Deconstructing Concepts of Student Satisfaction, Engagement and Participation in UK Higher Education

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Deconstructing Concepts of Student Satisfaction, Engagement and Participation in UK Higher Education

An Empirical Analysis Using Cross-sectional and Longitudinal Data

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Abstract

This thesis argues that established models of student satisfaction in higher education fail to take into account the contribution that students make towards their own learning and satisfaction and postulates a holistic model of student satisfaction. This thesis also highlights that student satisfaction is a slow and incremental process spread over several semesters and thus can more appropriately be understood longitudinally.

Based on the conceptual framework, a theoretical model is presented and empirically explored using two datasets: a cross-sectional dataset comprised of 147 students and a longitudinal dataset comprised of 66 students. Both datasets were collected from students at Oxford Brookes University. The longitudinal data is collected for 2 years (4 semesters). A theoretical model is presented and tested for empirical support using structural equation modelling (SEM) for the cross-sectional dataset while SEM growth curve modelling is employed to analyse the longitudinal dataset.

The results provide overwhelming support for the proposed theoretical model and confirm that student satisfaction is indeed a multi-faceted concept and cannot be understood solely on aspects of student learning experiences like many established models. It can more appropriately be understood using other concepts that signify the contribution of students in their own learning and satisfaction such as student engagement and student participation.

The results also point out the significance of understanding student satisfaction longitudinally and give an insight into students' growth trajectories as well as their perceptions about student satisfaction at different times during their course.

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Abbreviations & Acronyms

ADF	Asymptomatically Distribution-Free
AGFI	Adjusted Goodness of fit Index
AUSSE	Australian Survey of Student Engagement
AVE	Average Variance Extracted
BSLES	Brookes Student Learning Experience Strategy
CEQ	Course Experience Questionnaire
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CPQ	Course Perceptions Questionnaire
CRE	Centre of Research and Evaluation
CSEQ	College Student Experiences Questionnaire
EFA	Exploratory Factor Analysis
EP	Evaluated Performance
FGDs	Focus Group Discussions
GFI	Goodness to Fit Index
GLS	Generalised Least Square
GOF	Goodness-of-Fit Indices
HEdPERF	Higher Education Performance Model
HEFCE	Higher Education Funding Council for England
HEIs	Higher Education Institutions
HESA	Higher Education Statistics Agency
MAR	Missing at Random
MCAR	Missing Completely at Random
MLE	Maximum Likelihood Estimation
MLR	Maximum Likelihood Robust
NFI	Normed Fit Index
NQ	Normed Quality
NSS	National Student Survey
NSSE	National Survey of Student Engagement
NUS	National Union of Students
OBU	Oxford Brookes University

OLS	Ordinary Least Square
PIP	Personal Information Portal
PNFI	Parsimony Normed Fit Index
QAA	Quality Assurance Agency for Higher Education
REMSEA	Root Mean Square Error of Approximation
RNI	Relative Noncentrality Index
S-B	Satorra-Bentler
SEM	Structural Equation Modelling
SERVPERF	Service Performance model
SERVQUAL	Service Quality model
SET	Students' Evaluation of Teaching
SRMR	Standardised Root Mean Square Residual
SSS	Student Satisfaction Survey
SSSRP	Student Satisfaction Survey Research Project (Oxford Brookes)
TLI	Tucker-Lewis Index
TQE	Total Quality Education
TQM	Total Quality Management
UNIQOLL	University Quality of Life and Learning

Chapter I
Introduction

The purpose of this thesis is to propose and empirically test a model of student satisfaction in higher education that takes into account aspects of student engagement and student participation, unlike most established models which only focus on the student learning experience. This thesis also seeks to understand the effects of time on student satisfaction on the premise that students go through a slow and incremental process spread over several semesters as they sign up to different modules.

It is argued that the dominant approach to collecting student satisfaction data only using the dimensions of the student learning experience is flawed and ignores the aspects of student engagement and student participation and overlooks students' contribution, participation and involvement in shaping their own learning experience and satisfaction (Bitner, Faranda et al. 1997; Astin 1999; Hennig-Thurau, Langer et al. 2001; Kotze and Plessis 2003; QAA 2008; Trowler 2010).

This introductory chapter provides background and context to this thesis. The chapter is comprised of four sections.

The first section (1.1) revisits the background of this research and provides brief details about the project, which was begun in 2006 at Oxford Brookes

University. The next section (1.2) spells out the rationale of this thesis and presents a detailed account of the area of research, the research problem and identifies gaps in the literature which this thesis sought to address. The third section (1.3) describes research objectives followed by the fourth section (1.4) that presents the chapter outline.

1.1 Background

The first university-wide Student Satisfaction Survey (SSS) at Oxford Brookes University was carried out in February 2004 with the help of the Centre of Research and Evaluation (CRE), Sheffield Hallam University. In 2006, Oxford Brookes University took charge of the survey and administered it with the help of Oxford Brookes Student Union under supervision from the Student Satisfaction Survey Steering Group.

The first Brookes Student Learning Experience Strategy (BSLES) 2006-2010 launched in 2006. The strategy strived for "continuing enhancement of the learning experiences and opportunities" for students to reach their full potential academically and in preparation for life after Brookes (Robertson 2007). Following are the five key strategic outcomes that the BSLES aspired to achieve:

- to provide learning experiences and opportunities for all students which are of the highest quality, and appropriate to their expectations and needs;
- to establish learning environments that afford opportunities for a variety of learning styles and approaches to be pursued, utilise appropriate technologies, and facilitate effective participation in higher education;

- to provide effective support for all students as they prepare themselves for employability or career progression;

- to ensure that our staff achieve the highest professional standards; and

- to ensure that all services, processes and facilities with which our students engage are appropriate to their needs and expectations, and are of the highest quality.

In the 2006-07 funding year, the Student Satisfaction Survey Research Project (SSSRP) had been proposed with the aim of "investigating and developing a methodology for the measurement and analysis of student satisfaction, with particular application to Brookes". For this purpose, funding was made available for a three-year research studentship. This thesis is an outcome of the Student Satisfaction Survey Research Project (SSSRP).

1.2 Rationale

Student satisfaction is widely considered as an important concept in the higher education context (El Ansari and Oskrochi 2004). More recently, student satisfaction has received much attention due to the changing context and marketisation of higher education, the increasing demand for quality assurance coupled with diminishing public funding in the United Kingdom (Rautopuro and Vaisanen 2000; King 2001; Furedi 2011). Student satisfaction is at the centre of the British higher education system to the extent that the National Student Survey (NSS) has been established to collect data on student satisfaction from 150 universities across the United Kingdom (Williams 2002; Williams and Cappuccini-Ansfield 2007).

It became important for universities to raise their income through tuition fees, overseas students, grants, consulting and publications (White, 2006). Universities have been forced to adopt business-like strategies to market their courses in the global higher education marketplace (Salter and Tapper 2002). Universities are now working hard to attract and retain students and they consider the quality of service as a key element. The impact of not attracting or satisfying students could have adverse effects on student enrolment and retention, funding, job security and the viability of a university (Low 2000). Satisfying the needs of students is an important objective for higher education institutions (Athiyaman 1997).

In higher education, a successful student experience largely relies on student participation and student engagement (Bitner, Faranda et al. 1997; Astin 1999; Trowler and Trowler 2010). Students take an active part in learning activities (Hennig-Thurau, Langer et al. 2001) and contribute to their own satisfaction with their learning experience (Bitner, Faranda et al. 1997; Kotze and Plessis 2003). Moreover, active participation and involvement are instrumental in quality "assurance and enhancement" (QAA 2008, p.1). Collecting data on student satisfaction is also part of the quality audit in the United Kingdom (Cooke 2002; HEFCE 2003).

In recent years, discussions around students shaping their own learning have received much attention and wider recognition (Ramsden 2008). The role that students play affects the nature of the higher education service outcome, i.e. the student learning experience (Bitner, Faranda et al. 1997). However, the

established models of student satisfaction fail to acknowledge the distinctiveness and complexities of higher education and the critical role that students can or cannot play in their own learning and satisfaction.

Furthermore, it is worth noting here that the student satisfaction data is largely cross-sectional. Although "change-over-time graphs' feature prominently in most institutional reports" (Katiliūtė 2011, p.753), it is rarely investigated empirically (Wiers-Jenssen, Stensaker et al. 2002; Kane, Williams et al. 2008).

The cross-sectional data only provides a snapshot of the state of student satisfaction at that point in time. Cross-sectional data overlooks any effect "of time on students' perception" (Martin 2003, p.311). The higher education experience is a gradual process and transpires over time. Any approach discounting effects of time on students might present a flawed image of student satisfaction with their learning experience (Martin 2003).

Therefore, it will be useful to explore a model of student satisfaction that could incorporate aspects of student satisfaction, student learning experience, student engagement and student participation. In addition, using longitudinal as well as cross-sectional data would provide an insight into the effects of time on students' perceptions of satisfaction.

1.3 Research Objectives

This thesis aims to achieve two main objectives. First and foremost is to explore the plausibility of an empirical model of student satisfaction that incorporates the constructs of student learning experiences, student engagement and student participation. The purpose here is to propose and corroborate a holistic model and test its effectiveness, validity and usefulness in the higher education context in the United Kingdom. The second objective of this thesis is to understand changes in satisfaction between and within students, over time. Thus, the two main objectives articulated are:

- To explore the plausibility of an empirical model of student satisfaction that incorporates the constructs of student learning experiences, student engagement and student participation.

- To understand changes in mean level of student overall satisfaction across time and growth trajectories between students and within each student over time.

1.4 Thesis Outline

This thesis has seven chapters. An outline of each chapter is presented below:

In Chapter 1, a concise background of the first Brookes Learning Experience Strategy (BSLES) 2006-2010 is presented. The BSLES emphasised the need to enhance the student learning experience to help students reach to their full potential (Robertson 2007). This thesis stems from the BSLES 2006-2010.

Next in Chapter 1, a rationale for this thesis is explained and research objectives are outlined followed by the scope of this thesis where the main concepts of student satisfaction, student learning experience, student engagement and student participation are introduced. Chapter 1 continues with the outlining research objectives. The chapter ended with an outline of the thesis.

In the second chapter a detailed review of available literature is conducted. The chapter started with a brief account of history and the origin of student satisfaction and student learning experience followed by looking into the available definitions for these concepts and the reasons for collecting student satisfaction data. Next, a description of higher education in the current economic climate is presented. Chapter 2 continues with an in-depth review of available models, paradigms and measurement approaches that are used to understand student satisfaction is carried out. Finally, the concepts of student engagement and student participation are explored in detail.

In Chapter 3, a conceptual framework is presented. The conceptual framework brings together concepts and constructs that are important to student satisfaction as identified by the literature review. The purpose here is to develop and propose a theoretical model that takes into account the role of students in their own satisfaction. All concepts and constructs are defined in this chapter and the theoretical model along with propositions is outlined as hypotheses.

In Chapter 4, the methodology to analyse the cross-sectional and longitudinal data is presented. The chapter offers a brief account of research paradigms and aligns this thesis with post-positivist research traditions. The chapter also introduces the research design, research instrument and research participants. Finally, research procedures including statistical techniques are discussed.

In Chapter 5, the results are presented and data analysis is carried out. The chapter starts with outlining the aspects of data screening and examining. Detailed discussion on the statistical techniques applied to analyse data in this thesis is shared. Guidelines and evaluation criteria to assess statistical results are also provided. Finally, the proposed theoretical model is tested and the final empirical model is presented.

In Chapter 6, discussions based on the results are elaborated. The chapter includes discussions both of cross-sectional data where the empirical model of student satisfaction is generated as well as results from longitudinal data to highlight change over time.

Chapter 7 concludes this thesis and provides a response to the main objectives. It spells out the theoretical contribution and limitations of the thesis and outlines recommendations for future research.

Chapter 2

Literature Review

In the first chapter of the thesis, a brief overview of the concepts of student satisfaction, student engagement and student participation were provided. In addition, the purpose and objectives of this research were also articulated. In this second chapter, a comprehensive review of available literature is presented.

The chapter is organised in four distinct sections:

The first section (2.1) provides a brief account of the history, origin and definitions of student satisfaction and the student learning experience, as well as the reasons for collecting student satisfaction data. The second section (2.2) presents a description of higher education in the current economic climate, and hence sets the context for this research. The next section (2.3) takes an in-depth look into dominant models, paradigms, and measurement approaches of student satisfaction in the available literature. In the final section (2.4), the concepts of student engagement and student participation as well as their relationship with student satisfaction are presented.

2.1 Background

2.1.1 *History and Origins of Student Satisfaction*

In the past few decades, many concepts from the services and marketing disciplines have been introduced and applied in the higher education sector. Customer satisfaction is one of the important concepts that has gained wider acceptance (Hermans, Haytko et al. 2009). In higher education, it has been re-phrased as student satisfaction. Universities are now applying customer satisfaction literature, theories, concepts and paradigms in the higher education domain (Desai, Damewood et al. 2001). The satisfaction of students with their educational experience is now considered to be similar to customer satisfaction within services (Appleton-Knapp and Krentler 2006).

The term 'student satisfaction' has evolved over a considerable time. One early example of collecting student opinions dates back to the Yale University student survey of 1929 (Crawford 1929). However, since then there has been little agreement on how feedback should be collected (Williams 2002). Likewise, the purpose behind collecting student data has changed from just collecting student opinions (Crawford 1929) to monitoring and improving the quality of teaching and learning and advising potential students about the quality of teaching and learning (HEFCE 2003).

2.1.2 *Defining Student Satisfaction and the Student Learning Experience*

The literature review confirms the absence of an agreed definition of student satisfaction and the student learning experience. El Ansari and Oskrochi (2004) note that student satisfaction is widely considered to be an important aspect of the student learning experience.

Many authors suggest multiple interpretations of student satisfaction and the student learning experience. Some authors and researchers have made attempts to come up with an agreed working definition for the purpose of their research, however, the majority are not drawn into defining student satisfaction (Wiers-Jenssen, Stensaker et al. 2002; Athiyaman 2004; Oscar, Ali et al. 2005; Forrester 2006; Alves and Raposo 2009; Walker and Palmer 2011). Therefore, there is no consensus on the definitions of these concepts in higher education (Mercedes Marzo, Marta Pedraja et al. 2005). It will be useful to recapitulate some of the frequently cited definitions here.

Elliot and Healy (2001) describe student satisfaction as "a short-term attitude resulting from an evaluation of a student's educational experience". The definition appears to emphasise students' role in evaluating their educational experience. In another attempt, Oliver (1989) suggests that student satisfaction "refers to the favourability of a student's subjective evaluation of the various outcomes and experiences associated with education (Oliver 1989; Elliott and Shin 2002).

A more market-oriented definition is presented by Munteanu, Ceobanu et al. (2010, p. 124) who define student satisfaction as "an evaluative summary of direct educational experience, based on the discrepancy between prior expectation and the performance perceived after passing through the education cycle". Furthermore, some authors put forward a definition based on prior expectations and perceived performance in higher education (Hill 1985; Yüksel and Yüksel 2001).

Similarly, many authors define the student learning experience as a wide-ranging set of experiences without clearly defining the meaning and understanding of the concept (Ertl, Hayward et al. 2008). Ertl, Hayward et al. (2008) identify a diverse research base that many authors have used to explore the student learning experience and through this refer to three distinct research traditions.

The first research tradition focuses on students' attitudes and approaches towards learning (Perry 1968; Marton and Saljo 1976) which ensued from the development of the Course Experience Questionnaire – CEQ (Ramsden 1991; Ramsden 2003). The second tradition is sociologically-informed research which "includes work on the informal and formal academic institutional and disciplinary cultures, and how they shape students' learning experience within higher education" (Ertl, Hayward et al. 2008, p.17). The third and final tradition is associated with the notion of student learning experience and quality in higher education. This discourse also has various dimensions such as interest and political pressure to rank universities on a comparative scale

(Nordvall and Braxton 1996); assessing and measuring student learning for quality assurance; student evaluation of teaching and learning and student satisfaction surveys.

This thesis aligns its understanding of the student learning experience with the third discourse and proposes that students' satisfaction with their learning experience is a combination of academic and social aspects of what students encounter in the university environment. The thesis supports the view that student satisfaction is an important and useful concept and applying the framework from service marketing "can assist universities in understanding what market orientation means and how students would value their offerings" (Ng and Forbes 2009, p.38).

This thesis also reiterates that the notion that service quality in higher education is the largest determinant of student satisfaction as well as the student learning experience and a key element of attracting, retaining and satisfying students (Low 2000; Banwet and Datta 2003; Remedios and Lieberman 2008). However, the student learning experience in higher education is "emergent, unstructured, interactive and uncertain" (Ng and Forbes 2009, p. 40) and thus requires both students and institutions to play an instrumental role in achieving the desired outcome. Furthermore, some authors suggest that benchmarking the quality of teaching and learning using student satisfaction data could also help institutions to show their commitment to improving, monitoring, listening and responding to students' opinions and voices (HEFCE 2002; Harvey 2003; Rowley 2003).

2.1.3 Why Collect Student Satisfaction Data?

Before the introduction of the National Student Survey (NSS), most of the universities in the UK were collecting student satisfaction data through some kind of survey (Williams 2002). The National Student (NSS) was introduced in 2005 and currently all publicly funded Higher Education Institutions (HEIs) as well as other providers of higher education in England, Wales, Northern Ireland and Scotland participate in the NSS (NSS 2015).

In these surveys, data is collected about the experiences that the students go through on campus. This includes everything from the classroom to the campus environment and from interacting with fellow students to staff members (Elliott and Shin 2002). In general, university experience consists of academic programmes (Sevier 1996) as well as a whole series of social, physical and spiritual experiences (Elliott and Shin 2002).

There are many reasons to collect student satisfaction data. An HEFCE (2003) report suggests the monitoring of teaching and learning, improving the quality of teaching and learning and advising potential students about the quality of teaching and learning are prime reasons for collecting students' satisfaction data about their learning experience.

Rowley (2003) identifies three main reasons for collecting student satisfaction data: evidence that students are provided with the opportunity to comment on their learning experience and satisfaction, encourage reflection on learning, benchmarking for universities. Furthermore, Harvey (2003) outlines five main

reasons for higher education institutions to invest in student satisfaction: commitment to take student views seriously, recognition that the student learning experience is pivotal in learning, provision of procedures and processes for quality improvement, guidance for strategic management decisions and benchmarking.

The rise and wider recognition of the concept of student satisfaction could be attributed to a number of factors. These reasons could be classified broadly into three categories and are briefly presented here.

2.2 The Changing Context of Higher Education

Higher education in the UK and in other western countries is changing. The use of terms such as market research, positioning, market penetration and market audit from the field of marketing is gaining ground among both academic leaders and professional staff (Ng and Forbes 2009).

Neoliberal policies and its related discourses of 'new public management' have shaped the way universities function. The "professional culture of open intellectual enquiry and debate has been replaced with an institutional stress on performativity [i.e. "the best possible input/output equation" (Lyotard 1984, p. 46)], as evidenced by the emergence of an emphasis on measured outputs; on strategic planning, performance indicators, quality assurance measures and academic audits" (Olssen and Peters 2005, p. 313).

Universities in the UK, for example, are moving "into a new age of top-up fees" (Ng and Forbes 2009). These changes and transformations that higher education institutions (HEIs) are witnessing today are a gradual continuation of policies of marketisation since the 1980s (Furedi 2011).

Due to the changing economic climate, universities are beginning to adopt strategies similar to their counterparts in the business sector. Universities are now considering students as customers, clients, producers and products (Armstrong 1995), consumers (Cheney, McMillan et al. 1997), co-producers of education (Kotze and Plessis 2003), labourers (Halbesleben, Becker et al. 2003) and "primary customers" of a University (Crawford 1991, cited in Douglas and Douglas et al. 2006).

2.2.1 *Marketisation of the Higher Education Sector*

Since the late 1970s, the UK as well as global higher education has been going through fundamental changes. The markets were liberalised, and private profit-making institutions were allowed to enter into the higher education sector. The tuition fee has been introduced and is rising, higher education grants and funding have been significantly reduced and are expected to further decrease in the coming years (Brown 2011). These changes are largely attributed to the policy shift towards marketisation of higher education (Furedi 2011). Some authors suggest that higher education ought to follow the market mechanisms of supply and demand controlled by price. Students are now expected to be able to choose from various offerings from a range of universities based on price, quality and availability (Brown 2011).

Universities now operate more like businesses and promote courses in a global higher education marketplace (Salter and Tapper 2002). As a result, universities formulate strategic plans, a mission, goals and objective statements and devise strategies, action plans and performance measurement systems to achieve their mission, goals and objectives (Lomas 2007). An increasing number of HEIs are now adopting managerial models of commercial and public sector organisations. Academic departments are now transformed into "cost centres" run by non-academic professional staff from the private and public sector (Furedi 2011).

Consequently, universities and other types of organisations look alike and there is not much difference in the way they operate (Lomas 2007). The change in the functioning of universities is a direct result of "ideological and organisational shifts" due to increasing pressure from market forces in western economies (Willmott 2003, p. 129). Furthermore, with the increasing demand of quality assurance from publicly funded institutions and decreasing government financial resources, higher education institutions are now responsible for increasing their funding difference (Rautopuro and Vaisanen 2000).

2.2.2 Shift to a Focus on the Quality of the Student Experience and Quality Assurance

From the early 1980s, organisations in general were overwhelmed with the imposition of a variety of regulations demanding "financial audit, practices of environmental audit, value for money audit, management audit, forensic audit,

data audit, intellectual property audit, medical audit, teaching audit and technology audit" (Power 1997, p. 3). In higher education, a number of monitoring regimes and evaluation mechanisms were put in place (Power 1997). These regimes required universities to comply with the systems and provide a whole range of audit reports. University quality audits, satisfaction surveys, graduate destination surveys, and compliance with HESA data requirements are all part of the audit culture.

At the same time, in the early 1980s there was also an increasing interest in assessing quality in higher education (Nordvall and Braxton 1996). The emphasis on quality tends to stress developing indicators and internal and external quality assurance systems more while ignoring student-centred indicators (Astin 1991; Harvey and Green 1993; Harvey and Knight 1996; Lomas 2002; Ertl, Hayward et al. 2008). Soon, it was realised that students' views should be considered while assessing the quality of higher education (Coates 2005).

Many instruments to evaluate teaching effectiveness and course quality in higher education were introduced from the early 1980s. In the USA and Australia, CEQ, CSEQ and the National Survey of Student Engagement were developed and implemented in the 1980s and 1990s. In the UK, the National Student Survey was introduced in 2005 (Pace 1980; Ramsden 1991).

2.2.3 Re-positioning the Role of Student as Customer

The idea of the student as customer challenges the long held, historical and traditional academic role of faculty (Maguad 2007) and any suggestion to support the role of the student as a customer of higher education could easily invite criticism and resentment from academic staff (Canic and McCarthy 2000, cited in Maguad 2007). However, the student as customer metaphor has become very commonplace in the public discourse of higher education in North America and Europe (Cheney, McMillan et al. 1997). Scott (1999) suggests that universities today accept two facts: that they are in a competitive battle for students, and that students are customers (Sines and Duckworth 1994, cited in Scott 1999).

Researchers have long argued and disputed the purpose of university education as intellectual development, in contrast to demanding immediate benefits (Muncy 2008). As Athay (2002) argues, it seems that the "purpose in college is no longer to attain higher thinking, but rather is a means to get a degree, which is a means to get a job, which is a means to making a moderate amount of money someday. To shorten this, college is a means to making money" (p.7).

Kotler and Levy (1969) coined a broadened view of marketing believing that marketing is a 'societal activity' much more than selling commodities. For example, student recruitment is part of the marketing of higher education (p.10). This broadened view considers students as customers and "it is their needs and wants that the marketing educators must be responsible to" (Muncy 2008, p.15). In this context, the needs and wants of students should be

understood and fulfilled for a satisfactory educational experience (Desai, Damewood et al. 2001).

2.2.4 *Are Students Consumers or Customers?*

The debate over whether students are consumers or customers also raises interesting issues. In the marketing discipline, the customer is the centre of resources and a decision maker of what to buy while the consumer might not be the decision maker without any control on resources. Therefore, the satisfaction of the customer is paramount for the service provider as the customer, if not satisfied, could take his/her resources elsewhere (Barnett 2011). Universities, however, under market pressure competing for resources, are readily prepared to accept the role of the student as customer (Salter and Tapper 2002; Olssen and Peters 2005; Furedi 2011).

In higher education, however, both metaphors of the student as consumer and the student as customer could not be applied without caveats. On the one hand, students as customers are the bearers of precious financial resources, i.e. tuition fees and funding, and could choose between universities based on ranking, quality evaluation data, and word-of-mouth recommendations (Barnett 2011). On the other hand, the role of the student in their own learning does not coincide with the concept of student as consumer metaphor as it fails to take the complexities of higher education into account. Students cannot only be consumers, but they have to be involved and engaged in the service process and be responsible for their education and learning experience (Barnett 2011).

2.2.5 Criticism of the Role of Student as Customer

The metaphor of students as customers has been criticised from various quarters due to the obvious dissimilarities of comparing students with customers of goods and services in the commercial sector. Cheney, McMillan et al. (1997) argue that by assuming that students' satisfaction is the same as customer satisfaction, it should be possible to find out what students want "at any given moment and give it to them" (p.8). However, Sener (2006) argues that "students do not always know what they want" and it is difficult to fulfil the slogan "the customer is always right" in higher education (p.1). Other authors reiterate that students are wasting time if they are leaving university without expanding their horizons of knowledge (Groccia 1997), as university education is a continuous process to transform students and is not a service for customers (Harvey and Green 1993). Maguad (2007, p.339) distinguishes students from typical business customers and offers the following examples:

- *Colleges and universities often admit students selectively based on certain academic standards and requirements. Businesses usually do not do that. In fact, they do not ordinarily prevent prospective customers from purchasing their products and services.*

- *In higher education, students often do not totally pay for the full cost of their tuition and fees. These expenses are sometimes covered by payments from parents, state subsidies, scholarships and student loans. In business, customers generally pay for their purchases with their own funds.*

- *In higher education once students are admitted they are continually tested and graded to determine how well they have learned their lessons. They must maintain their good academic standing in order to be able to take more advanced courses and complete their programs of study. Businesses do not do that to their customers.*

Some of the authors criticise the customer-driven approach in higher education and query its usefulness in student learning and development (Cheney, McMillan et al. 1997; Scrabec 2000; Harvey 2002; Snyder 2007; Furedi 2011). However, despite the criticism of student as customer metaphor, it appears to have gained much attention. Ng and Forbes (2009) contend that "it is not wrong to view the student as consumer or customer, but it is important to realise that universities must go all the way to understand what that means" (p. 58).

2.2.6 *Alternative Understandings of the Role of the Student*

Authors discontented with the student as customer metaphor offer many alternative conceptualisations of the role of the student in higher education. Some authors have taken into account the co-production and co-creation role of students in their own learning experience (Bitner, Faranda et al. 1997; Hennig-Thurau, Langer et al. 2001; Kotze and Plessis 2003; Ng and Forbes 2009; Streeting and Wise 2009). However, the role of the student as co-producer or co-creator presents some shortcomings such as convincing students to take part in co-production, which involves students in shaping their curriculum despite the recognition that students are not experts in the field (Streeting and Wise 2009).

Groccia (1997) favours the role of the student as learner and claims that it is more appropriate in the higher education environment. It recognises the role of the student and the responsibility that the student has to take for their own

learning. However, Groccia (1997) failed to offer any meaningful details or any conceptual model to operationalise such an idea.

The concept of 'partial employees' grew out of the marketing discipline, however, authors apply it as a potential idea in higher education. It considers customers as temporary members or participants much like employees of organisations (Bowen 1986; Bitner, Faranda et al. 1997). The student as partial employee has limited application in higher education due to the lack of available mechanisms to reward or reprimand students as happens in business settings (Kelley, Skinner et al. 1990; Lengnick-Hall 1996; Kotze and Plessis 2003).

Halbesleben, Becker et al. (2003) propose another alternative metaphor of the student as labour based on the customer-as-labour model from the human resource management discipline. The metaphor claimed to offer "a plausible framework for managing the role of the student in the classroom" (Halbesleben, Becker et al. 2003, p. 257).

Two other alternative views are presented, of the student as change agent and the student as collaborator and producer. The assertion of the student as change agent claims to put a new perspective on the relationship between student and university. Advocating the student as change agent, Kay, Dunne et al. (2010) propose a new framework based on student engagement. The framework is based on four overlapping approaches of the student as evaluator, the student

as participant, the student as partner, co-creator and expert, and the student as change agent (Kay, Dunne et al. 2010).

The second assertion of the student as collaborator and producer also recognises the role of student engagement and an emphasis on the relationship between the student and teaching staff (Taylor and Wilding 2009). This approach recognises the role of the student in curriculum transformation, undertaking and encouraging others to conduct and publish research and "participate in curriculum and policy development" (Taylor and Wilding 2009, p.7)

2.2.7 *Other Stakeholders of Higher Education*

Students could be considered as the most important but they are not the only customers or stakeholders of higher education. There are several other interest groups with high stakes in higher education (Maguad 2007). Thus, it is imperative to understand and identify other customers, interest groups and the roles that they play in student satisfaction (Cortada and Woods 1995). For example faculty, non-teaching staff, funding agencies and parents all have interests in higher education that directly or indirectly contribute to student satisfaction.

Maguad (2007) classifies higher education customers into internal and external. The internal customers are students, faculty, non-teaching staff, administrators and support staff while employers, government, funding agencies, alumni and donor agencies are identified as external customers. Looking at the list, it would be helpful to include parents and charities as external customers.

2.3 Modelling Student Satisfaction

The literature review explores common themes, research contexts, foci and common methods as well as measurement approaches used by the researchers and authors to model student satisfaction.

This section is organised in three parts. The first part (2.3.1) outlines prominent models and paradigms that have been applied to understand student satisfaction, and the underlying theories that guide these models and paradigms.

The second part (2.3.2) outlines the measurement approaches applied to the concept of student satisfaction. The measurement approaches signify methodology and techniques employed to model student satisfaction and linked with the tools and instruments used.

In the third part (2.3.3), variables and constructs of student satisfaction that are used by many authors are discussed. Variables and constructs are used to measure student satisfaction. A variable is concrete observable characteristics inconsistent and with no fixed pattern or value (Miner 2007; Wallen and Fraenkel 2013). Constructs are mental abstractions that facilitate understanding, cannot be observed directly or indirectly and are agreed meanings of terms we use (Kaplan 1973; Miner 2007). The constructs are represented multiple observed variables (Hair, Black et al. 2010).

2.3.1 Prominent Models and Paradigms

Researchers in higher education coined the term student satisfaction as a parallel concept to the idea of customer satisfaction in modern marketing literature (Yi 1990). It is now considered that the satisfaction of the student is similar to customer satisfaction with services (Appleton-Knapp and Krentler 2006).

Thus, it is obvious that the evolution and development of the concept of student satisfaction originates from customer satisfaction theories, and any interpretation of student satisfaction must be derived from theoretical underpinnings from customer satisfaction literature. Researchers in marketing disciplines have long been paying attention to the "meaning, causes and consequences of satisfaction" (Oliver 1997, p.1) and more recently interest in this has grown on a phenomenal scale (Hunt 1982; Peterson and Wilson 1992; Cathy and Brian 2001).

As discussed in earlier sections, universities are now considered part of the service industry and consider their students as customers (Armstrong 1995; Oscar, Ali et al. 2005). Universities are also competing for students in local, regional and international markets (Salter and Tapper 2002), and hence customer satisfaction theories, concepts and paradigms are increasingly applied to higher education (Desai, Damewood et al. 2001).

Several customer satisfaction models from the marketing literature are applied in higher education. These can be categorised into four broader groups. The

first group consists of traditional customer satisfaction models. These models are based on perceived performance of goods and services, performance as comparative standards and determining feature performance (Martilla and James 1977; Douglas, Douglas et al. 2006; Oliver 2010).

The second group focuses on the expectation-disconfirmation paradigm. It is the most widely accepted model in customer satisfaction research (Cadotte, Woodruff et al. 1987; Oliver 2010) and extensively applied in higher education (Hill 1995; Athiyaman 2004; Appleton-Knapp and Krentler 2006).

The third group includes service quality models largely based on Herzberg's Two-Factor theory (Herzberg, Mausner et al. 1967; Kano, Seraku et al. 1984) and quality management models such as TQM, SERVQUAL, SERVPERF (Zeithaml, Parasuraman et al. 1990; Parasuraman, Zeithaml et al. 1991).

The fourth group encompasses alternative models, for example the University Quality of Life and Learning (UNIQoLL) approach (Audin, Davy et al. 2003) and student satisfaction guarantee (Gremler and McCollough 2002).

A detailed account of models and paradigms that are applied in the higher education context is presented here.

a)   Traditional Customer Satisfaction Models

The literature review identifies three groups of traditional customer satisfaction models. The first group of models is based on performance of goods and services as perceived by the customer using a list of key features and directly

asking customers about their satisfaction and dissatisfaction (Oliver 2010). The second group of models uses importance and performance as comparative standards for satisfaction or dissatisfaction (Martilla and James 1977; Douglas, Douglas et al. 2006).

The third group of traditional models is based on determining and measuring feature performance. The key features are developed using three approaches, i.e. widely accepted beliefs, an abstract feature list of dimensions and finally a consumer generated list of performance features (Oliver 2010).

The traditional models have been extensively used in higher education. Most university-wide institutional surveys are based on the first type of traditional models based on performance. These surveys adopt a student-generated list of features using focus groups to identify important features and constructs. Once the list is generated, these features are used to develop questionnaires to evaluate student satisfaction with their learning experience (Tompson and Tompson 1996; Pereda, Airey et al. 2007; Munteanu, Ceobanu et al. 2010). The institutional surveys collect useful and valuable, but complex data directly from students that can be used for quality improvement and decision making (Wiers-Jenssen, Stensaker et al. 2002). However, these surveys vary in breadth, methods and number of items. In addition, these are largely quantitative and tend to share greater congruence in terms of themes and coverage (Brennan, Brighton et al. 2003).

There are two other examples of importance-performance models (Martilla and James 1977) that are adopted by the Centre for Research into Quality at the University of Central England called the 'student satisfaction approach' and the commercially developed Noel-Lovtiz model in the US (Harvey 1997; Williams 2002). The student satisfaction approach uses focus groups to identify common themes to develop a questionnaire and collect data on importance and satisfaction with the identified themes and attributes (Williams 2002; Harvey 2003; Richardson 2005). The instrument has not been adequately documented and published (Richardson 2005) but claims to be adopted and used by several higher education institutions in the UK and abroad (Williams 2002; POPLI 2005; Richardson 2005).

The literature review identifies many shortcomings of traditional models. The performance-based models do not explain why students rate certain features or attributes positively or negatively and how to interpret these scores. For example, if a student is dissatisfied with the marks awarded to him or her, what does it explain? Could the reason for that particular student be dissatisfaction due to being awarded lesser marks than his or her classmates (i.e. equity and fairness) or ineffective teaching, (i.e. teaching quality or teaching staff ineffectiveness)? It is important that students are able to link their understanding of the course or module with marks awarded as the purpose of university education is proclaimed to be students' intellectual development (Muncy 2008), transformation (Harvey and Green 1993) as well as expanding their horizons, knowledge (Groccia 1997) and higher thinking (Athay 2002).

The importance-performance models are also criticised for being empirically indefensible due to ambiguity as to why some features or attributes are or are not important (Oliver 2010). Oliver (2010) also argues that "there may be a difference between importance as a requirement (it must be there) and importance as a temporary shortfall (it's not there, and I miss it)" (p.33). The traditional models at best could provide broader features and attributes that the students consider are important and should be addressed by the university.

b)   Expectation-Disconfirmation Paradigm

The expectation-disconfirmation paradigm is perhaps the most widely accepted model in customer satisfaction research (Cadotte, Woodruff et al. 1987). The paradigm is theoretically guided from adaptation level theory (Helson 1964) postulating that "one perceives stimuli only in relation to an adapted standard" (Yi 1990). The paradigm posits that the customer makes a judgement about a product or service using its quality and performance as a comparison measure based on their prior expectations (Oliver and DeSarbo 1988; Hill 1995; Appleton-Knapp and Krentler 2006).

The paradigm has been widely applied in higher education (Jayanti and Jackson 1991; Franklin and Shemwell 1995; Hill 1995; Spreng, MacKenzie et al. 1996; Hom 2002; Halbesleben, Becker et al. 2003; Athiyaman 2004; Shi, Holahan et al. 2004; Appleton-Knapp and Krentler 2006; Alves and Raposo 2007). Many authors have also included additional constructs and dimensions with expectation-disconfirmation such as attribution (Hill 1995), image, value and emotion (Alves and Raposo 2007; Alves and Raposo 2009), attribution, emotion and behavioural intentions (Athiyaman 1997; Athiyaman 2004).

Appleton-Knapp and Krentler (2006) report that "the extent to which student expectations are fulfilled does appear to be a good predictor of satisfaction" (p. 254).

However, despite being applied in a higher education context, the expectation-disconfirmation paradigm presents many challenges. The conceptualisation of expectation in the higher education context is problematic and recalling actual expectations accurately is flawed (Appleton-Knapp and Krentler 2006). It is one thing to form expectation about a restaurant experience, however in higher education, students entering the universities with expectations about quality "have no comparative base or framework of reference from which to make evaluations" (McElwee and Redman 1993, p. 30). Furthermore, students entering universities go through a transition from school to university while the expectation formation based on school experience or even initial university experience tends to change over time (Tricker 2003), while "such change may not necessarily relate to actual change in service quality" (Hill 1995, p. 16).

Nevertheless, it is very important for universities and other higher education institutions to form some kind of understanding about student expectation (Appleton-Knapp and Krentler 2006). This could help universities to elucidate the expected student learning experience allowing them to readjust their unrealistic expectations (Long, Tricker et al. 1999; Tricker 2003; Appleton-Knapp and Krentler 2006). There are many factors that could influence students' expectations such as: word-of-mouth, personal needs, past

experience, external communication of the service provider and price (Zeithaml, Parasuraman et al. 1990).

c)   Service Quality Models

The universities see quality as the key element in attracting and retaining students (Low 2000). The quality standards set by the service industry in general have driven universities to pay attention to this subject (O'Neill and Palmer 2004). As part of the service industry, universities recognise the benefits of delivering good quality services to their customers, i.e. students. Thus universities aspire to deliver quality services as one of the major goals (Athiyaman 1997; Gold 2001; Banwet and Datta 2003) and this receives strong support in universities' stated ethos, value, purpose and goal statements (Boyle and Bowden 1997).

There is no consensus on defining and measuring service quality (Vroeijenstijn 1992; Clewes 2003; Maguad 2007). It is a complex and intricate multiple concept with no single appropriate definition (Harvey, Green et al. 1993; Maguad 2007). Bergquist (1995) suggests four sets of criteria to define and assess quality in higher education, i.e. input criteria, output criteria, value-added criteria and process-oriented criteria. Maguad (2007) shares this view and adds that quality could be defined as how institutions dedicate resources to achieve outcomes related to their mission, continuous improvement into the programmes that they offer and its effects on the lives of students.

The service quality models that are used and applied in the higher education context can be loosely categorised into two groups. The first group uses

approaches proposed by Herzberg, Mausner et al. (1959 & 1967) such as Herzberg's Two-Factor theory also known as Motivation-Hygiene theory. Based on the theoretical foundation from Two-Factor theory, Kano, Seraku et al. (1984) presented the "motivator-hygiene nature of quality" and "two-dimensional quality" and called it Kano's model. In the higher education context, only a handful of authors employed Herzberg's Two Factor theory (Iiacqua, Schumacher et al. 1995; Lacy and Sheehan 1997; Oshagbemi 1997; Oscar, Ali et al. 2005) and Kano's model (Chen and Lee 2006; Emery 2006; Petruzzellis, D'Uggento et al. 2006; Nicolaou 2007).

