1	.000
N of Valid Cases	7298		

This is in line with literature. According to Kuh et al (2005) the relationship between students and faculty is vital to student success. According to Pascarella and Terenzini (2005) the more contact a student has with a faculty member, the more likely it is that the student will persist until graduation. Roberts and Styron (2010) found that those that did not return to college had statistically significant lower perceptions of faculty approachability than those that remained in their course.

Table 4.18 Facilities * satisfaction Crosstabulation

		Satisfaction study			Total
		dissatisfied	neither	satisfied	
Facilities	dissatisfied	21.1%	16.5%	11.6%	13.7%
	neither	11.2%	14.5%	8.9%	10.2%
	satisfied	67.7%	69.0%	79.5%	76.1%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	120.636[a]	4	**.000**
Likelihood Ratio	113.631	4	.000
Linear-by-Linear Association	100.196	1	.000
N of Valid Cases	7298		

Anova tests were carried out to assess the average time and distance travelling to college indicate that there is a non significant difference among satisfied and dissatisfied students as such time and distance travelling does not appear to impact student satisfaction.

Table 4.19 Time travelling to College * Satisfaction Anova Test

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
dissatisfied	1011	34.462216	32.1919334	1.0124451	32.475479	36.448952
neither	1195	33.419874	31.2637754	.9043936	31.645497	35.194252
satisfied	5006	32.855104	30.6530915	.4332403	32.005763	33.704445
Total	7212	33.173974	30.9753277	.3647439	32.458969	33.888979

ANOVA

travel_time

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2259.081	2	1129.540	1.177	**.308**
Within Groups	6916485.779	7209	959.424		
Total	6918744.860	7211			

Table 4.20 Distance travelling to College * Satisfaction Anova Test

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
dissatisfied	990	16.012444	26.7907143	.8514648	14.341559	17.683330
neither	1155	16.012035	28.8646278	.8493271	14.345636	17.678433
satisfied	4821	16.983431	28.3462769	.4082512	16.183072	17.783789
Total	6966	16.684373	28.2173059	.3380834	16.021626	17.347119

ANOVA

travel_distance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1400.247	2	700.123	.879	**.415**
Within Groups	5544246.642	6963	796.244		
Total	5545646.889	6965			

49% of satisfied students indicate that they have major to serious financial difficulties in comparison to 61% of those that are dissatisfied; chi square results indicate that there is a statically significant relationship between financial difficulty and satisfaction. This is in line with literature in which financial concerns are commonly cited as an important reason students give for their departure from college (Astin and Oseguera, 2005; Lenning, 1980; Yorke, 1999; Davies and Elias, 2003; Healy et al, 1999; McCarthy, 2000). Langbein and Snider (1999) found that more financial aid significantly increases the probability that a student will remain within college. According to Archuleta et al. (2013) adverse financial situations and financial anxiety can contribute the students' dissatisfaction.

Table 4.21 Financial Difficulty * Satisfaction Crosstabulation

| | | Satisfaction study | | | Total |
		dissatisfied	neither	satisfied	
Financial difficulty	no difficulty to some difficulty	17.7%	18.0%	23.8%	21.9%
	medium level of difficulty	21.3%	28.8%	27.2%	26.6%
	major to serious difficulty	61.1%	53.2%	49.1%	51.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	63.221[a]	4	**.000**
Likelihood Ratio	63.992	4	.000
Linear-by-Linear Association	50.329	1	.000
N of Valid Cases	7282		

67% of those that are working during the semester report that they are satisfied with their studies in comparison to a satisfaction level of 71.4% among those that do not work during the semester. Chi square results indicate a positive relationship between working during the semester and student satisfaction. This is similar to findings from Astin and Oseguera (2005) which found that working full time can impede persistence among third level students.

Table 4.22 Satisfaction * Working Crosstabulation

| | | Working | | | Total |
		work during whole semester	work from time to time during semester	do not work during semester	
Satisfaction study	dissatisfied	15.7%	14.3%	13.1%	14.1%
	neither	17.3%	18.2%	15.5%	16.5%
	satisfied	67.0%	67.5%	71.4%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.787[a]	4	**.002**
Likelihood Ratio	16.676	4	.002
Linear-by-Linear Association	13.421	1	.000
N of Valid Cases	7298		

Similarly, those that report they have adequate study time report the highest levels of satisfaction.

Table 4.23 Satisfaction * Time Pressures Study Crosstabulation

		time_pressures_study			Total
		I want less	adequate	I want more	
	dissatisfied	21.0%	10.1%	18.2%	14.1%
satis_study	neither	18.1%	14.8%	18.4%	16.4%
	satisfied	60.9%	75.1%	63.4%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	152.836[a]	4	.000
Likelihood Ratio	152.250	4	.000
Linear-by-Linear Association	16.273	1	.000
N of Valid Cases	7216		

Students indicating highest level of commitment to their studies report the highest level of satisfaction, for example 74% of those that indicate their studies is more important that other activities indicate they are satisfied with their studies in comparison to just 34% of those that indicate that their studies is less important than other activities, chi square results indicate a statistically significant relationship exists.

Table 4.24 Satisfaction * Commitment Crosstabulation

		commitment			Total
		less important	equal importance	more important	
satis_study	dissatisfied	43.8%	19.6%	11.5%	14.1%
	neither	22.1%	25.9%	14.5%	16.5%
	satisfied	34.1%	54.4%	74.1%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	441.633[a]	4	**.000**
Likelihood Ratio	375.704	4	.000
Linear-by-Linear Association	392.122	1	.000
N of Valid Cases	7298		

In line with findings from Moses et al (2011) that females are more likely to persist to completion than males, this study reports higher satisfaction rates among females.

Figure 4.6 Gender and Satisfaction Bar Chart
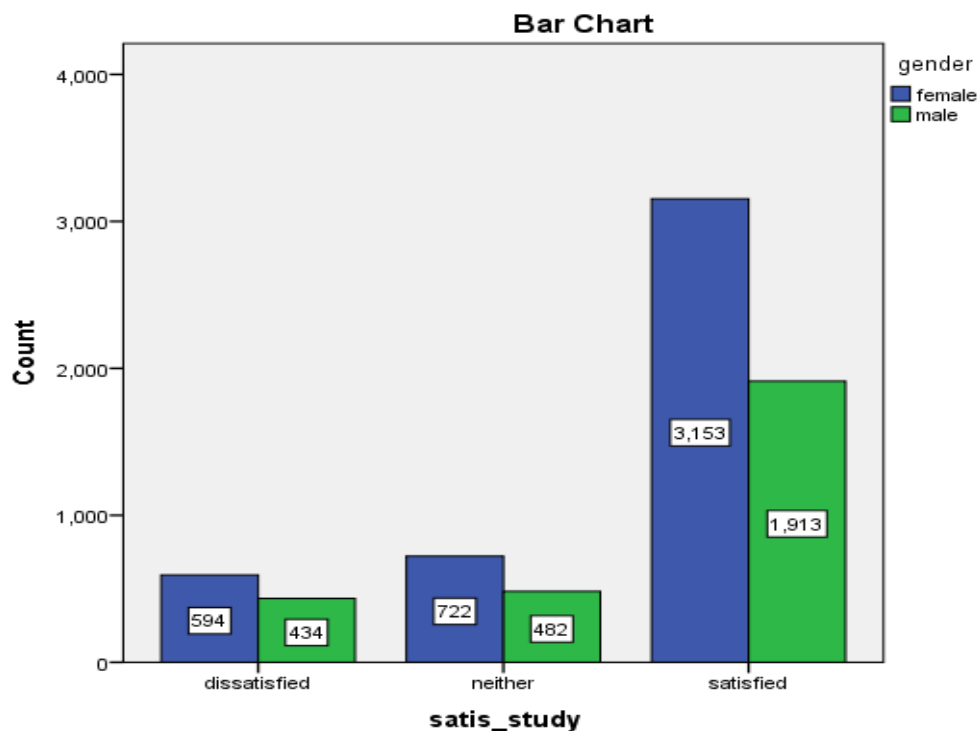
Table 4.25 Gender * Satisfaction Chi-Square Tests Results

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.128[a]	2	**.017**
Likelihood Ratio	8.081	2	.018
Linear-by-Linear Association	8.126	1	.004
N of Valid Cases	7298		

Results indicate slightly higher levels of satisfaction among those that have children.