The second group of service quality models focuses on quality management models such as TQM (Hill and Taylor 1991; Lynne and Ross 2007), SERVQUAL, SERVPERF (Parasuraman, Zeithaml et al. 1991; Tan and Kek 2004; Brochado 2009), Evaluated Performance (EP), Normed Quality (NQ)(Teas 1993) and the higher education specific HEdPERF (Abdullah 2005; Abdullah 2006).

TQM "strives to make the best use of all available resources and opportunities by constant improvement" (Hakes 1991, p. 3). It originates from the manufacturing industry and is applied in a variety of businesses (Eagle and Brennan 2007), however, in higher education its usefulness and appropriateness are yet to be established (Hill and Taylor 1991). Many authors used the TQM approach in higher education to improve functions from administration to the classroom (Sahney, Banwet et al. 2001). However, most studies are conceptual (Schwartzman 1995; Aliff 1998; Galloway 1998; Lynne

and Ross 2007) or proposing similar models such as Total Quality Education (TQE) (Scrabec 2000). Some studies also explore potential benefits and problems that TQM could bring into higher education (Hill and Taylor 1991; Williams 1993; Schwartzman 1995; Groccia 1997; Eagle and Brennan 2007).

The SERVQUAL model is based on gap theory, suggesting that service quality perception is driven by the expectation and performance gap (Parasuraman, Zeithaml et al. 1985; Cronin and Taylor 1992; Brochado 2009). The model is largely applied to commercial, industrial and not-for-profit settings (Carman 1990; Bouman and Wiele 1992; Johns 1993; Wong and Perry 1993; Kwan and Hee 1994). In higher education, it has been widely used and applied to assess the student perception of the quality of lectures (Banwet and Datta 2003), content and delivery of course units (Oldfield and Baron 2000) and student satisfaction (Franklin and Shemwell 1995; Aldridge and Rowley 1998; Tan and Kek 2004).

Despite its wider application, the model is criticised for lack of theoretical support and other conceptual and operational problems (Cronin and Taylor 1992; Teas 1993; Buttle 1996), and the validity of its expectation measures (Carman 1990). Cuthbert (1996) contends that five dimensions of SERVQUAL may not be appropriate in the higher education context and reiterates that SERVQUAL failed to take the complexities of higher education into account.

Due to the conceptual, theoretical and empirical inadequacies in SERVQUAL (Cronin and Taylor 1992; Teas 1993; Buttle 1996), Cronin and Taylor (1992)

propose SERVPERF based on perception-only components to measure service quality. It produces better results than SERVQUAL in terms of reliability and internal consistency, criterion validity, convergent validity and explained variance (Brochado 2009). However, Abdullah (2006) and Parasuraman, Zeithaml et al. (1994) argue for the inaptness of SERVPERF in higher education due to its generic nature.

Teas (1993) proposes two approaches to measure service quality, namely evaluated performance (EP) and a normed quality (NQ) as an alternative to SERVQUAL. The approaches advocate measuring the gap between performance and the customer's ideal rather than their expectation. It produces greater validity when compared with the SERVQUAL model (Abdullah 2006). However, in higher education students do not have a comparative or ideal reference point that they can use to assess service performance.

The use of models discussed so far, such as SERVQUAL, SERPERF and EP, are being promoted as generic measures with cross-industry applications, with some degree of customisation including within higher education (see for example; Franklin and Shemwell 1995; Aldridge and Rowley 1998; Oldfield and Baron 2000; Banwet and Datta 2003; Tan and Kek 2004; Telford and Masson 2005; Brochado 2009). There are issues associated with the development of service performance indicators in higher education. Soutar and McNeil (1996) identify one such problem of performance measures having a tendency to turn out to be activity measures rather than measures of education service quality.

Abdullah (2005) attempts to develop and claims to validate a new service quality model focussing on higher education comprised of 41 items. The model includes five dimensions pertaining to the academic as well as non-academic service attributes experienced by the students and reports "the best measurement capability" when compared with SERVPERF (Brochado 2009, p. 185). The model development is based on the performance-based scale to measure service quality in higher education using dimensions that are empirically tested for uni-dimensionality, reliability and validity (Abdullah 2006). The literature review shows that the HEdPERF model is yet to be adopted and applied to ascertain its usefulness in terms of consistent results.

d) Alternative Models

In addition to the models discussed above, several authors propose alternative models to understand student satisfaction. Some authors incorporate additional constructs and dimensions with theoretical support from attribution theory and equity theory (Hill 1995; Athiyaman 2004; Alves and Raposo 2009). Attribution theory posits that attributing good decisions to themselves, i.e. hard work, customers are likely to be more satisfied (Oliver and DeSarbo 1988). Equity theory suggests that "the ratio of outcomes to inputs should be constant across participants in an exchange" (Athiyaman 2004, p. 91) and "what they have received and what the other person has received relative to their respective inputs" (Yi 1990, p. 23).

The University Quality of Life and Learning (UNIQoLL) approach "seeks to move beyond a conventional satisfaction survey" while focusing on student quality of life and psychological well-being (Audin, Davy et al. 2003, p. 367).

The approach recognises the complex lives that students lead to fulfil academic demands in terms of time and effort towards their course as well as other important and demanding engagements requiring their time (Benjamin 1994).

Gremler and McCollough (2002) propose the student satisfaction guarantee model based on service guarantee literature. The model takes account of learning outcomes, course and instructor evaluation, students' self-evaluation in terms of their participation and efforts in the class and their attitudes towards overall service guarantee. The model claims to support the idea that student satisfaction, especially with instructor performances and overall learning outcome, can be guaranteed.

In this section, prominent models and paradigms of customer satisfaction that are applied in higher education are presented. These models and paradigms are applied in higher education to varying degrees and can be organised into four groups: traditional models, the expectation-disconfirmation paradigm, service quality models and alternative models.

The expectation-disconfirmation paradigm and service quality models demonstrate an obvious inaptness in the higher education context. The expectation-disconfirmation paradigm poses conceptual issues with recalling actual expectation accurately without any prior comparative base for new students not familiar with higher education (McElwee and Redman 1993; Appleton-Knapp and Krentler 2006). The service quality models also present theoretical, conceptual and operational challenges and fail to address the

complex nature of higher education (Carman 1990; Cronin and Taylor 1992; Teas 1993; Buttle 1996). The alternative models are still at a very early stage of conceptualisation and yet to gain much attention.

As discussed earlier in this section, traditional models are classified into three types: evaluating satisfaction using lists of key features, importance-performance as comparative standard and measuring satisfaction through feature performance. The earlier two types are criticised for lack of clarity, ambiguity and as empirically weak. However, feature performance based models within traditional customer satisfaction models demonstrate potential conceptualise student satisfaction in higher education.

This thesis envisages that the third type of traditional customer satisfaction models provide ample support for exploratory research with the purpose of testing a model empirically with the intention of theory generation. It is also understood that this type of traditional model can be appropriately translated into the higher education context with all its complexities and challenges.

2.3.2 Student Satisfaction Measurement Approaches

The application of prominent models of student satisfaction discussed in the preceding section (2.3.1) requires determining methodological underpinning that can guide towards designing appropriate research tools to collect data and selecting suitable techniques to analyse the collected data. The literature review shows that authors and researchers applied a number of measurement approaches to model student satisfaction. The literature review also provides an

account of a wide variety of research instruments used and techniques employed to measure student satisfaction in higher education.

Based on the literature review, methodological strategies applied, tools/instruments/questionnaires used and methods and techniques employed are discussed here.

a) Methodological Strategies

The literature review shows that research studies have overwhelmingly used quantitative data collection techniques as well as quantitative techniques with some qualitative data. Only a handful of researchers used a qualitative approach that explored the possibility of formulating a student satisfaction model (Townley 2005; Kanan and Baker 2006). Thus, it could be concluded with confidence that the predominant methodological approach to measure student satisfaction is largely quantitative, or quantitative with some qualitative data.

The use of questionnaires to collect students' views on the attributes of satisfaction with their learning experience is widespread (Kerridge and Mathews 1998; Pozo-Munoz, Rebolloso-Pacheco et al. 2000; Harvey 2001; El Ansari and Oskrochi 2004). These questionnaires are both paper-based and online and vary greatly in terms of sample size, from 100s to 10,000s (Gregg 1972; Wiers-Jenssen, Stensaker et al. 2002; Athiyaman 2004; Oscar, Ali et al. 2005; Forrester 2006; Alves and Raposo 2009; Hermans, Haytko et al. 2009; Walker and Palmer 2011).

The literature offers an insight into the type of instruments employed to collect student satisfaction data at university and national level on various levels, i.e. module, course or programme and overall learning experience.

Institutional surveys are carried out by dedicated units at universities around the world on an annual basis and collect views from all students on most of the services involved in their learning experience (Harvey 2001; Wiers-Jenssen, Stensaker et al. 2002). These surveys provide institutions with useful and valuable but complex data directly from students that can be used for quality improvement and decision making (Wiers-Jenssen, Stensaker et al. 2002). The institution-wide surveys vary in breadth, methods, number of items, and are largely quantitative; however, they tend to share greater similarities in terms of themes and coverage across the educational institutions (Brennan, Brighton et al. 2003).

The institutional surveys present some common limitations and challenges, i.e. low response rate (Harvey 2001), cross-sectional nature and inability to present changes in student satisfaction over time (Audin, Davy et al. 2003) and they are carried out once in an academic year (Howard and Henney 1998; Harvey 2001). However, teaching and teaching staff as well as assessment methods, and feedback are dynamic processes that change every semester. The surveys are also unable to determine the overall effect of these variables, and hence the cause of dissatisfaction and therefore present relatively high levels of satisfaction (Audin, Davy et al. 2003).

On the national level, the National Student Survey (NSS), introduced in 2005 (Surridge 2006; Williams and Cappuccini-Ansfield 2007), is designed and implemented to "provide comparable and consistent data across all HEIs in England" (Brennan, Brighton et al. 2003, p.5). It is based on CEQ, and asks 22 questions relating to teaching, assessment and feedback, academic support, organisations and management, learning resources, personal development and overall satisfaction of the final year undergraduates (NSS, 2009).

The rationale for a national level survey, i.e. the NSS, was to resolve issues surrounding individual institution-wide student satisfaction surveys, e.g. Brookes Student Satisfaction Survey. The institution-wide surveys proved to be flawed when it came to presenting and publicising comparable results about all universities in a consistent way (Williams and Cappuccini-Ansfield 2007)

b)   Tools, Instruments and Questionnaires

The instruments that are employed to collect student satisfaction data could be organised into three levels: module, course or programme and overall learning experience. A succinct account of the three levels and their associated instruments is presented here.

i.   Satisfaction with Module

These are instruments focussing on students' evaluation of teaching (SET) at module level. In these questionnaires, students are asked to provide their opinion on teaching quality, faculty, teaching method and module organisation (Centra 1979; Marsh 1987; Feldman 1997; Coles 2002; El Ansari and Oskrochi 2004). The SET questionnaires are found to be well-designed, useful for

students, administrators and faculty, multidimensional, reliable, stable, valid and unbiased (Cohen 1980; Braskamp 1984; Marsh 1987; Feldman 1997; McKeachie 1997; Coffey and Gibbs 2001). However, these instruments focus on individual course modules and not on overall learning experience or university performance (Richardson 2005), thus appear to have a narrow focus on attention (Wiers-Jenssen, Stensaker et al. 2002).

ii.   Satisfaction with Course

The questionnaire about student satisfaction with their course, i.e. the Course Perceptions Questionnaire (CPQ), which was later revised due to its inadequacies and presented as the Course Experience Questionnaire (CEQ), is used (Ramsden and Entwistle 1981; Gibbs, Habeshaw et al. 1988; Meyer 1990; Ramsden 1991). The validity and reliability of CEQ regarding student judgements about the quality of their course is supported by empirical evidence (Marsh 1987). Many authors used a customised version of CEQ with added additional aspects to collect satisfaction data on courses or programmes. Aspects including student views on teaching, teaching staff, course related services, libraries, computers, student workload, class sizes, course assessments and feedback are collected (Athiyaman 1997; Gilroy, Long et al. 1999; Tan and Kek 2004; Mercedes Marzo, Marta Pedraja et al. 2005; Remedios and Lieberman 2008).

The CEQ is not immune to criticism and the ability of graduates to judge course quality sometimes comes under scrutiny (Wilson, Lizzio et al. 1997). The CEQ has also been criticised due to its limited coverage of the student learning experience, especially in the absence of facilities and learning

resources such as libraries, computers and support services (Yorke 1995; Wilson, Lizzio et al. 1997).

iii.   Satisfaction with Overall Learning Experience

Student satisfaction with the overall student experience has gained more attention lately. Such surveys focussing on the overall learning experience are developed in-house or at institutional level, national level, i.e. the NSS, as well as the commercially available satisfaction surveys such as the Noel-Levitz Student Satisfaction Inventory (Brennan, Brighton et al. 2003; Richardson 2005; Pereda 2006). These surveys aspire to collect information of students' overall learning experience. In these studies, campus facilities, accommodation, social activities, recruitment and retention and its relationship with quality, as well as student satisfaction are evaluated (Boyle and Bowden 1997; Aldridge and Rowley 1998; Elliott and Shin 2002; Athiyaman 2004; Kara and DeShields 2004; Oscar, Ali et al. 2005).

c)   Methods & Techniques

The literature review deduces a comprehensive inventory of methods and techniques employed to measure student satisfaction at all levels, i.e. module, course or programme and overall learning experience. Researchers employed a range of statistical techniques to analyse quantitative data.

The most widely used are descriptive statistics as well as basic statistical techniques such as mean or averages (Elliott and Healy 2001; El Ansari and Oskrochi 2004) and Correlation (Donohue and Wong 1997.; Kara and DeShields 2004; Thorsten, Stefan et al. 2010) as well as analysing significance

difference in mean, i.e. ANOVA (Howard and Henney 1998; Roberts and McNeese 2010) and MANOVA (Franklin and Shemwell 1995).

Some studies employed various types of regression models such as uni-variate and multivariate (Fassinger 1995; Forrester 2006; Brochado 2009; Munteanu, Ceobanu et al. 2010; Thorsten, Stefan et al. 2010), hierarchical linear (Baek and Shin 2008), stepwise regression (Elliott and Healy 2001; Elliott and Shin 2002; Shi, Holahan et al. 2004; Tan and Kek 2004) and ordinal regression (Howard and Henney 1998; Chen and Hughes 2004).

In order to organise variables and identify constructs and dimension reduction, many studies employed factor analysis using various techniques for data exploration, e.g. principle component and exploratory factor analysis (Athiyaman 1997; Coffey and Gibbs 2001; Kara and DeShields 2004; Tan and Kek 2004; Marzo-Navarro, Iglesias et al. 2005; Abdullah 2006; Chien 2007; Hermans, Haytko et al. 2009). There are many studies that initially developed the model conceptually, and then conducted the hypothesis testing using confirmatory factor analysis (Wilson, Lizzio et al. 1997; Groth 2005; Marzo-Navarro, Iglesias et al. 2005; Remedios and Lieberman 2008).

The use of path analysis (Spreng, MacKenzie et al. 1996; Oscar, Ali et al. 2005) and structural equation models is also examined by many researchers to measure overall satisfaction models (Pike 1991; Kelley, Skinner et al. 1992; Athiyaman 1997; Banwet and Datta 2003; Alves and Raposo 2007; Alves and Raposo 2009).

2.3.3 Variables, Dimensions and Constructs

The variables are observable characteristics, concrete pieces of information that are not always the same, can take different value and vary (Miner 2007; Wallen and Fraenkel 2013). The constructs are unobservable factors that are represented and may be defined by multiple observed variables (Kaplan 1973; Hair, Black et al. 2010). The constructs are agreed meanings of terms that we use and mental abstractions "derived by mutual agreement from mental images (conceptions)" (Babbie 2010, p. 129).

Students go through a wide variety of service experiences associated with their life on campus. This includes everything from the classroom to the campus environment and from interacting with fellow students to staff members (Elliott and Shin 2002). This service experience covers both tangible and intangible attributes of student experience. Here tangible attributes refer to campus appearance, campus facilities; and intangible attributes indicate learning, teaching and cognitive development (McDougall and Snetsinger 1993)

The literature review shows a range of studies postulating diverse factors and attributes related to student satisfaction. These factors and attributes reflect the way student satisfaction is explored. Studies could be grouped according to the focus on single or multiple modules (Coles 2002; El Ansari and Oskrochi 2004; Hermans, Haytko et al. 2009; El-Ansari and Oskrochi 2011), course or programme (Athiyaman 1997; Gilroy, Long et al. 1999; Tan and Kek 2004; Mercedes Marzo, Marta Pedraja et al. 2005; Remedios and Lieberman 2008) and overall learning experience (Boyle and Bowden 1997; Aldridge and

Rowley 1998; Elliott and Shin 2002; Wiers-Jenssen, Stensaker et al. 2002; Athiyaman 2004; Kara and DeShields 2004; Oscar, Ali et al. 2005; Forrester 2006; Alves and Raposo 2009; Walker and Palmer 2011).

Many factors appear to influence student satisfaction belonging to several categories; most prominent are personal factors related to the student and institutional factors related to their educational experience. In the first category, for example, factors such as gender, temperament, preferred learning style (Stokes 2003; Brokaw, Kennedy et al. 2004), age, gender, employment (Fredericksen, Shea et al. 2000) and grade point average (Porter and Umbach 2001) were all found to be significant predictors of student satisfaction.

Other aspects impacting student satisfaction are: university facilities (Price, Matzdorf et al. 2003), class size and compulsory modules (Coles 2002), contact personnel, physical environment (Sohail and Shaikh 2004), administrative office and front line staff (Galloway 1998), quality of the lectures, classroom delivery, feedback and relationships with other students in the classroom (Hill, Lomas et al. 2003). However, by far the largest determinant of student evaluation of their courses is the quality of the teaching (Remedios and Lieberman 2008).

Stakeholders in higher education have varying and sometimes competing motivation and interests and have different understandings of quality (Harvey, Green et al. 1993). Stakeholders such as students, government, professional bodies, all have a view of quality depending on their specific needs (Voss,

Gruber et al. 2007). Moreover, comparing the perception of quality (Harvey, Green et al. 1993) identifies obvious disagreement between students and employers. Students associate modules and teaching staff with quality while employers link quality to students as potential employees at the end of their course. The quality, thus, cannot be conceptualised as a uni-dimensional concept but a range of dimensions should be used to understand the complex relationships between them (Gibbs 2010).

The quest to explore more appropriate dimensions of quality in higher education has long been the focus of attention from researchers and practitioners. Gibbs (2010) adopts the '3P model' of presage, process and product (Biggs 1993) and uses it to identify dimensions of quality suitable in the higher education environment. He equates presage with before learning starts, process with what happens while learning goes on and product with the outcome of the learning (Gibbs 2010).

2.4 Student Engagement and Student Participation in Higher Education

This section explores the link between student satisfaction and student engagement and student participation. These concepts have emerged in recent decades and influenced the higher education sector. The changing economic climate and processes of marketisation also triggered calls for a greater student role in their own learning. It also invites discussions on incorporating their views into policy, practice and recognition of their role as "consumers and stakeholders".

This section draws attention to the role of students in influencing their own learning experience and satisfaction. It drills down into the concepts of student engagement and student participation. It also provides definitions of these concepts and explores their linkages with student satisfaction.

In recent years, discussions around the role of students in shaping their own learning have received much attention and wider recognition (Ramsden 2008). The role that students play affects the nature of the higher education service outcome, i.e. student learning experience (Bitner, Faranda et al. 1997).

In higher education, a successful student experience largely relies on student participation and student engagement (Bitner, Faranda et al. 1997; Astin 1999; Trowler and Trowler 2010). Students take an active part in learning activities (Hennig-Thurau, Langer et al. 2001) and contribute to their own satisfaction with their learning experience (Bitner, Faranda et al. 1997; Kotze and Plessis 2003). Moreover, active participation is crucial in quality "assurance and enhancement" (QAA 2008, p.1).

The early work recognising the role of the student in shaping their learning experience is focussed on student development and learning. Based on his previous work on student retention, Astin (1984) proposed student involvement theory. The theory contributed towards student development and received much attention in education and pedagogical literature (Harper and Quaye 2009).

Student engagement has recently become the "focus of attention among those aiming to enhance learning and teaching in higher education, headlining meeting agendas and theming conferences in campuses around the world" (Trowler 2010, p.2). It is basically the incorporation of previous work on student involvement (Astin 1984), quality of effort (Pace 1980), time on task (Merwin 1969) and later work teaching and learning (Chickering and Gamson 1987; Kuh 1997; Kuh, Palmer et al. 2003).

The obvious reasons for paying so much attention to student involvement and engagement is that over considerable time literature has provided rigorous and robust evidence that these concepts are associated with student success, development, retention and persistence, achievements and satisfaction (Astin 1996; Kuh 1997; Astin 1999; Morgan 2001; Pascarella 2005; Trowler 2010).

The concept of customer participation has its roots in service marketing literature and is a well-established concept in business and marketing disciplines (Bowen and Schneider 1988). However, in higher education it has had limited penetration. Until now the concept has been investigated conceptually (Kotze and Plessis 2003).

2.4.1 Student Engagement and Involvement

It is important to note here that both concepts of student involvement and engagement are widely used and applied in the North American and Australian contexts where large-scale surveys were put in place and have been used for some time. For example, the National Survey of Student Engagement (NSSE)

collects information on student engagement and involvement in the US and Canada and the Australasian Survey of Student Engagement (AUSSE).

In the UK, the focus was more on student feedback, representation and various approaches to learning, thus it is quite natural that broader literature is skewed towards the North American and Australian tradition (Trowler 2010). However, in the UK, calls for collecting data on student engagement are gaining ground. The first British survey of student engagement is in its infancy under the auspices of the Higher Education Academy (Taylor 2011).

The debate in the literature uses involvement and engagement as synonymous terms and both terms are quite often used congruently (Astin 1999; Trowler 2010). Furthermore, both of these concepts have no agreement on definition (Hernandez, Hogan et al. 1999; Trowler 2010). However, Harper and Quaye (2009), while accepting conceptual similarities, argue that there are qualitative differences and it is possible that students could be involved without being engaged.

a)   Student Engagement

In fact, the term student engagement originates from the influential work of Astin (1984) vis-à-vis the theory of student involvement (Hardy 2009). Coates (2006) traced the idea of student engagement back to student involvement (Astin 1984; Astin 1996; Astin 1999), quality of effort (Pace 1980; Pace 1982) and good practices of undergraduate education (Chickering and Gamson 1987; Chickering and Gamson 1991). The idea is that student engagement "is not

new to education, but it has changed over time" (Coates 2006, p.5) and could be defined from two perspectives, i.e. student-led and institution-led.

The student-led definitions presented by Kuh, Kinzie et al. (2007) are that "participation in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes" (Krause and Coates 2008, p.493), as "the extent to which students are engaging in activities that higher education research has shown to be linked with high-quality learning outcomes" and (Hu and Kuh 2001, p.3) as "the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes" .

An illustration of the institution-led definition is from HEFCE (2008), defining student engagement as "the process whereby institutions and sector bodies make deliberate attempts to involve and empower students in the process of shaping the learning experience".

Kuh (2009, p.683) attempts to fuse together both perpectives and come up with a unified definition for student engagement as "the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities".

More recently, (Trowler 2010) conducted an in-depth literature review to understand the term and summarised the concept of student engagement: "student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions

intended to optimise the student experience and enhance the learning outcomes and development of students and the performance and reputation of the institution" (p.2) .

While the issues surrounding student retention, attrition and persistence of the students underpinned the development and wider acceptance of student involvement theory, the idea of student engagement is attributed to challenge established ideas and practices in higher education. As Coates (2006, p.5) explains:

- *While often used as proxies, measures of institutional resources and reputations provide inadequate and inappropriate representations of educational quality.*

- *Measures which focus on teaching alone can provide significant although insufficient indices of the quality of education.*

- *Summary measures of student input factors may have little relation to university education, are confounded by demographic and contextual factors, are rarely adjusted to derive value-added measures, and say nothing about the contribution of the current institution to a student's academic performance.*

- *Learning outcomes can be difficult to specify, measure, generalise and interpret.*

b)   Student Involvement

The concept of student involvement distils from Alexander Astin's student involvement theory positing that student involvement is the "quantity and quality of physical and psychological energy that students invest in the college experience" (Astin 1999, p.528).

The student involvement theory evolved from a longitudinal study focusing on dropout and retention (Astin 1975). The study reported that student involvement is positively influenced by almost all factors, regardless of demographic variables, e.g. age, gender, race and family background etc. The most cogent sorts of involvement reported by the research were "academic involvement, involvement with faculty and involvement with student peer groups" (Astin 1996, p.126). In addition, place of residence, participating in honours programmes, athletics and taking part in student governance were also identified as important forms of student involvement.

Astin's (1984) student involvement theory highlights that the most important resources are students' time, energy and effort in achieving development objectives instead of fiscal resources. Students' time is finite and their input of time, energy and efforts in learning and development often compete with the time that students invest in family, friends, jobs and other activities. Therefore using student time effectively could have serious implications for student involvement.

There are other dimensions of student involvement important for student learning and development. For example, time and effort including its quality (Pace 1982) and time-on-task (Chickering and Gamson 1987; Dalton and Crosby 2011) are identified as key principles for education practice for undergraduate students (Chickering and Gamson 1991). Attendance, although a simple measure, is said to be very effective in measuring student involvement (Douglas and Alemanne 2007) and appears to be positively related to

performance (Rodgers 2001; Cohn and Johnson 2006) although a few authors disputed these claims about attendance (Buckles and McMahon 1971; Douglas and Sulock 1995).

Tinto (1975) presents the model of student departure investigating student persistence in higher education. The model appears to acknowledge college student involvement and its impact on education outcome (Tinto 1993). The model reiterates the need to investigate effects of student involvement on student retention (Berger and Milem 1999). Bean (1983) applied Tinto's model and used two measures of student persistence, i.e. student interaction with faculty and time spent away from campus; it appears that both measures are crucial in student retention. However, the model overlooks behavioural measures while putting more emphasis on perceptual measures (Berger and Milem 1999). Astin (1996) cautions about discerning the behavioural and perceptual measures due to the obvious disparities and that each of the measures gauges different type of data. "A failure to properly distinguish between distinct types of measures makes interpretation of the role that behaviours and perceptions play in the persistence process difficult" (Berger and Milem 1999, p.643).

Student involvement proved to be advantageous for certain groups. For example, in the North American context, members from ethnic minorities, such as African-Americans, benefited from student involvement. Interaction with faculty, peers and students involved in organised activities on campus show lower dropout rates among this group (Davis 1991). Other studies in a similar

context were also found to promote positive identity due to involvement in clubs, organisations, campus employment, faculty interaction and sports activities (Taylor and Howard-Hamilton 1995).

Furthermore, Roberts and McNeese (2010) conducted research to examine students in a four-year honours programme in the US and students who joined them at a later stage. They found significant differences between students based on their origin. Other researchers, such as Morgan (2001), looked at non-traditional students aged 22 or older and reported improvements in confidence, time management and an association with the university. The research also recognised that non-traditional students do not live on the campus and have contesting priorities in terms of work and family, thus are involved in a distinctive way compared to traditional undergraduates (Morgan 2001).

Student involvement gained attention on the back of the issues related to student dropout and retention in 1970s and 1980s, but it is also at the heart of learning and overall student experience. In order to learn, students should be actively involved in their college environment (Astin 1984). Student involvement is "a critical element in the learning process" and student investment of time and effort on learning are "key determinants of a wide range of cognitive learning outcomes" (Pace 1982; Astin 1984; Chickering and Gamson 1987; Astin 1999; Dalton and Crosby 2011).

Besides its wider recognition and usefulness, student involvement sometimes presents undesirable consequences such as isolation from peer group influences

as a result of intense involvement in academic and athletic activities (Astin 1999). Students involved deeply in academic activities spend more time on their studies and spend less time interacting with their peers. Students involved in athletic activities experience the same situation due to the time that they invest in practice, competition, travelling and accommodation arrangements (Astin 1984; Astin 1999).

c)   Effects of Engagement on Student Satisfaction

The extensive literature review presents substantial evidence that student engagement and involvement are positively associated with student satisfaction with their learning experience (Abrahamowicz 1988; Morgan 2001). Students in institutions encouraging active involvement in learning and teaching as well as campus life appear to be more satisfied with their experience (Kuh, Schuh et al. 1991). This is because "student involvement leads to greater integration in the social and academic systems of the college and promotes institutional commitment" (Berger and Milem 1999, p. 644).

The students reported satisfaction and improvement in quality of work with some particular aspects of their learning experience such as: feedback (Hyland 2003), distance learning (Forrester, Motteram et al. 2005) and learning groups (Rush and Balamoutsou 2006). In addition, strong linkages have been identified between students' time, effort and interest in academic activities and improved performance and satisfaction (Ertl, Hayward et al. 2008).

A number of aspects of student involvement and engagement are also positively associated with satisfaction and achievement, such as quality of

programmes, close interaction with faculty members and quality of instruction (Astin 1984; Chickering and Gamson 1987; Pike 1991; Astin 1999). Students involved intensely in academic study tend to isolate themselves due to the time and effort that they are putting into studies but at the same time academic performance counteracts this isolation and these students enjoy considerable satisfaction (Astin 1999). In addition, peer interaction itself is reported to be positively related to student satisfaction (Pike 1991).

Student engagement and involvement promotes a sense of identity and belonging (Morgan 2001) and loyalty to the institution (Berger and Milem 1999) which in turn provides a vibrant learning environment and impact on student learning and thus satisfaction with the overall experience. In addition, involvement in extracurricular activities also contributes to student satisfaction and learning and development of students (Whitt 1994). Higher levels of satisfaction are also reported in non-traditional students due to the advantages that they have in terms of experiences, focus on goals and devoting more time to their studies (Greenfeig and Goldberg 1984).

2.4.2 Customer Participation in Higher Education

The concept of customer participation could be defined as "the degree to which the customer is involved in producing and delivering the service" (Dabholkar 1990, p. 484). It is a well-established concept in business and marketing disciplines (Bowen and Schneider 1988; Wolfi 2005).

Customer participation could raise organisational productivity, effectivity, efficiency and improve service performance (Mills, Chase et al. 1983;

Fitzsimmons 1985; Jones 1990; Hsieh, Yen et al. 2004). In addition, it has positive effects on service quality perception (Kelley, Skinner et al. 1992) and customer satisfaction (Czepiel 1990; Cermak, File et al. 1994). Customer participation could also enhance the behaviours of repurchase and referral (Cermak, File et al. 1994).

In the service industry, customers influence the quality by their roles: as resources, as co-producers, as buyers, as users, and as a product. Garnering customer talents in these roles can yield competitive advantages (Lengnick-Hall 1996). Some authors also consider customers as "partial employees" due to this role in service creation and delivery (Kelley, Skinner et al. 1990).

Rodie and Kleine (2000) suggest that customers could provide three types of inputs during the service encounter, namely: mental inputs, i.e. information and mental efforts, physical inputs, i.e. making themselves available that are needed for service delivery or performing physical labour, and finally emotional inputs, i.e. behaving patiently or pleasantly towards service employees. Applying this analogy to a student in higher education would mean students exerting substantial mental effort when preparing a research paper – mental input; conducting a chemistry experiment performing physical labour – physical input and facilitate service delivery when they are courteous towards lecturers and or administrative staff – emotional input (Kotze and Plessis 2003).

However, in higher education it has a limited penetration. Until now the concept has been investigated conceptually (Kotze and Plessis 2003). A few authors attempted to look at higher education from a service marketing perspective. In recent years, the higher education sector has reluctantly subscribed to the market perspective and started to take an interest due to market pressures, competition and scare resources (Ford, Joseph et al. 1999; Ng and Forbes 2009).

Students received services and facilities while at the university such as: teaching, administrative services, computing facilities, library services, on-campus retailing, career and placement services, counselling /welfare services, health services, accommodation, catering and sports and recreational services (Hill 1995). The principle of customer participation could be applied to students where students play a participatory role while using these services (Kotze and Plessis 2003).

Customer participation takes place at various levels depending on the nature of services. There are services where it is sufficient that a customer is present at the time of service delivery, e.g. airline travel, hotel stays and restaurants. In other types of services, customers are not only present but also provide information to have a successful experience and hence satisfaction, e.g. haircuts, medical examinations. There are, however, services that require customers to co-create demanding a high level of participation for a successful experience, e.g. physical exercise, weight-loss clinics (Bitner, Faranda et al. 1997).

Higher education is one of the latter types of service requiring active participation from students (Howard and Henney 1998). The success of student experience at the university in terms of "perceived improvements in knowledge, skills and capabilities" (Lengnick-Hall, Claycomb et al. 2000, p.360) hinges on their participation and if they do not participate effectively, the results could adversely affect their learning experience (Bitner, Faranda et al. 1997).

Students have a dual role to play in co-creating their learning experience. Firstly, students are a "productive resource" and, secondly, a "contributor to quality, satisfaction and value" (Bitner, Faranda et al. 1997, p.195). "As a productive resource, students bring with them their intellect, language and communication skills" while as "contributors to quality, satisfaction and value, students can choose the level of effort they wish to expend" (Ng and Forbes 2009, p.48). Consequently, students share responsibility for this co-creation of their learning experience with the university (Bitner, Booms et al. 1990; Hubbert 1995).

As mentioned in earlier sections, the students' learning experience is not limited to the classroom or academic activities. "The university is often viewed as the first step out into 'the real world', and students often leave home to stay in an alien environment. The time spent during the university years commonly includes physical as well as psychological adjustments, the forging of new friendships, and a search for common interests as well as social support within the campus activities" (MacKie 2001; Ng and Forbes 2009, p. 49). This

interaction and encounters with other students, academic staff and working in groups all contribute to students' learning experience (Jalomo 1995).

Similar to customers in the service industry, students' successful participation to influence the outcome of their learning experience also depends on role clarity, their ability and motivation (Lengnick-Hall, Claycomb et al. 2000). Firstly, students should know what is expected of them, how they should participate and the policies, procedures and process must be made clear prior to the start of their course. Secondly, students' ability to perform required tasks is an important requirement. Thus, it is important to provide appropriate guidance and direction to enroll them onto courses according to their aptitude, abilities and interests. Finally, students should be motivated to take part in activities related to their learning experience. The willingness of students to assume an effective role in their learning experience is paramount for a successful learning experience.

The service organisations adopted the customer organisational socialisation process to manage the customer behaviour necessary to complete service production and delivery. Organisational socialisation is defined as "a process by which an individual adapts to and comes to appreciate the values, norms and required behaviour patterns of an organisation" (Kelley, Skinner et al. 1992, p.198).

Literature on service customer socialisation draws attention to some important issues. It determines what customers are willing and able to bring to the service

encounter (Kelley, Skinner et al. 1990). The service customer can be socialised using several mechanisms, such as formal orientation programmes, written literature provided to customers, directional cues and signage in the service environment, learning from employees, reinforcement and punishment, learning from other customers, realistic service previews and service level agreements between customers and the service provider (Hill 1995; Rodie and Kleine 2000).

Customer socialisation plays a crucial role in managing the customer's expectation in an area like higher education. Kelley, Skinner et al. (1992) argue that the level of organisational socialisation of the service customer is positively related to their perception of the organisational climate for service, perception of service quality and satisfaction with the services provided.

Customers not appropriately socialised could present negative behaviours towards the organisation, for example they may slow down the service process negatively affecting their own and other customers' service outcome, making it difficult for employees to ensure the level of quality, satisfaction and value promised by the organisation (Kelley, Skinner et al. 1992).

Bogler and Somech (2002) contend that socialisation tactics used by students play an important role in academic achievement and satisfaction. Higher education uses student socialisation mechanisms routinely.

Kotze and Plessis (2003) present the following examples of student socialisation:

- *An induction programme for first-year students*
- *Study guides and course outlines*
- *Notices indicating where study assignments should be submitted*
- *A lecturer explaining the requirements for a course in class*
- *Deduction of marks, if assignments are handed in late*
- *Mentorship programmes or informal association through observation of the actions of other students*
- *Detailed course overviews provided by a lecturer in an introductory lecture*

(Kotze and Plessis 2003p. 192)

These socialisation mechanisms aim to achieve a number of objectives: to familiarise students with the university, develop students' sense of purpose and direction and their motivation, facilitate students' engagement in university life, promote and enhance students' learning and modify students' expectations of how they will be taught and the roles they will be asked to play (Kotze and Plessis 2003).

The process of organisational socialisation will help undergraduate students to cope with the pressures posed by the challenge of transition from school to university. In this transition, a sizeable proportion of students fail to meet the challenges due to the adjustment problem in a new environment (Pitkethly and Prosser 2001). Students are "expected to learn challenging materials, be capable of independent thought, and adjust to different teaching styles as well as to the expanded social environment" (Kotze and Plessis 2003, p. 194).

Many students come to university with unrealistic expectations and views about the time they are required to spend on learning and the amount of work they are expected to complete. They appear to be ill-informed about class sizes, learning and teaching styles and sometimes without taking responsibility for their own learning (Cook and Leckey 1999). The socialisation process provides an opportunity for universities to inform new students and help them realign their expectations and unrealistic views about their learning experience.

The socialisation process could have a positive impact on students as well as their learning experience and its successful outcome. It plays an instrumental role in student participation in shaping their learning, achievement and satisfaction.

Chapter 3
Conceptual Framework

In the previous chapter, a comprehensive literature review was presented postulating that student satisfaction has received much attention lately due to the transformation and marketisation of the higher education sector. It is argued that levels of satisfaction depend on the student learning experience as well as other associated concepts such as student engagement and student participation.

In this chapter, a conceptual framework is presented with an aim to theorise and empirically test a holistic model of student satisfaction in higher education incorporating the concepts of student learning experience, student engagement and student participation. It locates student satisfaction in the discourse that is transforming higher education due to the political pressure to evaluate performance of universities on a comparative basis, and to assess and measure student learning for quality assurance purposes.

This chapter also supports the central proposition of the thesis that student satisfaction is a concept that cannot be understood solely in relation to customer satisfaction models, since these models do not take into account the aspects of student engagement and student participation in students' own learning and satisfaction. It is proposed, therefore, that the satisfaction of students can be understood more appropriately using a framework that

considers additional factors such as student engagement and student participation.

This chapter is organised in two sections. The first section (3.1) introduces and defines the concepts of student satisfaction, student engagement and student participation as discussed in the rationale (Chapter 1 – Introduction). The aim here is to ascertain the understanding and meaning of each of these concepts within the context of this thesis.

In the second section (3.2), a theoretical model is proposed and propositions are established for empirical testing. The propositions are supported with theoretical justification and are translated into constructs, dimensions, attributes and variables. The attributes and variables (also called items) are then used to develop a draft research instrument. Details about the research instrument in terms of its development, pretesting and finalisation are discussed in the next chapter (Chapter 4 – Methodology). The section concludes by hypothesising a theoretical model that will then be tested empirically in the following chapter (Chapter 5 – Results and Data Analysis).

3.1 Definitions

This section introduces and defines the concepts of student satisfaction, student engagement to elucidates how these concepts are understood here. It also describes the concept of customer participation that is translated as student participation in the higher education context in this thesis. Thus, this section helps to disentangle these concepts and establish their meaning for this thesis.

The concepts of student satisfaction, student engagement and student participation are well researched, however, authors and researchers use a range of different attributes, variables, dimensions and constructs to explore them. Thus, it is quite obvious that a wide variety of measurements scales are used to collect student satisfaction data (Hartman and Schmidt 1995; Clewes 2003; Marzo-Navarro, Iglesias et al. 2005). Below is a concise review to discuss these concepts to establish the way these concepts are understood and defined in this thesis.

3.1.1 Student Satisfaction

A widely-agreed definition of student satisfaction is unavailable from the available literature (Mercedes Marzo, Marta Pedraja et al. 2005). However, literature review offers some working definitions adopted from customer satisfaction literature and modified to suit a higher education context. In this thesis student satisfaction is conceptualised as "students' subjective evaluation of the various outcomes and experiences associated with education" (Oliver and DeSarbo 1989a, cited in Elliott and Shin 2002, p.198).

Thus, this thesis conceptualises student satisfaction with their learning experience as students' subjective evaluation of the aspects of their life on campus. These include the student learning experience, student engagement and student participation.

3.1.2 Student Engagement

As discussed in the last chapter (Chapter 2 – Literature Review), the concepts of student engagement and student involvement are conceptualised as a unified concept. The focus of student engagement is the contribution of students in shaping their own learning experience and the role of universities in supporting the student learning experience, while student involvement focuses on the aspects of student development and learning.

Astin (1999) defines student involvement as the "quantity and quality of physical and psychological energy that students invest in the college experience" (p.528). Student engagement is, however, defined from a student and institutional perspective.

The student-led definitions are presented by Kuh, Kinzie et al. (2007) as "participation in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes". Krause and Coates (2008, p.493) describe it as "the extent to which students are engaging in activities that higher education research has shown to be linked with high-quality learning outcomes". However, a more comprehensive definition is presented by Hu and Kuh (2001, p.3) as "the quality of effort students

themselves devote to educationally-purposeful activities that contribute directly to desired outcomes".

An illustration of an institution-led definition comes from HEFCE (2008, p. 10) defining student engagement as "the process whereby institutions and sector bodies make deliberate attempts to involve and empower students in the process of shaping the learning experience".

Both concepts of student involvement and engagement are of a complementary nature and encapsulate broader academic and social as well as inside and outside classroom contribution that students make to enhance their overall learning experience and satisfaction. Thus, the conceptualisation of student engagement in combination with student involvement is used as a single concept in this thesis.

3.1.3 Customer Participation

In service marketing, customer participation is defined as "the degree to which the customer is involved in producing and delivering the service" (Dabholkar 1990, p. 484). In the higher education context, customer participation is translated as student participation and assesses the role of students in enhancing their overall learning experience as well as satisfaction.

Student participation could be measured by two proxy constructs of student socialisation and institutional socialisation. Student socialisation is conceptualised as "a process that results from the student's interaction with other members of the college community in groups or other settings

characterised by varying degrees of normative pressure" (Weidman 1989, p.304). The idea of institutional socialisation is conceptualised as a "process by which an individual adapts to and comes to appreciate the values, norms and required behaviour patterns of an organisation", in this case an institution or university (Schein 1968, cited in Kelley, Skinner et al. 1990, p.316).

The brief discussion above postulates a basic understanding of the concepts of student satisfaction, student engagement and student participation in the higher education context. In the next section, a conceptual framework is presented hypothesising a theoretical model of student satisfaction in higher education. The model incorporates the concepts of student satisfaction, student learning experience, student engagement and student participation. The framework identifies relationships of these concepts with overall satisfaction, students' future intentions and student achievements (grades).

3.2 Theorising Student Satisfaction

This section proposes a theoretical model of student satisfaction. The proposed theoretical model brings together concepts of the student learning experience, student engagement and student participation. The latter two concepts signify how students can contribute towards their own satisfaction. The proposed model uses these concepts, organises them into constructs and operationalises them into propositions and variables for empirical investigation. The concepts and constructs are agreed meanings of terms that we use, such as student satisfaction and "derived by mutual agreement from mental images (conceptions)" (Babbie 2010, p. 129).

The proposed theoretical model is presented below outlining the concepts of the student learning experience, student engagement and student participation. The concepts are interpreted using constructs (dimensions) as well as measures and variables for the proposed theoretical model.

3.2.1 Student Learning Experience

The literature review in the previous chapter indicated that the data relating to student satisfaction is collected based on module, course/programme and the student learning experience. In this thesis, the concept of student satisfaction refers to their overall experience while student learning experience is the most important aspect that is reported to influence student satisfaction. The student learning experience covers two "loosely bound categories", i.e. aspects of teaching and learning and other aspects of campus environment, facilities and services offered by the university (Munteanu, Ceobanu et al. 2010, p.126). Thus, the concept of student learning experience is related to variables covering the main aspects of a student's life at university (Athiyaman 1997; Wiers-Jenssen, Stensaker et al. 2002).

The data related to student learning experience is collected at an institutional or university level, i.e. Brookes Student Satisfaction Survey, as well as a national level, i.e. National Student Survey (NSS) and Course Experience Questionnaire (CEQ) etc. However, there are wide-ranging differences between institutional and national student satisfaction surveys in terms of methodologies, measurement approaches, designs and utilisation of data (Williams and Cappuccini-Ansfield 2007). Institutional surveys are "immensely varied in scope, approach and quality" while NSS is designed to collect consistent and

comparable data across all higher education institutions in the UK (Williams and Cappuccini-Ansfield 2007, p. 161).

The student satisfaction formation is based on a variety of experiences related to many aspects of a student's life on campus. The multiple episodes of interaction with academic and university staff, other students as well as many service encounters affect their overall satisfaction. Students' experience in the classroom "is not independent of all other experiences relating to campus life" (Elliott and Shin 2002, p. 198). Thus, student satisfaction is influenced by their evaluation "of the quality of the course and other curriculum-related factors" as well as the interaction with university staff that could affect their decision to recommend "the university to their friends/relatives" (Browne, Kaldenberg et al. 1998, cited in Elliott and Shin 2002, p.198).

The concept of student learning experience could be divided into two broader categories, i.e. core and peripheral. The core services include teaching and learning, academic support, course organisation, assessment and feedback, class size, choice of modules, quality of teaching, classroom, teaching staff, staff availability, approachability and willingness to help (McDougall and Snetsinger 1990; Hill 1995; Aldridge and Rowley 1998; Galloway 1998; Elliott and Healy 2001; Coles 2002; Williams 2002; Athiyaman 2004; El Ansari and Oskrochi 2004; Douglas, Douglas et al. 2006; Cheng and Marsh 2010; Thorsten, Stefan et al. 2010).

The peripheral services include learning resources, e.g. IT and library facilities, campus facilities, accommodation, catering, administration services, student advising, e.g. employment, finances, job placement etc., social and physical environment (Hill 1995; Aldridge and Rowley 1998; Elliott and Healy 2001; Price, Matzdorf et al. 2003; Athiyaman 2004; El Ansari and Oskrochi 2004; Shi, Holahan et al. 2004; Sohail and Shaikh 2004; Marzo-Navarro, Iglesias et al. 2005; Douglas, Douglas et al. 2006; Thorsten, Stefan et al. 2010).

In this thesis, the core and peripheral services are organised into four constructs i.e. Teaching & Learning, Assessment & Feedback, Learning Environment and Learning Resources. These constructs represent the majority of the determinants; attributes and variables used to understand student learning experience and are outlined next.

a)   Teaching & Learning

Student satisfaction is closely associated with aspects of the student learning experience such as teaching and the role of teaching staff. The quality of teaching and learning is the largest determinant of student satisfaction (Remedios and Lieberman 2008). This includes "the course content, structure, teaching-learning strategies and style (Hounsell, Tait et al. 1997, El Ansari and Oskrochi 2004, p.645). "It also embraces the module content, relevance and intellectual stimulation, teaching arrangements" (El Ansari and Oskrochi 2004, p.645).

Marsh (1987) implies that student ratings of "teaching effectiveness in higher education" are "multidimensional, reliable and stable, and assess the instructor

or lecturer as opposed to the course, unaffected with biases and recognised "by faculty as feedback about their teaching by students for use in course selection and by administrators for use in personnel decisions" (p.254).

The data pertaining to the student satisfaction with many aspects of teaching and learning provides valuable information to the prospective students to be able to select a university. It provides information about the quality of teaching, learning and teaching staff. The core service of teaching is an intangible service (McDougall and Snetsinger 1990) and prospective students have to rely on the evaluation and judgment from other students who have experienced these services to provide them with information to make a decision about university admission (Athiyaman 2004). Thus, student satisfaction data could influence student decision-making about the selection of a university.

Many research studies point out that the students-staff interaction, faculty involvement, competence and relationship with students is positively related to students' overall satisfaction (Chen and Hughes 2004). Some research studies also found that faculty-student interaction and peer interaction are related to satisfaction (Pike 1991).

The role of teaching staff in student satisfaction is crucial. Some of the aspects related to teaching staff include: staff enthusiasm, approachability, willingness to help and method and style of teaching. "The teaching staff element also logically appears as a potential determinant of student satisfaction" (Marzo-Navarro, Iglesias et al. 2005, p.509).

A list of items is generated as a result of the literature review. The sources of these items are multiple, including the Brookes Student Satisfaction Survey, the National Student Survey and the Course Experience Questionnaire (CEQ).

1. I am satisfied with the quality of teaching.

2. The modules were intellectually stimulating.

3. I am satisfied with the material covered by the modules and their learning outcome.

4. I am satisfied with the way the modules were organised.

5. I am satisfied with the quality of lecture notes and handouts.

6. I am satisfied with the way the timetable was arranged

7. Staff have made the subject interesting.

8. Teaching staff were knowledgeable about what they were teaching.

9. Teaching staff were enthusiastic about what they were teaching.

10. I have found it easy to contact teaching staff when I need to.

11. Teaching staff were more than willing to provide guidance and advice.

b)   Learning Environment

The Learning Environment refers to the important aspects of class size, student workload and teaching contact hours. These aspects, contact hours and student workload, are instrumental in supporting student learning and have received much attention, especially after the introduction of the tuition fee (QAA 2011). In addition, class size appears to have an indirect negative relationship with student achievements and satisfaction (Gleason 2010). Aspects of the learning environment, i.e. class size, workload and contact hours, appear to have an indirect relationship with student achievement and satisfaction (QAA 2011).

These aspects along with other determinants influence student satisfaction. However, researchers warn against "trying to assign a direct causal relationship between individual variables" and student satisfaction and achievement (Gibbs 2010, cited in QAA 2011, p. 10).

The students' experience at university is different from their experience at school and "universities encourage students to take more responsibility for their own learning and aim to create graduates who are self-starters and show initiative and leadership" (Russell-Group 2009). The student contact hours could take many forms, such as lectures, seminars, tutorials, projects, demonstrations, practical classes and workshops, supervised time in the studio/workshop, fieldwork, external visits and work-based learning (QAA 2011). The student contact time could be face-to-face or could take place through a virtual learning environment (VLE). The time could involve lecturers, visiting lecturers, teaching assistants, technicians or member of specialist support staff or employers in the case of work based learning (QAA 2011). The type of student contact is also determined by the way students are assessed. For example exams, assignment, reports, dissertations, portfolios and oral assessment require certain ways in which student contact with university staff could take place (QAA 2011).

In this thesis, student contact hours are conceptualised as teaching hours and refer to students' perception of the hours they received in a lecture, practical, tutorial and meeting with staff to discuss assessment and feedback.

Learning Environment also denotes student workload that may vary according to the students' preference of course, discipline and the field of study (Darmody, Smyth et al. 2008; QAA 2011). There are other factors such as "term-time work and family commitment" that could have an influence on student workload (Darmody, Smyth et al. 2008, p.330). Furthermore, students' capacity and prior learning also play an important role in their perception of "far too much or far too difficult" workload (Marsh 2001, p. 185).

In this thesis, data related to students' workload is collected using a single item asking students about the appropriateness of the workload. As part of an effective learning environment, workload is also associated with the strategies for assessment and feedback and teaching style that the staff decide to adopt.

Although the findings about effects of class size on student performance, achievement and learning are inconclusive, both teaching staff and students agree that "class size significantly shapes students' participation" (Fassinger 1996, p. 31). Class size has a negative effect on student performance, achievements and satisfaction, thus students "perform less well in larger classes" (Gibbs, Lucas et al. 1996, p.261). In other words "students are significantly less satisfied in departments with larger average class sizes" in both postgraduate and undergraduate classes (McConnell and Sosin 1984; Raimondo, Esposito et al. 1990; Coles 2002; Cuseo 2007; Bandiera, Larcinese et al. 2010).

The following items are used reflecting various dimensions of the learning environment:

1. Class size was appropriate.

2. Student workload was appropriate.

3. The number of teaching hours I have received has met my expectation.

c) **Assessment & Feedback**

Since the late 1980s, dissatisfaction of students relating to the issues surrounding assessment and feedback have been widely reported in many institutional student surveys (Williams and Kane 2008). Surridge (2006) reports that student-rated items related to assessment and feedback are less favourable as compared to the other aspects of their learning experience. "Items relating to assessment and feedback routinely score less well than other course-related aspects of the student experience and have done so for many years" (Williams and Kane 2008, p. 5). The results from NSS 2006 show that 49% of students were unhappy about the way the feedback was given on their assignments (Handley, Szwelnik et al. 2007).

Assessment & Feedback are two critical aspects of student learning that are associated with student achievement and the student learning experience, particularly Teaching & Learning (Hattie 1987; Gibbs and Awards 1992; Brown and Knight 1994; Black and Wiliam 1998). Assessment is central to the student experience and perhaps "the single biggest influence on how students approach their learning" (Rust, O'Donovan et al. 2005, p.231). On the other hand, feedback is "the most powerful single influence on learning" (Hattie 1987, cited in Gibbs and Simpson 2004, p. 10) as compared with "other aspects

of teaching or other interventions designed to improve learning" (Browne, Kaldenberg et al. 1998, cited in Gibbs and Simpson 2004, p. 10).

Traditionally, a widely held view postulates that "frequent assignments and detailed (written) feedback are central to student learning" (Gibbs and Simpson 2004, p. 6). However, due to shrinking resources and time constraints a large number of universities were forced to reduce or abandon written assignments and thus minimise formative assessment (Gibbs and Simpson 2004).

It is essential for students to participate actively and to engage with assessment and feedback processes. Active student engagement is also necessary for a student to understand the assessment process as well as benefitting from feedback on their assignment (Rust, O'Donovan et al. 2005). Students' involvement in this process will translate into a better understanding of the assessment and feedback process and affect teaching, learning and satisfaction (Rust, O'Donovan et al. 2005). Following is a list containing items related to assessment and feedback:

1. Assessment criteria were made available for each module.

2. Submission timings for coursework were spread out to avoid bunching.

3. Marking was fair.

4. Prompt feedback was provided on my coursework/assignments.

5. Feedback was clear and easy to understand.

6. The feedback was useful.

7. I have been able to apply feedback to subsequent assignments.

d) Learning Resources

Learning resources include attributes such as library services, computing and IT facilities, and services. Student use the "library as a social space" while "areas within the library where they (students) were able to talk and use IT resources were often used for socialising as well as an area for learning" (NUS 2008, p.23).

There are two major aspects of the determinant of learning resources that influence satisfaction i.e. library and computing services. Firstly, it is the product and what is available in a library while the second aspect is the satisfaction with systems and processes (Shi, Holahan et al. 2004). Therefore, it is absolutely essential to recognise the multiple aspects of satisfaction. A global variable of satisfaction with library or computing services will provide a vague understanding and thus present a confounding picture (Shi, Holahan et al. 2004).

In addition to the IT and library services, Brookes offers its students a virtual learning environment called 'Brookes Virtual' and a personal information portal called 'PIP'. These services are offered as part of broader IT support services to students, thus are included in the construct of learning resources. Below is a list of items relating to learning resources.

1. Library facilities were very good.
2. The email service was very effective.
3. Brookes virtual was very effective.
4. The Personal Information Portal (PIP) was very effective.

3.2.2 Linking Student Engagement and Student Participation to Student Satisfaction

The academic literature is full of contrasting ideas and concepts about what it is that students can do to have an enhanced learning experience. These ideas and concepts evolved over time and were informed and contextualised by many researchers according to their belief and research traditions.

The contribution of students in their own learning and satisfaction gained prominence for some time (Bitner, Faranda et al. 1997; Ramsden 2008). It is widely agreed that students participate in, are involved in, are engaged in and contribute to their own learning experience to achieve a desired and successful outcome (Bitner, Faranda et al. 1997; Astin 1999; Trowler 2010). Active participation from students in learning activities contributes towards greater satisfaction and is crucial in higher education quality assurance and enhancement (QAA 2008).

a)   Student Engagement

As discussed in the literature review, the concepts of student engagement originate from different academic debates, however, both of these concepts recognise that by being involved and engaged, students contribute significantly to their satisfaction. It is therefore inconceivable for students to achieve a successful outcome without being involved and engaged, with their learning process.

Student engagement refers to participating in academic activities, interacting with faculty members and their peers, in non-academic activities; taking part in student governance and extracurricular activities could positively influence student retention and satisfaction (Astin 1975; Tinto 1975; Astin 1984; Tinto 1993). It also refers to the quality of effort (Pace 1980; Pace 1982; Hu and Kuh 2001), good practices of undergraduate education (Chickering and Gamson 1987; Chickering and Gamson 1991), student involvement in academic work or academic experience (Astin 1984; Pascarella and Terenzini 1991), interaction with faculty (Astin 1975; Astin 1984; Astin 1999), participation inside and outside the classroom (Kuh, Kinzie et al. 2007), engaging in higher quality learning outcomes (Krause and Coates 2008) and investing time, effort and other resources (Trowler 2010).

Ertl, Hayward et al. (2008) reaffirm the strong linkages between students' time, efforts and interest in academic activities and improved performance and satisfaction. In addition, interaction with faculty, quality of programmes and involvement in class activities is reported to have a positive influence on student satisfaction (Astin 1984; Chickering and Gamson 1987; Pike 1991; Whitt 1994). Student involvement in academic activities positively influences their learning, development, persistent, achievement, satisfaction and social engagement (Astin 1984; Chickering and Gamson 1987; Kuh 1997).

Student engagement in this thesis is explored using the two constructs of Class Participation and Academic Involvement. The focus here is more on academic

engagement and how students participate in the classroom and their perception related to the academic involvement.

Class Participation

Tinto (1993) compares classrooms with small educational communities that offer opportunities for wider interaction with other academic and social communities in a university environment. It is essential for students to participate and engage in and around classroom activities for a successful learning experience. Irrespective of the orientation of class, i.e. discussion or lecture, Class Participation "seem to nurture critical thinking" (Smith 1977, cited in Fassinger 1995, p. 82). Class Participation also appears to improve and enhance student learning experience in higher education and satisfaction (Tinto 2003).

In this thesis, Class Participation is conceptualised as "any student comments offered or questions raised in class" as defined by Fassinger (1995, p. 86). Many authors reported linkages between class participation and student development, learning, and persistence (Pascarella and Terenzini 1991; Astin 1993). Class Participation also referred to as students' quality of efforts and its positive association with their learning (Pace 1980).

Despite the importance of Class Participation, it is quite difficult to achieve (Weaver and Qi 2005). Karp and Yoels (1976) report that very few students actually actively participate in class discussions and even fewer dominate the discussions. Thus, the active participation in classrooms appears to revolve

around a minority of the students while others participate only by nodding, laughing or being looked upon as good listeners (Howard and Henney 1998; Weaver and Qi 2005).

Many factors appear to influence Class Participation. These include demographic, e.g. age, gender (Crawford and Macleod 1990; Canada and Pringle 1995; Howard and Henney 1998; Howard, James et al. 2002); emotional, e.g. confidence or fear (Fassinger 1995; Howard and Henney 1998; Howard, James et al. 2002) and learning environment related, such as class size, instructor authority, teaching style, student lecture preparation and instructor's communication style (Terenzini, Theophilides et al. 1984; Crawford and Macleod 1990; Fassinger 1995; Tinto 1997; Howard and Henney 1998; Howard, James et al. 2002; Tinto 2003).

Researchers have used a range of variables to measure Class Participation. For example, Weaver and Qi (2005) used global assessment of students' participation by asking "the extent of their participation in class discussions" on a scale of never, seldom, sometimes, usually and always (p.581). Similarly, Mustapha, Rahman et al. (2010) used a qualitative approach, asking participants "how would you describe classroom participation?" and "are there times that you participate more or less in class?" (p.1080). To measure Class Participation some authors focused on quality of effort (Pace 1980; Pace 1982; Tinto 1997) as well as expressing views in class (Terenzini, Pascarella et al. 1982).

Fassinger (1995) devises measures of Class Participation to investigate classroom interaction irrespective of its orientation, i.e. lectures or discussions. There are six measures altogether asking students to recall how many times in a typical class they offered comments or raised questions. Weaver and Qi (2005), however, caution against asking students to "recall and specify the number of times they raise questions or offer responses within a particular time frame" (p.582). Fassinger (1995), though, reports a higher combined reliability score (Cronbach's alpha) of 0.84. This thesis has adopted three items with some modification used by Fassinger (1995). These items are:

1. In a typical class, I offer my comments and raise questions more than my peers.

2. In a typical class, I contribute more to the class relative to my peers.

3. In a typical class, I am willing to volunteer more than my peers.

Academic Involvement

Academic Involvement is reported to be more important than the social aspects for student persistence (Tinto 1993) and satisfaction (Astin 1999). However, Astin (1999) notes that being intensely involved academically poses challenges for students and presents an "unusual pattern of effects" (p.525). Academically involved students are likely to isolate themselves from social aspects of involvement and engagement; however, they could "experience considerable satisfaction, perhaps because of the many institutional rewards for good academic performance" (Astin 1999, p. 525).

Adams (1979) defines Academic Involvement as "engaging in the activities of a course programme with thoroughness and seriousness; exhibiting feelings,

motives, purposes and self-direction or capacity for commitment, and checking where the study is leading, as a personal undertaking" (p. 511, cited in Willis 1993). The definition touched upon aspects of involvement, more specifically on interest in the course and class participation and learning as proposed by Terenzini, Theophilides et al. (1984). Pascarella and Terenzini (1991) maintain that "the greater the student's involvement or engagement in academic work or in the academic experience of college, the greater his or her level of knowledge acquisition and general cognitive development" (p. 616, cited in Garrett 2011).

In this thesis, the conceptualisation of Academic Involvement is adopted from Astin (1999) as "self-reported traits and behaviours" (p.525). It is multidimensional in nature and considers time, degree of interest and quality of study strategies that students adopt to enhance their learning experience and satisfaction (Willis 1989). Academic Involvement appears to have an association with quality and quantity of learning outcomes, student motivation, personal development and satisfaction (Astin 1975; Astin 1984; Terenzini, Theophilides et al. 1984; Biggs 1993; Willis 1993; Astin 1999). Four items were adopted from Astin (Astin 1984; Astin 1999) and modified and adopted for this thesis as follows:

1. I know I have good study habits.
2. I work hard at my studies.
3. I take interest in my studies.
4. I give appropriate time to my studies.

b) Student Participation

In this thesis, the concept of customer participation in the service marketing discipline is translated as student participation due to the obvious benefits and value that this concept could offer in higher education. The concept recognises the role of the customer in creating the service, enhancing service quality and their own satisfaction (Czepiel 1990; Kelley, Skinner et al. 1992; Cermak, File et al. 1994). In higher education, "not many studies look directly at universities from a services marketing perspective" (Ng and Forbes 2009, p.46), although there are very few examples that have investigated it conceptually (Kotze and Plessis 2003). Using and applying the service perspective in higher education could carry potential benefits.

The nature of higher education requires students to co-create and co-produce their learning experience in close collaboration with faculty and their peers (Hennig-Thurau, Langer et al. 2001; Ng and Forbes 2009). By actively participating in learning and social activities, students also play a part in their own satisfaction, quality and value of their learning experience (Bitner, Faranda et al. 1997, cited in Kotze and Plessis 2003).

The student learning at the university ascribes to both student and university as shared responsibility (Ng and Forbes 2009). Students' decisions regarding the level of effort determine the service outcome in higher education. It is practically impossible to achieve a desirable service outcome without student contribution and participation in their learning experience (Astin 1984). Universities not "communicating their expectations of students' commitment"

could result in service failure or students not achieving the desired outcome, i.e. results, grades thus could increase dissatisfaction among students (Ng and Forbes 2009, p. 54).

In services marketing, customer participation requires role clarity, ability and motivation of the customer in order to participate effectively (Cynthia, Vincentia et al. 2000; Kotze and Plessis 2003). Schneider and Bowen (1995) further elucidate the ideas of role clarity, ability and motivation. According to them, role clarity points towards customers' understanding of "how they are expected to perform" whereas ability suggests customers' ability "to perform as expected", and finally motivation leads to the organisation placing "valued rewards for performance as expected" (Schneider and Bowen 1995, p. 88).

The ideas of role clarity, ability and motivation could be interpreted in higher education. For example, 'role clarity' is clearly delineated in Oxford Brookes University's student charter for the university, students and student union (OBU 2011). Other mechanisms for ensuring role clarity could be a formal and information orientation programme, open days, course and module requirements in terms of hours of study required, assessment and marking criteria and indicative private study hours students are expected to commit to.

Similarly, to address stipulations of 'ability', universities admit students with certain competencies and screen and select students carefully to ensure effective participation (Schneider and Bowen 1995; Ng and Forbes 2009). Finally, 'motivation' for students to participate in their learning experience for

better career prospects and subject interest could be termed as a reward. Although motivation in higher education is discussed as an interlinked idea of entry motivation, daily motivation and future motivation, the future motivation plays a pivotal role for students expecting to "gain something at the end of their course" (Round 2005, p. 28).

Since customer participation is anchored on role clarity, ability and motivation, customer socialisation and organisational socialisation are suggested as means to ensure customers learn these participation roles (Bowen and Schneider 1985; Kelley, Skinner et al. 1990; Kelley, Skinner et al. 1992). Socialisation is a broad concept and could be defined as "the process by which persons acquire the knowledge, skills and dispositions that make them more or less effective members of their society" (Brim 1966, p. 3 cited in Weidman 2006). There are two separate dimensions, i.e. individual and organisational (Weidman 2006). Thus, these dimensions are interpreted as Student Socialisation (individual) and Institutional Socialisation (organisational) in this thesis.

Student Socialisation is conceptualised as "a process that results from the student's interaction with other members of the college community in groups or other settings characterised by varying degrees of normative pressure" (Weidman 1989, p. 304, cited in Bogler and Somech 2002) while Institutional Socialisation is conceptualised as a "process by which an individual adapts to and comes to appreciate the values, norms and required behaviour patterns of an organisation" in this case institution or university (Schein 1968, cited in Kelley, Skinner et al. 1990, p.316).

Student Socialisation

Ng and Forbes (2009) argue that student learning is not restricted to the classroom but that interacting with staff, other students and social aspects of campus life also contribute to students' learning and overall satisfaction (Johns 1999; Elliott and Shin 2002; Ng and Forbes 2009).

Student Socialisation helps students to become familiar with the university, develop a student's sense of purpose, direction and their motivation. It also promotes and enhances students' university life; facilitate learning and modify students' expectations of how they will be taught and the roles they will be asked to play (Kotze and Plessis 2003).

Student Socialisation is reported to be closely associated with their orientation towards learning as described by Beaty, Gibbs et al. (2005) as academic, vocational, personal and social. These orientations have both intrinsic and extrinsic sub-types, e.g. for academic it is intellectual interest and education progressions, for vocational it is training and qualification, for personal it is broadening or self-improvement and compensation or proof of capability, while for social it is having a good time. Beaty, Gibbs et al. (2005) also note that these orientation categories service the purpose of an analytical framework and a typical student could relate to two or more categories.

Weidman (1989) stipulates three categories of student socialisation processes, namely: interpersonal interaction, interpersonal process and social and academic integration. Interpersonal interaction refers to "the frequency of

interaction between active participants in the environment, in which the student is seeking acceptance", while intrapersonal process relates "to the student's self-perceptions of their collegiate experience" (Collins and Lewis 2008, p. 48). Social integration relates to the student's acceptance "of group norms and solitary relationship with other members" while academic integration refers to the student's interaction with faculty members (Weidman 1989, p. 294).

A simplified version of the categories outlined by Weidman (1989) is presented by Bogler and Somech (2002) about how student socialise in higher education. Their classification acknowledges that students participating in their learning experience will socialise using tactics related to scholastic, collegiate and instrumental characteristics.

In this thesis, attributes pertaining to the collegiate characteristics are adopted as Student Socialisation as suggested by Bogler and Somech (2002), while scholastic and instrumental attributes are already covered in students' Academic Involvement and Class Participation constructs in earlier sections. Collegiate characteristics appear to coincide with what Weidman (1989) outlines as social integration.

1. I actively take part in social activities at Brookes.
2. I have developed friendship with other students.
3. I am involved with the Student Union at Brookes.

Institutional Socialisation

In service marketing, organisational socialisation is "a common method used to influence employee performance" (Dubinsky, Howell et al. 1986, cited in Kelley, Skinner et al. 1990, p.316). It influences and enables individuals to adopt values, norms, and requires certain behaviour, and could be applied to students in higher education institutions. In this thesis, it has been conceptualised as Institutional Socialisation. It could provide higher education institutions with an ability to manage students' required behaviour to ensure their participation. Although students are liable for their own efforts to enhance their learning experience, institutions "also influence the quality of student effort via their capacity to involve students with other members of the institution in the learning process" (Tinto, 1993, p.132).

Institutional Socialisation mainly promotes interaction among students and other member of the university, i.e. faculty, university support staff and other students. Bogler and Somech (2002) specifically highlight the role of faculty and administrative staff in "assisting students to adjust, survive and succeed" (p.245). It generally plays an important role in guiding students to find their way through the university. However, it does not lead students through the organisation's specific "behavioural guidelines" (Kelley, Skinner et al. 1992). The process of institutional socialisation fills this gap and provides students with required values, norms and behaviours related to their role.

In a university environment, institutional socialisation may include both formal and informal processes. Induction programmes, handouts and communication

materials outlining expected behaviour, offering additional skills development opportunities, visible and clear instructions, postings and email messages related to assignment collection and submission are some of the formal processes that could help students acquire institutional expectations (Hill 1995).

The process of Institutional Socialisation could help students understand university norms (Schein 1968; Feldman 1981), institutional culture (Hermanowicz 2005), ethos, values, beliefs and commitment (Vreeland and Bidwell 1966), and student-related policies and procedures. Furthermore, the process also helps students to familiarise themselves with the university, develop a sense of purpose and direction and readjust their expectations (Taylor 2000). It also influences the students' perception of university climate, motivational direction and satisfaction (Kelley, Skinner et al. 1992).

Three items were adopted from the organisational socialisation construct used by Kelley, Skinner et al. (1992) and modified to suit the higher education environment and used here as Institutional Socialisation:

1. I get along well with Brookes teaching and administration staff; I understand student-related policies at Brookes.
2. I feel comfortable studying at Brookes.
3. I understand the values that are important to Brookes.

3.2.3 *Student Future Intentions/Loyalty*

In businesses, satisfied customers engage in re-purchasing behaviour, loyalty, positive word-of-mouth communication and referrals to other prospective customers (Athiyaman 2004; Alves and Raposo 2007). In higher education, re-purchase behaviour has limited scope as one student cannot go on to register for another course for a long time. However, positive word-of-mouth communication and referrals to other prospective students could be applied to students in higher education. In addition, alumni activities in terms of financial contribution and being part of the institution for a long time are additional aspects in a higher education context. Some researchers also used the concept of loyalty for student commitment to the institution and future intention (Berger and Milem 1999; Hennig-Thurau, Langer et al. 2001).

The long-term relationship with students also provides resources for the institutions, such as financial donation through alumni for projects, cooperation in terms of offering placement to students moving towards a professional organisation and committing themselves as visiting guest speakers (Hennig-Thurau, Langer et al. 2001).

Student loyalty is a consequence of student satisfaction. Relationship-marketing practices provide evidence that recruiting new customers costs more than retaining customers and developing a long-term relationship with them, and could provide a competitive advantage (Reichheld and Teal 2001). Thus, satisfied and loyal students would be likely to stay at the university i.e. lower dropout rate. The concept of customer participation also supports the argument

that a satisfied and loyal customer would positively influence quality of services (Rodie and Kleine 2000). Translating these suggestions into higher education would mean that a satisfied student would be loyal to the institution and could stay at the university for the length of the course and contribute positively to the quality of its teaching and learning.

The core service that higher education offers is teaching and learning, which are intangible in nature (McDougall and Snetsinger 1990). This intangibility makes it difficult for students to experience a course before they enroll and makes it important that students who attended the course or institution recommend it to the prospective students (Athiyaman 2004). The recommendations provide prospective students with reassurance and clarity about the course or institution. Particularly, recommendations from friends and family members could significantly influence university choice (Athiyaman 2004).

The satisfaction of students is the most important factor in students recommending a course or university to prospective students (Mavondo and Zaman 2000; Wiers-Jenssen, Stensaker et al. 2002). Other factors that could influence student willingness to recommend the course or university are satisfaction with university staff, including interaction with the faculty (Browne, Kaldenberg et al. 1998).

Two constructs are used to enquire about student future intentions: Student Referrals and Alumni Donations. For Student Referrals measures are

developed and used to collect information about students' information provision to the prospective students, recommending the course to friends, family and other prospective students. For Alumni Donations a measure developed is willingness to contribute once students have completed their education and start working.

<u>Student Referrals</u>

1. I am happy to provide information about my course to prospective students.

2. I will recommend my course to my friends/relatives.

3. I will recommend my course to anyone interested.

<u>Alumni Donations</u>

1 Once I am into a job after my degree I intend to make at least one donation to Brookes Alumni.

2 Once I am into a job after my degree I intend to make multiple donations to Brookes Alumni.

3.2.4 Academic Performance

Student grades are used as a measure of students' academic achievements in surveys on student feedback, evaluation of teaching and satisfaction. Most surveys collect data on anticipated grades as compared to actual grades (Walker and Palmer 2011).

Both anticipated and actual grades are claimed to influence student rating in these surveys. The positive and negative correlations between student satisfaction and achievements are interpreted with grades and workload

respectively (Griffin 2004). However, Marsh and Roche (2000) suggest that grades acknowledge good teaching and students with higher grades tend to rate higher in surveys not because they want to reward the faculty but that higher rating is a function of good teaching which brings good grades. In addition, student grades and achievements is also positively correlated with student engagement (Kuh, Cruce et al. 2008).

In this thesis, actual grades of students have been collected to explore the relationship primarily among Academic Performance and other constructs.

3.2.5 Overall Satisfaction

Student satisfaction is widely seen as a measure of educational quality, quality of teaching and student performance as well as an outcome measure of the education process (Ramsden 1991; Coates 2010). Even in the broader service-marketing discipline, a widely agreed satisfaction measurement scale is lacking. In higher education, the situation is not different and a wide variety of measurement scales are used to collect student satisfaction data (Hartman and Schmidt 1995; Clewes 2003; Marzo-Navarro, Iglesias et al. 2005). To measure student satisfaction, researchers employed a variety of divergent indicators and techniques (Munteanu, Ceobanu et al. 2010).

The Overall Satisfaction of students with their education experience "has traditionally been measured by a simple 'yes or no' question, or with one question assessing the degree of overall satisfaction" (Elliott and Shin 2002, p. 197). Some researchers used this traditional measure of satisfaction as global or overall satisfaction (Cronin and Taylor 1992; Browne, Kaldenberg et al. 1998;

Banwet and Datta 2003; DeShields, Kara et al. 2005) while others used a mean score using multiple items (Gregg 1972) and conceptualised satisfaction as transaction-specific (Dawes and Rowley 1999). Elliott and Shin (2002) suggest a multiple-item weighted gap score analysis to measure student overall satisfaction. However, the majority of the studies used multiple dimensions or constructs and an additional global/overall satisfaction item (Wiers-Jenssen, Stensaker et al. 2002) including a national student survey and a Brookes student satisfaction survey (OBU 2008).

In this thesis, Overall Satisfaction is measured using the latter approach of collecting data on multiple constructs and an overall satisfaction. It is conceptualised here as a cumulative experience of what student experience is in each semester. However, Overall Satisfaction is measured using two items relating to the overall satisfaction with the university and overall satisfaction with the course. The first item is included to ascertain the relationship between Overall Satisfaction and aspects of socialisation and broader campus environment.

The following two items are used to collect data on student overall satisfaction:

1. I am satisfied with my decision to come and study at Brookes.
2. I am satisfied with my course.

3.2.6 *Proposed Theoretical Model of Student Satisfaction*

Based on the conceptualisation of student satisfaction and its associated concepts in the previous section, a theoretical model is proposed here. The proposed theoretical model outlines hypothesised propositions to establish linkages and relationship constructs in the model. The model includes: Overall Satisfaction, Academic Performance, student learning experience (Teaching & Learning, Assessment & Feedback, Learning Environment, Learning Resources), student engagement (Class Participation, Academic Involvement) and student participation (Student Socialisation, Institutional Socialisation).

Figure 1 – Proposed Theoretical Model
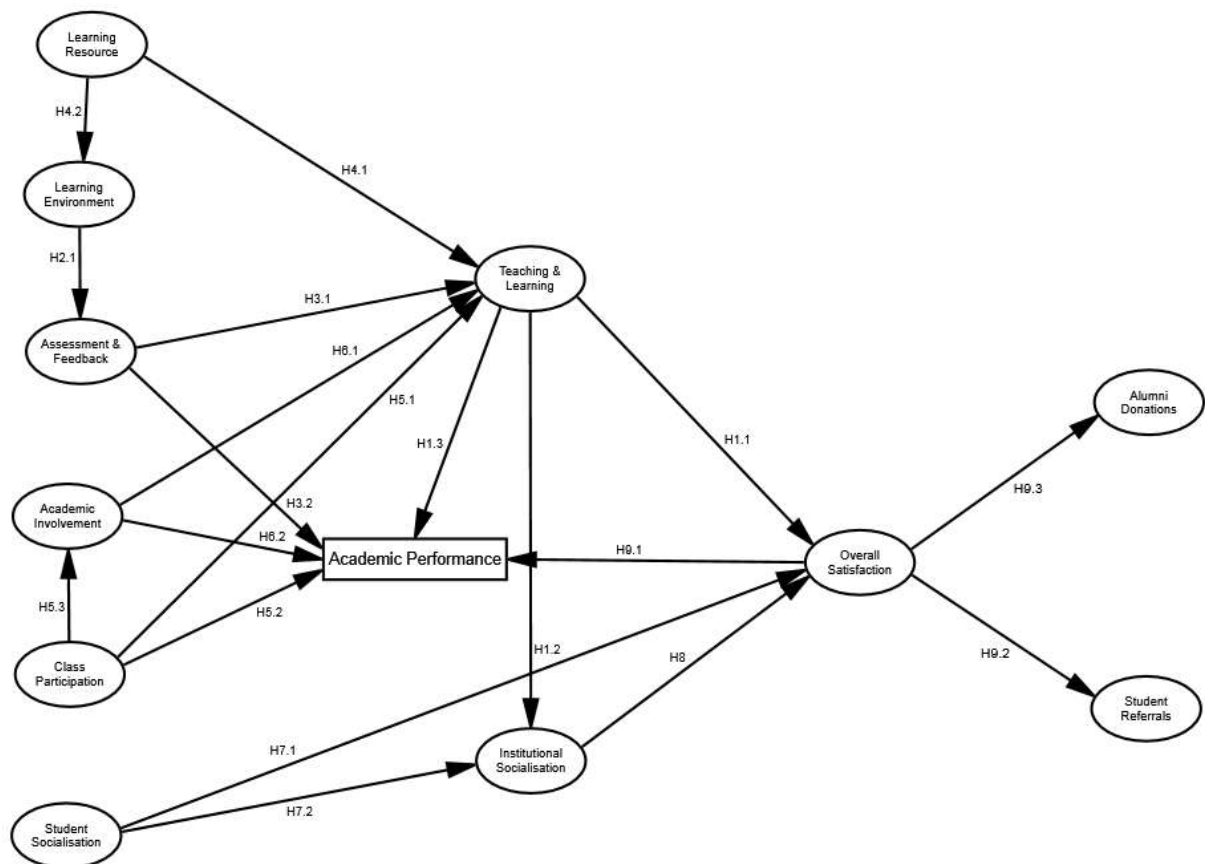
Based on the discussion in this chapter, items are obtained for each construct and are presented below:

Student Learning Experience

- Teaching & Learning (11 Items)
    - I am satisfied with the quality of teaching.
    - The modules were intellectually stimulating.
    - I am satisfied with the material covered by the modules and their learning outcome.
    - I am satisfied with the way the modules were organised.
    - I am satisfied with the quality of lecture notes and handouts.
    - I am satisfied with the way the timetable was arranged.
    - Teaching staff have made the subject interesting.
    - Teaching staff were knowledgeable about what they were teaching.
    - Teaching staff were enthusiastic about what they were teaching.
    - I have found it easy to contact teaching staff when I need to.
    - Teaching staff were more than willing to provide guidance and advice.