Table 4.26 Satisfaction * Children Crosstabulation

		children		Total
		yes	no	
Satisfaction study	dissatisfied	10.6%	14.5%	14.0%
	neither	13.0%	16.8%	16.3%
	satisfied	76.4%	68.6%	69.6%
Total		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.633[a]	2	**.000**
Likelihood Ratio	23.610	2	.000
Linear-by-Linear Association	20.355	1	.000
N of Valid Cases	7182		

In terms of student well being, higher satisfaction rates were found among students that reported more often feeling in good spirits, calm, active, well rested and interested. All relationships indicate statistically significant results.

Table 4.27 Satisfaction * Good Spirits Crosstab

		Good spirits				Total
		at no time / some of the time	less than half of the time	more than half of the time	most / all of the time	
Satisfaction study	dissatisfied	30.0%	21.9%	11.9%	5.7%	14.1%
	neither	21.5%	25.0%	18.4%	10.2%	16.5%
	satisfied	48.5%	53.1%	69.7%	84.2%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	818.210[a]	6	.000
Likelihood Ratio	809.119	6	.000
Linear-by-Linear Association	770.280	1	.000
N of Valid Cases	7298		

Table 4.28 Satisfaction * Feeling Calm Crosstab

		Calm				Total
		at no time / some of the time	less than half of the time	more than half of the time	most / all of the time	
Satisfaction study	dissatisfied	25.3%	17.2%	10.2%	5.3%	14.1%
	neither	21.5%	21.6%	14.5%	10.1%	16.5%
	satisfied	53.2%	61.2%	75.4%	84.7%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	584.417[a]	6	.000
Likelihood Ratio	596.345	6	.000
Linear-by-Linear Association	560.062	1	.000
N of Valid Cases	7298		

Table 4.29 Satisfaction * Active Crosstab

		Active				Total
		at no time / some of the time	less than half of the time	more than half of the time	most / all of the time	
Satisfaction study	dissatisfied	25.7%	15.3%	9.4%	5.3%	14.1%
	neither	21.7%	19.6%	14.0%	10.3%	16.5%
	satisfied	52.6%	65.1%	76.6%	84.4%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	546.752[a]	6	.000
Likelihood Ratio	551.335	6	.000
Linear-by-Linear Association	522.293	1	.000
N of Valid Cases	7298		

Table 4.30 Satisfaction * Rested Crosstab

		Rested				Total
		at no time / some of the time	less than half of the time	more than half of the time	most / all of the time	
Satisfaction study	dissatisfied	22.5%	11.2%	5.8%	5.2%	14.1%
	neither	20.7%	16.4%	14.1%	7.8%	16.5%
	satisfied	56.9%	72.3%	80.0%	87.0%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	522.159[a]	6	.000
Likelihood Ratio	547.867	6	.000
Linear-by-Linear Association	472.402	1	.000
N of Valid Cases	7298		

Table 4.31 Satisfaction * Interested Crosstab

		Interest				Total
		at no time / some of the time	less than half of the time	more than half of the time	most / all of the time	
Satisfaction study	dissatisfied	29.8%	19.0%	8.0%	4.2%	14.1%
	neither	22.8%	23.6%	14.0%	9.6%	16.5%
	satisfied	47.4%	57.4%	78.0%	86.2%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	963.109[a]	6	.000
Likelihood Ratio	968.193	6	.000
Linear-by-Linear Association	909.963	1	.000
N of Valid Cases	7298		

While lower levels of alcohol consumption relate to higher levels of satisfaction, the relationship is non-significant.

Table 4.32 Satisfaction * Alcohol Crosstabulation

		Alcohol						Total
		daily	a few times a week	weekly	monthly	less than monthly	never	
Satisfaction study	dissatisfied	17.0%	15.3%	13.7%	13.8%	15.4%	12.2%	14.1%
	neither	14.9%	16.6%	18.0%	16.6%	15.1%	13.4%	16.5%
	satisfied	68.1%	68.0%	68.3%	69.5%	69.5%	74.4%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.944[a]	10	.056
Likelihood Ratio	18.141	10	.053
Linear-by-Linear Association	4.582	1	.032
N of Valid Cases	7296		

There are higher levels of satisfaction reported among non smokers in comparison to smokers; chi square results indicate a statistically significant relationship. These findings are in line with research carried out by Cox et al (2005) which reported that health variables such as smoking and alcohol can impact student satisfaction.

Table 4.33 Satisfaction * Smoke Crosstabulation

		Smoke			Total
		yes, regularly	yes, occasionally	no	
Satisfaction study	dissatisfied	19.4%	16.3%	13.0%	14.1%
	neither	16.5%	18.9%	16.1%	16.5%
	satisfied	64.1%	64.8%	70.9%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.045[a]	4	.000
Likelihood Ratio	33.335	4	.000
Linear-by-Linear Association	30.734	1	.000
N of Valid Cases	7298		

Higher levels of satisfaction are found among students who exercise more often, experience problems such as headaches, trouble sleeping, stress, colds and difficulty concentrating. All chi square tests indicate significant relationships are present.

Table 4.34 Satisfaction * Exercise Crosstab

		Exercise							Total
		5 or more times a week	four time a week	3 times a week	twice a week	once a week	less than once a week	never	
Satisfaction study	dissatisfied	13.3%	10.7%	12.5%	11.5%	14.3%	17.8%	22.3%	14.1%
	neither	12.2%	16.0%	16.2%	16.9%	17.3%	18.6%	18.2%	16.5%
	satisfied	74.5%	73.3%	71.3%	71.6%	68.4%	63.5%	59.6%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	91.087[a]	12	**.000**
Likelihood Ratio	88.856	12	.000
Linear-by-Linear Association	62.248	1	.000
N of Valid Cases	7298		

Table 4.35 Satisfaction * Headaches Crosstab

		Headaches					Total
		less than once a year	once a year	once every 6 months	once a month	more than once a month	
Satisfaction study	dissatisfied	13.2%	13.0%	13.0%	14.4%	16.4%	14.1%
	neither	14.4%	16.1%	16.2%	16.7%	18.9%	16.5%
	satisfied	72.5%	70.9%	70.7%	68.9%	64.7%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.131[a]	8	**.001**
Likelihood Ratio	25.950	8	.001
Linear-by-Linear Association	17.683	1	.000
N of Valid Cases	7298		

Table 4.36 Satisfaction * Sleeping Difficulty Crosstab

		Sleeping difficulty					Total
		less than once a year	once a year	once every 6 months	once a month	more than once a month	
Satisfaction study	dissatisfied	8.7%	11.4%	11.2%	13.0%	19.4%	14.1%
	neither	10.9%	14.7%	16.2%	18.1%	18.7%	16.5%
	satisfied	80.5%	73.9%	72.6%	68.9%	62.0%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	166.660[a]	8	**.000**
Likelihood Ratio	168.582	8	.000
Linear-by-Linear Association	143.426	1	.000
N of Valid Cases	7298		

Table 4.37 Satisfaction * Difficulty Concentrating Crosstab

		Concentrating					Total
		less than once a year	once a year	once every 6 months	once a month	more than once a month	
Satisfaction study	dissatisfied	3.9%	5.4%	6.8%	9.2%	23.7%	14.1%
	neither	6.6%	7.9%	14.6%	16.0%	21.3%	16.5%
	satisfied	89.5%	86.6%	78.6%	74.8%	55.0%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	647.528[a]	8	.000
Likelihood Ratio	675.943	8	.000
Linear-by-Linear Association	510.307	1	.000
N of Valid Cases	7298		

Table 4.38 Satisfaction * Stress Crosstab

		Stress					Total
		less than once a year	once a year	once every 6 months	once a month	more than once a month	
Satisfaction study	dissatisfied	7.3%	4.6%	5.8%	10.0%	20.2%	14.0%
	neither	10.5%	10.9%	12.3%	16.6%	18.9%	16.5%
	satisfied	82.2%	84.4%	81.9%	73.4%	60.9%	69.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	333.448[a]	8	.000
Likelihood Ratio	351.919	8	.000
Linear-by-Linear Association	268.591	1	.000
N of Valid Cases	7282		

Students reporting higher levels of satisfaction with their study also reported higher levels of satisfaction with their accommodation. The results indicate a statistically significant relationship exists.

Table 4.39 Satisfaction * Accommodation Crosstabulation

		Satisfaction accommodation			Total
		dissatisfied	neither	satisfied	
Satisfaction study	dissatisfied	18.3%	21.4%	12.6%	14.1%
	neither	16.9%	19.8%	16.1%	16.5%
	satisfied	64.8%	58.8%	71.3%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	65.884[a]	4	.000
Likelihood Ratio	62.232	4	.000
Linear-by-Linear Association	41.678	1	.000
N of Valid Cases	7297		

Similarly, students reporting higher levels of satisfaction with their studies also report higher levels of satisfaction with their financial situation.

Table 4.40 Satisfaction * Financial Situation Crosstabulation

		Satisfaction Financial Situation			Total
		dissatisfied	neither	satisfied	
Satisfaction study	dissatisfied	18.4%	12.2%	9.7%	14.1%
	neither	17.5%	20.0%	13.5%	16.5%
	satisfied	64.1%	67.8%	76.8%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	143.680[a]	4	.000
Likelihood Ratio	144.425	4	.000
Linear-by-Linear Association	126.185	1	.000
N of Valid Cases	7298		

A strong relationship exists between student overall satisfaction with their studies and satisfaction with their friendships 75% of satisfied students are happy with their friendships in comparison to just 45.5% of dissatisfied students.

Table 4.41 Satisfaction * Friendship Crosstabulation

		Satisfaction with friendship			Total
		dissatisfied	neither	satisfied	
Satisfaction study	dissatisfied	35.4%	19.8%	10.7%	14.1%
	neither	19.1%	30.1%	14.3%	16.5%
	satisfied	45.5%	50.1%	75.0%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	536.193[a]	4	**.000**
Likelihood Ratio	464.576	4	.000
Linear-by-Linear Association	456.732	1	.000
N of Valid Cases	7298		

There is also a very strong relationship present between student satisfaction with their studies and satisfaction with their college. 79% of satisfied students are also satisfied with their college in comparison to just 26% of dissatisfied students.

Table 4.42 Satisfaction * College Crosstabulation

| | | Satisfaction with college | | | Total |
		dissatisfied	neither	satisfied	
Satisfaction study	dissatisfied	54.6%	27.5%	8.1%	14.1%
	neither	19.8%	40.7%	12.8%	16.5%
	satisfied	25.7%	31.8%	79.1%	69.4%
Total		100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1700.470[a]	4	.000
Likelihood Ratio	1421.057	4	.000
Linear-by-Linear Association	1441.107	1	.000
N of Valid Cases	7298		

There is no relationship found between level of satisfaction and social status of students.

Table 4.43 Satisfaction * Social Status Crosstabulation

| | | Social status | | | | | | | | | |
		high social standing	2	3	4	upper middle	lower middle	7	8	9	low social standing
Satisfaction study	dissatisfied	1.8%	1.6%	6.0%	7.8%	34.4%	31.5%	6.1%	4.8%	2.1%	3.9%
	neither	2.0%	2.8%	5.8%	8.3%	38.4%	30.5%	4.8%	3.4%	1.5%	2.6%
	satisfied	2.7%	2.0%	6.5%	8.7%	37.1%	29.2%	5.2%	3.8%	1.5%	3.2%
Total		2.5%	2.1%	6.3%	8.5%	36.9%	29.7%	5.3%	3.9%	1.6%	3.2%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.666[a]	18	.134
Likelihood Ratio	24.543	18	.138
Linear-by-Linear Association	9.188	1	.002
N of Valid Cases	7273		

There is also no relationship found between income level and student satisfaction. This is in contrast to findings from Astin and Oseguera (2005) which found income levels directly and indirectly affect a student's completion.

Table 4.44 Satisfaction * Income Crosstabulation

		income						Total
		greater than €90,000	€70,001 to €90,000	€50,001 to €70,000	€35,001 to €50,000	€20,001 to €35,000	less than €20,000	
satis_study	dissatisfied	9.4%	11.8%	17.0%	20.9%	23.2%	17.7%	100.0%
	neither	10.0%	11.2%	17.9%	22.3%	19.9%	18.7%	100.0%
	satisfied	9.9%	10.8%	19.8%	21.7%	20.8%	17.0%	100.0%
Total		9.8%	11.0%	19.1%	21.7%	21.0%	17.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.527[a]	10	.396
Likelihood Ratio	10.524	10	.396
Linear-by-Linear Association	1.327	1	.249
N of Valid Cases	7298		

4.6 Predictive Model

The third objective of this research aimed to develop a predictive model of student satisfaction; this has been carried out using linear regression, decision tree analysis and logistic regression.

4.6.1 Multiple Regression

A multiple regression was run on all possible independent variables and the dependent variable (satisfaction with studies) to identify those independent variables that are likely to impact on satisfaction.

Table 4.45 Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.658[a]	.433	**.430**	.720

The Model summary table above shows the initial model reported an R value, this is a Pearson's correlation of 0.658, this value squares i.e. the R square is 0.433. The adjusted R square shows the value of R^2 while compensating for the number of independent variables. This is the most commonly reported value as R square can be inflated as the number of independent variables increases. The R square value is the coefficient of determination and indicates how well the data fit a statistical model. It indicates the proportion change in the dependent variables that is caused by the independent variables. Thus, the independent variables explain 43% of the change in 'Satisfaction with studies'.

Table 4.46 Multiple Regression Anova Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2795.161	41	68.175	131.689	**.000**[b]
	Residual	3660.106	7070	.518		
	Total	6455.267	7111			

Table 4.45 indicates that the initial model is significant i.e. there is a statistically significant relationship between the dependent and independent variables.

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Table 4.47 Multiple Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.586	.156		3.748	.000
	teaching_quality	.117	.014	.100	8.310	**.000**
	timetable	.033	.010	.035	3.208	**.001**
	module_selection	.017	.010	.018	1.758	.079
	staff_admin	-.018	.010	-.020	-1.748	.080
	staff_teaching	.047	.013	.044	3.658	**.000**
	facilities	-.075	.009	-.082	-8.014	**.000**
	pre_achievement	.000	.002	-.002	-.208	.835
	distance	4.118E-006	.000	.005	.496	.620
	travel_time	.000	.000	-.007	-.556	.578
	travel_distance	.001	.000	.032	2.439	**.015**
	fin_difficulty	-.007	.011	-.008	-.643	.520
	working	.000	.002	-.001	-.140	.889
	time_pressures_study	-.062	.009	-.065	-7.094	**.000**
	commitment	.210	.010	.195	20.423	**.000**
	gender	-.076	.019	-.038	-4.021	**.000**
	children	-.055	.034	-.015	-1.596	.111
	good_spirits	.030	.011	.038	2.597	**.009**
	calm	.036	.011	.048	3.352	**.001**
	active	-.003	.010	-.004	-.322	.747
	rested	.020	.009	.028	2.288	**.022**
	interest	.101	.009	.141	11.842	**.000**
	satisfaction_accomodation	-.019	.009	-.021	-2.127	**.033**
	satisfaction_financial_situation	.044	.011	.055	4.161	**.000**
	satisfaction_friendship	.112	.010	.112	11.056	**.000**
	satisfaction_college	.303	.012	.297	24.927	**.000**
	alcohol	.011	.008	.014	1.445	.148
	smoke	.031	.014	.021	2.215	**.027**
	exercise	-.023	.005	-.044	-4.548	**.000**
	colds	-.007	.010	-.007	-.731	.465
	headsches	.023	.007	.034	3.300	**.001**
	sleeping	.022	.007	.033	2.990	**.003**
	concentrating	-.094	.008	-.131	-11.469	**.000**
	stress	-.006	.010	-.007	-.592	.554
	father_working_status	.004	.003	.013	1.257	.209
	mother_working_status	-.002	.004	-.005	-.479	.632
	father_education	-.024	.020	-.013	-1.222	.222
	mother_education	.006	.020	.003	.320	.749
	social_status	.006	.006	.010	.984	.325
	income	-.004	.005	-.007	-.751	.453

The significant independent variables are bold. These include teaching quality,

timetable (class scheduling), teaching staff, facilities, travel distance to college, time

pressure, commitment to college, gender, health and well being variables including feeling in good spirits, calm, rested and interested, whether the students smokes and their level of exercise, extent to which the student experiences difficulty sleeping, concentrating or suffers from headaches, satisfaction with accommodation, finances, friendship and college. These variables were noted earlier as having a significant relationship with student satisfaction.