- Assessment & Feedback (7 Items)
    - Assessment criteria were made available for each module.
    - Submission timings for coursework were spread out to avoid bunching.
    - Marking was fair.
    - Prompt feedback was provided on my coursework/assignments.
    - Feedback was clear and easy to understand.
    - The feedback was useful.
    - I have been able to apply feedback to subsequent assignments.

- Learning Environment (3 Items)
    - Class size was appropriate.
    - Student workload was appropriate.
    - The number of teaching hours I have received has met my expectation.

- Learning Resources (4 Items)
    - Library facilities were very good.
    - The email service was very effective.
    - Brookes virtual was very effective.
    - The Personal Information Portal (PIP) was very effective.

Student Engagement

- Class Participation (3 Items)
    - In a typical class, I offer my comments and raise questions more than my peers.
    - In a typical class, I contribute more to the class relative to my peers.
    - In a typical class, I am willing to volunteer more than my peers.

- Academic Engagement (4 Items)
    - I know I have good study habits.
    - I work hard for my studies.
    - I take interest in my studies.
    - I give appropriate time to my studies.

Student Participation

- Student Socialisation (3 Items)
    - I actively take part in social activities at Brookes.
    - I have developed friendship with other students.
    - I am involved with the Student Union at Brookes.

- Institutional Socialisation (4 Items)
    - I get along well with Brookes teaching and administration staff; I understand student-related policies at Brookes.
    - I feel comfortable studying at Brookes.
    - I understand the values that are important to Brookes.

Student Future Intentions and Overall Satisfaction

- Student Referrals (3 Items)
    - I am happy to provide information about my course to prospective students.
    - I will recommend my course to my friends/relatives.
    - I will recommend my course to anyone interested.

- Alumni Donations (2 Items)

    - Once I am into a job after my degree I intend to make at least one donation to Brookes Alumni.
    - Once I am into a job after my degree I intend to make multiple donations to Brookes Alumni.

- Overall Satisfaction (2 Items)
    - I am satisfied with my decision to come and study at Brookes
    - I am satisfied with my course.

The discussion in this chapter also provided an insight into the theoretical direct and indirect relationships among constructs which are hypothesised and are presented next.

a) Student Learning Experience

Teaching & Learning is directly associated with:
- Overall Satisfaction ($H_{1.1}$)
- Institutional Socialisation ($H_{1.2}$)
- Academic Performance (grades) ($H_{1.3}$)
- Class Participation

Teaching & Learning has an indirect relationship with:
- Student Referrals ($H_{10.1}$)
- Alumni Donations ($H_{10.2}$)

Assessment & Feedback is directly associated with:
- Teaching & Learning ($_{H3.1}$)
- Academic Performance (grades) ($H_{3.2}$)

Assessment & Feedback has an indirect relationship with:
- Overall Satisfaction ($H_{12.1}$)
- Student Referrals ($H_{12.2}$)
- Alumni Donations ($H_{12.3}$)

Learning Environment is directly associated with:
- Assessment & Feedback (H_2)

Learning Environment is indirectly associated with:
- Overall Satisfaction ($H_{11.1}$)
- Academic Performance ($H_{11.2}$)
- Student Referrals ($H_{11.3}$)
- Alumni Donations ($H_{11.4}$)

Learning Resources is directly associated with:
- Teaching & Learning ($H_{4.1}$)
- Learning Environment ($H_{4.2}$)

Learning Resources has an indirect relationship with:
- Overall Satisfaction ($H_{13.3}$)
- Assessment & Feedback ($H_{13.2}$)
- Academic Performance ($H_{13.3}$)
- Student Referrals ($H_{13.4}$)
- Alumni Donations ($H_{13.5}$)
- Institutional Socialisation ($H_{13.6}$)

b) Student Engagement

Class participation has a direct relationship with:
- Teaching & Learning ($H_{5.1}$)
- Academic Performance ($H_{5.2}$)
- Academic Involvement ($H_{5.3}$)

Class Participation has an indirect relationship with:
- Overall Satisfaction ($H_{14.1}$)
- Student Referrals ($H_{14.2}$)
- Alumni Donations ($H_{14.3}$)

Academic Involvement has a direct relationship with:
- Teaching & Learning ($H_{6.1}$)
- Academic Performance ($H_{6.2}$)

Academic Involvement has an indirect relationship with:
- Overall Satisfaction ($H_{15.1}$)
- Student Referrals ($H_{15.2}$)
- Alumni Donations ($H_{15.3}$)

c) Student Participation

Student Socialisation is directly associated with:
- Overall Satisfaction ($H_{7.1}$)
- Institutional Socialisation ($H_{7.2}$)

Student Socialisation has an indirect relationship with:
- Overall Satisfaction ($H_{16.1}$)
- Student Referrals ($H_{16.2}$)
- Alumni Donations ($H_{16.3}$)

Institutional Socialisation is directly associated with:
- Overall Satisfaction (H_8)

Institutional Socialisation has an indirect relationship with:
- Student Referrals ($H_{17.1}$)
- Alumni Donations ($H_{17.2}$)

d) Overall Satisfaction

Overall Satisfaction is directly associated with:
- Academic Performance ($H_{9.1}$)
- Student Referrals ($H_{9.2}$)
- Alumni Donations ($H_{9.3}$)

Chapter 4
Methodology

In the previous chapter a theorised model is proposed (Chapter 3 – Conceptual Framework). The model is to be tested for empirical support in an attempt to fit observed data and latent constructs. In this chapter a detailed methodology is outlined.

This chapter is organised into five sections. The first section (4.1) attempts to position this thesis based on its ontological and epistemological orientation. The next section (4.2) briefly discusses the research design while the third section (4.3) presents the research instrument. In the fourth section (4.4), participants of this research are introduced. The final section (4.5) explains the research procedure including selection of the statistical technique, i.e. structural equation modelling (SEM).

4.1 Research Paradigms

Research paradigms are basic beliefs that a group of researchers share based on their ontological and methodological assumptions (Guba 1990; Guba and Lincoln 1994; Creswell 2009). The ontological assumptions mainly guide the epistemological and methodological positions (Grix 2002). The methodological approach for any research is associated with its ontological and epistemological orientation (Layder 1988) which helps minimise methodological inaccuracies (Hughes and Sharrock 1997) and closely aligns the employed tools with the set of beliefs about social reality (Hughes 1990; Williams and May 1996; Denscombe 2002). Therefore, it is important to ascertain the ontological and epistemological orientation of this thesis.

Historically, the paradigm debate is fought on the grounds of an ontological stance that researchers take about the form and nature of reality (Guba and Lincoln 1994). The group of researchers hold and defend a wide range of ontological positions. In social science there are two broad perspectives: positivism and phenomenology. The former take an objectivist stance about the nature of reality and the latter consider it as interpretivist and constructionist. These positions are typically associated with quantitative and qualitative methodological approaches respectively.

For some quantitative researchers, positivist assumptions are incompatible with the social sciences. These researchers, while accommodating most of the critique on positivism of absolute objectivity, reorganised themselves into the post-positivist paradigm. Phillips and Burbules (2000) articulate the post-

positivist worldview. Based on their readings, Creswell (2009) summarises the following key assumptions:

1. *Knowledge is conjectural (and anti-foundational) – absolute truth can never be found. Thus, evidence established in research is always imperfect and fallible. It is for this reason that researchers state that they do not prove a hypothesis; instead, they indicate a failure to reject the hypothesis.*

2. *Research is the process of making claims and then refining or abandoning some of them for other claims more strongly warranted. Most quantitative research, for example, starts with the test of a theory.*

3. *Data, evidence, and rational considerations shape knowledge. In practice, the researcher collects information on instruments based on measures completed by the participants or by observations recorded by the researcher.*

4. *Research seeks to develop relevant, true statements, ones that can serve to explain the situation of concern or that describe the causal relationship of interest. In quantitative studies, researchers advance the relationship among variables and pose this in terms of questions or hypotheses.*

5. *Being objective is an essential aspect of competent inquiry; researchers must examine methods and conclusions for bias. For example, standards of validity and reliability are important in quantitative research.*

(Creswell 2009, p.7)

Therefore, this thesis derived its understanding of student satisfaction from post-positivist worldview, assuming that one "cannot be positive about our claims of knowledge when studying the behaviour and actions of humans" (Creswell 2009, p.7). This paradigmatic position is based on critical realism acknowledging that reality can only be imperfectly and probabilistically apprehendable (Guba and Lincoln 1994). This philosophy is deterministic and reductionist recognising that causes do influence the result or outcome and ideas can be reduced to small variables that can be tested to validate theoretical underpinning (Creswell 2009). Schutt (2004) explains the post-positivist

worldview as "the belief that there is an empirical reality, but that our understanding of it is limited by its complexity and by the biases and other limitations of the researcher" (p.73).

4.2 Research Design

The literature review (Chapter 2) highlights the main characteristics of student satisfaction research as overwhelmingly self-administered, cross-sectional and quantitative. These surveys largely collect students' perceptions about the services that they receive while students' role in terms of their engagement and participation is often overlooked.

In this chapter, the research methodology addresses two main objectives described in the introductory chapter (Chapter 1). The first objective is to explore the plausibility of an empirical model of student satisfaction that incorporates the contribution of students in their own learning. The second objective of this research is to explore student overall satisfaction longitudinally.

In order to effectively achieve both objectives, data is collected using identical dimensions, constructs, factors and variables. For this purpose a single research instrument (questionnaire) is developed for both cross-sectional and longitudinal data collection. The reason for adopting a single questionnaire is twofold. Firstly, to understand student satisfaction as a concept while considering aspects of student learning experience, student engagement and student participation. Secondly, to evaluate, using the same dimensions, constructs, factors and variables, the effects of time over aspects of the student

learning experience, student engagement and student participation. The underlying assumption in using the same questionnaire is the fact that the determinants of the student satisfaction model relevant to higher education would remain the same. In addition, results from both datasets would yield greater understanding in articulating factors important to student satisfaction and variations in these factors over time.

The premise of the methodology in this research is therefore based on adopting predominantly quantitative self-administered cross-sectional questionnaire with an ancillary component of longitudinal sample. The cross-sectional data provides a snapshot into student experience at any one point while longitudinal data offers variation in the level of student satisfaction at different points during their studies. Furthermore, the research design also focuses around developing and testing a model to understand how student engagement and participation contribute to their own satisfaction.

In order to analyse both cross-sectional and longitudinal datasets, this research employs structural equation modelling (SEM). The reason for employing SEM is its wider recognition and growing use (Bentler 1983; Reisinger and Mavondo 2007) and that it is an established method for social science research (Yuan, Wu et al. 2011). Moreover, SEM also proves to be suitable in theory testing and development and provides "researchers with a comprehensive means for assessing and modifying theoretical models" (Anderson and Gerbing 1988, p.411). In addition, it has an ability to retain latent structures of the constructs that this research aims to develop and analyse it using SEM latent

growth curve model to ascertain growth trajectories between students and within each student.

4.3 Instrument Development

The development of an appropriate instrument is crucial for any research in order to produce meaningful conclusions. The process of instrument development requires an understanding of common themes and issues related to the area of research.

4.3.1 Reviewing Available Literature

The process to develop the research questionnaire was started with the reviewing of available literature on student satisfaction in higher education. An inventory was developed gathering key information, attributes, variables and constructs from research papers/studies carried out by other researchers. In addition, Oxford Brookes's student satisfaction survey questionnaire as well as the UK National Student Survey (NSS) questionnaire was also studied. This review produced a useful list of attributes and variables broadly covering areas such as student satisfaction, teaching quality, student perception of teaching, assessment and feedback, learning resources, student evaluation of service quality etc.

4.3.2 Focus Group Discussions

In order to further explore critical areas such as assessment and feedback, four focus group discussions were organised on four main campuses with the help of the student union. The focus group discussions (FGDs) were attended by course representatives. The organisation of these discussions provided an

opportunity to hear students from all disciplines. A total of 32 course representatives took part in the four FGDs: 22 took part in two FGDs at Headington Campus while seven took part at Wheatley Campus FGD and three took part at Harcourt Hill Campus FGD (Table 1). The discussion also achieved a balanced gender mix of 15 females and 17 males. It was expected that the FGD would inform the questionnaire development process.

Table 1 – Attendance at Focus Group Discussions

Campus	No. of Attendees
FGD 1 – Headington Campus	12
FGD 2 – Headington Campus	10
FGD 3 – Wheatley Campus	7
FGD 4 – Harcourt Hill Campus	3

4.3.3 Student Satisfaction Questionnaire

Based on the review of available literature and focus group discussions, a draft questionnaire was designed to be used for pilot testing. The pilot testing provided an opportunity to incorporate respondents' views on questions that students felt are unsuitable or inappropriate. The initial questionnaire had 55 items embodied in 10 constructs excluding demographic variables i.e. age, gender, school, year etc. The details of the number of items in each category are given in Table 2 below.

Table 2 – Number of Items by Categories

Categories	No. of Items
Modules	05
Teaching	06
Teaching Staff	04
Assessment	06
Feedback	05
Facilities & Services	06
Social Environment	04
Involvement/Participation	14
My Overall Experience	02
My Future Intentions	03

The selected attributes and variables were transformed into a structured questionnaire. The format of the questionnaire was to provide statements under various categories and to ask students to rate them using a 7-point Likert-type scale. Details of the rating scale are presented in the subsequent section. The initial questionnaire also addressed ethical issues, such as the right to privacy, informed consent and confidentiality (Bradburn, Sudman et al. 2004). The issues were governed by the guidelines provided by the Ethics Committee at Oxford Brookes University while engaging in the ethical approval procedure (Annex 1).

The initial questionnaire was paper-based with the intention that after pretesting and incorporating the changes it would be designed as an online questionnaire. Questionnaire development is an important and essential aspect of social research. Authors provided guidelines on questionnaire format, coverage, clarity, proper spacing, and basic instructions on completing it (Babbie 2011). Authors advised against including negative worded items (Belson 1981; Foddy and Foddy 1994).

Brace (2008) suggests addressing a number of questions while designing structured questionnaires. Some of the important concerns raised in the case of online questionnaires were clarity, understanding, asking the right questions, flow, duration and proper function. Thus, questionnaires should be well structured, clear, well-timed and meticulously articulated as "the precise wording of questions plays a vital role in determining the answers given by respondents" (Bradburn, Sudman et al. 2004, p.3).

a)   Rating Scale

A seven-point ordinal Likert-type rating scale was used. The literature provides ample support for adopting a seven-point Likert-type scale "as this tends to promote satisfactory properties with regard to the underlying distribution of responses" (Tam 2000, p.138). Many authors involved in student satisfaction research used a seven-point scale in their work (Hampton 1993; Appleton-Knapp and Krentler 2006; Brochado 2009; Munteanu, Ceobanu et al. 2010). The seven-point scale adopted includes 3 positive categories i.e. strongly agree, agree, slightly agree and three negative categories i.e. strongly disagree, disagree and slightly disagree with one neutral category, i.e. neither agree nor disagree.

The review of literature shows that most quantitative student satisfaction research has commonly used Likert-type scales. However, the type of rating scale employed was different, ranging from three to seven points, i.e. completely dissatisfied/disagree to completely satisfied/agree (Athiyaman 1997; Elliott and Shin 2002). Furthermore, five to seven-point Likert-type scale is very common in the social and behavioural sciences (Bearden, Netmeyer et al. 1993; Preston and Colman 2000). Likewise, most student satisfaction studies reviewed used five-point (Aldridge and Rowley 1998; Debourgh 1999; DeShields, Kara et al. 2005; Douglas, Douglas et al. 2006) and seven-point Likert-type scales (Hampton 1993; Appleton-Knapp and Krentler 2006; Brochado 2009; Munteanu, Ceobanu et al. 2010). There are some example of using different rating scales for different constructs (Athiyaman 1997; Spreng and Chiou 2002).

The literature review also demonstrates the absence of an agreement on how many Likert-type points to use. However, most authors agree on not using fewer than three points and not more than nine points (Bagozzi 1994; Whitley Jr, Kite et al. 2012).

Preston and Colman (2000) evaluate various Likert-type scale points "on several indices and reliability, validity and discriminating power" and conclude that "two-point, three-point, and four-point scales performed relatively poorly, and indices were significantly higher for scales with more response categories, up to about 7" (p.1).

In addition, many researchers consider Likert-type scales with 5 or more categories showing agreement with statements as continuous variables instead of ordinal categorical variables (Babakus, Fergnson et al. 1987; Dolan 1994; Hutchinson and Olmos 1998).

b)   Pretesting the Instrument

There is a universal agreement among researchers and authors to pretest or pilot test a questionnaire (Foddy and Foddy 1994; Hughes and Sharrock 1997; Corbetta 2003; Bradburn, Sudman et al. 2004; Brace 2008; Babbie 2010; Babbie 2011). This applies to newly developed questionnaires as well as using questionnaires that are developed by other researchers. Even after years of experience, researchers cannot claim to design a perfect questionnaire that requires no review, revision or changes, as often researchers discover that the first draft of a questionnaire has a tendency to violate the basic guidelines discussed earlier. Bradburn, Sudman et al. (2004) advocate pretesting a

questionnaire ten to twelve times among colleagues as well as among a small sample from the survey population, in this case students.

The initial questionnaire was pretested in two ways. Firstly, a group of 25 students were contacted and asked to take part in the pretesting exercise. This group, however, was not systematically selected. Secondly, the questionnaire was shared with other research students and colleagues at Oxford Brookes University. In addition, the questionnaire was tested for face validity and content validity by supervisors, subject experts and other researchers involved in similar research in many conferences, seminars and meetings.

The comments, suggestions and observations from colleagues, subject experts, other researchers and students were incorporated into the questionnaire and shared again with colleagues for a second time. A final questionnaire is presented in the next section. The changes included reordering the items, reducing the number of categories, rewording some items and eliminating some of the items.

c)   Final Instrument

After pilot testing the questionnaire was concluded, the final questionnaire had 49 items organised in seven categories (Table 3). Below is a list of the number of items in each category. A detailed account of these categories and items is given in the previous chapter (Chapter 3 – Conceptual Framework).

Table 3 – Final Number of Items by Category

	Categories	No. of Items
Student Learning Experience	Teaching & Learning	10
	Teaching Staff	04
	Assessment & Feedback	08
	Facilities & Services	06
Involvement/Participation		14
My Overall Experience		02
My Future Intentions		05

The items included in the final questionnaire are presented below. It includes all items and constructs and excludes demographic variables.

Satisfaction/ dissatisfaction with the Teaching & Learning						
1	2	3	4	5	6	7
Strongly Disagree	**Disagree**	**Slightly Disagree**	**Neither Agree nor Disagree**	**Slightly Agree**	**Agree**	**Strongly Agree**
I am satisfied with the material covered by the modules and their learning outcome.						
1	2	3	4	5	6	7
I am satisfied with the way the modules were organised.						
1	2	3	4	5	6	7
I am satisfied with the quality of lectures notes and handouts.						
1	2	3	4	5	6	7
I am satisfied with the way the timetable was arranged.						
1	2	3	4	5	6	7
I am satisfied with the quality of teaching.						
1	2	3	4	5	6	7
Staff members have made the subject interesting.						
1	2	3	4	5	6	7
The modules were intellectually stimulating.						
1	2	3	4	5	6	7
The number of teaching hours I have received has met my expectation.						
1	2	3	4	5	6	7
Student workload was appropriate.						
1	2	3	4	5	6	7
Class size was appropriate.						
1	2	3	4	5	6	7
Satisfaction/ dissatisfaction with the Teaching Staff						
1	2	3	4	5	6	7
Teaching staff were knowledgeable about what they were teaching.						
1	2	3	4	5	6	7
Teaching staff were enthusiastic about what they were teaching.						
1	2	3	4	5	6	7
I have found it easy to contact teaching staff when I needed to.						
1	2	3	4	5	6	7
Teaching staff were more than willing to provide guidance and advice.						
1	2	3	4	5	6	7

Satisfaction/ dissatisfaction with the Assessment & Feedback

1	2	3	4	5	6	7

Assessment criteria were made available for each module.

1	2	3	4	5	6	7

Submission timings for coursework were spread out to avoid bunching.

1	2	3	4	5	6	7

Marking was fair.

1	2	3	4	5	6	7

Working in groups was a good experience.

1	2	3	4	5	6	7

Prompt feedback was provided on my coursework/assignments.

1	2	3	4	5	6	7

Feedback was clear and easy to understand.

1	2	3	4	5	6	7

The feedback was useful.

1	2	3	4	5	6	7

I have been able to apply feedback to subsequent assignments.

1	2	3	4	5	6	7

Satisfaction/ dissatisfaction with the Facilities & Services

The email service was very effective.

1	2	3	4	5	6	7

Brookes virtual was very effective.

1	2	3	4	5	6	7

The Personal Information Portal (PIP) was very effective.

1	2	3	4	5	6	7

Library facilities were very good.

1	2	3	4	5	6	7

Food quality at food courts/cafeteria/canteen was good.

1	2	3	4	5	6	7

Brookes bus/ parking services were appropriate.

1	2	3	4	5	6	7

Involvement/engagement/Participation

In a typical class I offer my comments and raise questions more than my peers.

1	2	3	4	5	6	7

In a typical class I contribute more to the class relative to my peers.

1	2	3	4	5	6	7

In a typical class I am willing to volunteer more than my peers.

1	2	3	4	5	6	7

I actively take part in social activities at Brookes.

1	2	3	4	5	6	7

I have developed friendship with other students.

1	2	3	4	5	6	7

I am involved with the Student Union at Brookes.

1	2	3	4	5	6	7

I know I have good study habits.

1	2	3	4	5	6	7

I work hard in my studies.

1	2	3	4	5	6	7

I take interest in my studies.

1	2	3	4	5	6	7

I give appropriate time to my studies.

1	2	3	4	5	6	7

I get along well with Brookes teaching and administration staff.

1	2	3	4	5	6	7

I understand student-related policies at Brookes.

1	2	3	4	5	6	7

I feel comfortable studying at Brookes.

1	2	3	4	5	6	7

I understand the values that are important to Brookes.

1	2	3	4	5	6	7

My Overall Experience						
I am satisfied with my decision to come and study at Brookes.						
1	2	3	4	5	6	7
I am satisfied with my course.						
1	2	3	4	5	6	7
My Future Intentions						
I am happy to provide information about my course to prospective students.						
1	2	3	4	5	6	7
I will recommend my course to my friends/relatives.						
1	2	3	4	5	6	7
I will recommend my course to anyone interested.						
1	2	3	4	5	6	7
Once I am into a job after my degree I intend to make at least one donation to Brookes Alumni.						
1	2	3	4	5	6	7
Once I am into a job after my degree I intend to make multiple donations to Brookes Alumni.						
1	2	3	4	5	6	7

4.4 Sample/Participants

Students from Oxford Brookes University took part in this research. Prior to the sample selection and data collection phase, an application was made to seek ethical approval. The instructions stipulated by the ethics committee guided the research on sample selection. These guidelines did not permit sending block emails to students inviting them to take part in this research.

Details on how the sample was selected and the sample size are given below.

4.4.1 Sample Selection

According to these guidelines, the sample selection process started with developing a poster containing information about the project, its aims, objectives and contact details (see Annex 2). The poster was displayed outside the lecture rooms and teaching staff were requested to share the information on the posters with their students. It was also publicised through the University's online notice board called 'Message of the day'. On this poster, students were

requested to send an email to the researcher to express their willingness to participate in this study.

Students were provided with an email contact to report any complaint that they might have on any aspect of the research. They were also provided with a University contact to complain about any aspect of their learning experience as well as seeking financial advice in case they were facing financial difficulties. It was made very clear to the students that the purpose of this research was not to attempt to address or provide direct support for any issues which students might raise; however, pointing out to them the source of support available within the University is the only action which can be taken.

Students who took part in this research were not paid any remuneration or fee, however, small gifts were given in appreciation of their participation. Each student who took part in the cross-sectional sample was given a coffee mug, ballpoint and shoulder bag (all with the Oxford Brookes logo and research title). However, students who took part in the longitudinal sample were given more gifts as their continuous participation was sought for an extended period of time. Five students from the longitudinal sample were given mp4 players (given by lucky draw) while all others from the longitudinal sample were given a USB stick, coffee mug, shoulder bag and ballpoint over a two-year period.

The procedure for sample selection for the cross-sectional and longitudinal sample was slightly different and is presented below.

a)   Cross-sectional Sample Selection

The drive to recruit the cross-sectional sample took eight weeks. During this time students were contacted through an online message board, visiting large courses and providing information about the project to the students; they were asked to give their email address if they wished to take part.

After eight weeks, all students who showed their willingness were sent an email invitation with an online link to a website to complete the electronic questionnaire. At the start of the electronic questionnaire, students were informed about the research, their right not to respond or discontinue at any stage as well as anonymity and confidentiality. After being given this information, students were required to provide their consent (Annex 4).

b)   Longitudinal Sample Selection

The approach to recruit the longitudinal sample was to meet them in person. This face-to-face meeting took place with individual students once they showed their willingness to take part in the research. Students were offered a time slot according to their availability and a face-to-face meeting was conducted on their suitable campus location. Students were asked to sign a consent form (Annex 4) and provided with an information sheet (Annex 3). Students were informed that they would receive an email invitation and a link to complete the electronic questionnaire.

4.4.2 *Sample Size*

At the start of the academic year 2009-10, cross-sectional data collection took place. A total of 150 students completed the online questionnaire. However, two questionnaires were found to be incomplete and one questionnaire was duplication. Thus, all three were eliminated from the sample, leaving a final cross-sectional sample of 147.

The longitudinal data collection took place over a two-year period. The data was collected at the end of each semester for four semesters (two years). In terms of student numbers, at the start of the survey 66 students agreed to take part in the survey. This number came down to 63, 60 and 54 for the 2nd, 3rd and 4th waves respectively. The last wave of longitudinal data collection took place at the end of the academic year 2009-10.

Thus, the final sample for analysis was 147 students for cross-sectional and 66 students for longitudinal data analysis. These students belong to the first, second and third year in eight schools and various departments. The cross-sectional sample includes first-, second- and third-year students while the longitudinal sample includes first-year students who were recruited when they joined university and data was collected for two years (four semesters).

There is little agreement on the recommended sample size (Bentler 1983; Sivo, Fan et al. 2006) or minimum sample size (MacCallum, Widaman et al. 2001; MacCallum 2003) in SEM. Several authors suggested different numbers to be appropriate for carrying out SEM, i.e. five per construct or not less than 100

(Gorsuch 1983), at least 200 (Harris and Schaubroeck 1990), 200 or larger (Kline 2011), 100 preferably 200 (Hoyle 1995; Bagozzi and Yi 2012; Loehlin 2012), 200 but not exceeding 400 (Hair, Black et al. 2010). Some authors prescribed five cases per parameter estimate (Bentler and Chou 1987), 10-20 cases per parameter estimate (Mitchell 1993; Kline 1998; Kline 2011) and 15 cases per parameter estimate (Stevens 1996). However, many published research studies do not meet this criteria (Kenny 2012). The exploratory factor analysis used by many authors as traditional rules of thumb have no basis (MacCallum, Widaman et al. 1999). Muthén and Muthén (2002) point out that "in reality there is no rule of thumb that applies to all situations" (p.600).

The SEM is generally a large sample technique (Nevitt and Hancock 2004; Kline 2011), as large samples are assumed to increase the possibility of multivariate normality (Little 2013). However, as SEM advances and more research is undertaken, most of the presumed required sample sizes suggested above are no longer valid (Hair, Black et al. 2010). Furthermore, in social and behavioural science research achieving large sample size has not been so easy. Satisfying distribution and other assumptions of estimation method has also been difficult (Nevitt and Hancock 2004).

The required sample size for research depends on many factors. Hair, Black et al. (2010) suggest five considerations of multivariate normality: estimation technique, model complexity, amount of missing data and average error variance among the reflective indicators. Other factors as noted by (Muthén

and Muthén 2002), are size of model, variable distribution and reliability, missing data and strength of the relationship among the variables.

Some authors point out that using the most common SEM technique i.e. maximum likelihood estimation (MLE), a sample size of 50 could produce valid and reliable results (Tabachnick and Fidell 2001; Hair, Black et al. 2010). Other authors maintain this position and argue that if the variables are reliable and the model is not complex, a sample size of 50 could produce valid results (Bearden, Sharma et al. 1982; Bollen 1990). In order to deal with these challenges, methodological researchers offer some remedies to make the data more robust, such as Monte Carlo procedure (Muthén and Muthén 2002; Nevitt and Hancock 2004; Little 2013).

4.5 Procedure for Data Analysis

This section touches upon screening, examining and analysing statistical data. The data screening requires examining several multivariate assumptions as well as potential issues and effective strategies to resolve these problems. This includes ensuring eliminating data entry errors as well as devising strategies to deal with missing data.

This section also recapitulates exploratory factor analysis (EFA). The EFA "is an interdependence technique whose primary purpose is to define the underlying structure among the variables in the analysis" (Hair, Black et al. 2010, p.95)

Towards the end, this section introduces the selected statistical technique for data analysis, i.e. structural equation modelling (SEM). Here principles, assumptions, SEM design and various stages will be presented. There is a great deal of computer software available capable of handling SEM. For example, Linear Structural Relations – LISREL, Equations – EQS, Analysis of Moment Structures (AMOS), Statistical Analysis System – SAS, Covariance Analysis of Linear Structure Equations – CALIS, Matrix – Mx, Reticular Action Model or Near Approximation – RAMO-NA, Structural Equation Modelling and Path Analysis – SEPATH and Mplus (Byrne 2014).

AMOS (Analysis of Moment Structures) version 21 has been used for data analysis because of "its graphical approach to the analysis of confirmatory factor analytic and full structural equation models" (Byrne 2010, p.17) as well as all necessary tools including modification indices and squared multiple correlations. AMOS, however, does not offer robust maximum likelihood estimations while dealing with non-normal data. To overcome this limitation, EQS version 6.1 was used that provides scaling correction to chi-square statistic as Satorra-Bentler (S-B) chi-square estimates where the distributional assumptions of normality are violated (Byrne 2014). In addition, SPSS was also used for other descriptive and exploratory factor analysis.

Thus, the selection of software primarily based on author's familiarity with SPSS/AMOS and its graphical approach while EQS was selected for the benefits it offers to overcome the limitations posed by AMOS. The combination of SPSS/AMOS worked well for all data analysis in this thesis.

4.5.1 Screening and Examining Quantitative Data

Screening and examining quantitative data is a painstaking and time consuming task; however, ignoring this process may endanger the data analysis and ultimately the results. Hair, Black et al. (2010) advise not to compromise on data screening and suggest that it should be done before data analysis to eliminate biases and pseudo-effects on results. Kline (2011) also emphasises the importance of data screening and examination and recommends doing it before analysing quantitative data.

a)   Normality

The normality or normal distribution is one of the basic assumptions of multivariate data analysis. All variables were checked for normality in terms of skewness and kurtosis. "Skew is a measure of how asymmetric a uni-modal distribution is" and could be positively skewed, i.e. score below mean, or negative skewed, i.e. score above mean. Similarly, kurtosis measures "how well the shape of the bell conforms to that of a normal distribution" and could be positive i.e. leptokurtic or negative i.e. platykurtic, depending on higher or lower level respectively (Harrington 2008, p.42).

Multivariate normality is one of the basic assumptions of structural equation modelling (SEM). Furthermore, even if the variables are univariate normally distributed they do not guarantee multivariate normality (Johnson and Wichern 1992; Hair, Black et al. 2006; Nicolaou 2007). Multivariate normality can be evaluated using Mardia's coefficient based on multivariate kurtosis (MARDIA 1970). Authors suggested normalised estimate greater than 3 (Bentler 2001), and greater than 5 (Byrne 2010) to suggest non-normality.

Browne (1984) acknowledges that in the social and behavioural sciences data is not normally distributed and proposes asymptomatically distribution-free (ADF) estimator as a remedy.

b)   Missing Data

Researchers working with data, particularly multivariate data, very often have to work with data where responses for one or more variables are not available due to data entry and data collection errors as well as respondents' refusal to answer. This could compel the researcher to work with excluding the cases with missing variable(s) and work with the reduced data (Hair, Black et al. 2010).

Everitt and Dunn (2001) suggest that if 5% or fewer cases have missing values, deletion may be justified. In addition, missing data can be ignored if it is missing at random (MAR) but cannot be ignored if causes are errors in data entry and respondents' failure to provide complete required information. The missing data that cannot be ignored is called missing completely at random (MCAR), representing "observed values of Y are truly a random sample of all Y values, with no underlying process that lends bias to the observed data" (Hair, Black et al. 2010, p. 49). However, in situations where more cases have one or more variables with missing data, strategies have to be devised to cope with the problem. Therefore, there is a need to understand the causes of missing data and to adopt an appropriate strategy.

A possible solution to deal with missing data "is to consider some form of imputation, the practice of 'filling in' missing data with plausible values" (Everitt and Dunn 2001, p. 311). Once the nature of missing data is diagnosed appropriate remedies can be applied. If the diagnosis showed that the data is missing at random (MAR) there are limited options of only one model-based method available. Hair, Black et al. (2010) report that in this case the EM approach could be used to make plausible estimates of missing data while considering the parameters like mean, standard deviation and correlations. For data that is missing completely at random (MCAR), there are plentiful options for imputation available. These are complete data, case substitution, hot and cold deck imputation, mean substitution, regression imputation and model-based methods (Hair, Black et al. 2010).

c)   Outliers

Outliers are the values that are different from the other observations and identifiable when these values are unusually high or low on one or several variables. An outlier could be an extremely large or small value. Outliers could be caused by data entry or coding errors, due to extraordinary events or observations with more than usually high or low estimates for the sample and finally due to respondents providing an ordinary range of values for each variable (Hair, Black et al. 2010).

The detection of outliers for multivariate data is achieved by Mahalanobis D2 measure that estimates distance from mean for each observation in a multi-dimensional space. If the D2 value is 2.5 in small sample and 3 or 4 in large

sample with a significance level i.e. 0.005 or 0.001, it verifies the existence of outliers (Hair, Black et al. 2010).

4.5.2 *Exploratory Factor Analysis (EFA)*

Exploratory factor analysis (EFA) is employed to identify various constructs. The results are shown in the next chapter (Chapter 5 – Data Analysis). Multivariate data pose many challenges, one of which is to work with a large number of variables correlating with each other and indicating underlying structures. There are a number of ways researchers could deal with this situation, such as grouping highly correlated variables together and giving them label or name as a group or calculating composite score for the group etc. (Hair, Black et al. 2010).

Factor analysis could help overcome these challenges as it "refers to a set of statistical procedures designed to determine the number of distinct constructs needed to account for the pattern of correlations among a set of measures" (Fabrigar and Wegener 2012, p.3). "Factor analysis is a statistical procedure used to analyse the interrelationships between a set of variables" (Pearson and Colorado 2008). It is one of the widely used procedures in social sciences, education, business and psychology for identifying common factors (Tucker and MacCallum 1997; Fabrigar, Wegener et al. 1999).

The EFA provides an empirically sound solution to theory-based research where "an individual's observed score is affected by one or more common factors (e.g. maths ability), a specific factor which influences only that score, and error in measurement. The observed variance in a variable can be partially

explained by common factors, and this portion is referred to as its communality. The remainder of the variable's variance is referred to as its unique variance, or uniqueness, and includes the combined effects of a specific factor and measurement error" (Pearson and Colorado 2008, p.2). Thus, a set of directly measured or observed variables are used to determine scores for unobserved or latent variables. Hair, Black et al. (2006) suggest using at least three or four observed variables or items per latent variable in order to statistically identify factors or constructs.

4.5.3 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) is considered as part of the structural equation modelling family which is used to specifically explore relationships between observed and latent variables (Brown 2006). It simply tests the viability of organising a larger number of measured variables into a smaller number of constructs (Hair, Black et al. 2006). In the literature, CFA is also cited by many authors as restricted factor analysis, structural factor analysis or the measurement model (Hattie and Fraser 1988; Hoyle and Lennox 1991; McArdle 1996; Hoyle 2000).

CFA empirically tests construct validity. It is actually a structural equation model with a focus on verifying or disproving theory driven constructs and their relationship with each other and providing accurate measurement translated into an acceptable model fit (Brown 2006; Hair, Black et al. 2006; Nicolaou 2007).

CFA evaluates measured variables based on theoretical model and relationships of these measured variables with constructs also called latent variables or factors (Hair, Black et al. 2010). Thus CFA informs if and how a theoretical model is characterised by actual data.

As part of structural equation modelling (discussed next), CFA was conducted to ensure construct validity and items or variables with low factor loading were eliminated. CFA was employed on each second order construct with its indicators to ensure construct validity. The results are presented in the next chapter (Chapter 5 – Data Analysis). More details are given in the next SEM section.

4.5.4 *Structural Equation Modelling*

As discussed in the previous sections, the questionnaire developed for this research has generated multivariate data that requires a suitable technique to yield meaningful results. Appropriate and suitable multivariate techniques could not only be able to test construct validity but could also explore theoretical relationships between constructs. The constructs are unobservable factors, also called latent factors, that are represented by multiple observed variables (Hair, Black et al. 2010).

All multivariate techniques could be classified as either interdependent or dependent; however, the nature of student satisfaction demands a technique that could combine both. For example, student satisfaction itself could have a dependent relationship with constructs like teaching, teaching staff and assessment and feedback, but another consequence of student satisfaction is

that the students spread positive word-of-mouth and provide referrals to other students. In this situation, student satisfaction could become an independent variable.

Thus, after a very careful review of available multivariate techniques, structural equation modelling was selected to be most appropriate and useful group of multivariate techniques that takes account of construct validity, measurement properties and theoretical relationships among concepts using latent (unobserved) and observed variables (Hair, Black et al. 2010).

The SEM takes a confirmatory approach towards model testing based on a series of structural or regression equations aided by visually drawn models (Byrne 2010). In addition, SEM estimates for measurement errors as well as points or interval indirect effects along with modelling multivariate relationships (Byrne 2010). These features give a methodological superiority to the SEM over other multivariate techniques and make it a popular choice for theory and model testing.

SEM is not a single technique but rather a group of related procedures. SEM is also known as covariance structure analysis, covariance structure modelling, or analysis of covariance structures (Kline 2011), covariance structure analysis, path analysis, causal modelling, latent variable analysis and even identified with the names of computer programs i.e. LISREL and AMOS (Hair, Black et al. 2010). All these terms are substitutable; however, SEM appears to have been widely used by researchers and authors.

It is important to note here that in earlier literature SEM is sometimes associated with causality and causal modelling. Nevertheless, causal modelling and causality are more relevant to one of the SEM techniques called path analysis and it should not be understood to be evidence of causation (Kline 2011).

According to Hair, Black et al. (2010), the SEM has three distinguishable characteristics. These are the ability to estimate multiple and interrelated dependence relationships, the ability to take into account unobserved variables as well as estimate measurement errors and finally the ability to define an entire model with all of its possible relationships. In addition, its ability to consider correlation analysis along with covariance analysis, application to experimental data and less emphasis on statistical tests are some other characteristics highlighted by Kline (2011).

It can be concluded that SEM offers useful means for testing hypothesis and theory generation if theory is well conceptualised, can be reasonably represented by equations and quality data is available with sufficient representative data (Fergusson 1995). However, employing SEM poses some challenges such as the gap between theoretical conceptualisation and statistical model, the use of latent variables and structures as opposed to using measured variables (Martin 1982; Fergusson 1995). Furthermore, there are issues with omitting variables that could be important in a theoretical sense but failed while fitting in the statistical model and thus might be eliminated to achieve acceptable model fit (Fergusson 1995).

a)   SEM Research Designs

Structural equation models could be designed for cross-sectional and longitudinal research. However, cross-sectional research designs are quite common using both observable and latent variables. Almost all student satisfaction studies reviewed for this research that employed SEM are cross-sectional.

The longitudinal studies that employed SEM are of two types: sequential and repeated measures longitudinal designs (MacCallum and Austin 2000). In sequential design, data are collected for different variables at multiple time intervals while in repeated measures design the same variables are measured on multiple occasions. The sequential designs are intended to illustrate patterns of influence of variables over time while the repeated measures designs are envisioned to divulge relationships among the same variables at different times as well recording changes over time. Although student satisfaction studies use longitudinal data, it is important to note here that none of the student satisfaction studies that are reviewed for this research employed SEM as an analysis tool.

b)   SEM Process Stages

Once the process of data screening and examination is completed and all problems are eliminated, the process of constructing SEM model could begin. Many authors and researchers provide similar guidelines on the steps to be taken. For example, Kline (2011) strategy suggests that model specification, identification, measures selection, estimations, evaluation, interpretation and reporting are the logical steps to take after data preparation, screening and

examination. Hair, Black et al. (2010), however, recommend a more comprehensive framework with the following six-step strategy for employing SEM. The following is a brief discussion intended to provide the typical steps necessary to optimise SEM.

i) Defining Individual Constructs

Each construct is required to be operationalised by identifying appropriate and relevant items and scales for measurement. This involves defining each construct and its indicators i.e. items or variables as presented in the last chapter on the conceptual framework (Chapter 3). The items and scale for constructs could also be derived from earlier studies in the area. Alternatively, new items and measurement scales could be developed which demand that the constructs should be clearly defined theoretically and a list of possible items should also be developed using qualitative techniques. Once the items are identified, a suitable measurement scale should be selected, pilot tested and finalised.

Since student satisfaction studies are largely quantitative and use many constructs and indicators, it is obvious to identify and review established scales and indicators used by other authors and researchers.

ii) Specifying the Overall Measurement Model

Kline (2011) argues that specifying the overall model is the most important step of SEM. A path diagram in SEM is a very simple procedure to specify an overall measurement model that connects the observed variable to the unobserved latent variables to specify relationships in line with the theoretical

justification. The error terms for each observed and unobserved variables could also be drawn for the error measurements. At the model specification stage, Hair, Black et al. (2010) warn against uni-dimensionality due to cross-loading of items between constructs which could damage construct validity.

iii) Model Identification

A model is defined as identified if it is possible for a computer program to generate a unique value for each model parameter otherwise it has to be re-specified (Kline 2011). An unidentified model could produce inadequate results; therefore, it is absolutely imperative to work with an identified model. "In most SEMs, the amount of known information for estimation is the number of elements in the observed variance-covariance matrix" (Kenny and Milan 2014, p.145). Thus, identification can be represented as:

$$[k(k + 1)] / 2$$

where k = the number of observed variables in the model.

After model specification and identification, data may be collected according to the sample plan and finalised constructs, indicators and items. The data collection process could take some time for both cross-sectional and longitudinal studies.

iv) Measurement Model Estimation

The model estimation process involves evaluating the measurement model according to the goodness-of-fit indices, interpreting parameter estimations and comparing equivalent or alternative models to achieve the best model based on goodness-to-fit indicators.

Hair, Black et al. (2010) view goodness-to-fit indices as an indication of how well a model provides convergence to the theory and the reality. It estimates similarities between observed and estimated covariance matrices. In simple terms, it links theoretical relationships corresponding to and supported by the collected data. There are several goodness-to-fit measures available; however, the most basic one is Chi-Square.

While looking at Chi-Square, its p-value is of less importance representing a data misfit with defined model if it is significant, i.e. <0.05. Ideally, smaller Chi-Square and non-significant p-value indicate that there is no statistical difference in measured and estimated matrices (Hair, Black et al. 2010).

In addition to the Chi-Square, the degree of freedom representing "the amount of mathematical information available to estimate model parameters" is also important (Hair, Black et al. 2010, p. 665).

The Chi-Square and degree of freedom are not enough to evaluate and assess the model fit. Many fit indices are available and used by the researcher, however a common set of indices that is broadly accepted and used by the

researchers includes root mean square error of approximation (REMSEA), proposed by (Steiger 1990), goodness to fit index (GFI), suggested by (Jöreskog and Sörbom 1982), comparative fit index (CFI), presented by (Bentler and Kano 1990) and standardised root mean square residual (SRMR) which is related to the residuals in correlations. Hair, Black et al. (2010) recommend various cut off points for the most common set of indices, as reproduced below (Table 4):

Table 4 – Common Recommended Set of Goodness-of-Fit Indices

Statistics	Sample Size (N<250)		
	m ≤ 12	12 ≤ 30	m ≥ 30
Chi-square	Insignificant p-values expected	Significant p-value can be expected even with good fit	Significant p-value can be expected
CFI or TLI	0.97 or better	0.95 or better	Above 0.92
SRMR	Could be biased upward, use other indices	0.08 or less (with CFI 0.97 or higher)	Less than 0.09 (With CFI above 0.92)
RMSEA	Values < 0.08 with CFI-0.97 or higher	Value <0.08 with CFH=0.95 or higher	<0.08 with CFI=0.02 or higher

Adopted from Hair et al., 2006 (P. 753)

v) Specification and Assessment of the Structural Model

The measurement model specification, identification and estimation is discussed above. Once the measurement model is checked for problems and errors, the structural model can be specified. Since the measurement model is specified using observed variables, the structural model specification takes place linking constructs supported by the hypothesis using the theoretical model.

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After the specification of the structural model, it is ready to test for estimates. The structural model provides greater empirical evidence to validate the proposed conceptual model while comparing proposed and alternative models. If the relationships are significant in the predicted direction, the model to be tested is deemed valid (Hair, Black et al. 2010).

Chapter 5
Results and Data Analysis

The purpose of this chapter is to offer an in-depth data analysis on cross-sectional and longitudinal datasets. In the preceding chapters an understanding is established regarding concepts, constructs and variables important to the overall student experience (Chapter 3 – Conceptual Framework) and the way data will be analysed and statistical techniques employed (Chapter 4 – Methodology).

This chapter is comprised of four main sections. The first section (5.1) outlines three important aspects of data screening and examination i.e. normality, outlier and treating missing data. The next section (5.2) provides a detailed account on the statistical techniques employed for data analysis, mainly structural equation model (SEM) and its associated techniques i.e. CFA and latent growth curve model for longitudinal data. This section (5.2) provides guidelines to evaluate EFA, CFA and also imparts results for the exploratory and confirmatory factor analysis (EFA & CFA). The same evaluation criteria presented in section (5.2) will be used in the subsequent section (5.3 and 5.4) to assess the plausibility of structural equation modelling (SEM) and SEM latent growth curve model for cross-sectional and longitudinal dataset respectively.

In sections 5.3, 5.4 and 5.5, results for SEM and SEM latent growth curve model are presented.

5.1 Data Screening and Examination

The descriptive analysis shows that cross-sectional data comprised of largely full-time (75%), White (71%), home students (81%) with gender balance i.e. female (57%) and male (43%) with a small proportion of other ethnic groups, part-time and EU/Overseas students. The sample distribution by schools is presented in Table 5.

Table 5 – Cross-Sectional Sample by Schools

	No.	%
School of Arts and Humanities	15	10
School of the Built Environment	11	08
The Business School	34	23
School of Health and Social Care	16	11
School of Life Sciences	15	10
School of Social Sciences and Law	22	15
School of Technology	25	17
Westminster Institute of Education	10	06
Total	**147**	**100**

The longitudinal sample also exhibits similar characteristics. The majority of the students were full-time (74%), White (80%), and home (92%) with slight higher proportion of female students (64%) than the cross-sectional sample. The sample distribution by schools is presented below in Table 6.

Table 6 – Longitudinal Sample by Schools

	No.	%
School of Arts and Humanities	08	12
School of the Built Environment	02	03
The Business School	14	21
School of Health and Social Care	11	17
School of Life Sciences	08	12
School of Social Sciences and Law	08	12
School of Technology	09	14
Westminster Institute of Education	06	09
Total	**66**	**100**

Both cross-sectional and longitudinal datasets were screened and examined to evaluate the accuracy and to validate data entry/coding. Since the data was collected online, the chance of data entry and coding errors was minimal. Students, when asked to complete the questionnaire online, were presented with options and were restricted to put any data other than the options made available to them. Furthermore, data screening and examining was also carried out to identify normality, outliers and missing values.

5.1.1 Missing Data

a) Cross-Sectional Dataset

The cross-sectional dataset was screened for missing values. The proportion of missing value ranges between 0.7% and 2.0%. The Little's MCAR test (Little 1988) revealed a Chi-Square value of 672.92 with 623 degree of freedom and p-value 0.081, indicating that the data is indeed missing completely at random (MCAR) without any identifiable pattern in missing data.

The low proportion of missing values provides justifications to employ simpler technique to substitute missing values. The mean substitution technique is ideal for a situation where level of missing data is low and variables have relative higher correlation (Saadé and Bahli 2005; Hair, Black et al. 2006).

In addition, mean substitution technique was employed considering that the benefits it brings outweigh the challenges it poses and thus make it a suitable solution to deal with missing data. Mean substitution technique was used purely due to its wider recognition and use in replacing missing values

(Raymond 1986; Buhi, Goodson et al. 2008). There are two obvious benefits of using mean substitution technique to deal with missing data compared to any other deletion or imputation techniques available. First and foremost is its simplicity as a single imputation technique and secondly is its ability to keep the sample to its original size (Raymond 1986) which is particularly crucial in the case of a small sample size, similar to the one used in this research.

Despite its simplicity, ease and effectiveness to work with small sample size, mean substitution technique poses some challenges and should be employed with caution. This technique is likely to decrease the variance as a result of change in distribution of a variable (Pigott 2001). In addition, imputing a single value with missing values is also likely to weaken the correlation among variables (Tanguma 2000).

b) Longitudinal Dataset

Missing and incomplete data is a common occurrence in longitudinal studies (Liang and Zeger 1986; Patrician 2002; Ibrahim and Molenberghs 2009). The nature of longitudinal studies involves collecting data repeatedly from the same subjects to measure change over time (Hedeker and Gibbons 1997). Very often, subjects missed a round or wave of data collection or dropped out completely in between data waves. In addition, sometimes, subjects decided not to provide information on some of the variables in a research instrument, "even in well-controlled situations, missing data invariably occur in longitudinal studies" (Hedeker and Gibbons 1997, p.64). The obvious consequences of situations discussed above are incomplete data for one wave or no data at all for the other wave.

The Little's MCAR (Little 1988) test was carried out for longitudinal data and produced an insignificant p-value, indicating any systematic pattern is not detected and data is missing completely at random (MCAR). However a higher proportion of missing values is reported as presented in Table 7. This is mainly due to the dropout of some of the participants in last two waves of data collection. In total, 66 students were recruited while three dropped out by the second wave, another three dropped out in the third wave and 6 dropped out in the fourth and last wave of data collection. The details of the longitudinal sample recruited, interviewed and rate of dropout in each wave is presented in Table 7 below:

Table 7 – Longitudinal Sample and Dropout Details

	Total Number of Students Interviewed in Each Wave	Total Dropout (%)
Data Collection Wave 1	66	-
Data Collection Wave 2	63	05
Data Collection Wave 3	60	09
Data Collection Wave 4	54	18

The Little's MCAR test (Little 1988) carried out on each wave of data yielded insignificant p-value indicating that data do not exhibit a distinctive pattern of missingness and thus, missing completely at random (MCAR). The listwise deletion and mean substitution were deemed not appropriate options due to small sample size and higher proportion of missing values. Thus, multiple imputation (MI) is considered as a suitable strategy to deal with missing data as MI shown to work well with longitudinal data (Kenward and Carpenter 2007).

It is universally observed that longitudinal studies present challenges with missing data in terms of non-response in any data collection wave or subject attrition from the whole wave altogether (Diggle, Heagerty et al. 2002; Verbeke and Molenberghs 2009). "Multiple imputation is a predictive approach to handling missing data in multivariate analysis" (Patrician 2002, p.79). MI is routine practice prescribed as a remedy both in cross-sectional and longitudinal studies (Hawthorne and Elliott 2005; Sterne, White et al. 2009).

MI methods (Rubin 1978) provide an opportunity to generate values close to the real one, keeping mean and standard deviations of the dataset in line with the original dataset (Patrician 2002).

5.1.2 Checking Normality

In order to assess if the dependent variables are normally distributed Kolmogorov-Simirnov and Shapiro-Wilk tests of normality were performed for all variables in the cross-sectional dataset. It is advisable that both approaches are used (Looney 1995), however, Shapiro-Wilk is particularly recommended for small sample size by many authors and emerged as one of the best overall tests to evaluate univariate normality (Gan and Koehler 1990; Seier 2002).

Table 8 – Cross-sectional Dataset – Test of Normality

Variables/ Items	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TL1	.321	147	.000	.741	147	.000
TL2	.241	147	.000	.871	147	.000
TL3	.299	147	.000	.824	147	.000
TL4	.290	147	.000	.817	147	.000
TL5	.262	147	.000	.849	147	.000
TL6	.228	147	.000	.883	147	.000
LE1	.254	147	.000	.875	147	.000
LE2	.269	147	.000	.869	147	.000
LE3	.266	147	.000	.865	147	.000
LE4	.265	147	.000	.860	147	.000
AF1	.217	147	.000	.883	147	.000
AF2	.206	147	.000	.906	147	.000
AF3	.214	147	.000	.900	147	.000
AF4	.210	147	.000	.902	147	.000
LR1	.272	147	.000	.793	147	.000
LR2	.306	147	.000	.797	147	.000
LR3	.253	147	.000	.846	147	.000
CP1	.137	147	.000	.942	147	.000
CP2	.152	147	.000	.942	147	.000
CP3	.127	147	.000	.949	147	.000
AI1	.204	147	.000	.901	147	.000
AI2	.255	147	.000	.855	147	.000
AI3	.251	147	.000	.812	147	.000
IS1	.189	147	.000	.908	147	.000
IS2	.239	147	.000	.880	147	.000
IS3	.267	147	.000	.855	147	.000
IS4	.322	147	.000	.745	147	.000
SS1	.232	147	.000	.871	147	.000
SS2	.141	147	.000	.928	147	.000
REF1	.302	147	.000	.778	147	.000
REF2	.291	147	.000	.802	147	.000
REF3	.315	147	.000	.788	147	.000
ALU1	.281	147	.000	.873	147	.000
ALU2	.300	147	.000	.859	147	.000
OS1	.285	147	.000	.729	147	.000
OS2	.291	147	.000	.784	147	.000
a. Lilliefors Significance Correction						

In addition to the univariate normality, it is also essential to check that the variables are also multivariate normally distributed. However, the starting point for the multivariate normality is to test if all variables have univariate normal distribution (Johnson and Wichern 1992; Looney 1995). The Mardia's Coefficient of multivariate kurtosis for cross-sectional dataset was 156.56 and normalised estimate was 18.63 indicating non-normality.

The results for both cross-sectional and longitudinal datasets indicate that almost all variables have non-normal distribution. This was also evident from skewness and kurtosis statistics to empirically test the distribution. The variables were mostly kurtotic and negatively skewed.

It is widely accepted that in the social sciences, having univariate or multivariate non-normality is very common (Micceri 1989; West, Finch et al. 1995; Finney and DiStefano 2006). It is also observed that almost all self-reported and self-administered satisfaction surveys are inherently skewed to the negative, pointing out a higher level of satisfaction (Oliver 1980; Bearden, Sharma et al. 1982; Peterson and Wilson 1992).

Table 9 – Longitudinal Dataset – Test of Normality (Kolmogorov-Smirnov)

Variables / Items	Kolmogorov-Smirnov[a]											
	Wave 1			Wave 2			Wave 3			Wave 4		
	Statistic	df	Sig.	Statistic	df	Sig.	Statistic	df	Sig.	Statistic	df	Sig.
TL1	0.376	366	0	0.256	366	0	0.319	366	0	0.185	366	0
TL2	0.236	366	0	0.305	366	0	0.201	366	0	0.234	366	0
TL3	0.23	366	0	0.285	366	0	0.246	366	0	0.236	366	0
TL4	0.259	366	0	0.293	366	0	0.229	366	0	0.219	366	0
TL5	0.264	366	0	0.271	366	0	0.219	366	0	0.215	366	0
TL6	0.29	366	0	0.329	366	0	0.228	366	0	0.27	366	0
LE1	0.327	366	0	0.305	366	0	0.275	366	0	0.196	366	0
LE2	0.354	366	0	0.273	366	0	0.239	366	0	0.23	366	0
LE3	0.282	366	0	0.332	366	0	0.317	366	0	0.22	366	0
AF1	0.257	366	0	0.256	366	0	0.238	366	0	0.138	366	0
AF2	0.301	366	0	0.195	366	0	0.254	366	0	0.175	366	0
AF3	0.27	366	0	0.223	366	0	0.196	366	0	0.13	366	0
AF4	0.34	366	0	0.295	366	0	0.208	366	0	0.211	366	0
LR1	0.286	366	0	0.245	366	0	0.275	366	0	0.234	366	0
LR2	0.29	366	0	0.25	366	0	0.26	366	0	0.194	366	0
LR3	0.268	366	0	0.27	366	0	0.255	366	0	0.25	366	0
CP1	0.149	366	0	0.167	366	0	0.178	366	0	0.149	366	0
CP2	0.159	366	0	0.156	366	0	0.159	366	0	0.111	366	0
CP3	0.117	366	0	0.161	366	0	0.172	366	0	0.132	366	0
AI1	0.227	366	0	0.183	366	0	0.167	366	0	0.204	366	0
AI2	0.238	366	0	0.264	366	0	0.176	366	0	0.178	366	0
AI3	0.256	366	0	0.337	366	0	0.237	366	0	0.245	366	0
IS1	0.161	366	0	0.237	366	0	0.192	366	0	0.173	366	0
IS2	0.202	366	0	0.242	366	0	0.193	366	0	0.177	366	0
IS3	0.253	366	0	0.257	366	0	0.256	366	0	0.206	366	0
IS4	0.306	366	0	0.234	366	0	0.249	366	0	0.254	366	0
SS1	0.237	366	0	0.192	366	0	0.193	366	0	0.161	366	0
SS2	0.164	366	0	0.165	366	0	0.18	366	0	0.13	366	0
ALU1	0.253	366	0	0.252	366	0	0.268	366	0	0.221	366	0
ALU2	0.161	366	0	0.296	366	0	0.306	366	0	0.247	366	0
REF1	0.278	366	0	0.289	366	0	0.237	366	0	0.228	366	0
REF2	0.291	366	0	0.274	366	0	0.21	366	0	0.209	366	0
OS1	0.316	366	0	0.255	366	0	0.278	366	0	0.256	366	0
OS2	0.293	366	0	0.283	366	0	0.237	366	0	0.224	366	0

Table 10 – Longitudinal Dataset – Test of Normality (Shapiro-Wilk)

Variables / Items	Shapiro-Wilk											
	Wave 1			Wave 2			Wave 3			Wave 4		
	Statistic	df	Sig.	Statistic	df	Sig.	Statistic	df	Sig.	Statistic	df	Sig.
TL1	0.662	366	0	0.777	366	0	0.75	366	0	0.862	366	0
TL2	0.856	366	0	0.789	366	0	0.906	366	0	0.896	366	0
TL3	0.856	366	0	0.782	366	0	0.87	366	0	0.879	366	0
TL4	0.797	366	0	0.785	366	0	0.875	366	0	0.896	366	0
TL5	0.822	366	0	0.83	366	0	0.889	366	0	0.903	366	0
TL6	0.78	366	0	0.806	366	0	0.892	366	0	0.868	366	0
LE1	0.818	366	0	0.791	366	0	0.844	366	0	0.875	366	0
LE2	0.749	366	0	0.811	366	0	0.853	366	0	0.87	366	0
LE3	0.815	366	0	0.782	366	0	0.808	366	0	0.882	366	0
AF1	0.829	366	0	0.88	366	0	0.865	366	0	0.937	366	0
AF2	0.793	366	0	0.911	366	0	0.856	366	0	0.92	366	0
AF3	0.813	366	0	0.89	366	0	0.893	366	0	0.954	366	0
AF4	0.746	366	0	0.854	366	0	0.906	366	0	0.867	366	0
LR1	0.704	366	0	0.786	366	0	0.749	366	0	0.815	366	0
LR2	0.695	366	0	0.858	366	0	0.82	366	0	0.9	366	0
LR3	0.769	366	0	0.821	366	0	0.842	366	0	0.838	366	0
CP1	0.93	366	0	0.923	366	0	0.939	366	0	0.943	366	0
CP2	0.939	366	0	0.935	366	0	0.949	366	0	0.955	366	0
CP3	0.947	366	0	0.932	366	0	0.93	366	0	0.946	366	0
AI1	0.878	366	0	0.931	366	0	0.932	366	0	0.894	366	0
AI2	0.844	366	0	0.849	366	0	0.893	366	0	0.865	366	0
AI3	0.805	366	0	0.745	366	0	0.838	366	0	0.834	366	0
IS1	0.921	366	0	0.885	366	0	0.887	366	0	0.913	366	0
IS2	0.901	366	0	0.884	366	0	0.922	366	0	0.933	366	0
IS3	0.852	366	0	0.838	366	0	0.857	366	0	0.913	366	0
IS4	0.761	366	0	0.851	366	0	0.799	366	0	0.812	366	0
SS1	0.865	366	0	0.899	366	0	0.901	366	0	0.918	366	0
SS2	0.919	366	0	0.918	366	0	0.916	366	0	0.932	366	0
REF1	0.777	366	0	0.859	366	0	0.856	366	0	0.859	366	0
REF2	0.77	366	0	0.856	366	0	0.893	366	0	0.896	366	0
ALU1	0.852	366	0	0.881	366	0	0.876	366	0	0.916	366	0
ALU2	0.921	366	0	0.85	366	0	0.835	366	0	0.892	366	0
OS1	0.661	366	0	0.812	366	0	0.799	366	0	0.781	366	0
OS2	0.72	366	0	0.816	366	0	0.844	366	0	0.846	366	0

5.1.3 Outliers

Preliminary descriptive data analysis including boxplot was assessed to identify any outliers in the data. The results indicated the presence of some extreme values in the dataset however, within the limit of Likert-scale 1 to 7, confirming that there are no errors in data entry. In addition, the data was collected using online survey questionnaire to minimise the data entry issues at a later stage. Once the survey questionnaires were completed by the students, an Excel data file was downloaded from the survey site and imported into SPSS for further analysis.

It is important here to reiterate that students could be extremely satisfied or extremely dissatisfied with any aspect of their learning experience and hence could rate extreme values i.e. 1 or 7. Thus, although data presents extreme values and presents these values as outliers, eliminating these values could have a serious impact on representativeness in "favour of the cases that follow norm" (Nicolaou 2007, p.209). In addition, these values were a true reflection of student's opinion and were included in the data analysis.

5.2 Exploratory Factor Analysis (EFA)

The exploratory factor analysis (EFA) was performed using the theoretical constructs and items identified in the literature review (Chapter 2) and explained in detail in the conceptual framework (Chapter 3). The main purpose of EFA was to identify underlying constructs. All items were put together based on their association with broader theoretical constructs i.e. Teaching & Learning, Assessment & Feedback, Learning Environment, Learning

Resources, Class Participation, Academic Involvement, Student Socialisation and Institutional Socialisation.

The EFA is a common technique in multivariate analysis where a large number of measures could be grouped together into constructs based on inter-correlation capturing the same underlying associations. In a more "general sense, factor analysis is used as a means for arriving at a more parsimonious representation of the underlying structure of correlations among a set of measured variables" (Fabrigar and Wegener 2012, p.20). It is a "diagnostic tool" that can be used to determine if the "collected data are in line with the theoretically expected pattern, or structure, of the target construct and thereby to determine if the measures used have indeed measured what they are purported to measure" (Matsunaga 2010, p.98).

Some of the objectives of exploratory factor analysis (EFA) as outlined by several authors are: reduction in variable number, evaluation of construct validity of scale or instrument, development of theoretical constructs, evaluation of proposed theories, examination of structure/relationship between variables, detection of uni-dimensionality of theoretical constructs and development of parsimonious analysis for simple interpretation (Pett, Lackey et al. 2003; Thompson 2004; Williams, Brown et al. 2012). In SEM, the use of EFA signifies the procedure to empirically identify the number and nature of latent constructs based on observed variables (Fabrigar and Wegener 2012).

Although EFA is broadly considered to be heuristic, the subjective nature of its results is criticised (Williams, Brown et al. 2012). Unlike confirmatory factor analysis (CFA) where priori theory in terms of number of factors is put to the test, EFA "has no expectation of the number or nature of the variables and as a the title suggests, is exploratory in nature" (Williams, Brown et al. 2012, p. 3). The EFA decisions are more "pragmatic rather than theoretical" (Tabachnick and Fidell 2001) and subjectiveness can be limited through systematic approach and sound judgement about latent structure (Henson and Roberts 2006).

5.2.1 EFA Evaluation Criteria

There are a number of decisions that have to be made before as well as after employing factor analysis. For example, to determine if the dataset is suitable for factor analysis, decisions are to be made prior to EFA related to sample size, correlational values, test of sphericity and test for sample adequacy (Hair, Black et al. 2010; Williams, Brown et al. 2012; Beavers, Lounsbury et al. 2013). Similarly, once the appropriateness of EFA is established, decisions are to be made pertaining to extraction method, rotation, number of factors and variables included or excluded to make the interpretation of the dataset simpler and meaningful.

a) Sample Size

The appropriateness of sample size is widely contested in the literature with no agreement on the minimum sample required (Hogarty, Hines et al. 2005). Many authors suggested different rules of thumb i.e. 100 (Hair, Black et al. 2006), 300 (Comrey and Lee 1992; Tabachnick and Fidell 2001), 500 and even

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1000 (Comrey and Lee 1992). However, other authors argue that these rules of thumb do not take into account the complexities of factor analysis and hence are misleading. Smaller sample size i.e. <100 could well be appropriate if communalities are high i.e. 0.6 or higher and there are several items in each factor (Guadagnoli and Velicer 1988; MacCallum, Widaman et al. 1999; MacCallum, Widaman et al. 2001; Sapnas and Zeller 2002; Henson and Roberts 2006). Communalities values basically indicate correlation of an item from all other items in a construct.

Another way of determining sample size used by many authors is to assess sample to variable ratio or subject to item ratio. Authors use and recommend several rules of thumbs i.e. from 3:1 to 20:1 (Gorsuch 1983; Everitt and Dunn 2001; Tabachnick and Fidell 2001; Hair, Black et al. 2006; Williams, Brown et al. 2012). The results from a review of 1700 studies conclude that almost 60 percent of the studies used sample to item ratio of up to 10:1, 40 percent used up to 5:1 and 15 percent used 2:1 or less (Costello and Osborne 2005).

However, results from other studies do support the assertions that sample to variable ratio i.e. N:p, is a robust way to achieve good factor structure across all complexities of social research (Cudeck and O'Dell 1994; MacCallum, Widaman et al. 2001; Hogarty, Hines et al. 2005). Furthermore, results from studies also demonstrate that number of variables, factors, variable factor ratio and size of communalities work together to achieve an appropriate sample size (Mundfrom, Shaw et al. 2005).

b) Test of Sphericity

Barlett's Test of Sphericity (Bartlett 1950) is used to see if the dataset is suitable for factor analysis. The Barlett Test of Sphericity is a statistical test to verify that correlation matrix has significant correlations among some of the variables, however this test is sensitive to sample size (Hair, Black et al. 2010).

The result of Barlett Test of Sphericity should be significant i.e. $p<0.05$ to establish suitability of the dataset for factor analysis (Williams, Brown et al. 2012) as it rejects or fails to reject the null hypothesis i.e. that the correlation matrix of observed variables is not factorable (Pett, Lackey et al. 2003; Beavers, Lounsbury et al. 2013). Thus, a significant p-value (<0.05) would reject the null hypothesis confirming the presence of significant correlation among some of the variables and hence suitability of observed variables for factor analysis.

c) Measure of Sample Adequacy (MSA)

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Kaiser 1970; Kaiser and Rice 1974; Williams, Brown et al. 2012) signifies shared items variance. It is also particularly useful where sample and variable ratio is lower i.e. 5:1.

The measures of sample adequacy (MSA) are evaluated in two different ways. Firstly, the overall MSA assessed through Kaiser-Meyer-Olkin Test of Sample Adequacy (KMO) and secondly, the variable-specific MSA that can be attained in anti-image correlation matrix.

The overall MSA is assessed through KMO index. The suggested guidelines to interpret KMO index by Kaiser, Meyer and Olkin are: 0.9 and above as marvellous, 0.8 to 0.89 meritorious, 0.7 to 0.79 as middling, 0.6 to 0.69 ad mediocre, 0.5 to 0.59 as miserable while 0 to 0.59 as unsuitable for factor analysis (Hair, Black et al. 2010; Beavers, Lounsbury et al. 2013).

Similarly, for individual variable MSA, Hair, Black et al. (2010) suggest a value of 0.5 and above as acceptable. Particularly in the case that KMO index is below 0.5, scanning through individual variables could identify offending variables with lower values. The decision to include or exclude the offending variables can be taken and factor analysis can be recalculated.

d)   Factor Extraction Method

Once the suitability and appropriateness of the data for factor analysis are established, there are other decisions to be made. The decision about selecting factor method requires an in-depth understanding about the purpose of factor analysis as well as prior knowledge about the variance in studied variables. There are two statistical techniques broadly referred to as factor analysis. Firstly, component analysis and secondly common factor analysis (Tabachnick and Fidell 2001; Beavers, Lounsbury et al. 2013).

The aim of component analysis is to summarise observed data into factors or dimensions i.e. data reduction, while the purpose of common factor analysis is to identify underlying constructs that are impossible to measure directly and are based on shared variance among variables as well as relationship (Costello and Osborne 2005; Byrne 2010; Hair, Black et al. 2010; Beavers, Lounsbury et

al. 2013). Some authors do not regard component analysis as true factor analysis and advise against using it (Bentler and Kano 1990; Loehlin 1990; Tucker and MacCallum 1997) while others argue that both analyses yield similar results (Steiger 1990; Velicer and Jackson 1990). Some authors also point out that both component analysis and common factor analysis produce similar results when the number of variables exceeds 30 and communalities exceeds 0.60 (Gorsuch 1983; Hair, Black et al. 2010).

The component analysis has only one factor extraction method called principal components analysis (PCA). However, common factor analysis has several extraction methods that can be employed such as: principal axis factoring (PAF), maximum likelihood, unweighted least squares, generalised least squares, alpha factoring and image factoring. The two most commonly used extraction methods are principal axis factoring (PAF) and maximum likelihood. Principal axis factoring (PAF) is usually considered where data violates multivariate assumption of normality, and is suitable for non-normal data (Fabrigar, Wegener et al. 1999) while maximum likelihood requires multivariate normality (Pett, Lackey et al. 2003).

e)   Number of Factors

The decision about number of factors to extract is one that requires theoretical and conceptual justification. The EFA aims at extracting sufficient number of factors that adequately represent data that are statistically and theoretically sound (Fabrigar, Wegener et al. 1999; Williams, Brown et al. 2012; Beavers, Lounsbury et al. 2013). It is important to make a balanced judgement in choosing to include or exclude factors as both could have detrimental effects

on overall analysis. If too many factors are retained, the consequence could be weaker factor loadings (Pett, Lackey et al. 2003) while retaining too few factors could result in inaccurate representation of data structure (Pett, Lackey et al. 2003; Beavers, Lounsbury et al. 2013).

There are other parameters that are important to making decisions pertaining to the number of factors to extract. Hair, Black et al. (2010) suggest that combining both conceptual foundation and empirical evidence to extract the number of factors is a good starting point. It simply means determining the number of factors that should be in the structure as well as the number of factors can be supported in the analysis.

There are a number of criteria proposed by authors that can be used to determine the number of factors to extract (Costello and Osborne 2005; Hair, Black et al. 2010). These are: latent root or Kaiser criterion, a priori criterion, percentage of variance criterion and scree plot criterion.

Latent Root Criterion or Kaiser Criterion

It is based on eigenvalues greater than 1. However, it works well for a dataset where the number of variables is between 20 and 50. If the number of variables is less than 20 it can produce too few factors while if the number of variables is more than 50 it could produce too many factors (Fabrigar, Wegener et al. 1999; Henson and Roberts 2006; Hair, Black et al. 2010; Williams, Brown et al. 2012; Beavers, Lounsbury et al. 2013). However, Velicer and Jackson (1990) reports an inherent tendency of retaining too many factors which makes it a less accurate method for making decisions on retaining number of factors.

A Priori Criterion

This criterion is based on extracting a known number of factors. This method is useful when testing theory or hypothesis (Hair, Black et al. 2010). It simply means instructing the computer to stop when the specified number of factors is extracted.

Total Variance Criterion

This method is useful when the objective is to achieve a desired level of total variance extracted by the factors. In social science, dataset extracting between 60 percent and 50 percent total variance is considered satisfactory (Hair, Black et al. 2010; Beavers, Lounsbury et al. 2013).

Scree Plot Criterion

This method is simply the "graphical representation of the factors and their corresponding eigenvalues" (Beavers, Lounsbury et al. 2013, p. 8). The attention is paid to the area between the starting point and the point where the natural bend or curve becomes flat.

f) Communalities

Another important attribute is the item communalities values indicating correlation of an item from all other items. In social sciences, higher item communalities values i.e. 0.8 are unheard of, however, low and moderate item communalities values are common i.e. 0.4 to 0.7 (Velicer and Fava 1998; Costello and Osborne 2005). Costello and Osborne (2005) point out that item communalities value lower than 0.4 indicates no relationship with other items or the possibility of an additional factor.

g) Rotation Method

After dealing with extraction method and value, the next decision is to select the rotation method. The rotation simplifies the data structure. The orthogonal methods of rotation i.e. varimax, quartimax and equamax are commonly available in SPSS, assuming that factors are uncorrelated while oblique rotation techniques i.e. oblimin, quartimin and promax allow that factor correlation is preferred in social sciences (Costello and Osborne 2005). The reason for selecting oblique rotation technique is the fact that it "theoretically renders a more accurate and perhaps more reproducible solution" (Costello and Osborne 2005, p.3). Thus oblique rotation technique of promax was employed.

h) Cross-loading Value

All variables should have a high loading only on one factor, however, quite often factor analysis results do not produce a simple structure. In case if one variable has significant loading on more than one factor i.e. cross-loading, it should be dealt with appropriately. Since the objective of factor analysis is to identify association of each item or variable with one factor, cross-loading pose is challenging for researchers and sometimes it forces items with significant loading on more than one factor to be eliminated. A figure of 0.32 and above cross-loading is usually quoted in the literature as a rule of thumb (Tabachnick and Fidell 2001; Hair, Black et al. 2006; Henson and Roberts 2006). Sometimes, using different rotation methods could produce a better result and minimize cross-loading (Hair, Black et al. 2010).

g)   Constructs and Variables

The extensive literature review (Chapter 2) provided this basis to develop an appropriate conceptual framework (Chapter 3). The literature review yielded a comprehensive list of variables under broader constructs with a relationship and effect on student satisfaction. The list including constructs and items is presented below:

<u>Student Learning Experience</u>

- Teaching, Learning and Teaching Staff (11 Items)
    - I am satisfied with the quality of teaching.
    - The modules were intellectually stimulating.
    - I am satisfied with the material covered by the modules and their learning outcome.
    - I am satisfied with the way the modules were organised.
    - I am satisfied with the quality of lectures notes and handouts.
    - I am satisfied with the way the timetable was arranged.
    - Teaching staff have made the subject interesting.
    - Teaching staff were knowledgeable about what they were teaching.
    - Teaching staff were enthusiastic about what they were teaching.
    - I have found it easy to contact teaching staff when I needed to.
    - Teaching staff were more than willing to provide guidance and advice.

- Learning Environment (3 Items)
    - Class size was appropriate.
    - Student workload was appropriate.
    - The number of teaching hours I have received has met my expectation.

- Assessment and Feedback (7 Items)
    - Assessment criteria were made available for each module.
    - Submission timings for coursework were spread out to avoid bunching.
    - Marking was fair.
    - Prompt feedback was provided on my coursework/assignments.
    - Feedback was clear and easy to understand.
    - The feedback was useful.
    - I have been able to apply feedback to subsequent assignments.
- Learning Resources (4 Items)
    - Library facilities were very good.
    - The email service was very effective.
    - Brookes virtual was very effective.
    - Personal Information Portal (PIP) was very effective.

Student Involvement, Engagement and Participation

- Class Participation (3 Items)
    - In a typical class, I offer my comments and raise questions more than my peers.
    - In a typical class, I contribute more to the class relative to my peers.
    - In a typical class, I am willing to volunteer more than my peers.

- Academic Involvement (4 Items)
    - I know I have good study habits.
    - I work hard for my studies.
    - I take interest in my studies.
    - I give appropriate time to my studies.

- Student Socialisation (3 Items)
    - I actively take part in social activities at Brookes.
    - I have developed friendship with other students.
    - I am involved with the Student Union at Brookes.

- Institutional Socialisation (4 Items)
    - I get along well with Brookes teaching and administration staff; I understand student-related policies at Brookes.
    - I feel comfortable studying at Brookes.
    - I understand the values that are important to Brookes.

Student Future Intention and Overall Satisfaction

- Student Future Intentions (5 Items)
    - I am happy to provide information about my course to prospective students.
    - I will recommend my course to my friends/relatives.
    - I will recommend my course to anyone interested.
    - Once I am into a job after my degree I intend to make at least one donation to Brookes Alumni.
    - Once I am into a job after my degree I intend to make multiple donations to Brookes Alumni.

- Student Overall Satisfaction (2 Items)
    - I am satisfied with my decision to come and study at Brookes.
    - I am satisfied with my course.

5.2.2 EFA Results

Two EFAs were carried out separately combining antecedents (aspects of student learning experience, student engagement and student participation) and consequences (student satisfaction and student future intentions). Hair, Black et al. (2010) advise against combining independent and dependent variables in one factor analysis. EFA is a technique relying solely upon correlation among variables and has no way of determining or confirming conceptual validity and plausibility. Thus, variables grouped together in an EFA should have some conceptual meaning. Hair, Black et al. (2010) further note that "mixing dependent and independent variables in a single factor analysis and then using the derived factors to support dependence relationships is inappropriate" (Hair, Black et al. 2010, p. 101).

The first EFA contains 39 items belonging to student learning experience (25 items) and student involvement, engagement and participation (14 items). The EFA evaluate plausibility in line with prescribed guidelines. In total, seven items were deemed unfit to be included in the EFA on the grounds of low factor loading (<0.3), moderate to strong cross-loading and were eliminated from the analysis.

All items with factor loading lower than 0.3 were excluded. The threshold figure of 0.3 suggests that the factor accounts for 10% variance by the **factor** (Hair, Black et al. 2006; Williams, Brown et al. 2012). Hair, Black et al. (2006) suggest considering the factor loading of ±0.3 as minimal, ±0.4 as important and ±0.5 as practically significant. These figures are used as rule of thumb

while performing exploratory factor analysis. In addition, Fabrigar, Wegener et al. (1999) recommend using principal factor axis as an extraction technique where data violates the assumption of multivariate normality. Items with factor "loading above 0.3, no or few items cross loadings, no factors with few than three items – has the best fit to the data" (Costello and Osborne 2005, p.3). In addition, promax rotation is used for its appropriateness with the data characteristics.