4.6.2 Decision Tree

The next step was to develop a decision tree model of the data. It was previously noted that there is a higher proportion of satisfied students in comparison to dissatisfied or neither satisfied nor dissatisfied. It was decided to take a random sample of satisfied respondents to ensure a balanced target variable, it was also decided to rescale the target variable to a binary variable i.e. remove those that are neither satisfied nor dissatisfied.

Table 4.48 Satisfaction with study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	dissatisfied	1321	49.5	49.5	49.5
	satisfied	1346	50.5	50.5	100.0
	Total	2667	100.0	100.0	

Figure 4.7 Decision Tree (Training Set)
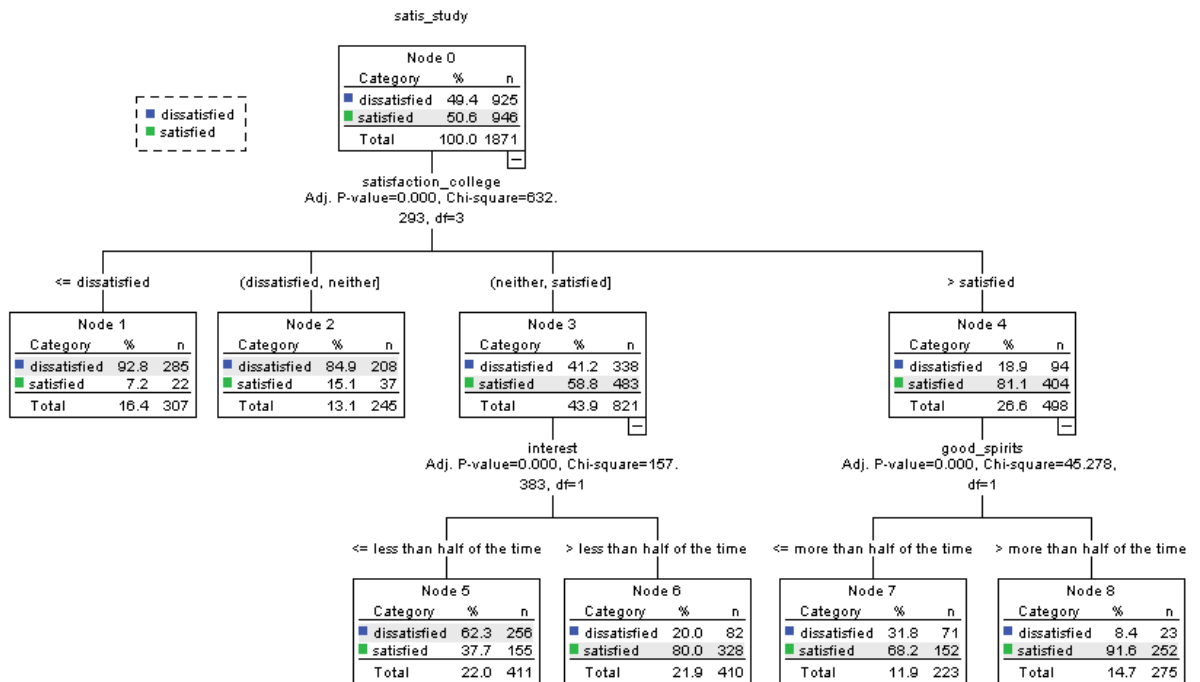
Figure 4.8 Decision Tree (Holdout Sample)
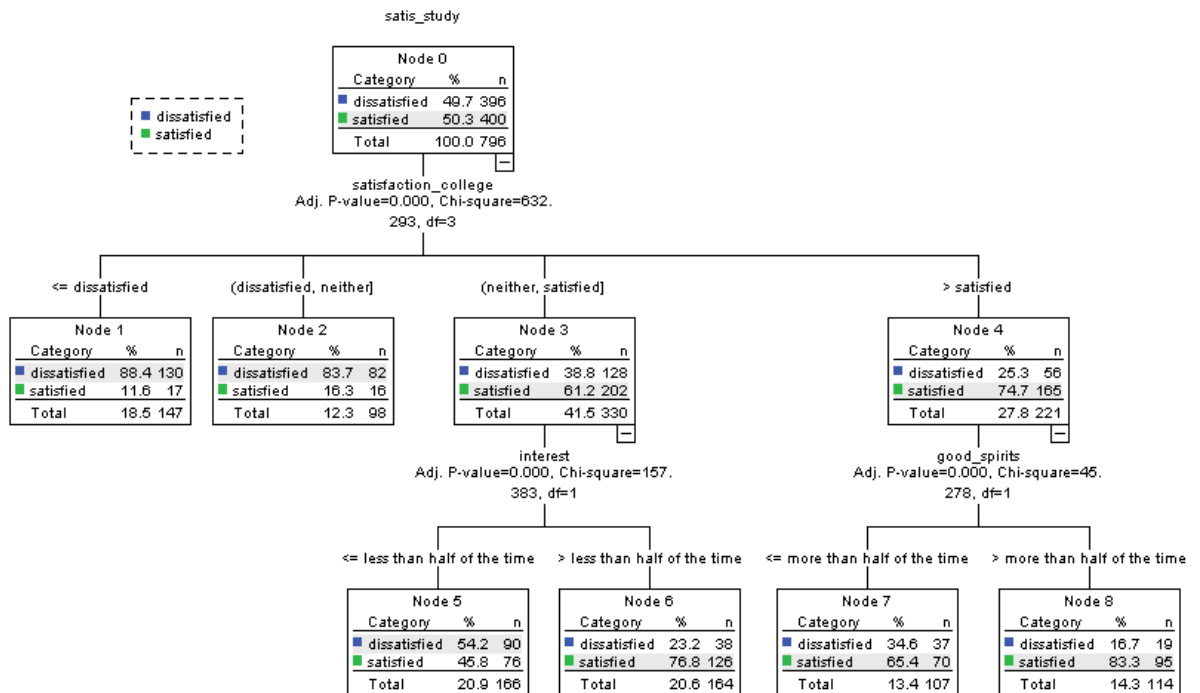
Table 4.49 Decision Tree Classification

Sample	Observed	Predicted		
		dissatisfied	satisfied	Percent Correct
Training	dissatisfied	749	176	81.0%
	satisfied	214	732	77.4%
	Overall Percentage	51.5%	48.5%	79.2%
Holdout	dissatisfied	302	94	76.3%
	satisfied	109	291	72.8%
	Overall Percentage	51.6%	48.4%	74.5%

Risk		
Sample	Estimate	Std. Error
Training	.208	.009
Holdout	.255	.015

The data was split between training and holdout sample. 70% of the data was randomly selected for the training set i.e. the model was developed using this data. The remaining 30% of respondents were used to test the model once complete; this is referred to as the holdout sample. The classification above indicates that the model correctly predicts 79% of respondents in the training sample and 75% in the hold out sample. In both data sets the model is slightly better at predicting dissatisfied students in comparison to satisfied students.