In this thesis, the concepts of student engagement (Fassinger 1995; Astin 1999; QAA 2008) and student participation (Bitner, Faranda et al. 1997) are conceptualised through four different constructs i.e. Class Participation (Fassinger 1995), Academic Involvement (Astin 1999), Student Socialisation (Bogler and Somech 2002) and Institutional Socialisation (Kelley, Skinner et al. 1992). The latter two constructs stem from customer participation literature (Bitner, Faranda et al. 1997). All these concepts and constructs highlight the contribution of students in their own learning and satisfaction (Bitner, Faranda et al. 1997; Ramsden 2008; Trowler 2010).

Engaging students academically and in the classroom as well as in non-academic activities positively influences student satisfaction (Astin 1975; Astin 1984; Tinto 1993). There is strong link between students engaging in their academic activities and their performance and satisfaction (Ertl, Hayward et al. 2008).

The second EFA containing student future intentions (5 items) and overall satisfaction (2 items) was carried out. One item from Student Future Intentions was dropped due to low factor loading and cross-loading. The final list of all items with coding is presented below:

Student Learning Experience

- Teaching & Learning – TL (6 Items)
  - TL1 Teaching staff were knowledgeable about what they were teaching.
  - TL2 Staff have made the subject interesting.
  - TL3 I am satisfied with the quality of teaching.
  - TL4 Teaching staff were enthusiastic about what they were teaching.
  - TL5 I am satisfied with the quality of lecture notes and handouts.
  - TL6 The modules were intellectually stimulating.

- Assessment & Feedback – AF (4 Items)
  - AF1 The feedback was useful.
  - AF2 Feedback was clear and easy to understand.
  - AF3 I have been able to apply feedback to subsequent assignments.
  - AF4 Marking was fair.

- Learning Environment – LE (4 Items)
  - LE1 Student workload was appropriate.
  - LE2 The number of teaching hours I have received has met my expectation.
  - LE3 Class size was appropriate.
  - LE4 I am satisfied with the way the timetable was arranged.

- Learning Resources – LR (3 Items)
  - LR1 The email service was very effective.
  - LR2 Brookes virtual was very effective.
  - LR3 Personal Information Portal (PIP) was very effective.

Student Engagement and Student Participation

- Class Participation – CP (3 Items)
  - CP1 In a typical class, I offer my comments and raise questions more than my peers.
  - CP2 In a typical class, I contribute more to the class relative to my peers.
  - CP3 In a typical class, I am willing to volunteer more than my peers.

- Academic Involvement – AI (3 Items)
  - AI1 I know I have good study habits.
  - AI2 I give appropriate time to my studies.
  - AI3 I work hard for my studies.

- Institutional Socialisation – IS (4 Items)
    IS1   I understand student-related policies at Brookes.
    IS2   I understand the values that are important to Brookes.
    IS3   I get along well with Brookes teaching and administration staff.
    IS4   I feel comfortable studying at Brookes.

- Student Socialisation – SS (2 Items)
    SS1   I am involved with the Student Union at Brookes.
    SS2   I actively take part in social activities at Brookes.

Student Future Intentions & Overall Satisfaction

- Referrals – R (2 Items)
    Ref1 I will recommend my course to anyone interested.
    Rer2 I will recommend my course to my friends/relatives.

- Alumni Donations – AD (2 Items)
    Alu1 Once I am into a job after my degree I intend to make at least one donation to Brookes Alumni.
    Alu2 Once I am into a job after my degree I intend to make multiple donations to Brookes Alumni.

- Overall Satisfaction – OS (2 Items)
    OS1 I am satisfied with my decision to come and study at Brookes.
    OS2 I am satisfied with my course

a)   Student Learning Experience

The EFA for Student Learning Experience generated four constructs comprised of 18 items. Seven items were excluded from the list due to factor loading lower than 0.32, cross-loading and low correlations with other variables. One item exploring timetable arrangements appears to show close association with Learning Environment construct as opposed to the Teaching & Learning construct as previously thought.

The Kaiser-Myer-Olkin measure of sampling adequacy and Bartlett's test of Sphericity values are above 0.5 level and significant (p-value <0.05) respectively. Scree plot was also evaluated to determine the number of

constructs. The examination of scree plot indicated the presence of four clearly

grouped constructs.

Table 11 – Construct & Items – Student Learning Experience, Student Engagement & Student Participation

Items	Teaching & Learning	Assessment & Feedback	Learning Environment	Learning Resources	Class Participation	Academic Engagement	Student Socialisation	Institutional Socialisation
TL-1	.844							
TL-2	.838							
TL-3	.769							
TL-4	.712							
TL-5	.605							
TL-6	.593							
AF-1		.941						
AF-2		.787						
AF-3		.745						
AF-4		.362						
LE-1			.610					
LE-2			.596					
LE-3			.572					
LE-4			.421					
LR-1				.724				
LR-2				.640				
LR-3				.434				
CP-1					.930			
CP-2					.898			
CP-3					.872			
AI-1						.884		
AI-2						.830		
AI-3						.681		
SS-1							.603	
SS-2							.541	
IS-1								.896
IS-2								.735
IS-3								.586
IS-4								.522
Cronbach's Alpha	0.869	0.823	0.645	0.730	0.932	0.862	0.518	0.812

The construct reliability (Cronbach's alpha) values for all constructs are calculated to be above the recommended threshold of 0.7 with the exception of Learning Environment construct which is 0.649.

It is important to note here that a few items in Assessment & Feedback, Learning Environment and Learning Resources produce factor loading below 0.5, however, slightly below that prescribed by Hair, Black et al. (2006), however, as Costello and Osborne (2005) emphasised, factor loading above 0.3, multiple items and no cross-loading are the best fit for EFA. In addition, class timetable, originally included in the Teaching & Learning, actually appear to belong to the Learning Environment construct in line with EFA results (Table 11).

b)   Student Engagement and Student Participation

The Exploratory Factor Analysis (EFA) brought together four constructs pertaining to the contribution of students in their own learning and satisfaction. A total of 14 items were put together under four constructs i.e. Class Participation (3 items), Academic Involvement (4 items), Student Socialisation (4 items) and Institutional Socialisation (3 items). Only one item from Institutional Socialisation constructs was excluded due to low factor loading i.e. below .32. All items under respective constructs appear to show quite high factor loading expect one item under Institutional Socialisation i.e. .46.

The Kaiser-Myer-Olkin measure of sampling adequacy value is reported to be 0.772 while Bartlett's test of sphericity is significant (p-value <0.05). Scree plot clearly indicates the extraction of four constructs. In addition, the

Cronbach's alpha for construct reliability appears to show quite encouraging values i.e. > 0.8 except for Institutional Socialisation. Overall, the Student Socialisation construct came out as the weakest construct, while the other three constructs with good factor loading and construct reliability could be considered as good, valid and reliable measures to assess these constructs (Table 11).

c)   Future Intentions and Overall Satisfaction

A total of five items were included to gauge students' future intentions in terms of their behaviour towards referral by recommending their course and university to other students as well as their role and future contribution in Alumni support and donations.

Table 12 – Constructs and Items – Future Intentions & Overall Satisfaction

Items	Alumni Donations	Student Referrals	Overall Satisfaction
ALU1 – Once I am into a job after my degree I intend to make at least one donation to Alumni.	.925		
ALU2 – Once I am into a job after my degree I intend to make multiple donations to Alumni.	.919		
OS1-UNI – I am satisfied with my decision to come and study at Brookes.		.832	
OS2-Course – I am satisfied with my course.		.745	
Ref1 – I will recommend my course to anyone interested.			.925
Ref2 – I will recommend my course to my friends/relatives.			.825
Cronbach's Alpha	.921	.949	.841

Thus, there are two constructs i.e. Student Referrals and Alumni Donations identified by the exploratory factor analysis (EFA). Both of these constructs explain more than 84 percent of the variance. The factor loading for both constructs is quite high while Cronbach's alpha for both constructs is above 0.7 indicating very high degree of construct reliability. The Kaiser-Myer-Olkin (KMO) value is .670 while Bartlett's test of sphericity is significant at p-value 0.05.

Two items were used to evaluate students' overall satisfaction i.e. overall satisfaction with course and overall satisfaction with the university. The Cronbach's alpha for both of these items is 0.841 indicating reliable measures for evaluating Overall Satisfaction as shown in Table 12.

5.3 Cross-Sectional Data Analysis

The exploratory factor analysis (EFA) in the preceding section highlights the link between observed variables and their latent structure. The confirmatory factor analysis (CFA) is used when a link of an underlying latent structure and observed variable is established through knowledge based on theory and empirical research (Byrne 2010). The roots for both exploratory factor analysis (EFA) and CFA can be traced back to the common factor theory stipulating that each observed measure is linearly associated with one or more common factors and one unique factor (Thurstone 1948). CFA is considered as part of the SEM family which is used to specifically explore relationships between observed and latent variables (Brown 2006).

SEM "is a statistical methodology that takes a confirmatory (i.e., hypothesis-testing) approach to the analysis of structural theory bearing on some phenomenon" (Byrne 2010, p.3). For this thesis, SEM is considered due to its relevance and usefulness in testing hypotheses.

5.3.1 CFA and SEM Evaluation Criteria

As mentioned earlier, CFA is part of SEM, thus the evaluation criteria outlined in this section will apply to both CFA as well as SEM i.e. both measurement and structural model.

a) Sample Size

Although SEM is considered to be a large sample technique assuming that large sample support increased chances of achieving multivariate normality, however, these assumptions on required size are not valid any more due to recent development and advances in SEM (Nevitt and Hancock 2004; Hair, Black et al. 2010; Kline 2011; Little 2013). In addition, there are limitations to achieve large sample size in social and behavioural sciences which have always been difficult to achieve, particularly in longitudinal studies.

Thus, issues around sample size have to be compensated using more robust methods and statistical techniques such as maximum likelihood robust (MLR) estimation techniques considered suitable non-normal data. With reference to cross-sectional sample, a sample size between 100 and 200 is suggested to be suitable for CFA and SEM along with other factors taking into consideration reliability of measured variables and factors, no or insignificant missing data and estimation technique employed (Anderson and Gerbing 1988; Hoyle 1995;

Tabachnick and Fidell 2001; Muthén and Muthén 2002; Hair, Black et al. 2010; Bagozzi and Yi 2012; Loehlin 2012).

In addition, a large longitudinal sample is also difficult to achieve. The issue of longitudinal sample size coincides with the number of time points in a longitudinal study using SEM latent growth curve model. Some authors suggest a minimum sample size of normally distributed, 100 cases (Anderson and Gerbing 1988; Hu and Bentler 1999). Furthermore, at least three time points are required for an SEM growth curve model. However, subsequent studies suggest that with more than three time points a minimum sample size between 50 and 75 is needed (Fan and Fan 2005; Newsom 2015).

In addition to the sample size, a number of other parameters are taken into considered including estimation methods, estimates of measured and latent variables and goodness to fit indices that are discussed in the next sections.

b) Estimation Technique

The solution for measurement and structural models can be generated using various available estimation techniques based on characteristics of measures variables as well as on model misspecification, sample size and non-normality. Other available estimation techniques are: ordinary least square (OLS) weighted least squares (WLS), generalised least squares (GLS) and asymptotically distribution frees (ADF). The two estimation techniques i.e. WLS and ADF, although working well with non-normal data, require very large sample size (Olsson, Foss et al. 2000; Hair, Black et al. 2010). In particular, ADF's performance is poor when the sample is less than 1000, in

fact suggested sample size to employ ADF is 1000 to 5000 (West, Finch et al. 1995; Byrne 2010).

However, maximum likelihood (ML) estimation is a widely used technique and has been found quite robust to the violation of normality (Anderson and Gerbing 1984; Muthén and Kaplan 1985; Chou, Bentler et al. 1991; Hu, Bentler et al. 1992; Hoyle 1995; Browne 2008; Hair, Black et al. 2010; Muthén and Kaplan 2011). Stimulation studies show that maximum likelihood (ML) performs better and appears to be more insensitive of model misspecification, sample size and non-normality as compared other estimation techniques such as GLS, WLS and ADF (Olsson, Foss et al. 2000).

To overcome the issues around selecting estimation technique, authors suggest that it will be "more appropriate to correct the test statistic, rather than use of different mode of estimation" such as ADF that requires a large sample (Chou, Bentler et al. 1991; Hu, Bentler et al. 1992). One such statistic is called Satorra-Bentler $\chi2$ (S-B $\chi2$) (Satorra and Bentler 2001) which "incorporates a scaling correction for the $\chi2$ statistic" (Byrne 2010, p.105).

The Satorra-Bentler scaled $\chi2$, however, has repeatedly been shown to work fairly well relative to the ML and ADF $\chi2$ across various levels of non-normality and sample size (Chou, Bentler et al. 1991; Hu, Bentler et al. 1992; Curran, West et al. 1996; Hoyle 2014). In addition to $\chi2$, the correction is also applied to the fit indices such as CFI, TLI and RMSEA as well as standard errors (Satorra and Bentler 2001). It is widely reported that "Satorra-Bentler

robust method works very well with smaller sample sizes" as well as with multivariate data exhibiting non-normality (Byrne 2010, p.105).

Thus, it was decided to employ maximum likelihood (ML) estimation technique with added Satorra-Bentler $\chi2$ scaled corrections, also called robust maximum likelihood (Robust ML) estimation technique.

c) Construct Validity

In order to determine the adequacy of the measurement model before it put to the test to evaluate structural relationships, it is important to assess construct validity. The construct validity broadly refers to measurement model while carrying out CFA and is crucial in assessing validity and plausibility of measurement model.

The construct validity can be tested using convergent validity, discriminant validity, nomological validity and content or face validity (Hair, Black et al. 2010). The convergent validity can be tested through evaluating factor loading estimates that should be at least 0.5 but ideally 0.7 or greater (Bagozzi 1994; Hair, Black et al. 2010; Bagozzi and Yi 2012) as well as Cronbach's alpha coefficient of 0.6 or greater for internal consistency (Cronbach 1951; Gliem and Gliem 2003; Nicolaou 2007).

The discriminant validity assesses distinctiveness of constructs to see if each construct is measuring different phenomena by looking at whether there is an extremely high correlation (e.g. > 0.9) among constructs (Fornell and Larcker 1981; Brown 2006; Kline 2011). If correlations among constructs make sense,

it confirms nomological validity while face validity is tested prior to theoretical testing of a measurement model (Brown 2006; Hair, Black et al. 2010; Kline 2011).

d) Assessing Model Specification

Before an acceptable level of goodness-of-fit (GOF) indices is discussed, it is useful to outline two additional pieces of information indicating any misspecification in the model. Firstly, the differences between observed and estimated covariance terms called standardised residuals and, secondly, modification indices calculated for every possible relationship but not estimated in the model (Hair, Black et al. 2010).

The suggested values for standardised residues less than or equal to 2.58 is good (Jöreskog and Sörbom 1993; Byrne 2010), values between 2.5 and 4.0 are acceptable but should be looked at while anything greater than 4.0 suggest problems and requires close attention (Hair, Black et al. 2010). The modification indices valued at 4.0 and greater point out possibilities of improvement in model fit (Hair, Black et al. 2010).

e) Model Fit Indices

In addition to construct validity, determining acceptable level of goodness-of-fit (GOF) indices is a logical step. The estimates provide several indices indicating how sample data best corresponds with hypothesised model. There are three types of goodness-of-fit (GOF) indices outlined in the SEM literature i.e. absolute fit indices, incremental fit indices and parsimony fit indices.

The <u>absolute fit indices</u> are direct measures and do not compare GOF values of specified model with any other model while <u>incremental fit indices</u> compare estimated model with some alternative model. The <u>parsimony fit indices</u> provide details on various competing models (Hair, Black et al. 2010).

The values for absolute fit indices directly measure if researcher theoretical model fits well with sample data (Hair, Black et al. 2010). Chi-square ($\chi 2$) statistic is the most basic absolute fit index that evaluates measurement and structural models. However, $\chi 2$ is not the only absolute fit index and is not used as the only GOF measure (Hair, Black et al. 2010). There are other absolute fit indices proposed such as goodness of fit index – GF) (Jöreskog and Sörbom 1982) and mean square error of approximation – RMSEA (Steiger 1990) which takes model complexity and sample size into account. GFI ranges from 0 – 1 where values greater than .90 indicates a good model fit (Hoyle 2000) while RMSEA value of 0.05 or less indicates a good fit, 0.08 indicates a marginal fit while 0.10 indicates a poor fit (Browne and Cudeck 1992; Hair, Black et al. 2010).

RMSEA is also reported to be an index that should be routinely used for three reasons (MacCallum and Austin 2000). Firstly, its sensitive nature towards model misspecification, secondly, RMSEA is supportive towards drawing conclusions on model quality and thirdly, RMSEA estimates provide confidence interview around values (Hu and Bentler 1998; Hu and Bentler 1999; Byrne 2010).

In addition, root mean square residual (RMR) and standardised root mean residual (SRMR) are also considered as absolute fit indices. RMR is the square the average value of the residuals while SRMR is the average standardised residual value. The lower values for both RMR and SRMR are indicative of better model fit. Hair, Black et al. (2010) prescribe SRMR value of < 0.1 for a better fit model.

There are several incremental fit indices such as Normed Fit Index (NFI), Tuker-Lewis index (TLI), Comparative Fit Index (CFI), and relative noncentrality index (RNI). Among these incremental fit indices, CFI and TLI are widely used. CFI is a widely used index exhibiting insensitivity to the model complexity and is an improved version of NFI (Horn and McArdle 1992; Bollen and Ting 2000; Bollen 2002; Hair, Black et al. 2010). CFI values above .90 indicate a good model fit.

The most common parsimony fit indices are adjusted goodness of fit index (AGFI) and parsimony normed fit index (PNFI). Both of these indices favour less complex model and are not commonly used (Hair, Black et al. 2010). Some authors have advised against using some fit indices, particularly GFI, AGFI, NFI and rho 1 (Bentler and Bonett 1980; Bollen 1986; Hu and Bentler 1998).

f) Cut-off Values

Hair, Black et al. (2010) recommend using a combination of three to four fit indices to assess the model as there is not a single GOF that could provide conclusive information on model fit. It is reported by authors that despite

shortcomings of χ2, it should be reported with degree of freedom and significance level (Byrne 2010; Hair, Black et al. 2010; Kline 2011). In addition, the most commonly used GOF indices selected on the overall performance are RMSEA, SRMR, CFI and TLI (Hu and Bentler 1998; Hu and Bentler 1999; Brown 2006; Hair, Black et al. 2010).

A matrix of the cut off values suggested by Hair, Black et al. (2010) for different fit indices demonstrating goodness-of-fit (GOF) across different model situations was presented in Chapter 4 – Methodology. The matrix provides useful information about the cut-off values for goodness-of-fit (GOF) indices to be used.

Using the guidelines from the matrix provided by Hair, Black et al. (2010) as well as considering the sample size (N<250) and number of observed variables (>30), it can be said with some confidence that a χ2 with significant p-values can be expected, CFI or TLI estimate above 0.92, SRMR less than .09 and RMSEA value <0.08 are appropriate GOF estimates for an acceptable model. However, Byrne (2010) RMSEA value as <0.05 indicating good fit with pclose <0.05 (Jöreskog and Sörbom 1993; Jöreskog and Sörbom 1996). In addition, it will be useful to apply Satorra-Bentler robust corrections on χ2. For SRMR suggested threshold from other authors is < 0.08 (Hu and Bentler 1999; Kline 2011).

5.3.2 CFA Results

All items and constructs, both dependent and independent, were put together for a CFA to produce a measurement model. Two computer programmes i.e. IBM AMOS ver.21.0 and EQS ver. 6.3 were used to generate estimates. The IBM AMOS is capable of generating estimates as well as a better visual representation of items and factors/constructs along with all required estimates. However, IBM AMOS does not provide estimates for maximum likelihood robust (MLR) estimation technique. For this purpose, EQS was also used as it provides robust estimations, Satorra-Bentler (S-B) scaled $\chi2$ as well as corrected standard errors and other goodness-of-fit (GOF) indices i.e. CFI, RMSEA.

The cross-sectional sample size of 147 was used for the analysis. It is in line with suggested required sample size (i.e. 100 to 200) (Hoyle 1995; Tabachnick and Fidell 2001; Muthén and Muthén 2002; Hair, Black et al. 2010; Bagozzi and Yi 2012; Loehlin 2012). In order to deal with non-normality, maximum likelihood robust (MLR) estimation technique was employed. This technique helps produce Satorra-Bentler (S-B) scaled corrected estimates for $\chi2$, standard errors and goodness-of-fit indices as well as its robustness in dealing with non-normality and smaller sample size (Chou, Bentler et al. 1991; Hu, Bentler et al. 1992; Curran, West et al. 1996; Hoyle 2014). The measurement model is presented in Figure 2.

Figure 2 – Confirmatory Factor Analysis (CFA) – Measurement Model
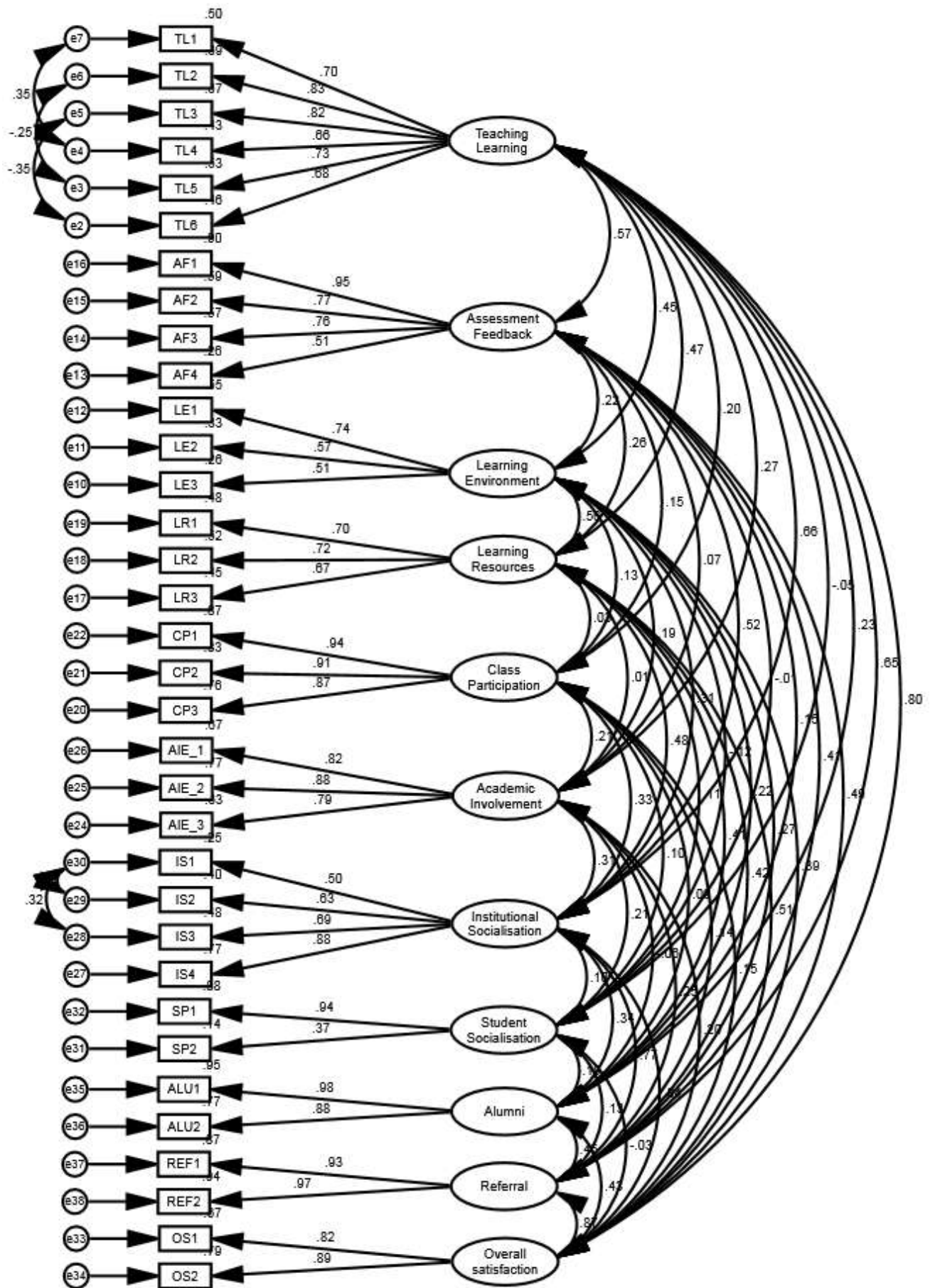
To ensure that the items and factors are valid, construct validity for the measurement model was tested using convergent validity and discriminant validity. The convergent validity was tested against the criteria suggested by many authors i.e. factor loading ≥0.5, Cronbach's alpha coefficient ≥0.6 and average variance extracted ≥ 0.5 (Cronbach 1951; Bagozzi 1994; Gliem and Gliem 2003; Nicolaou 2007; Hair, Black et al. 2010; Bagozzi and Yi 2012). In addition, measurement model was also tested for Common Method Bias (CMB) posing issues due to unexplained shared variance (Podsakoff, MacKenzie et al. 2003; Meade, Watson et al. 2007). Only one observed variable in the Teaching & Learning (i.e. TL3 Quality of Teaching) construct appeared to show a high CMB value while all other observed variable appeared to have very low CMB, very low (under 2%) indicating most of the variance among latent variables is explained by observed variables.

CFA results show (Table 13) that only two items have less than 0.5 factor loading values i.e. LE4 under Learning Environment (0.457) and SP2 under Student Socialisation (0.39) while one i.e. IS1 under Institutional Socialisation (0.498) is very close to 0.5. However, values for Cronbach's alpha for these two factors are in line with the recommended threshold of 0.6 i.e. 0.654 (Learning Environment) and 0.776 (Institutional Socialisation). The average variance extracted (AVE) value for three other factors i.e. Institutional Socialisation, learning resources and student socialisation are close to 0.5 (i.e. 0.475, 0.485 and 0.480 respectively), however, AVE value is far lower than the recommended 0.5 for Learning Environment (i.e. 0.327) showing low convergent validity.

Table 13 – Confirmatory Factor Analysis – Construct Reliability

Constructs/ Items	Standardised Estimate	Composite (Construct) Reliability (CR)	Average Variance Extracted (AVE)	Cronbach's Alpha
Teaching & Learning		**0.878**	**0.547**	**0.869**
TL1	0.705			
TL2	0.831			
TL3	0.820			
TL4	0.656			
TL5	0.730			
TL6	0.676			
Assessment & Feedback		**0.840**	**0.579**	**0.823**
AF1	0.947			
AF2	0.765			
AF3	0.757			
AF4	0.510			
Learning Environment		**0.642**	**0.380**	**0.645**
LE1	0.744			
LE2	0.573			
LE3	0.509			
Learning Resources		**0.738**	**0.484**	**0.730**
LR1	0.696			
LR2	0.724			
LR3	0.667			
Academic Involvement		**0.870**	**0.691**	**0.862**
AI1	0.817			
AI2	0.880			
AI3	0.795			
Student Socialisation		**0.615**	**0.480**	**0.812**
SS1	0.937			
SS2	0.375			
Class Participation		**0.932**	**0.821**	**0.932**
CP1	0.935			
CP2	0.912			
CP3	0.870			
Institutional Socialisation		**0.776**	**0.474**	**0.518**
IS1	0.497			
IS2	0.633			
IS3	0.693			
IS4	0.877			
Alumni Donations		**0.925**	**0.861**	**0.921**
ALU1	0.977			
ALU2	0.876			
Referrals / Word-of-mouth		**0.949**	**0.903**	**0.949**
REF1	0.931			
REF2	0.969			
Overall Satisfaction		**0.843**	**0.729**	**0.841**
OS1	0.816			
OS2	0.890			

In addition, the discriminant validity was assessed for extremely high correlation (e.g. > 0.9) among constructs (Fornell and Larcker 1981; Brown 2006; Kline 2011). However, Hair, Black et al. (2010) argue that assessing high correlation does not provide solid indication of discriminant validity. Cohen, Cohen et al. (2013) prescribe comparing average variance extracted (AVE) with the square of the correction between two constructs to attain a more robust evidence for discriminant validity.

The two factors/constructs with low convergent validity also exhibit lower discriminant validity with lower average variance extracted (AVE) values with the absolute value of correction with another factor.

In order to ensure correct model specification, standardised residual matrix was examined. All values were found to be lower than prescribed <2.58 thresholds. Post-hoc analyses also showed goodness-of-fit summary and modification indices suggesting drawing covariance between error terms in two factors i.e. Teaching & Learning and Institutional Socialisation. The goodness-of-fit indices show (Table 14) a well-fitted measurement model i.e. significant $\chi 2$ value of 647.084 with 467 degree of freedom, CFI=0.942 (cut-off value >0.92), RMSEA=0.049 (cut-off value <0.05) (with 90% confidence interval 0.039 – 0.058), Standardised RMR=0.061 (cut-off value <0.8). All values appear to be within suggested range.

Table 14 – Confirmatory Factor Analysis – Model Fit Indices

	ML	MLR (S-B scaled corrected)
χ^2	630.979 (p= .000)*	547.835 (p= .007)*
Degree of Freedom	467	467
Comparative Fit Index (CFI)	0.942	0.958
Root Mean Square Error of Approximation (RMSEA)	0.049	0.034
90% CI of RMSEA	(0.039 – 0.058)	(0.020 – 0.046)
Standardised Root Mean Square Residual (SRMR)	0.060	0.060

* 95% confidence Interval

In addition, when the Satorra-Bentler (S-B) scaled correction was applied, the goodness-of-fit summary provided more robust estimations i.e. χ^2 value of 547.835 with 467 degree of freedom, χ^2 probability value 0.007, CFI=0.958, RMSEA=0.034 (with 90% confidence interval 0.020 – 0.046) and Standardised RMR=0.060 (<0.8). The S-B scaled values provided better results indicating a well-fitting measurement model. Even 90% confidence interval value for RMSEA is within the boundary of <0.5 for a good fit model as shown in Table 14.

The difference between ML χ^2 value and MLR i.e. S-B scaled χ^2 value is significant i.e. approximately 83 indicating the extent of non-normality in the data. S-B corrections were also applied on the standard errors, however after applying corrected standard errors the critical ratio (t-value) for all items is significant (Table 15).

Table 15 – Confirmatory Factor Analysis - Estimates

	Unstandardized Estimate	S.E.	C.R or (t-value)	S-B Scaled S.E	S-B Scaled C.R.	P	Standardised Estimate
Teaching & Learning (TL)							
TL1	1.000						0.705
TL2	1.171	0.125	9.388	0.154	7.58	***	0.831
TL3	1.345	0.145	9.273	0.229	5.88	***	0.820
TL4	0.863	0.092	9.376	0.103	8.37	***	0.656
TL5	1.315	0.159	8.258	0.200	6.59	***	0.730
TL6	1.035	0.135	7.652	0.166	6.24	***	0.676
Assessment & Feedback (AF)							
AF1	1.000						0.947
AF2	0.836	0.074	11.344	0.073	11.52	***	0.765
AF3	0.873	0.078	11.166	0.081	10.81	***	0.757
AF4	0.579	0.088	6.546	0.092	6.30	***	0.510
Assessment & Feedback (LE)							
LE1	1.000						0.744
LE2	0.907	0.181	5.013	0.167	5.42	***	0.573
LE3	0.702	0.151	4.647	0.132	5.31	***	0.509
Assessment & Feedback (LR)							
LR1	1.000						0.696
LR2	1.425	0.210	6.777	0.241	5.92	***	0.724
LR3	1.201	0.186	6.453	0.227	5.28	***	0.667
Academic Involvement (AI)							
AI1	1.000						0.817
AI2	0.927	0.083	11.137	0.080	11.64	***	0.880
AI3	0.732	0.071	10.322	0.094	7.80	***	0.795
Student Socialisation (SS)							
SS1	1.000						0.937
SS2	0.367	0.183	2.002	0.173	2.17	**	0.375
Class Participation (CP)							
CP1	1.000						0.935
CP2	0.935	0.052	17.978	0.045	20.65	***	0.912
CP3	0.905	0.056	16.231	0.052	17.31	***	0.870
Institutional Socialisation (IS)							
IS1	1.000						0.497
IS2	1.339	0.195	6.871	0.186	7.20	***	0.633
IS3	0.989	0.152	6.497	0.177	5.58	***	0.693
IS4	1.294	0.214	6.037	0.221	5.86	***	0.877
Alumni Donations (ALU)							
ALU1	1.000						0.977
ALU2	0.833	0.074	11.229	0.068	12.32	***	0.876
Referrals / Word-of-mouth (REF)							
REF1	1.000						0.931
REF2	1.043	0.047	21.970	0.037	28.38	***	0.969
Overall Satisfaction (OS)							
OS1	1.000						0.816
OS2	1.024	0.079	12.904	0.091	11.20	***	0.890

*** Significant Level <0.001 ** Significance level <0.05

S-B = Satorra-Bentler scaled estimates

5.4 The Proposed Theoretical Model

In this section, a proposed theoretical model based on the literature review (Chapter 2) and conceptual framework (Chapter 4) is presented and empirically tested. The proposed model posits that student satisfaction in higher education is a multi-dimensional concept based not only on aspects of student learning experience but also influenced by the role of the student in terms of engagement and participation.

The proposed model brings together eleven constructs i.e. four constructs associated with the student learning experience, two constructs of student engagement, two constructs of student participation and four constructs of consequences/outcomes including Overall Satisfaction, future intentions – Student Referrals and Alumni Donations. In addition, Student Achievements (grades) are also included in the hypothesised model. An illustration of all constructs and final items selected is presented in section 5.2.2.

The proposed theoretical model brings together antecedents and consequences of student satisfaction in higher education. The antecedents include the student learning experience, student engagement and student participation, while consequences include future intentions in terms of making referrals to others and those involved in alumni activities. These antecedents and consequences of student satisfaction are mediated through core aspects of Teaching & Learning and Institutional Socialisation.

The aspects of Teaching & Learning are the largest determinants of student satisfaction (Hounsell, Tait et al. 1997; Chen and Hughes 2004; El Ansari and Oskrochi 2004; Remedios and Lieberman 2008). The aspects of Institutional Socialisation are also crucial in influencing students' quality of efforts and performance, managing their expectation and informing them about required behaviour to ensure participation (Dubinsky, Howell et al. 1986; Kelley, Skinner et al. 1990; Tinto 1993; Bogler and Somech 2002).

Thus, the proposed model is empirically tested for its usefulness and plausibility. It provides an opportunity to empirically evaluate the direct and indirect effects as well as direction and strength of these effects and relationships of various aspects of the student learning experience, student engagement and student participation. Each relationship is translated into a theoretical proposition and made into a hypothesis to be tested. In Chapter 3 (Conceptual Framework), several hypothesise were derived based on literature review and theoretical knowledge.

The proposed model is tested applying the similar evaluation criteria used for CFA and outlined in section 5.3.2. The model is hypothesised and based on 45 theoretical propositions to explore 19 direct and 26 indirect relationships of eleven constructs and a single observed variable of Academic Performance (grades).

a)   Direct relationships

In total, 19 direct theoretical propositions are tested to evaluate relationships among latent constructs. These propositions are derived with theoretical support as presented in Chapter 3 – Conceptual Framework and are listed below as hypothesises.

- Teaching & Learning is directly associated with:
  - $H_{1.1}$ Overall Satisfaction
  - $H_{1.2}$ Institutional Socialisation
  - $H_{1.3}$ Academic Performance (grades)

- Learning Environment is directly associated with:
  - H_2 Assessment & Feedback

- Assessment & Feedback is directly associated with:
  - $H_{3.1}$ Teaching & Learning
  - $H_{3.2}$ Academic Performance (grades)

- Learning Resources construct is directly associated with:
  - $H_{4.1}$ Teaching & Learning
  - $H_{4.2}$ Learning Environment

- Class Participation has a direct relationship with:
  - $H_{5.1}$ Teaching & Learning
  - $H_{5.2}$ Academic Performance
  - $H_{5.3}$ Academic Involvement

- Academic Involvement has a direct relationship with:
  - $H_{6.1}$ Teaching & learning
  - $H_{6.2}$ Academic Performance

- Student Socialisation is directly associated with:
  - $H_{7.1}$ Overall Satisfaction
  - $H_{7.2}$ Institutional Socialisation

- Institutional Socialisation is directly associated with:
  - H_8 Overall Satisfaction

- Overall Satisfaction is directly associated with:
  - $H_{9.1}$ Academic Performance
  - $H_{9.2}$ Student Referrals
  - $H_{9.3}$ Alumni Donations

Figure 3 – Proposed Theoretical Model – Direct Relationships
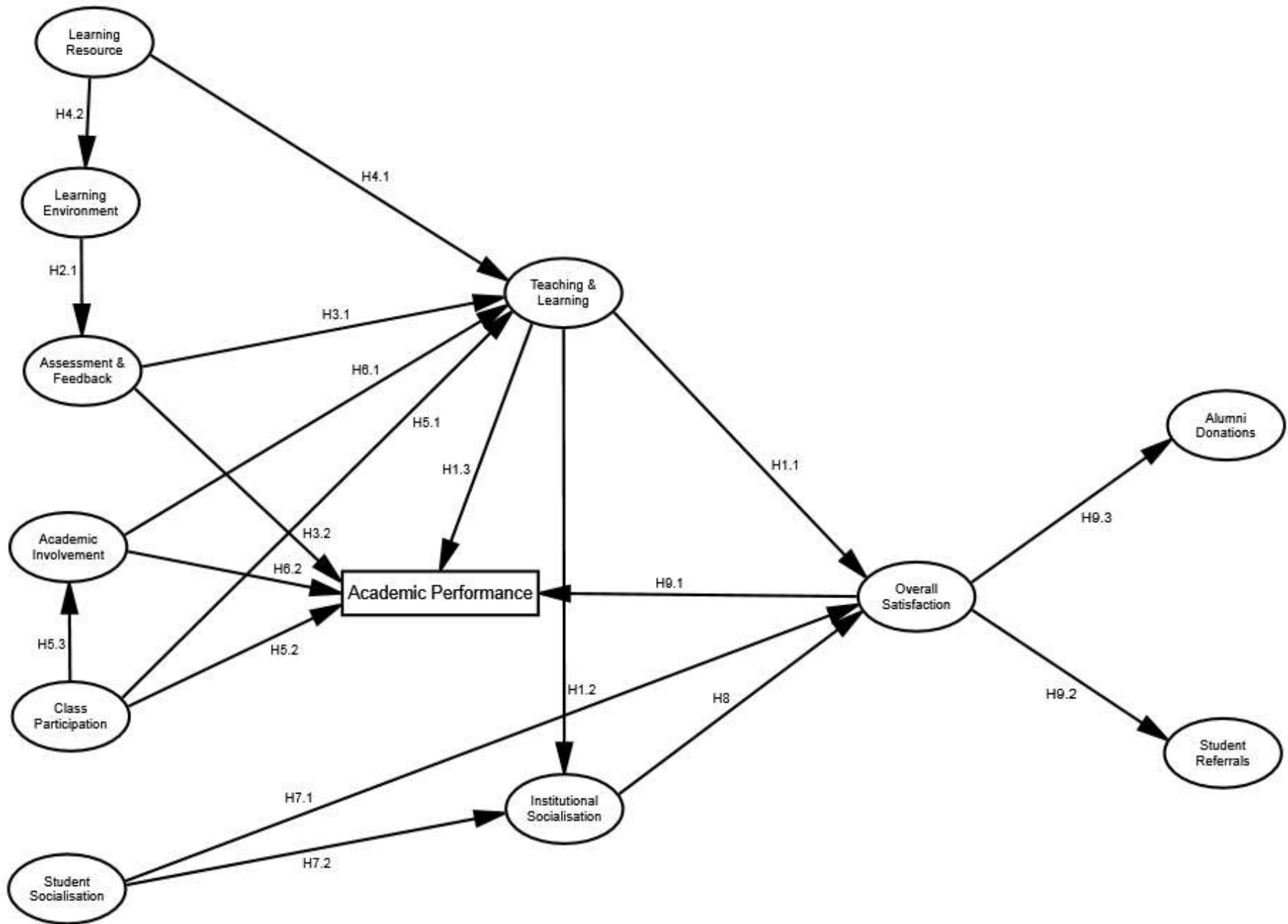
b) Indirect relationships

The conceptual framework (Chapter 3) identified indirect relationships among latent factors/constructs. These indirect relationships are outlined below:

- Teaching & Learning has indirect relationships with:
  $H_{10.1}$ Student Referrals
  $H_{10.2}$ Alumni Donations

- Learning Environment is indirectly associated with:
  $H_{11.1}$ Overall Satisfaction
  $H_{11.2}$ Academic Performance
  $H_{11.3}$ Student Referrals
  $H_{11.4}$ Alumni Donations

- Assessment & Feedback is indirectly associated with:
  $H_{12.1}$ Overall Satisfaction
  $H_{12.2}$ Student Referrals
  $H_{12.3}$ Alumni Donations

- Learning Resources construct is indirectly associated with:
  $H_{13.1}$ Overall Satisfaction
  $H_{13.2}$ Assessment & Feedback
  $H_{13.3}$ Academic Performance
  $H_{13.4}$ Student Referrals
  $H_{13.5}$ Alumni Donations
  $H_{13.6}$ Institutional Socialisation

- Class participation has an indirect relationship with:
  $H_{14.1}$ Overall Satisfaction
  $H_{14.2}$ Student Referrals
  $H_{14.3}$ Alumni Donations

- Academic Involvement has an indirect relationship with:
  $H_{15.1}$ Overall Satisfaction
  $H_{15.2}$ Student Referrals
  $H_{15.3}$ Alumni Donations

- Student Socialisation is indirectly associated with:
  $H_{16.1}$ Overall Satisfaction
  $H_{16.2}$ Student Referrals
  $H_{16.3}$ Alumni Donations

- Institutional Socialisation is indirectly associated with:
  $H_{17.1}$ Student Referrals
  $H_{17.2}$ Alumni Donations

5.4.1 *Results*

The hypothesised model is empirically tested to test both direct and indirect structural relationships and effects of latent variables. The proposed theoretical is hypothesised based on propositions about structural relationships in the predicted direction with theoretical support. The model is evaluated (Table 16) based on cut-off values presented in section 5.3.2.