The first variable in both data sets is satisfaction with college. It was earlier noted that there is a very strong relationship present between student satisfaction with their studies and satisfaction with their college. The decision tree model predicts that if a student is dissatisfied with their college than they will be dissatisfied with their studies. If a student is neither satisfied nor dissatisfied with their college the next variable is Interest (the extent to which the student feels interested), if a student feels interested less than half of the time they will be dissatisfied whereas if they feel interested more than half of the time they will be satisfied. If a student is satisfied with their college, the next variable is good spirits (the extent to which the students feels in good spirits). If the students feels in good spirits more than half the time there is a higher probability that they will be satisfied (83%) than if they feel in good spirits less than half of the time (65%).

Thus the following rules can be drawn from the decision tree:

If dissatisfied with college, then dissatisfied.

If neither satisfied not dissatisfied with college and interested half or less than half of the time, then dissatisfied.

If neither satisfied not dissatisfied with college and interested more than half of the time, then satisfied.

If satisfied with college, then satisfied.

4.6.3 Logistic Regression

Following the rescaling of the target variable to a binary variable, a logistic regression test was carried out on the data. The table below indicates an R square of 0.45; this is similar to the findings of the linear regression test. The classification table indicates an overall correct classification rate of 82.5%.

Table 4.50 Logistic Regression Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1594.222[a]	**.454**	.605

Table 4.51 Logistic Regression Classification

	Observed		Predicted		
			Satisfaction study		Percentage
			dissatisfied	satisfied	Correct
Step 1	Satisfaction study	dissatisfied	846	187	81.9
		satisfied	171	837	83.0
	Overall Percentage				82.5

Table 4.52 Logistic Regression Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	teaching_quality	.274	.098	7.805	1	**.005**	1.316
	timetable	.080	.072	1.246	1	.264	1.083
	module_selection	.114	.067	2.883	1	.090	1.121
	staff_admin	-.087	.071	1.473	1	.225	.917
	staff_teaching	.140	.089	2.448	1	.118	1.150
	facilities	-.243	.070	12.150	1	**.000**	.784

	B	S.E.	Wald	df	Sig.	Exp(B)
pre_achievement	-.027	.021	1.588	1	.208	.974
distance	.000	.000	.367	1	.545	1.000
travel_time	-.008	.003	6.779	1	**.009**	.992
travel_distance	.010	.004	6.570	1	**.010**	1.010
fin_difficulty	-.061	.078	.605	1	.436	.941
working	-.024	.030	.656	1	.418	.976
time_pressures_study	-.184	.061	9.099	1	**.003**	.832
commitment	.825	.078	111.604	1	**.000**	2.283
gender	-.525	.142	13.691	1	**.000**	.592
children	-.388	.248	2.460	1	.117	.678
good_spirits	.034	.081	.181	1	.670	1.035
calm	.179	.078	5.279	1	**.022**	1.196
active	-.049	.070	.483	1	.487	.952
rested	.078	.065	1.434	1	.231	1.081
interest	.375	.062	36.034	1	**.000**	1.455
satisfaction_accomodation	-.074	.064	1.332	1	.248	.929
satisfaction_financial_situation	.187	.076	6.035	1	**.014**	1.206
satisfaction_friendship	.326	.070	21.819	1	**.000**	1.386
satisfaction_college	.859	.088	95.095	1	**.000**	2.360
alcohol	.016	.059	.073	1	.787	1.016
smoke	-.037	.096	.150	1	.699	.964
exercise	-.121	.037	10.979	1	**.001**	.886
colds	-.017	.072	.055	1	.815	.983
headsches	.139	.053	6.869	1	**.009**	1.150
sleeping	.156	.056	7.771	1	**.005**	1.169
concentrating	-.546	.069	62.967	1	**.000**	.580
stress	-.236	.077	9.408	1	**.002**	.790
father_working_status	.028	.022	1.676	1	.196	1.029
mother_working_status	-.016	.028	.333	1	.564	.984
father_education	-.016	.143	.012	1	.913	.985
mother_education	-.142	.149	.918	1	.338	.867
social_status	.019	.048	.151	1	.697	1.019
income	-.042	.037	1.337	1	.248	.959
Constant	-5.654	1.162	23.697	1	.000	.004

The significant independent variables are bold. These include teaching quality,

facilities, travel time and distance to college, time pressure, commitment to college,

gender, health and well being variables including feeling calm and interested, level of exercise, extent to which the student experiences difficulty sleeping, concentrating, stress or suffers from headaches, satisfaction with finances, friendship and college. These are similar to those noted in the linear regression test.

In summary the following variables have been identified as predictor variables:

Table 4.53 Summary of Predictor Variables

Predictor variable	Linear Regression	Decision Tree	Logistic Regression
Teaching quality	☆		☆
Timetable (class scheduling)	☆		
Teaching staff	☆		
Facilities	☆		☆
Travel distance to college	☆		☆
Travel time to college			☆
Time pressures	☆		☆
Commitment to studies	☆		☆
Gender	☆		☆
Feeling in good spirits	☆	☆	
Feeling calm	☆		☆
Feeling rested	☆		
Feeling interested	☆	☆	☆
Satisfaction with accommodation	☆		
Satisfaction with finances	☆		☆
Satisfaction with friendships	☆		☆
Satisfaction with college	☆	☆	☆
Smoking	☆		
Exercise	☆		☆
Difficulty sleeping	☆		☆
Difficulty concentrating	☆		☆
Stress			☆
Experiencing headaches	☆		☆

Analysis of the three tests indicates that satisfaction with college is the most important predictor variable of student satisfaction. It was noted earlier that 79% of satisfied students are also satisfied with their college in comparison to just 26% of dissatisfied students. This is in line with Elliot (2002) argument that quality of education is an important factor and Ozga and Sukhandan (1998) findings from qualitative research in the UK. They argued that previous models placed too much emphasis on the fault of the student and argued that the reasons for non completion are evenly distributed between the student and the institution. It is important that colleges ensure students are satisfied with the college; in particular this study highlighted the importance of teaching quality, teaching staff and facilities. Kuh et al. (2005) and Pascarella and Terenzini (2005) highlight the importance of teaching staff and the relationship they develop with students. Roberts and Styron (2010) found that those that did not return to college had statistically significant lower perceptions of faculty approachability than those that remained in their course. Kara and DeShields (2004) also report a positive relationship between faculty performance and student satisfaction. Bean (1990: 159) remarks that 'putting the best instructors in introductory level courses is ... a good way to keep student enrolled in school'.

Class scheduling was noted as important in the linear regression model only. This is in line with research carried out by Loveland and Bland (2013) found that class scheduling has a significant impact on student satisfaction.

The extent to which student exercise was noted as a significant predictor variable in both the linear and logistic regression. Colleges should encourage students to take regular exercise and ensure facilities are available for students. Students who are more committed to their studies report higher levels of satisfaction, colleges should ensure student feel involved and committed to their studies.

It was noted in the literature that working full time can impede persistence among third level students (Astin and Oseguera, 2005). While this was not reported as a significant predictor of satisfaction, time pressure was also noted as an important

variable, colleges should ensure students have adequate time to study and undertake course work, possibly through class and assignment/assessment scheduling.

This study also highlighted the importance of health and wellbeing. Feeling interested was reported as an important predictor variable in all models. Just 4.2% of students that feel interested most or all of the time report that they are dissatisfied, in comparison to 29.8% of students that are interested none or some of the time. This highlights for colleges the importance of attracting and retaining student's interest. Elliot (2002) argues that quality of education is an important factor; he went on to argue that students want to experience intellectual growth. Similarly, Frederick (2012) argued that being intellectually challenged is associated with student satisfaction. Astin (1991) argued that student involvement has a major impact on student's learning and development. As such, the effectiveness of educational policy or practice is directly related to its capacity to increase student involvement (Braxton and Hirschy, 2005). This was also notes in Tinto's (1975) Interactionalist Theory which argues that a student's decision to withdrawal is the culmination of a longitudinal process that determines a student's ability to integrate into the academic and social aspect of an institution. Feeling calm and in good spirits were found to be significant predictor variables in two models.

Satisfaction with finances was noted as an important predictor variable in two models. This is in line with Tinto (1993) argument that the financial situation of the student is likely to affect their decision to leave college. Financial concerns are commonly cited as an important reason students give for their departure from college (Astin and Oseguera, 2005). This was cited as a factor leading to non completion in studies conducted in the US (Lenning, 1980), the UK (Yorke, 1999; Davies and Elias, 2003) and Ireland (Healy et al., 1999; McCarthy, 2000). According to Archuleta et al. (2013) adverse financial situations and financial anxiety can contribute the students' dissatisfaction. Murdock (1987) found financial aid promotes persistence. Langbein and Snider (1999) found that more financial aid significantly increases the probability that a student will remain within college.

Satisfaction with friendship was also noted as significant in two models. This highlights the importance of students making friends and feeling involved in college. It was noted in the literature that the social lives of students and their exchanges with others inside and outside the institution are important in retention decisions (Bean, 2005). Roberts and Styron (2010) found that those that did not return to college had statistically significant lower perceptions of social connectedness than those that remained in their course. Ethington (1990) also found academic and social integration has a direct and positive effect on completion. As noted by Tinto (1993) it is imperative for higher education administrators to work diligently to provide students with opportunities to get involved with campus and activities.

While literature has argued that parent's educational background (Bean, 2005) and income have been seen to directly and indirectly affect a student's completion (Astin and Oseguera, 2005). This study did not find either of these variables as predictors of student satisfaction.

4.7 Satisfaction and Future Plans

The final objective of this research seeked to analyse the relationship between student satisfaction and their intention to pursue further studies. The table below indicates that there is no relationship between further study intentions and satisfaction among this group of students.

Figure 4.9 Satisfaction * Further study plans Bar chart
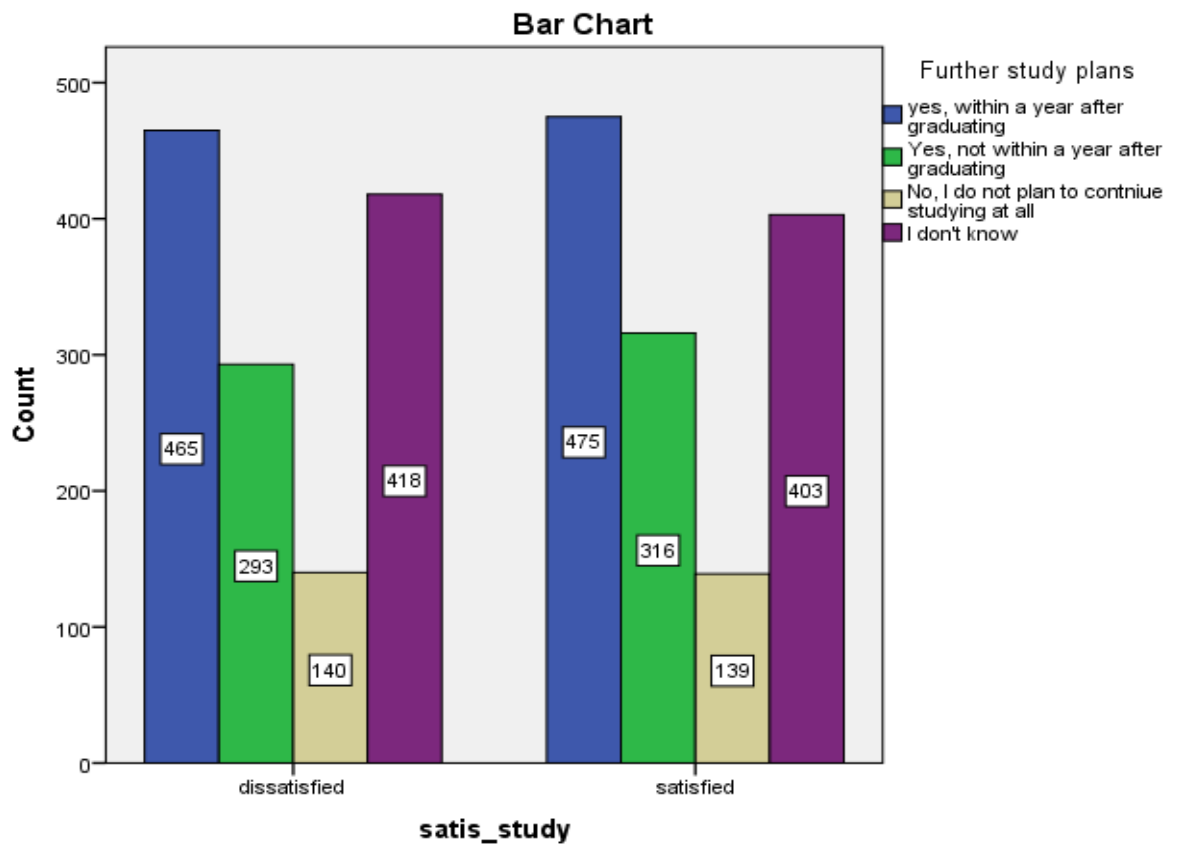
Table 4.54 satisfaction * Further study plans Crosstabulation

		Further study plans				Total
		yes, within a year after graduating	Yes, not within a year after graduating	No, I do not plan to continue studying at all	I don't know	
Satisfaction study	dissatisfied	35.3%	22.3%	10.6%	31.8%	100.0%
	satisfied	35.6%	23.7%	10.4%	30.2%	100.0%
Total		35.5%	23.0%	10.5%	31.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.144[a]	3	.767
Likelihood Ratio	1.144	3	.767
Linear-by-Linear Association	.540	1	.462
N of Valid Cases	2649		

An analysis of the relationship between satisfaction and perception of employment prospects. As the table below indicates, satisfied students rate their employment prospects higher than dissatisfied students.

Table 4.55 satisfaction * Employment chance (National) Crosstabulation

		Employment chance(National)					Total
		very poor	poor	neither	good	very good	
Satisfaction study	dissatisfied	11.8%	30.0%	12.3%	29.9%	16.1%	100.0%
	satisfied	6.8%	17.3%	10.9%	39.4%	25.5%	100.0%
Total		9.3%	23.5%	11.6%	34.7%	20.9%	100.0%

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	101.203[a]	4	**.000**
Likelihood Ratio	102.140	4	.000
Linear-by-Linear Association	95.520	1	.000
N of Valid Cases	2435		

This relationship was also present when assessing employment prospects internationally.

Table 4.56 Satisfaction * Employment chance (International) Crosstabulation

		Employment chance(International)					Total
		very poor	poor	neither	good	very good	
Satisfaction study	dissatisfied	4.3%	12.6%	12.0%	39.0%	32.1%	100.0%
	satisfied	1.4%	5.6%	9.5%	39.9%	43.6%	100.0%
Total		2.9%	9.1%	10.7%	39.5%	37.9%	100.0%

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	73.418[a]	4	**.000**
Likelihood Ratio	75.170	4	.000
Linear-by-Linear Association	71.870	1	.000
N of Valid Cases	2314		

4.8 Conclusion

This chapter analysed the data from Eurostudent survey. The research found that there is an overall high level of satisfaction among students in higher education in Ireland. 14% are dissatisfied, 16% neither satisfied nor dissatisfied and almost 70% indicate that they are satisfied with their studies. Satisfaction was higher among mature students and part time students. An Anova test indicated that satisfied students are slightly older (average = 25.8years) than dissatisfied (average = 24.4 years). A predictive model of student satisfaction was developed and analysed using linear regression, decision tree analysis and logistic regression.

An analysis of the three models found that satisfaction with college is the most important predictor variable of student satisfaction. This study also highlighted the importance of teaching quality, teaching staff and facilities. This research found a positive feeling interested, calm and in good spirits were found to be significant predictor variables of student satisfaction. Satisfaction with finances, accommodation and friendship were noted as an important predictor variable in two models. However, social class and income were not found to be predictors of student satisfaction.

The research found that there is no relationship between further study intentions and satisfaction among this group of students. An analysis of the relationship between satisfaction and perception of employment prospects (both nationally and internationally) found satisfied students rate their employment prospects higher than dissatisfied students.