Table 16 – Structural Equation Model – Model Fit Indices

	Proposed Theoretical Model	
	ML	**S-B Scaled**
Chi-Square ($\chi 2$)	758.76 **p-value = 0.0000**	671.66 **p-value = 0.0000**
Degree of Freedom (DF)	538	537
Comparative Fit Index (CFI)	.924	.932
Root Mean Square Error of Approximation (RMSEA)	.053	.041
90% CI of RMSEA	.044 - .062	.030 - .041
Standardised Root Mean Square Residual (SRMR)	.0824	.0824

ML=Maximum Likelihood Estimations   S-B = Satorra-Benter scaled corrections.

The goodness to fit indices for the proposed theoretical model indicates a good model fit based on the evaluation criteria with a significant chi-square value 671 with 537 degree of freedom. The Comparative Fit Index (CFI) is .932, RMSEA .041 and SRMR .0824 are all below cut-off values for a good fitted model are: 0.92 (CFI), 0.08 (RMSEA) and 0.09 (SRMR) respectively.

The parameter estimates in Figure 4 show a strong, direct, positive and significant relationship of Overall Satisfaction with Teaching & Learning and Institutional Socialisation. However, assumptions pertaining to the

relationships that Overall Satisfaction and Teaching & Learning have with Academic Performance are statistically not significant.

Overall Satisfaction is very strongly associated with Student Referrals and a little lower with Alumni Donations. Similarly, Learning Resources, Assessment & Feedback, Academic Involvement and Class Participation showed positive and statistically significant relationships. Academic Performance is only significantly associated with Assessment & Feedback and Academic Involvement & Participation. Teaching & Learning is strongly and significantly associated with Institutional Socialisation indicating that students with higher level of satisfaction with aspects of Teaching & Learning also positively participate in institutional aspects such as understanding student related policies, positive attitudes towards teaching and admin staff and feel comfortable studying at Brookes.

Figure 4 – Standardised Regression Estimates, Standard Errors & Significance – Direct Relationships (Initial Proposed Model)

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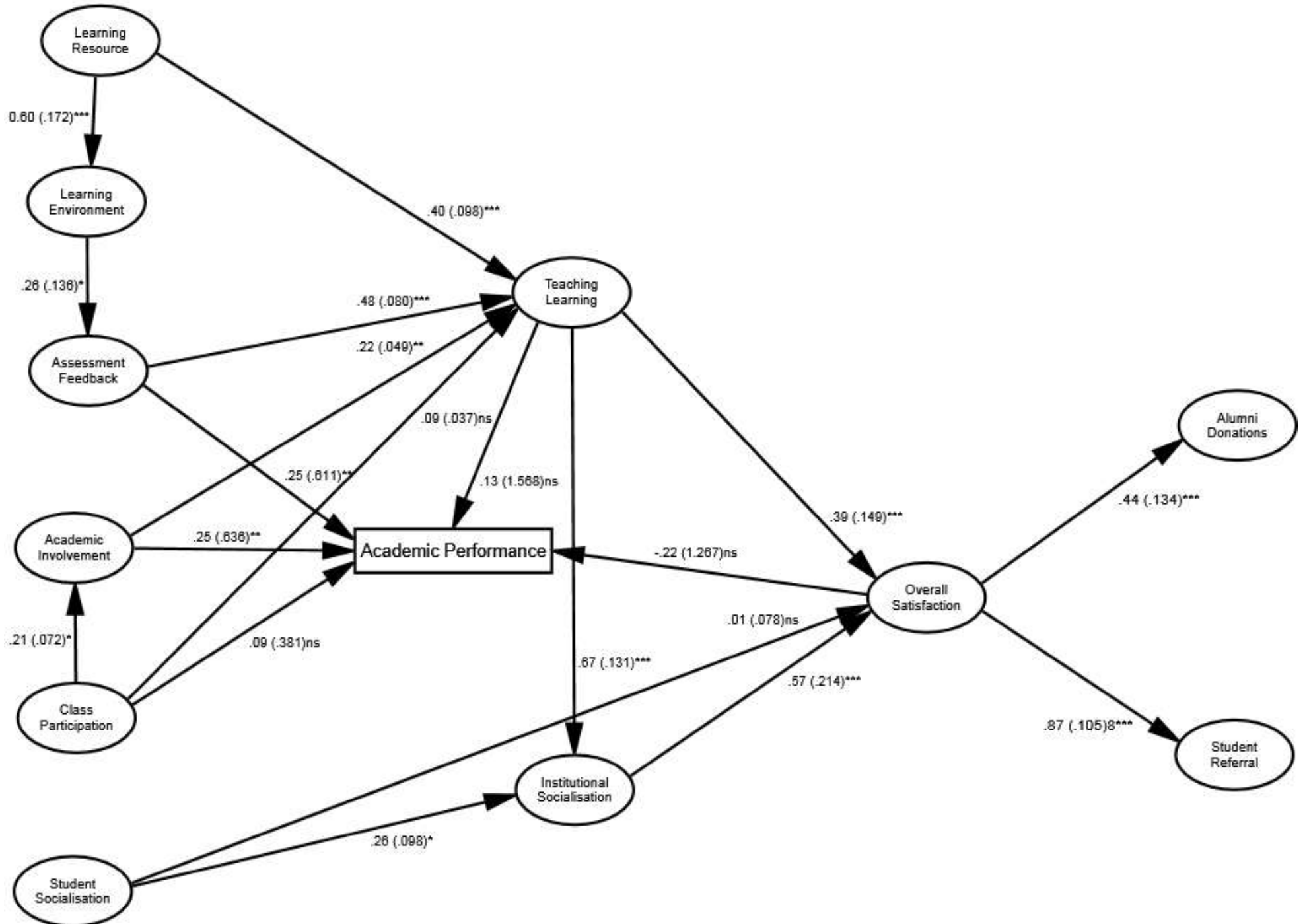
Before carrying out in-depth analysis, it is essential to see if there are opportunities to improve the proposed model. The software (AMOS) offers modification indices suggesting relationships that are statistically important but not yet realised. The changes suggested in modification indices have to be explored for theoretical justification to make sure that conceptually they make sense and contribute to the model improvement.

The modification indices suggest a negative, moderate and significant association between Alumni Donations and Academic Performance indicating that students performing well and getting good results have a lower level of commitment towards contributing to Alumni Donations in future after their graduation. This appears to be a very interesting proposition and finding suggesting that students with good grades attribute their success to themselves and are less inclined to commit to Alumni Donation in future after graduation. These students feel that by working hard they are achieving better grades and thus, they are the ones who should benefit from their future earnings. This proposition is further supported by no direct association of Teaching & Learning and Class Participation and Overall Satisfaction with Student Performance.

It is therefore decided that a slight modification in the model will not only improve its goodness to fit but also have an effect on other relationships. The modified model is evaluated for goodness to fit indices and a comparison of initial proposed model and final modified model is also presented in Table 17.

Table 17 – Model Fit Indices – Comparison of Initial Proposed Model and Final Modified Model

	Initial Proposed Model		Final Modified Model	
	ML	S-B Scaled	ML	S-B Scaled
Chi-Square - χ^2 (p-value)	758.76 (0.000)	671.66 (0.000)	741.72 (0.000)	654.045 (0.000)
Degree of Freedom (DF)	538	537	537	536
Comparative Fit Index (CFI)	.924	.932	.929	.941
Root Mean Square Error of Approximation (RMSEA)	.053	.041	.051	.039
90% CI of RMSEA	.044 - .062	.030 - .041	.042 - .069	.027 - .049
Standardised Root Mean Square Residual (SRMR)	.0824	.0824	.0765	.0765

ML=Maximum Likelihood Estimations   S-B = Satorra-Benter scaled corrections.

The matrix above (Table 17) shows a comparison of initial proposed model and final modified model. There are visible improvements of model fit indices. The Satorra-Bentler (S-B) scaled corrected chi-square value reduced from 671 to 654, CFI improved from .932 to .941, RMSEA and SRMR also present improved values. The indices suggest a well-fitted model.

Figure 5 below presents standardised regression estimates, standard errors and significations for the direct relationships calculated for the final modified model.

The results suggest that aspects of Institutional Socialisation i.e. students' understanding of values, student related policies, getting along with both academic and admin staff and feeling comfortable appear to have strongest, positive and significant association with Overall Satisfaction. Teaching &

Learning is also directly, positively and significantly associated with Overall Satisfaction. Both of these relationships indicate that one unit increase in Teaching & Learning/Institutional Socialisation will increase .39 and .57 unit increase in Overall Satisfaction respectively. In other words, increase in satisfaction with Teaching & Learning will increase Overall Satisfaction.

The results also show that Learning Resources has a strong, positive and significant relationship with Learning Environment, while Learning Environment is associated with Assessment & Feedback. It clearly shows relationships in students using Brookes Virtual, Personal Information Pages (PIP) and email services appear to have an effect on their workload, timetable, teaching hours and class size. These services provide students with an opportunity to organise and manage their time effectively as well as getting their hands on electronic resources related to their teaching, assignments etc.

Aspects of Learning Environment, Assessment & Feedback and Academic Involvement have positive and significant associations with Teaching & Learning. This clearly indicates that students happy with their class size, teaching hours, timetable and workload also have positive attitudes towards Teaching & Learning. It appears that Learning Resources aid students to organise their time effectively and interact with their learning environment and use it for their advantage towards tests and exams (Assessment & Feedback. This in turn better prepares them to contribute towards Teaching & Learning.

Figure 5 – Standardised Regression Estimates, Standard Errors & Significance – Direct Relationships (Final Modified Model)
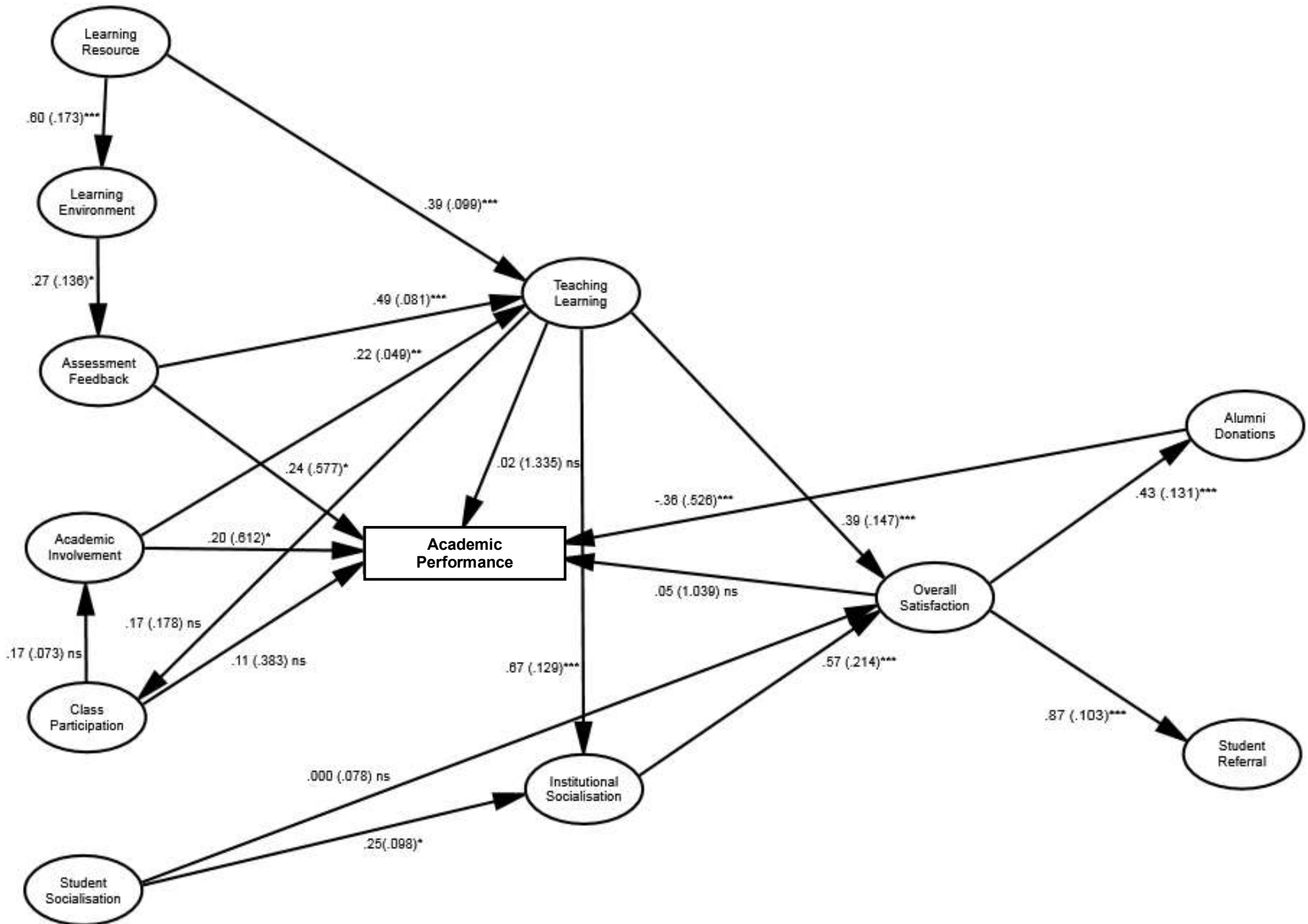
Furthermore, Assessment & Feedback, Academic Involvement have a positive relation with Student Performance. It is quite natural that students happy with the aspects of Assessment & Feedback are likely to be satisfied with their grades.

To explore the relationship further between Assessment & Feedback and Student Performance, a two-way relationship is also investigated to ascertain whether students satisfied with Assessment & Feedback achieve better results or students with better results are likely to be more satisfied with aspects of Assessment & Feedback. The results show that the association of Assessment & Feedback with Academic Performance take precedence with no relationship indicated in the other direction.

a)   Direct, Indirect and Total Effects

Bollen and Stine (1990, p. 120 & p. 129) note that "direct effects are the influences of one variable on another that are not mediated by any other variable in a model" while the "indirect effect is the effect of one variable on another that is mediated by at least one other variable in the model". The total effects are, however, the sums of both direct and indirect effect" (Bentler and Freeman 1983).

Since a number of hypotheses put to empirical tests were direct and indirect, IBM AMOS offers an effective way to generate these relationships, corrected standard errors and significance levels called bootstrapping technique. The bootstrapping technique is a resampling procedure that draws multiple subsamples randomly while considering the available sample as population

(West, Finch et al. 1995; Zhu 1997; Byrne 2010). The indirect relationships are mediated through other latent constructs, mainly Teaching & Learning and Institutional Socialisation. The bootstrap technique works well with moderate or small sample size and non-normal distribution (Efron and Tibshirani 1994; Shrout and Bolger 2002; Byrne 2010).

As advised by Byrne (2010), the bootstrap procedure was employed using AMOS with 600 bootstrap samples to get bootstrapped corrected standard errors and significance level estimates using ML estimator. The bootstrapped corrected standard errors and significance level estimates obtained in 20 iterations and replaced for all parameter estimates as presented in Table 18.

Table 18 – Final Modified Model – Direct, Indirect and Total Effects

	Student Socialisation	Learning Resources	Learning Environment	Assessment & Feedback	Class Participation	Teaching & Learning	Academic Involvement	Institutional Socialisation	Overall Satisfaction	Alumni
Overall Satisfaction										
DE	0.002ns					0.391**		0.574*		
IE	0.144*	0.37**	0.102*	0.386**	0.029*	0.391**	0.171*			
TE	0.147ns	0.37**	0.102*	0.386**	0.029*	0.783**	0.171*	0.574*		
Referral										
DE									0.873**	
IE	0.128ns	0.323***	0.089*	0.337**	0.025*	0.684**	0.15*	0.501*		
TE	0.128ns	0.323***	0.089*	0.337**	0.025*	0.684**	0.15*	0.501*	0.873**	
Alumni										
DE									0.432**	
IE	0.063ns	0.16***	0.044**	0.167**	0.012*	0.338**	0.074*	0.248**		
TE	0.063ns	0.16***	0.044**	0.167**	0.012*	0.338**	0.074*	0.248**	0.432**	
Academic Performance										
DE				0.244**	0.108ns	0.024ns	0.202*		0.052ns	-0.358*
IE	-0.015ns	0.024ns	0.061**	-0.016ns	0.033*	-0.056ns	-0.007ns	-0.059ns	-0.155**	
TE	-0.015ns	0.024ns	0.061**	0.228**	0.14*	ns-0.031	0.195*	-0.059ns	-0.103ns	-0.358*
Institutional Socialisation										
DE	0.252*					0.673**				
IE		0.32**	0.089*	0.334**	0.025*	0.004*	0.148*			
TE	0.252*	0.32**	0.089*	0.334**	0.025*	0.678**	0.148*			
Teaching Learning										
DE		0.394**		0.493**			0.219*			
IE		0.081**	0.132*	0.003*	0.037*		0.001*			
TE		0.475**	0.132*	0.496**	0.037*		0.221*			
Academic Involvement										
DE					0.169*					
IE		0.014*	0.004**	0.014*	0.001*	0.029*				
TE		0.014*	0.004*	0.014*	0.17*	0.029*				
Class Participation										
DE						0.172*				
IE		0.082*	0.023*	0.085*		0.001*	0.038*			
TE		0.082*	0.023*	0.085*		0.173*	0.038*			
Assessment Feedback										
DE			0.265*							
IE		0.158*								
TE		0.158*	0.265*							
Learning Environment										
DE		0.597**								
IE										
TE		0.597**								

(*** p<0.001, ** p<0.01, *p<0.05, ns=not significant) DE=Direct effects, IE=Indirect effects, TE=Total effects

The results show (Table 18) that almost all constructs have direct or indirect significant effects on Overall Satisfaction except Student Socialisation and Academic Performance. Overall Satisfaction has a negative, weak, significant indirect effect (-.155) on Academic Performance while Student Socialisation

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has a positive, weak, weak indirect effect (0.144) on Overall Satisfaction. Similarly, almost all latent constructs have significant direct or indirect effects on another two dependent latent constructs of Alumni Donations and Student Referrals. Alumni Donations has a significant, moderate, negative direct effect on Academic Performance.

Table 19 – Structural Equations

Structural Equations	R-square
Overall Satisfaction=.144*SS+.37*LR+.102*LE+.386*AF+.029*CP+.783*TL*.171*AI+.574*IS	.785
Referral=.323*LR+.089*LE+.337*AF+.025*CP+.684*TL+.015*AI+.501*IS+.874*OS	.763
Alumni=.16*LR+.044*LE+.167*AF+.025*CP+.684*TL+.15*AI+.501*IS+.873*OS	.187
Academic Performance=.061*LE+.228*AF+.14*CP+.195*AI-.358*Alumni	.216
Teaching & Learning=.475*LR+.132*+.495*AF+037*CP+..221*AI	.520
Institutional Socialisation=.252*SS+.32*LR+.089*LE+.025*CP+.678*TL+.148*AI	.517

TL=Teaching & Learning, LR=Learning Resources, AF=Assessment & Feedback, LE=Learning Environment, CP=Class Participation, IS=Institutional Socialisation, AI=Academic Involvement.

Using the SEM results, Table 19 outlines structural equations. The most important equations are three independent latent constructs i.e. Overall Satisfaction, Alumni Donations and Student Referrals while two mediator latent constructs i.e. Teaching & Learning and Institutional Socialisation.

The structural equations present an acceptable R-square estimates, indicating the proportion of variance explained by the equation, except Alumni Donations and Academic Performance that have low proportion of variance explained by the equation i.e. 18.7% and 21.6% respectively. A complete model (measurement and structural) is presented on the next page:

Figure 6 – Complete Structural Equation model (measurement and structural relationships) Standardised Estimates
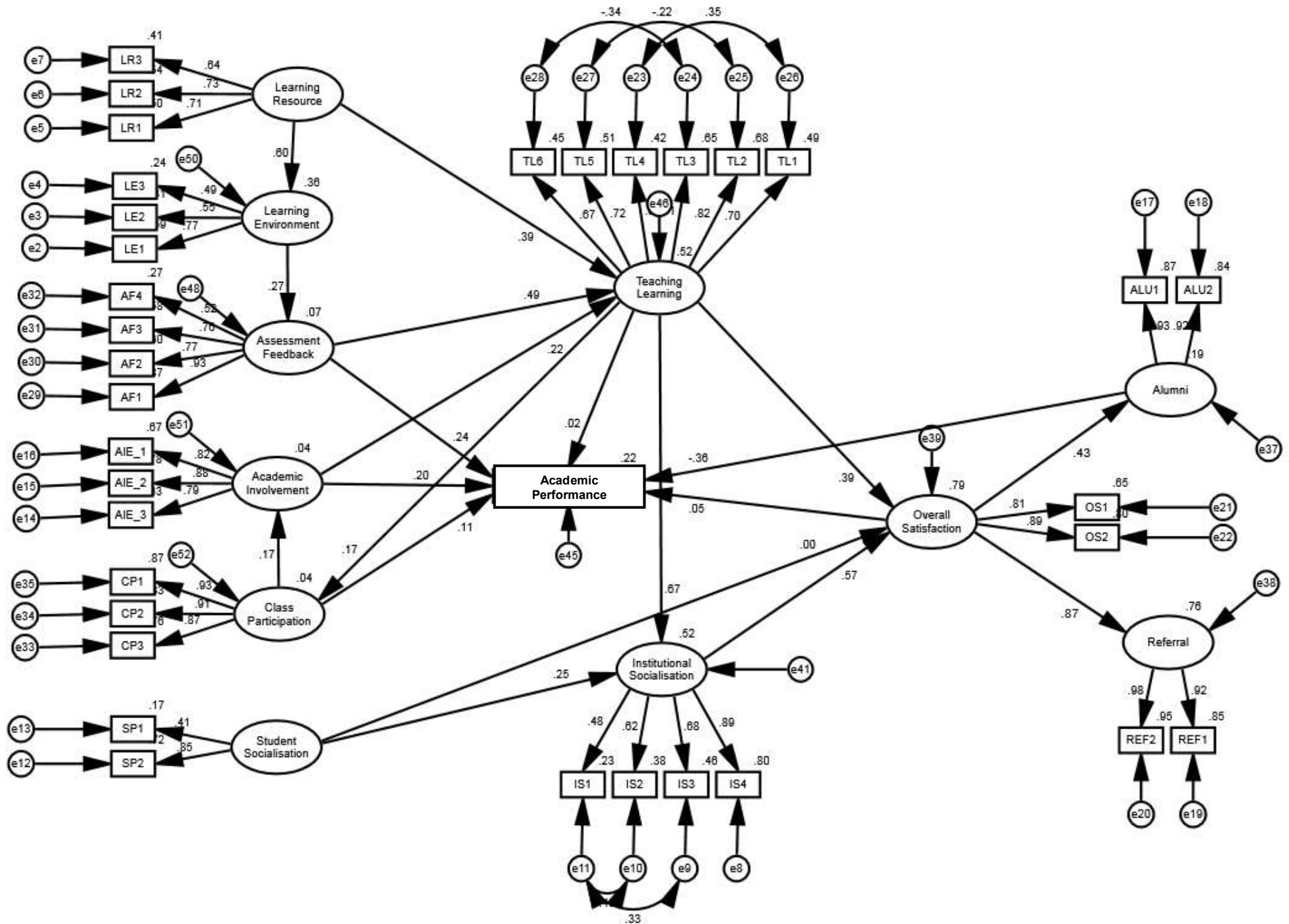
5.5 Longitudinal Data Analysis

The longitudinal data analysis is carried out using Latent Growth Curve Modelling, a procedure available within SEM. It provides an opportunity to observe change over time using the same latent structures and constructs as well as observed variables.

In total, three dependent variables i.e. Overall Satisfaction, Alumni Donations and Student Referrals are of great interest. Since we already empirically tested and identified determinants of student satisfaction in previous section, understanding change over time will help understand the overall phenomena of student satisfaction. "There are individual differences in the rate of direction of change in any contexts, and these individual differences in change are often of scientific or practical interest" (Preacher, Wichman et al. 2008, p.1).

The longitudinal data is analysed using EQS statistical package for its usefulness in offering maximum likelihood (ML) and Robust Maximum Likelihood estimations at the same time. Since the longitudinal data was collected at the end of each semester for two years i.e. four semesters in total, all latent variables are used as a summated scale based on respective observed variables. For example, Overall Satisfaction is a summated scale of two observed variables/items i.e. overall satisfaction with university and overall satisfaction with the course.

Due to small sample size, demographic variables (i.e. gender, schools etc.) were not included in the sample.

Similar goodness-of-fit indices and cut-off values were used to evaluate model fit as presented in section 5.3.2. However, it is important to note here that RAMSEA is quite sensitive to fewer degrees of freedom and is expected to produce slightly higher values. Furthermore, maximum likelihood (ML) estimation technique is employed. In order to account for multivariate non-normality and smaller sample size, Satorra-Bentler (S-B) scaled corrected estimates are used for model evaluation as well as correction in standard errors and significance levels (Satorra and Bentler 2001). The S-B scaled corrections for standard errors and significance levels are incorporate in Maximum Likelihood Robust (MLR).

The latent growth curve model offers intercepts and slopes in means as well as variance, covariance and estimate errors.

Mean

- Intercept – signifies the point where an average person start or average score at the start.

- Slope – signifies the rate of change or an average rate of change among sample.

Variance

- Intercept – shows the rate of change among individuals from the point where they start.

- Slope – shows rate of change within each individual.

Intercept-Slope Covariance – The covariance between intercept and slope for mean shows proportional increase or decrease among individuals. For example

individuals starting higher are likely to have higher slope till the end time point.

The results are presented next and are organised in five sub-sections.

5.5.1 *Overall Satisfaction*

The Overall Satisfaction represents students' overall satisfaction with university and course. The latent growth curve model fit indices (Table 20) show an acceptable fit except SRMR value that is slightly (0.05) higher than the cut-off value (0.09) and RMSEA. RMSEA can be misleading with smaller sample size and fewer degrees of freedom (Lysaker, Shea et al. 2010; Kenny, Kaniskan et al. 2014).

Table 20 – Estimates and Model Fit Indices – Overall Satisfaction

	Estimate	Standard Error (SE)	Critical Ratio (CR)	ML Robust SE	ML Robust CR
Means					
Intercept	6.198	.092	67.349*	.092	67.35*
Slope	-.120	.048	-2.484*	.048	-2.48*
Variance					
Intercept	.249	.109	2.278*	.094	2.64*
Slope	.049	.034	1.414ns	.031	1.570ns
Covariance					
Intercept-Slope	-.008	.048	-.0164	.032	-.245ns

Model Fit Indices		ML	S-B Scaled Robust
$\chi 2$ (p-value)		8.649 (0.123)	8.624 (0.125)
Degree of Freedom (DF)		5	5
Comparative Fit Index (CFI)		0.948	0.936
Root Mean Square Error of Approximation (RMSEA)		0.112	0.112
90% CI of RMSEA		0.000-0.258	0.000-0.258
Standardised Root Mean Square Residual (SRMR)		0.095	

* Significance level 5%

The variance intercept shows a significant but small variance estimate indicating a lower variability between subject in their overall satisfaction. The estimate for variance slope is insignificant showing not much different among individuals within their own satisfaction over time. In addition, covariance between mean intercept and slope is negative, negligible and insignificant.

5.5.2 *Alumni Donations*

The model fit indices for Alumni Donations exhibits an acceptable model (Table 18) i.e. CFI > .92 and SRMR <0.09, however present a significant chi-square and higher RAMSEA value due to lower degree of freedom and smaller sample.

Table 21 – Estimates and Model Fit Indices – Alumni Donations

	Estimate	Standard Error (SE)	Critical Ratio (CR)	S-B Scaled SE	S-B scaled CR
Means					
Intercept	4.961	.126	39.248*	.126	39.25*
Slope	-.371	.064	-5.789*	.064	-5.79*
Variance					
Intercept	.003	.271	.011ns	.234	.012ns
Slope	.152	.066	2.314*	.076	4.90*
Covariance					
Intercept-Slope	.003	.105	.031ns	.088	.036ns

Model Fit Indices	ML	S-B Scaled Robust
χ2 (p-value)	19.315 (0.000)	20.469 (0.001)
Degree of Freedom (DF)	4	4
Comparative Fit Index (CFI)	.956	.928
Root Mean Square Error of Approximation (RMSEA)	.136	.143
90% CI of RMSEA	0.000-0.309	0.000-0.315
Standardised Root Mean Square Residual (SRMR)	.069	

On average, students were close to "Slightly Agree" (i.e. Mean intercept 4.961) willing to commit making alumni donations after graduation and finding work. However, at the end of each subsequent semester this willingness is reduced at

the rate of 0.371 per semester. The implied means for second, third and fourth semesters were 4.59, 4.22 and 3.85 respectively indicting moving between "Slightly Disagree" and "Neither Agree nor Disagree" i.e. a natural position.

The insignificant and very low variance intercept and covariance between mean intercept and slope indicates that most students were thinking along the same lines i.e. not to commit to make Alumni Donations in future. A significant and small variance in variance slope i.e. 0.152 shows very little change within each individual over time.

5.5.3 Student Referrals

The model fit indices suggest a well-fitted model with CFI .977, RMSEA .071 and SRMR .071, however, chi-square is significant (Table 22).

The average students at the start of data collection in the first semester appear to "Agree" (mean intercept 6.172) with making referrals to prospective students and their friends/relatives. However, this willingness reduced gradually (mean slope -0.19). In terms of between students a small rate of variability is reported i.e. significant variance intercept while no noticeable variability within each students' intention to make referrals. The covariance between mean intercept and intercept is also statistically insignificant.

Table 22 – Estimates and Model Fit Indices – Student Referrals

	Estimate	Standard Error (SE)	Critical Ratio (CR)	S-B Scaled SE	S-B scaled CR
Means					
Intercept	**6.172**	**.097**	**63.549***	**.097**	**63.55***
Slope	**-.190**	**.045**	**-4.224***	**.045**	**-4.22***
Variance					
Intercept	**.372**	**.141**	**2.632***	**.136**	**2.72***
Slope	**.059**	**.033**	**1.796ns**	**.034**	**1.734ns**
Covariance					
Intercept-Slope	**-.059**	**.055**	**-1.075ns**	**.049**	**-1.219ns**

Model Fit Indices		ML	S-B Scaled Robust
χ2 (p-value)		**20.941 (0.000)**	**23.596 (0.000)**
Degree of Freedom (DF)		**5**	**5**
Comparative Fit Index (CFI)		**.987**	**.977**
Root Mean Square Error of Approximation (RMSEA)		**.053**	**.071**
90% CI of RMSEA		**0.000-0.221**	**0.000-0.230**
Standardised Root Mean Square Residual (SRMR)		**.071**	

5.5.4 Teaching & Learning

The model fit indices are acceptable with higher RMSEA estimate due to lower degree of freedom (Table 23).

Table 23 – Estimates and Model Fit Indices – Teaching & Learning

	Estimate	Standard Error (SE)	Critical Ratio (CR)	S-B Scaled SE	S-B scaled CR
Means					
Intercept	**5.985**	**.083**	**72.436***	**.083**	**72.44***
Slope	**-.133**	**.041**	**-3.262***	**.041**	**-3.26***
Variance					
Intercept	**.355**	**.121**	**2.936***	**.197**	**1.801ns**
Slope	**.058**	**.026**	**2.218***	**.030**	**1.943ns**
Covariance					
Intercept-Slope	**-.116**	**.048**	**-2.431***	**.080**	**-1.449ns**

Model Fit Indices		ML	S-B Scaled Robust
χ2 (p-value)		**8.749 (0.067)**	**8.472 (0.0757)**
Degree of Freedom (DF)		**4**	**4**
Comparative Fit Index (CFI)		**0.964**	**0.936**
Root Mean Square Error of Approximation (RMSEA)		**0.095**	**0.091**
90% CI of RMSEA		**0.000-0.280**	**0.000-0.277**
Standardised Root Mean Square Residual (SRMR)		**0.056**	

Other estimates appear to provide enough evidence for a well-fitted model i.e. SRMR 0.056, insignificant chi-square and CFI .0936 with Satorra-Bentler scaled corrected (Table 23). The mean intercept values of close to 6 indicate that on average students were generally satisfied with the aspects of Teaching & Learning when asked at the end of the first semester. For the second, third and fourth semesters the satisfaction with aspects of Teaching & Learning went down to 0.133 in each semester. The results shows insignificant values for between student variance, within student variance as well as covariance between mean intercept and mean slope.

5.5.4 Institutional Socialisation

The model fit results show a perfect model fit indices i.e. insignificant chi-square, CFI 1.0, RMSEA 0.0 and SRMR 0.045 (Table 24).

Table 24 – Estimates and Model Fit Indices – Institutional Socialisation

	Estimate	Standard Error (SE)	Critical Ratio (CR)	S-B Scaled SE	S-B scaled CR
Means					
Intercept	5.641	.099	57.248*	.099	57.25*
Slope	-.132	.051	-2.564*	.051	-2.56*
Variance					
Intercept	.000	.157	.000ns	.136	.000ns
Slope	.074	.039	1.908ns	.038	1.945ns
Covariance					
Intercept-Slope	-.007	.064	-.105ns	.055	-.123ns

Model Fit Indices			ML	S-B Scaled Robust
χ2 (p-value)			7.101 (0.130)	8.360 (0.079)
Degree of Freedom (DF)			4	4
Comparative Fit Index (CFI)			1.000	1.000
Root Mean Square Error of Approximation (RMSEA)			0.000	0.000
90% CI of RMSEA			0.000-0.225	0.000-0.235
Standardised Root Mean Square Residual (SRMR)			0.045	

The estimates for mean and variances are similar to other constructs. Students reported to be between "Slightly agree" and "Agree" with aspects of Institutional Socialisation with an understanding of important values, student related polices, relationships with teaching and admin staff and feeling comfortable at Brookes. However, after the first semester a slight decrease is reported in their agreement with these aspects of Institutional Socialisation. Other results i.e. covariance between intercept and slope, between students and within students variance is reported to be insignificant.

Chapter 6

Discussion

This chapter offers a detailed discussion on the results presented in the previous chapter (Chapter 5 – Results and Data Analysis). The literature review in Chapter 2 (Literature Review) provided a basis to develop a holistic model of student satisfaction in higher education. The holistic model is theorised and operationalised using identified constructs, factors, dimensions and variables in Chapter 3 (Conceptual Framework). The conceptual framework brought together aspects of student learning experience (i.e. Teaching & Learning, Assessment & Feedback, Learning Environment and Learning Resources), student engagement (i.e. Class Participation and Academic Involvement) and student participation (Student Socialisation and Institutional Socialisation). The holistic model was empirically tested using methodology outlined in Chapter 4 (Methodology).

This chapter is organised in two broad sections. The first section (6.1) is based on results from cross-sectional data for the purpose of generating a model of student satisfaction in higher education. Here the proposed theoretical model and final empirical model are discussed in detail.

The next section (6.2) offers discussions on results generated from longitudinal data. Here the purpose is to determine the change over time in student satisfaction and its consequences i.e. student referrals and alumni donations. In

addition, change over time in dominant aspects of student satisfaction, such as student learning experience (i.e. Teaching & Learning, Assessment & Feedback, Learning Environment and Learning Resources), student engagement (i.e. Class Participation and Academic Involvement) and student participation (Student Socialisation and Institutional Socialisation) are also discussed.

6.1 Modelling Student Satisfaction

The hypotheses formulated in Chapter 3 (Conceptual Framework) are empirically tested in the previous chapter (Chapter 5 – Results & Data Analysis) and are summarised in this section.

The results for each group of constructs are presented in this section. The predicted hypotheses, both direct and indirect, are evaluated for empirical support. In addition, some of the effects that are not predicted in the proposed theoretical model but indicated in the results are also presented (as NP i.e. not predicted). Only significant effects are shown and any insignificant associations deduced in the results are not included.

This section is organised in three broad groups associated with latent constructs and observed variables i.e. Student Learning Experience, Student Engagement and Student Participation.

6.1.1 Student Learning Experience

The aspects of student learning experience i.e. Teaching & Learning, Assessment & Feedback, Learning Environment and Learning Resources are found to be directly or indirectly associated with other latent constructs. It is interesting to note that several relationships that were not predicted in the theoretical model are found to be significant. The most noticeable one is the indirect effect of Teaching & Learning on Overall Satisfaction as shown in Table 25.