5. Conclusions

5.1 Introduction

This chapter discusses the main findings of the research and the contributions made by this project. It also outlines the limitations of the project and discusses possible future research. This research project set out to provide greater understanding of the factors that lead to dissatisfaction and non completion of third level students in Ireland. Four research objectives were developed:

1. Gain an understanding of the level of student satisfaction among third level students.
2. Gain an understanding of the factors that impact on student satisfaction.
3. Develop a prediction model of student satisfaction.
4. Analyse the relationship between satisfaction and future study plans

This chapter will analysis the main findings from each objective.

5.2 Findings

The original data set of 10,110 was reduced to 9,502 following a data cleaning approach of removing all respondents with missing data in terms of the target variable or potential predictor variables. The majority of respondents were full time students undertaking an ordinary or honours degree. The students covered a broad spectrum of study areas, income levels and counties in Ireland. The average age was 25. Finally, 63% were female and 37% male.

5.2.1 Objective One

Gain an understanding of the level of student satisfaction among third level students.

The research found that there is an overall high level of satisfaction among students in higher education in Ireland. 14% are dissatisfied, 16% neither satisfied nor dissatisfied and almost 70% indicate that they are satisfied with their studies.

Satisfaction was higher among mature students and part time students. An Anova test indicated that satisfied students are slightly older (average = 25.8years) than dissatisfied (average = 24.4 years). An analysis of satisfaction and programme type indicates that there is highest levels of satisfaction among students undertaking a taught masters whereas lowest levels of satisfaction are among students undertaking an ordinary bachelor degree.

5.2.2 Objective Two

Gain an understanding of the factors that impact on student satisfaction.

An analysis was carried out between each potential predictor variable and the target variable of student satisfaction. The research found that there is a clear relationship present between satisfaction with the quality of teaching and student satisfaction among this group of respondents. 91% of those that are satisfied with the studies are satisfied with the quality of teaching they experience, in comparison to just 61% of those that are dissatisfied. This is in line with literature (Elliot, 2002; Kara and DeShields, 2004; Bean, 1990).

Similarly, those that are satisfied with their timetable and the organisation of their studies; the possibility to select from a broad variety of courses; college administrators attitude toward students; teaching staff attitude toward staff and facilities report higher levels of overall satisfaction. This is in line with literature (Loveland and Bland, 2013; Kuh et al., 2005; Pascarella and Terenzini, 2005; Roberts and Styron, 2010).

Anova tests indicate that there is a non significant difference among satisfied and dissatisfied students as such time and distance travelling does not appear to impact student satisfaction.

49% of satisfied students indicate that they have major to serious financial difficulties in comparison to 61% of those that are dissatisfied. In line with literature (Astin and Oseguera, 2005; Lenning, 1980; Yorke, 1999; Davies and Elias, 2003; Healy et al., 1999; McCarthy, 2000; Langbein and Snider, 1999; Archuleta et al., 2013) chi square results indicate that there is a statically significant relationship between financial difficulty and satisfaction.

Similar to findings from Astin and Oseguera (2005) this study found a relationship exists between working during the semester and student satisfaction. 67% of those that are working during the semester report that they are satisfied with their studies in comparison to a satisfaction level of 71.4% among those that do not work during the semester. Similarly, those that report they have adequate study time report the highest levels of satisfaction.

Students indicating highest level of commitment to their studies report the highest level of satisfaction, for example 74% of those that indicate their studies is more important that other activities indicate they are satisfied with their studies in comparison to just 34% of those that indicate that their studies is less important than other activities.

In line with findings from Moses et al. (2011) this study reports higher satisfaction rates among females. Results indicate slightly higher levels of satisfaction among those that have children. In terms of student well being, higher satisfaction rates were found among students that reported more often feeling in good spirits, calm, active, well rested and interested.

While lower levels of alcohol consumption relate to higher levels of satisfaction, the relationship is non-significant. In line with Cox et al. (2005) there are higher levels of satisfaction reported among non smokers in comparison to smokers. Higher levels of satisfaction are found among students who exercise more often, experience problems such as headaches, trouble sleeping, stress, colds and difficulty concentrating.

Students reporting higher levels of satisfaction with their study also reported higher levels of satisfaction with their accommodation, financial situation and friendships. 75% of satisfied students are happy with their friendships in comparison to just 45.5% of dissatisfied students. There is also a very strong relationship present between student satisfaction with their studies and satisfaction with their college. 79% of satisfied students are also satisfied with their college in comparison to just 26% of dissatisfied students.

There was no relationship found between level of satisfaction and social status of students or income level, which is in contract to findings from Astin and Oseguera (2005).

5.2.3 Objective Three

Develop a prediction model of student satisfaction.

The third objective of this research aimed to develop a predictive model of student satisfaction; this has been carried out using linear regression, decision tree analysis and logistic regression. An analysis of the three models found that satisfaction with college is the most important predictor variable of student satisfaction. This is in line with literature (Elliot, 2002; Ozga and Sukhandan, 1998). It is important that colleges ensure students are satisfied with the college; in particular this study highlighted the importance of teaching quality, teaching staff and facilities. Again, this is in line with literature in the area (Kuh et al., 2005; Pascarella and Terenzini, 2005; Roberts and Styron, 2010; Kara and DeShields, 2004; Bean, 1990). While previously noted as an important variable (Loveland and Bland, 2013) class scheduling was noted as important in the linear regression model only.

The extent to which student exercise was noted as a significant predictor variable in both the linear and logistic regression. Students who are more committed to their studies and report fewer time pressures report higher levels of satisfaction.

This study also highlighted the importance of health and wellbeing. Feeling interested was reported as an important predictor variable in all models. Just 4.2% of students that feel interested most or all of the time report that they are dissatisfied, in comparison to 29.8% of students that are interested none or some of the time. This is in line with literature (Elliot, 2002; Frederick, 2012; Astin, 1991; Braxton and Hirschy, 2005; Tinto, 1975). Feeling calm and in good spirits were found to be significant predictor variables in two models.

In line with literature (Tinto, 1993; Astin and Oseguera, 2005; Lenning, 1980; Yorke, 1999; Davies and Elias, 2003; Healy et al, 1999; McCarthy, 2000; Archuleta *et al.*, 2013; Murdock, 1987; Langbein and Snider, 1999) satisfaction with finances was noted as an important predictor variable in two models.

Satisfaction with friendship was also noted as significant in two models. It was noted in the literature that the social lives of students and their exchanges with others inside and outside the institution are important in retention decisions (Bean, 2005; Roberts and Styron, 2010; Ethington, 1990; Tinto, 1993).

While literature has argued that parent's educational background (Bean, 2005) and income have been seen to directly and indirectly affect a student's completion (Astin and Oseguera, 2005). This study did not find either of these variables as predictors of student satisfaction.

5.2.4 Objective Four

 Analyse the relationship between satisfaction and future study plans

The final objective of this research seeks to analyse the relationship between student satisfaction and their intention to pursue further studies. The research found that there is no relationship between further study intentions and satisfaction among

this group of students. An analysis of the relationship between satisfaction and perception of employment prospects (both nationally and internationally) found satisfied students rate their employment prospects higher than dissatisfied students.

5.3 Limitations

This research used secondary data. The Eurostudent data set, a survey which assesses the attitudes of all third level students in Ireland provided rich data for the analysis. However, it was not tailor made for the current study, as such many variables were not included, as outlined in the findings chapter for example, the survey includes a section on international mobility which is not relevant to the current study. In addition, the study did not directly measure retention or students intention to remain in third level education to completion. If primary research was used, this variable would have been included. The data set did however; provide data in relation to future study intentions and student's perceptions of their employment prospects which provided interesting findings.

Only a small minority of students were part-time (8%) or studying through a language other than English (11%) or represent distant learning students (5%). As such, an analysis of these students and the factors that impact their satisfaction is difficult.

5.4 Future research

This research has identified that while satisfaction levels among third level students in Ireland is high, there are a number of factors that impact on student satisfaction. It is recommended that future research should be carried out involving primary research to assess the impact of these factors on student satisfaction and retention, as noted earlier, a limitation of this research is that retention or intention to remain in college and complete their programme was not directly measured in the current dataset.

In addition, it is recommended that qualitative research be carried out. Such research would provide in-depth understanding of the factors that led to dissatisfaction and non-completion among third level students in Ireland.

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Full Time and Part Time

		Frequency	Percent	Valid Percent
	full time	8719	91.8	**91.8**
Valid	part time	783	8.2	8.2
	Total	9502	100.0	100.0

Programme Language

		Frequency	Percent	Valid Percent
	english	9362	98.5	**98.7**
	irish	73	.8	.8
Valid	other	52	.5	.5
	Total	9487	99.8	100.0
Missing	0	15	.2	
Total		9502	100.0	

Entry Route

		Frequency	Percent	Valid Percent
	through the CAO	6814	71.7	**71.8**
	through HEAR	130	1.4	1.4
	through DARE	55	.6	.6
	Directly to the college administration or access office	1604	16.9	16.9
Valid	through the Springboard programme	119	1.3	1.3
	through the Bluebrick system	16	.2	.2
	through the postgraduate application centre	743	7.8	7.8
	other	6	.1	.1
	Total	9487	99.8	100.0
Missing	0	15	.2	
Total		9502	100.0	

Nationality

	Frequency	Percent	Valid Percent
Valid			

		Frequency	Percent	Valid Percent
	Irish citizen through birth	7244	76.2	**76.2**
	Naturalised Irish citizen	1167	12.3	**12.3**
	Foreign national resident for 5 years or more in Ireland	540	5.7	5.7
	Foreign national resident for less than 5 years in Ireland	353	3.7	3.7
	other	182	1.9	1.9
	Total	9502	100.0	100.0

Distance Learning

		Frequency	Percent	Valid Percent
	yes	453	4.8	4.8
Valid	no	9032	95.1	**95.2**
	Total	9485	99.8	100.0
Missing	0	17	.2	
Total		9502	100.0	

mature

		Frequency	Percent	Valid Percent	Cumulative Percent
	yes	2459	25.9	26.2	26.2
Valid	no	6926	72.9	73.8	100.0
	Total	9385	98.8	100.0	
Missing	0	117	1.2		
Total		9502	100.0		

Children

		Frequency	Percent	Valid Percent	Cumulative Percent
	yes	1124	11.8	12.0	12.0
Valid	no	8233	86.6	88.0	100.0
	Total	9357	98.5	100.0	
Missing	0	145	1.5		
Total		9502	100.0		

Current Year of Programme

		Frequency	Percent	Valid Percent
Valid	1 year	2782	29.3	32.7
	2 year	2572	27.1	30.2
	3 years	1950	20.5	22.9
	4 years	1119	11.8	13.1
	5 years	66	.7	.8
	6 years +	23	.2	.3
	Total	8512	89.6	100.0
Missing	0	990	10.4	
Total		9502	100.0	

Study Area

		Frequency	Percent	Valid Percent
Valid	education	695	7.3	7.3
	humanities & arts	2103	22.1	22.1
	social science	686	7.2	7.2
	business	1304	13.7	13.7
	law	282	3.0	3.0
	science	1555	16.4	16.4
	maths/computers/computer science	782	8.2	8.2
	engineering, manufacturing and construction	840	8.8	8.8
	agricultural / veterinary	144	1.5	1.5
	health/ welfare	865	9.1	9.1
	sport/ leisure	141	1.5	1.5
	catering	62	.7	.7
	services	36	.4	.4
	other	7	.1	.1
	Total	9502	100.0	100.0

County

		Frequency	Percent	Valid Percent
Valid	Antrim	15	.2	.2
	Armagh	2	.0	.0
	Carlow	115	1.2	1.2
	Cavan	99	1.0	1.1
	Clare	222	2.3	2.4

		Frequency	Percent	Valid Percent	Cumulative Percent
	Cork	1062	11.2	11.4
	Derry	6	.1	.1
	Donegal	206	2.2	2.2
	Down	14	.1	.2
	Dublin	2316	24.4	24.9
	Fermanagh	7	.1	.1
	Galway	659	6.9	7.1
	Kerry	257	2.7	2.8
	Kildare	454	4.8	4.9
	Kilkenny	156	1.6	1.7
	Laois	110	1.2	1.2
	Leitrim	58	.6	.6
	Limerick	415	4.4	4.5
	Longford	54	.6	.6
	Louth	209	2.2	2.2
	Mayo	253	2.7	2.7
	Meath	299	3.1	3.2
	Monaghan	98	1.0	1.1
	Offaly	132	1.4	1.4
	Roscommon	107	1.1	1.1
	Sligo	173	1.8	1.9
	Tipperary	289	3.0	3.1
	Tyrone	5	.1	.1
	Waterford	257	2.7	2.8
	Westmeath	170	1.8	1.8
	Wexford	274	2.9	2.9
	Wicklow	279	2.9	3.0
	Another EU Country	341	3.6	3.7
	A non EU Country	203	2.1	2.2
	Total	9316	98.0	100.0
Missing	0	186	2.0	
Total		9502	100.0	

Mental health problem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	8994	94.7	94.7	94.7
	yes	508	5.3	5.3	100.0

| | | Total | 9502 | 100.0 | 100.0 | |

Mobility impairment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	9425	99.2	99.2	99.2
	yes	77	.8	.8	100.0
	Total	9502	100.0	100.0	

Sensory impairment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	9269	97.5	97.5	97.5
	yes	233	2.5	2.5	100.0
	Total	9502	100.0	100.0	

Learning disability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	9099	95.8	95.8	95.8
	yes	403	4.2	4.2	100.0
	Total	9502	100.0	100.0	

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	8968	94.4	94.4	94.4
	yes	534	5.6	5.6	100.0
	Total	9502	100.0	100.0	

Satisfaction with study * learning disability Crosstabulation

		Learning disability		Total
		no	yes	
Satisfaction	very dissatisfied	**2.4%**	**6.0%**	2.5%

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study	dissatisfied	**11.3%**	**13.4%**	11.4%
	neither	16.4%	17.4%	16.4%
	satisfied	54.6%	48.6%	54.4%
	very satisfied	15.3%	14.6%	15.3%
Total		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.378[a]	4	.000
Likelihood Ratio	19.013	4	.001
Linear-by-Linear Association	11.854	1	.001
N of Valid Cases	9502		

Satisfaction with study * mental health problem Crosstabulation

		Mental health problem		Total
		no	yes	
Satisfaction study	very dissatisfied	2.2%	7.1%	2.5%
	dissatisfied	10.9%	20.3%	11.4%
	neither	16.3%	18.5%	16.4%
	satisfied	55.0%	43.9%	54.4%
	very satisfied	15.6%	10.2%	15.3%
Total		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	103.258[a]	4	.000
Likelihood Ratio	84.250	4	.000
Linear-by-Linear Association	88.912	1	.000
N of Valid Cases	9502		

Satisfaction with study * mobility impairment Crosstabulation

| | Mobility impairment | | Total |
	no	yes	
Satisfaction study	very dissatisfied	2.5%		2.5%
	dissatisfied	11.4%	9.1%	11.4%
	neither	16.4%	19.5%	16.4%
	satisfied	54.4%	51.9%	54.4%
	very satisfied	15.2%	19.5%	15.3%
Total		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.730[a]	4	.444
Likelihood Ratio	5.590	4	.232
Linear-by-Linear Association	1.526	1	.217
N of Valid Cases	9502		

Satisfaction with study * sensory impairment Crosstabulation

| | Sensory impairment | | Total |
	no	yes	
Satisfaction study	very dissatisfied	2.4%	6.0%	2.5%
	dissatisfied	11.3%	14.6%	11.4%
	neither	16.3%	21.5%	16.4%
	satisfied	54.6%	47.2%	54.4%
	very satisfied	15.4%	10.7%	15.3%
Total		100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.997[a]	4	.000
Likelihood Ratio	19.737	4	.001
Linear-by-Linear Association	18.596	1	.000
N of Valid Cases	9502		