Table 25 – Summary of Results – Student Learning Experience

Hypotheses – Direct and Indirect Effects	Supported? (Yes/No)	Regression Weight/Sig
Teaching & learning is **directly** associated with:		
• Overall Satisfaction ($H_{1.1}$)	Yes	0.391**
• Institutional Socialisation ($H_{1.2}$)	Yes	0.673**
• Academic Performance (grades) ($H_{1.3}$)	**No**	0.024ns
• Class Participation	NP	0.172*
Teaching & Learning has **indirect** relationship with:		
• Student Referrals ($H_{10.1}$)	Yes	0.684**
• Alumni Donations ($H_{10.2}$)	Yes	0.338**
• Overall Satisfaction	NP	0.391**
• Institutional Socialisation	NP	0.004*
• Academic Involvement	NP	0.029*
• Class Participation	NP	0.001*
Assessment & Feedback is **directly** associated with:		
• Teaching & Learning ($_{H3.1}$)	Yes	0.493**
• Academic Performance (grades) ($H_{3.2}$)	Yes	0.244**
Assessment & Feedback has an **indirect** relationship with:		
• Overall Satisfaction ($H_{12.1}$)	Yes	0.386**
• Student Referrals ($H_{12.2}$)	Yes	0.337**
• Alumni Donations ($H_{12.3}$)	Yes	0.167**
• Institutional Socialisation	NP	0.334**
• Teaching & Learning	NP	0.003*
• Academic Involvement	NP	0.014*
• Class Participation	NP	0.086*
Learning environment is **directly** associated with:		
• Assessment & feedback (H_2)	Yes	0.265*
Learning environment is **indirectly** associated with:		
• Overall Satisfaction ($H_{11.1}$)	Yes	0.102*
• Academic Performance ($H_{11.2}$)	Yes	0.061**
• Student Referrals ($H_{11.3}$)	Yes	0.089*
• Alumni Donations ($H_{11.4}$)	Yes	0.044**
• Institutional Socialisation	**NP**	0.089*
• Teaching & Learning	**NP**	0.132*
• Academic Involvement	**NP**	0.004**
• Class Participation	**NP**	0.023*
Learning Resources is **directly** associated with:		
• Teaching & learning ($H_{4.1}$)	Yes	0.394**
• Learning environment ($H_{4.2}$).	Yes	0.597**
Learning Resources has **indirect** relationship with:		
• Overall Satisfaction ($H_{13.3}$)	Yes	0.370**
• Assessment & Feedback ($H_{13.2}$)	Yes	0.158*
• Academic Performance ($H_{13.3}$)	**No**	0.024ns
• Student Referrals ($H_{13.4}$)	Yes	0.323***
• Alumni Donations ($H_{13.5}$)	Yes	0.160***
• Institutional Socialisation ($H_{13.6}$)	Yes	0.320**
• Teaching & Learning	NP	0.081**
• Academic Involvement	NP	0.014*
• Class Participation	NP	0.082*

NP=not predicted   (*** $p<0.001$, ** $p<0.01$, *$p<0.05$, ns=not significant)

The theoretical model predicted only a direct relationship between Teaching & Learning and Overall Satisfaction that is supported empirically from the results. However, an indirect relationship between these two constructs of equal strength and significance also exists making the total effects of Teaching & Learning on Overall Satisfaction i.e. both direct and indirect far stronger i.e. 0.783 (p-value <0.01). Thus, it can be concluded that aspects of Teaching & Learning significantly contribute to Overall Satisfaction.

The findings are in line with other studies carried out postulating that student overall satisfaction is seen as a measure of the quality of teaching and the education process (Ramsden 1991; Coates 2010). It is the largest determinant of student satisfaction (Pike 1991; Hounsell, Tait et al. 1997; Chen and Hughes 2004; El Ansari and Oskrochi 2004; Remedios and Lieberman 2008).

Other aspects of the student learning experience i.e. Assessment & Feedback, Learning Environment and Learning Resources all have direct, indirect, positive and significant effects on Teaching & Learning. At the same time these also contribute indirectly towards overall satisfaction, student referrals, alumni donations and institutional socialisation. Many studies reported similar findings (Galloway 1998; Coles 2002; Hill, Lomas et al. 2003; Price, Matzdorf et al. 2003; Sohail and Shaikh 2004). Furthermore, the hypothesis positing that Teaching & Learning is closely associated with aspects of Institutional Socialisation is also supported i.e. relationship with teaching and admin staff, an understanding of values and student related polices and feeling comfortable (Jalomo 1995; MacKie 2001; Bogler and Somech 2002; Kotze and Plessis

2003; Ng and Forbes 2009). Assessment & Feedback contributes directly to Academic Performance, while Teaching & Learning and Learning Environment have indirect relationships.

Thus, a successful student learning experience positively contributes to students' Overall Satisfaction and their future intentions to refer the course or university to friends/relatives/others as well as active alumni participation by committing future financial contributions.

6.1.2 Student Engagement

Two latent constructs are used to determine student engagement i.e. Class Participation and Academic Involvement. Both of these aspects of student engagement are reported to be positively associated directly with student Academic Performance, Teaching & Learning and indirectly with Overall Satisfaction (Tinto 1975; Astin 1984; Chickering and Gamson 1987; Kuh 1997; Ertl, Hayward et al. 2008; Kuh, Cruce et al. 2008).

As shown in Table 26, Academic Involvement has a direct, positive and significant relationship with Teaching & Learning and Academic Performance. However, Class Participation has only indirect and weak but significant association with Teaching & Learning and Academic Performance mediated through Academic Involvement and Teaching & Learning. Both Class Participation and Academic Involvement are also indirectly related to Overall Satisfaction, Student Referrals and Alumni Donations (Table 26).

Table 26 – Summary of Results – Student Engagement

Hypotheses – Direct and Indirect Effects	Supported? (Yes/No)	Regression Weight/Sig.
Class participation has a direct relationship with:		
• Teaching and Learning (H$_{5.1}$)	**No**	ns
• Academic Performance (H$_{5.2}$)	**No**	0.108ns
• Academic Involvement (H$_{5.3}$)	Yes	0.169*
Class Participation has indirect relationship with:		
• Overall Satisfaction (H$_{14.1}$)	Yes	0.029*
• Student Referrals (H$_{14.2}$)	Yes	0.025*
• Alumni Donations (H$_{14.3}$)	Yes	0.012*
• Academic Performance	NP	0.033*
• Teaching & Learning	NP	0.037*
• Academic Involvement	NP	0.001*
• Institutional Socialisation	NP	0.025*
Academic Involvement has a direct relationship with:		
• Teaching & Learning (H$_{6.1}$)	Yes	0.291*
• Academic Performance (H$_{6.2}$)	Yes	0.202*
Academic Involvement has an indirect relationship with:		
• Overall Satisfaction (H$_{15.1}$)	Yes	0.171*
• Student Referrals (H$_{15.2}$)	Yes	0.150*
• Alumni Donations (H$_{15.3}$)	Yes	0.074*
• Teaching & Learning	NP	0.001*
• Class Participation	NP	0.038*
• Institutional Socialisation	NP	0.148*

NP=not predicted   (*** p<0.001, ** p<0.01, *p<0.05, ns=not significant)

The results provided empirical evidence to support a number of indirect effects of Class Participation and Academic Involvement that were not predicted in the theoretical model. For example, results confirm that Class Participation has indirect effects on Academic Performance, Teaching & Learning, Academic Involvement and Institutional Socialisation that were not predicted in the theoretical model. Similarly, results also demonstrated that Academic Involvement has an indirect relationship with Teaching & Learning, Class Participation and Institutional Socialisation.

Both aspects of Student Engagement i.e. Class Participation and Academic Involvement are also related to the Institutional Socialisation indicating that interacting with faculty members, non-academic staff as well as understanding

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of student related policies, procedures, ethos, values, beliefs help student familiarise students with university (Vreeland and Bidwell 1966; Schein 1968; Feldman 1981; Hermanowicz 2005).

Thus, the results indicate that a student participating in class discussions and academically involved experience is likely to have a greater level of Overall Satisfaction, likely to make referrals about their courses and university to potential students in their social circles, and likely to better understand ethos, values and student policies, and have better relationship with faculty members and university staff.

6.1.3 *Student Participation*

Student participation is assessed through two latent constructs i.e. Student Socialisation and Institutional Socialisation. Student Socialisation includes students taking part in social activities to subscribe to group norms as part of social integration (Astin 1984; Weidman 1989; Bogler and Somech 2002; Weidman 2006; Collins and Lewis 2008).

Table 27 – Summary of Results – Student Participation

Hypotheses – Direct and Indirect Effects	Supported? (Yes/No)	Regression Weight/Sig.
Student Socialisation is directly associated with:		
• Overall Satisfaction ($H_{7.1}$)	No	0.002ns
• Institutional Socialisation ($H_{7.2}$)	Yes	0.252*
Student Socialisation has an indirect relationship with:		
• Overall Satisfaction ($H_{16.1}$)	Yes	0.144*
• Student Referrals ($H_{16.2}$)	No	0.128ns
• Alumni Donations ($H_{16.3}$)	No	0.063ns
Institutional Socialisation is directly associated with:		
• Overall Satisfaction (H_8)	Yes	0.574*
Institutional Socialisation has an **indirect** relationship with:		
• Student Referrals ($H_{17.1}$)	Yes	0.501*
• Alumni Donations ($H_{17.2}$)	Yes	0.248**

NP=not predicted   (*** p<0.001, ** p<0.01, *p<0.05, ns=not significant)

The social aspects of campus life, student governance and extracurricular activities also contribute to student learning and satisfaction (Astin 1975; Tinto 1993; Johns 1999; Elliott and Shin 2002; Ng and Forbes 2009). A number of studies show that social life at college or university is positively related to student satisfaction (Bean and Bradley 1986).

However, the results given in Table 27 do not support a direct association of Student Socialisation with Overall Satisfaction but suggest an indirect association between these two latent constructs. This finding highlights that students taking part in social activities and involved with student union activities do not experience any change in their Overall Satisfaction. Furthermore the indirect effect of Student Socialisation mediated through Institutional Socialisation is significant i.e. one unit increase in Student Socialisation leads to 0.144 unit increase in Overall Satisfaction (Table 27). In addition, results do not provide empirical support for the predicted indirect effects of Student Socialisation with Student Referrals and Alumni Donations mediated through Institutional Socialisation.

It appears that Institutional Socialisation, a borrowed idea from the service marketing discipline, enables individuals to adopt values, norms and required behaviour to influence outcome, and ensure their participation as a productive resource and contributors to their own service experience (Hubbert 1995; Jalomo 1995; Bitner, Faranda et al. 1997; MacKie 2001; Ng and Forbes 2009). The results provide a solid foundation to the inclusion of Institutional Socialisation as an important aspect of student satisfaction. The results provide

empirical support for a direct association of Institutional Socialisation with Overall Satisfaction and indirect effects on Student Referrals and Alumni Donations.

The results suggest that students with an understanding of the university ethos, values, student related policies and an interaction with teaching and administration staff members are more likely to experience higher Overall Satisfaction, willing to make referrals and commit alumni contributions. However, participating in social activities and student governance i.e. student union has weak indirect effects on Overall Satisfaction but not direct or indirect effects on referrals and alumni contributions.

6.1.4 Outcomes/Consequences

Overall Satisfaction is predicted to be directly associated with Student Performance (Ramsden 1991; Porter and Umbach 2001; Umbach and Porter 2002). However, empirical results in Table 28 do not support this claim and only show an indirect, weak, negative but significant relationship between Overall Satisfaction and Student Performance.

Table 28 – Summary of Results – Outcomes/Consequences

Hypotheses – Direct and Indirect Effects	Supported? (Yes/No)	Regression Weight/ Significance
Overall Satisfaction is **directly** associated with:		
• Academic Performance (H9.1)	No	0.052ns
• Student Referrals (H9.2)	Yes	0.873**
• Alumni Donations (H9.3)	Yes	0.432**
Overall Satisfaction has **indirect** relationship with:		
• Academic Performance	NP	-0.155**
Alumni Donations has direct relationship with		
• Academic Performance	NP	-0.358*

NP=not predicted   (*** p<0.001, ** p<0.01, *p<0.05, ns=not significant)

Thus, positing that Overall Satisfaction has a weak negative effect on Student Performance in terms of grades i.e. students with lower grades can demonstrate higher level of Overall Satisfaction with the university and their course.

The results in Table 28 show an unexpected moderate, negative and significant association of Alumni Donations with Academic Performance indicating that students achieving better results commit less to Alumni Donations.

6.1.5 *Empirical Model of Student Satisfaction*

The proposed theoretical was tested, modified and transformed into an empirical model presented in the previous chapter (Chapter 5 – Results and Data Analysis) provides a useful way to conceptualise student satisfaction in higher education. The empirical model brings together aspects of the student learning experience, student engagement and student participation and is supported by the results for plausibility.

The weakest link within the model appears to be the latent construct of Student Socialisation which although found to be associated with Institutional Socialisation has no direct or indirect effect on Overall Satisfaction, thus, indicating that students taking part in social activities and student governance are not likely to influence their Overall Satisfaction. This finding is contrary to what authors have reported in past studies (Astin 1975; Tinto 1993; Johns 1999; Elliott and Shin 2002; Ng and Forbes 2009). However, it does help students in adopting values, norms, rules and procedures of their respective departments and the university.

One of the modifications made in the initial theoretical model was the association from Alumni Donations to Academic Achievements. Students appear to exhibit a customer-like behaviour by attributing the success in terms of higher grades to themselves (Bitner, Faranda et al. 1997), and are not prepared to commit their future earnings to the university. In addition, this also indicates a very interesting phenomenon where customers in service marketing "frequently blame themselves (at least partially) when things go wrong" (Bitner, Faranda et al. 1997, p.198). In situations like these the service customer is likely to be less dissatisfied with the service when they realise that they also share the responsibility for their service experience (Folkes 1988; Hubbert 1995).

Thus, students achieving higher grades are more likely to attribute success to themselves and less likely to commit Alumni Donations, while students achieving lower grades are more inclined to blame themselves, not the institution, for the failure to attain higher grades and ultimately exhibit less dissatisfaction and are likely to commit more towards Alumni Donations. To drill down into this claim, descriptive analysis is carried out making three groups of all students based on their grades. The first group is comprised of 35% high achieving students (by grades) while the second group is composed of 35% low achievers. Another group includes 30% students who attained middle or average scores.

It was surprising to see that descriptive analysis of Academic Achievements and Alumni Donations appears to support the claim that low achieving students

are more likely to commit to Alumni Donations as presented in Table 29. The table includes data about only those students who responded with a definitive answer i.e. that they will or will not commit (excluding those who were neither agree nor disagree). It reveals that only 23 percent of high achieving students are willing to commit to a single Alumni Donations and 15 percent are willing to commit multiple Alumni Donations as compared to 53 and 58 percent low achieving students respectively.

Table 29 – Academic Performance & Committing Alumni Donations

Academic Performance (Grades)	Single Donations		Multiple Donations	
	Not Willing to Commit(1)	Willing to Commit(2)	Not Willing to Commit(1)	Willing to Commit(2)
High Achievers	48.1	23.3	35.9	15.4
Middle Achievers	29.6	23.3	28.2	26.9
Low Achievers	22.2	53.5	35.9	57.7
Total	**100**	**100**	**100**	**100**

(1. Strongly Disagree, Disagree & Slightly Disagree) (2. Slightly Agree, Agree & Strongly Agree)

The final empirical model accounts for a higher level of variation in Overall Satisfaction (R-square=0.785) and is plausible after evaluating goodness-of-fit indices after applying Satorra-Bentler scaled corrections for taking into consideration non-normality and small sample size.

Figure 7– Final Empirical Model of Student Satisfaction (Only Direct Relationships, Regression Weight (Standard Errors) Significance)
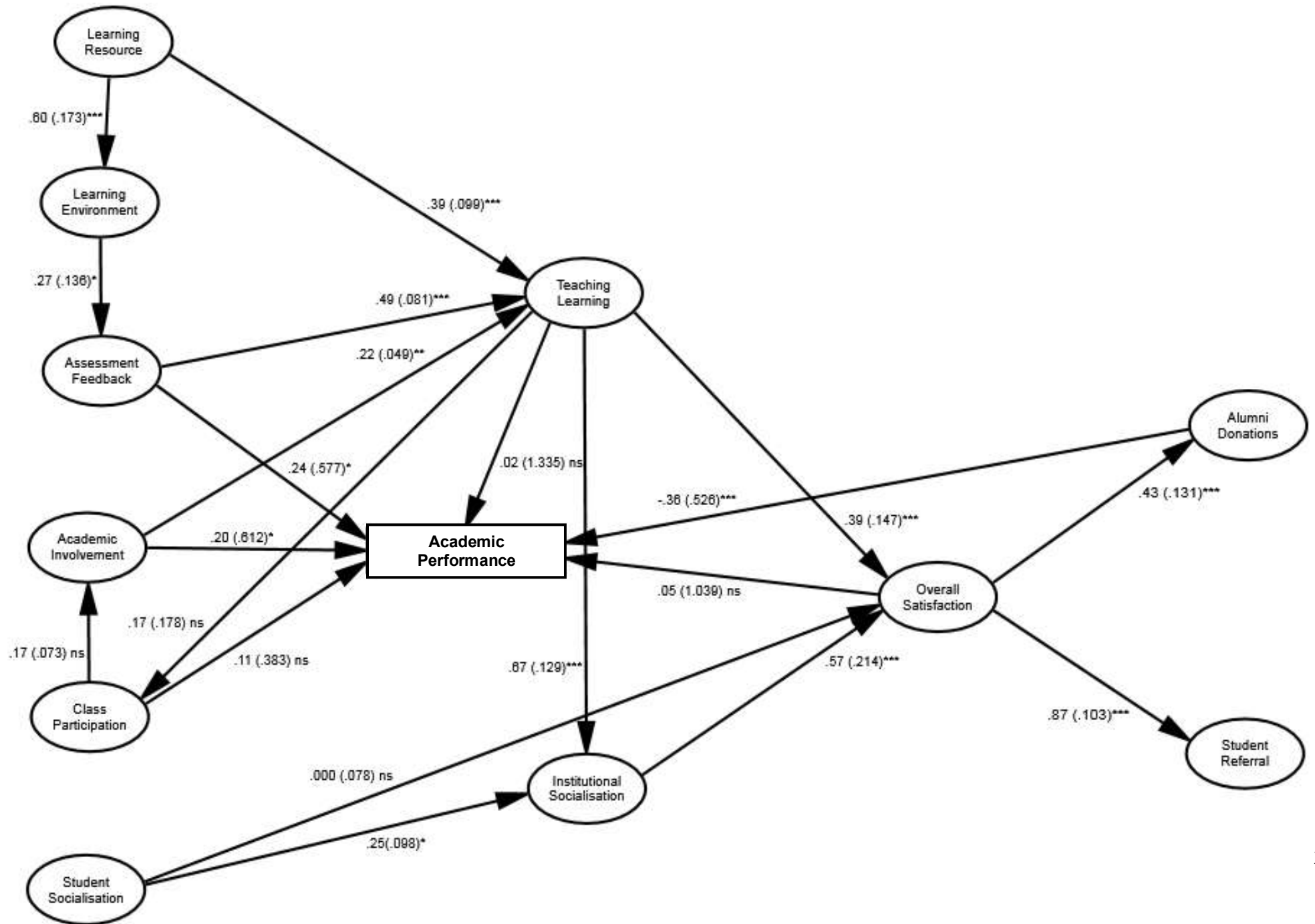
6.2 Student Satisfaction – Change Over Time

The first and most prominent highlight of the longitudinal analysis is a gradual decrease in all aspects that were put to empirical testing. This finding indicates that students in the first year of their course are overwhelmed by the transition in their lives from college to university and tend to give high ratings because of optimism. However, as they go along and progress to their second semester they try to readjust their ratings more realistically, thus, causing a gradual decrease in their ratings. The readjustment takes place as students go through various service encounters with different modules, assessment requirements, instructors with personal teaching styles in each semester (Finaly-Neumann 1994). A depiction of the change in the levels of latent constructs is presented in Figure 8 below.

Figure 8 – Implied Mean Estimates – Mean Intercepts & Slopes
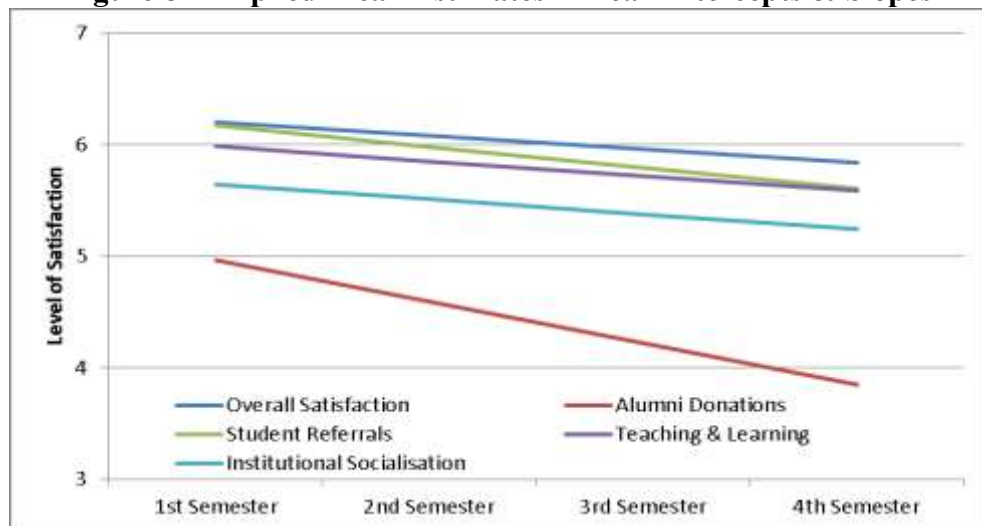
Level of Satisfaction: 3=Slightly Disagree, 4=Neither Agree nor Disagree, 5=Slightly Agree, 6=Agree, =Strongly Agree

Furthermore, students also demonstrate differing perceptions, intentions and motivations with great variations between disciplines (Ramsden 1991). Rautopuro and Vaisanen (2000) also report that students more critically

evaluate the aspects of their experience towards the end of the course. Thus, ascertaining effects of this complex web of attributes is a daunting task that requires considerable time, effort and resources.

The steepest decline is noticed in students' perception about Alumni Donations. However, almost no variability between students is reported. While within each student, a low but significant variation is reported (0.4 unit of satisfaction) over time.

The results show that Overall Satisfaction decreases by .12 unit in each semester. The individual differences among students where they start is approximately .5 unit of satisfaction while rate of change over time in students' own satisfaction is not significant indicating not much variability. Similar trends are presented by other constructs i.e. Student Referrals, Teaching & Learning and Institutional Socialisation.

The relationships among different latent constructs are already established using cross-sectional data through SEM. Therefore, it will be useful to understand the longitudinal results while applying the framework of the empirical model that is developed in the previous chapter.

The interpretation of the longitudinal results is in line with the final empirical model based on cross-sectional data, delineating that the two strong mediators of Teaching & Learning and Institutional Socialisation have a strong, positive and significant direct relationship with Overall Satisfaction. It is evident that

the gradual decline in the means and slope of longitudinal estimates data in these two mediators as well as the three dependent variables i.e. Overall Satisfaction, Alumni Donations and Student Referrals are inter-linked. In addition, indirect effects from other latent constructs of Assessment & Feedback, Learning Environment, Learning Resources, Class Participation, Academic Involvement and Student Socialisation also have an effect on Overall Satisfaction.

Most of the students at the start of their course enjoy the basic and general nature of their studies and are not required to do too much in terms of assignments (Rautopuro and Vaisanen 2000); this is where the first wave of data was collected from students. However as they go along, by the second wave of data collection their responses are usually based on what they experienced in the first semester and what they anticipate in the second semester. Thus, by the fourth semester, students are fully adjusted to the university environment and their responses are fine-tuned and become more realistic in line with their perception. Furthermore, students' responses also face a conflicting situation where in the same term/semester, they attend more than one module and could have different judgements based on their perception of each module.

Chapter 7
Conclusions

The purpose of this chapter is to draw conclusions based on the empirical findings presented in last two chapters (Chapter 5 – Results and Data Analysis and Chapter 6 – Discussion) and attempt to answer the research questions posed in the introductory chapter (Chapter 1). This chapter also discusses theoretical implications of the empirical model presented in Chapter 5.

This chapter is organised in four sections. The first section (7.1) reiterates the research objectives and aim to answer to the research questions. The second section (7.2) spells out the theoretical contribution of this thesis to the wider literature on student satisfaction. In the next section (7.3) limitations of this thesis are discussed. The final section (7.4) outlines recommendations for future research.

7.1 Research Objectives

The proposal in this study is that the present approach to collecting student satisfaction data using cross-sectional data, and collecting this information only on their learning experience is flawed as it does not take into account the aspects of student engagement and student participation as well as effects of time on students' overall satisfaction (Bitner, Faranda et al. 1997; Astin 1999; Hennig-Thurau, Langer et al. 2001; Kotze and Plessis 2003; Martin 2003; QAA 2008; Trowler 2010).

This thesis has sought to address two main research objectives as outlined in the introductory chapter (Chapter 1 – Introduction):

1. To propose and explore the plausibility of an empirical model of student satisfaction that incorporates the constructs of student learning experiences, student engagement and student participation.

2. To understand changes in mean level of students' overall satisfaction across time and growth trajectories between students and within each student over time.

7.1.1 First Research Objective

To propose and explore the plausibility of an empirical model of student satisfaction that incorporates the constructs of student learning experiences, student engagement and student participation.

The results in Chapter 5 (Results & Data Analysis) provide overwhelming support for the empirical model of student satisfaction, and demonstrate that almost all aspects of the student learning experience, student engagement and student participation have direct or indirect effects on Overall Satisfaction, Student Referrals and Alumni Donations except Student Socialisation.

The aspects of the student learning experience, student engagement and student participation are listed below:

Student Learning Experience
1. Teaching & Learning
2. Assessment & Feedback
3. Learning Environment
4. Learning Resources

Student Engagement
1. Academic Involvement
2. Class Participation

Student Participation
1. Student Socialisation
2. Institutional Socialisation

The proposed empirical model fits well with the observed data and its latent constructs. The goodness-of-fit indices for the results in chapter 5 (Results and Data Analysis) also indicate a well-fitted model, which explains a large proportion of variance in Overall Satisfaction (78.5%) and Student Referrals (76.3%). However, the variance for Alumni Donations is not promising (18.7%) indicating that more than 80 percent variance is still unaccounted for. Similarly more than half of the variance is also account for by the model for the two most important factors of Teaching & Learning (52%) and Institutional Socialisation (51.7%).

Figure 9 – The Empirical Model
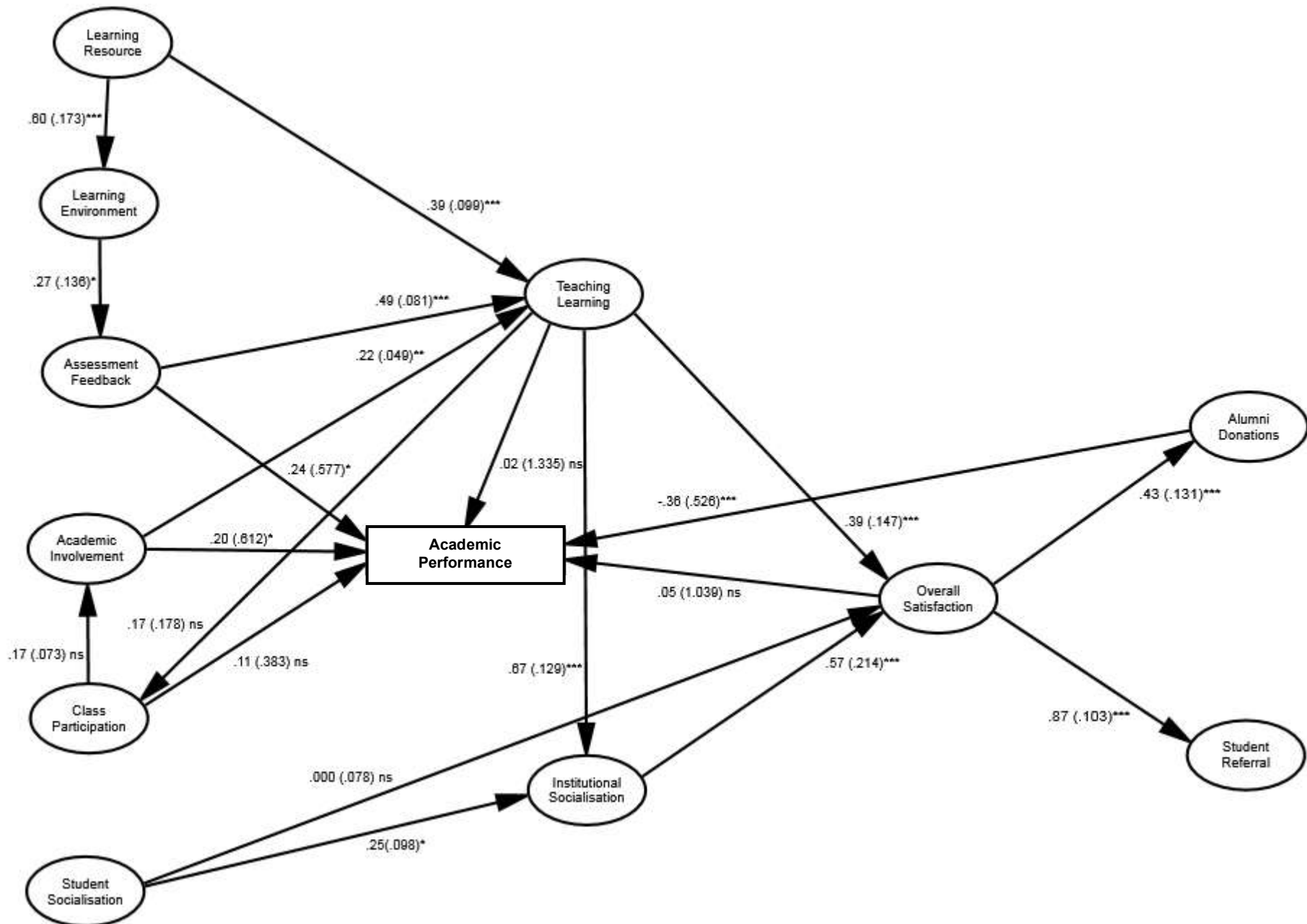
The empirical model highlights the importance of the role of students in their own satisfaction through four constructs. Two of these appear to have a market-orientation (Student Socialisation and Institutional Socialisation), while the other two exhibit pedagogic-orientation (Class Participation and Academic Involvement). One of the market-oriented constructs (Institutional Socialisation) is very strongly, significantly and directly associated with Overall Satisfaction. Both of the pedagogic-oriented constructs also influence Overall Satisfaction, Student Referrals, Alumni Donations and Academic Achievements.

7.1.2 Second Research Objective

To examine changes in average (mean) level of student overall satisfaction across time and growth trajectories between students and within each student over time.

The longitudinal data analysis focuses on Overall Satisfaction, Student Referrals and Alumni Donations. In addition, the two most important constructs that also mediate between other latent constructs i.e. Teaching & Learning and Institutional Socialisation are also included in the longitudinal data analysis.

The results show that all five latent constructs show a gradual decline in mean values as shown in Table 27. The results show that the mean level of all the constructs included began with a high value, but all constructs have negative values for average rate of change over time (slopes) indicating a declining trend in each semester, although of varying degrees (Table 27).

The longitudinal results showed both fixed and random effects over time on Overall Satisfaction, Alumni Donation, Student Referrals, Teaching & Learning and Institutional Socialisation. As shown in Table 30, the fixed effects of time on Overall Satisfaction and Student Referrals are slightly higher than the other three constructs. This indicates higher level of Overall Satisfaction as well as higher level of commitment to make Student Referrals. Alumni Donations appears to be the lowest fixed effect over time, where students are not willing to commit future financial donations.

Table 30 – Fixed and Random Effects of Time

	Fixed Effects		Random Effects	
	Average level at the start	Average rate of change	Between Variance	Within Variance
Overall Satisfaction	6.198*	-0.120*	0.249*	0.049ns
Alumni Donations	4.961*	-0.371*	0.033ns	0.152*
Student Referrals	6.172*	-0.190*	0.372*	0.059ns
Teaching & Learning	5.985*	-0.133*	0.355ns	0.058ns
Institutional Socialisation	5.641*	-0.132*	0.000ns	0.074ns

The random effects, on the other hand, do not show much variability for individual trajectories over time. Almost all students appear to exhibit similar trajectory parameters i.e. all estimates are insignificant except Alumni Donations indicating that students are responding differently to committing to financial donations.

The results help examine the nature of student satisfaction and its associated constructs over time. The higher ratings at the start of their course in semester one indicate that students are overwhelmed with the transition from college or school to university. The fixed effects of rate of change over time show a

negative trend signifying that students are readjusting and adapting to the university environment.

7.2 Theoretical Contribution

Student satisfaction in higher education is gaining wider acceptance, and is considered as an important aspect and measure of student learning at universities (El Ansari and Oskrochi 2004; Hermans, Haytko et al. 2009). The use and application of customer satisfaction literature, theories and concepts in higher education is widespread (Desai, Damewood et al. 2001). Universities now seem to be gradually becoming part of the service industry, looking at students as customers, and competing for them in national and international marketplaces (Gold 2001; Salter and Tapper 2002; Appleton-Knapp and Krentler 2006). Students are now viewed as a resource for additional income through tuition fees in a fast changing economic climate where public funding is shrinking, and there are increasing demands for quality assurance in an audit culture (Power 1997; Rautopuro and Vaisanen 2000; King 2001; White 2007).

The situation described above has changed the concept of student satisfaction in higher education in the United Kingdom. The voices and views of students are becoming ever more important and responding to their needs and requirements has never been so critical for university management. The role of students in their own satisfaction has become inevitable. However, most established models of student satisfaction only address views and perceptions of students in terms of their learning experience i.e. Teaching & Learning, Assessment & Feedback, Learning Environment and Learning Resources.

These established models fail to take into account the role of students and their influence on their own satisfaction.

The empirical model presented in Chapter 5 (Results and Data Analysis) adopts an holistic approach and offers a plausible empirically sound option to explore student satisfaction. This expands the established models of student satisfaction by including concepts of Student Engagement (Class Participation and Academic Involvement) and Student Participation (Institutional Socialisation and Student Socialisation) to explore student satisfaction. The results are robust with good model fit indices (Chapter 5) that further validate the plausibility of the empirical model.

The empirical model is superior to the established models and expands the theoretical understanding of student satisfaction in the higher education context. It suggests a useful way of conceptualising student satisfaction in the current economic climate where student satisfaction data receives much attention. The university rankings based on student satisfaction, such as the National Student Survey (NSS), have implications for students' decisions in selecting a university (Brennan, Brighton et al. 2003; Surridge 2006; Williams and Cappuccini-Ansfield 2007; Barnett 2011). More recently, a study focusing on NSS satisfaction ratings and its effects on university choice concludes that the results provide evidence that NSS ratings influence university league table rankings and ultimately university applications (Gibbons, Neumayer et al. 2013).

The empirical model gives market orientation to the way student satisfaction can be evaluated by including constructs on the role of students in their own satisfaction. It is argued that when students realise that they have a role to play in a successful learning experience, they tend to be less dissatisfied when desired outcomes are not achieved. An example presented in Section 6.1.5 (Chapter 6 – Discussions) demonstrates that students achieving lower grades are prepared to commit to make Alumni Donations more readily than those who achieved higher grades. Students achieving lower grades appear to take responsibility for their grades and do not blame teachers or their university and thus their views about Alumni Donations are unaffected. Table 26 in Section 6.1.5 (Chapter 6 – Discussion) shows that 20% fewer high achievers are likely to commit to Alumni Donations.

These findings could have interesting theoretical implications for how student satisfaction data should be collected. The inclusions of the aspects of student engagement and student participation in any student satisfaction model could provide an opportunity to manage their expectations. At the same time it may have effects on the consequence of student satisfaction i.e. Student Referrals and Alumni Donations.

This thesis also contributes to the wider literature and subject of student satisfaction in higher education in terms of examining the effects of time on student satisfaction. This has been done keeping the same latent structure to understand the relationships identified in the empirical model based on cross-sectional data. The longitudinal data provides useful information on fixed and

random effects of time on Overall Satisfaction, Alumni Donations, Student Referrals, Teaching & Learning and Institutional Socialisation. This will influence the way student satisfaction surveys are conducted and transforms the cross-sectional snap-shot into a continuous and incremental process to see the effects over time.

7.3 Limitations

One of the main limitations of this study appears to be the sample size. Although the methodological literature reviewed provides support for the available sample size for this thesis being robust i.e. cross-sectional sample 147 and longitudinal sample 66, these sample sizes are toward the lower band of the required sample as stipulated in the methodological literature (Comrey and Lee 1992; Tabachnick and Fidell 2001; Costello and Osborne 2005; Hair, Black et al. 2006). A larger sample size is desirable; however achieving it posed many challenges particularly in the case of longitudinal data.

The final empirical model presented in the thesis is of an exploratory nature and does not claim to be inclusive of all aspects of student engagement and student participation of students. However, the empirical model provides a useful starting point to influence the established model and start taking notice of the aspects of student engagement and student participation and their relationship with satisfaction.

7.4 Recommendations for Future Research

This thesis draws literature from a variety of disciplines i.e. pedagogical, service marketing, customer satisfaction and student satisfaction in higher education. The initial theoretical model is developed based on a broader literature base with different understandings of the concepts and constructs than the one used in this thesis. The scales used for the constructs are modified and are not used in original connotations and dispositions. These scales were also checked for validity and reliability but might require further research to make them fully adaptive.

This thesis is an attempt to test the theory of student satisfaction that includes the role of students in their own satisfaction. The conceptual framework (Chapter 3) and the empirical model (Chapter 5) provide a foundation to develop a theory and future research could utilise and further advance this purpose.

Annexes

Annex 1 – Ethical Approval Letter

Professor Denise Morrey and
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19th June 2009

Dear Professor Denise Morrey and Dr Reza Oskrochi

UREC Registration No: 090394: "Longitudinal study to assess student satisfaction with their learning experience through time."

Thank you for your email of the 16th June outlining the response to the points raised in my previous letter for your **PhD student Shakil Ghori** and attaching the revised documents.

I notice that there are one or two minor spelling errors on the PI sheet and Consent Form that has been resubmitted by email. Please arrange to have them proof read and amended before use in the study proper.

I am pleased to inform you that, on this basis, I have given Chair's Approval for the study to begin.

The UREC approval period for this study is six months after the expected completion date, so the 29th February 2012. If you need the approval to be extended please do contact me nearer the time of expiry.

In order to monitor studies approved by the University Research Ethics Committee, we will ask you to provide a (very brief) report on the conduct and conclusions of the study in a year's time. If the study is completed in less than a year, could you please contact me and I will send you the appropriate guidelines for the report.

I hope that you have found the review process helpful and constructive, and wish you all the best with the PhD research,

Yours sincerely

Dr Elizabeth T Hurren
Chair of the University Research Ethics Committee

cc Shakil Ghori
   Brian Andrews
   Graduate Office

Annex 2 – Poster

Longitudinal Study to Assess Student Satisfaction with Their Learning Experience through Time

You could make a difference...

Participate in this Research Study to let us know your views about your learning experience at Oxford Brookes University

Important Information for First Year Students

We would like to invite you to take part in this research study that will look into various aspects of your learning experience.

What is the purpose of the study? The longitudinal study will only focus on first year students 2008/2009 in all eight schools at Oxford Brookes University. It will focus on your learning experience covering various aspects such as modules, teaching, teaching staff and personal tutors, assessment, feedback, facilities and administration, and the learning and social environment at Brookes.

What will happen to me if I take part? You will be invited to take part in 4 one-to-one discussions over a two year period (one discussion per semester). The duration for each one-to-one discussion will be approximately 30 minutes.

The discussion will be informal and could take place on any of the campus locations at Oxford Brookes University.

What should I do if I want to take part? Please send an email to Shakil Ghori shakil.ghori@brookes.ac.uk, indicating your willingness to take part in this study with the following information:

• Your name	• School
• Student number	• Suitable date for first interview
• Course	• Suitable time for first interview

By agreeing to take part in this study, you will positively contribute towards a greater understanding of these issues. You participation will benefit in terms of improvement in policies, procedures and practices that affects you and the thousands of other students at Oxford Brookes.

For further information please contact Shakil Ghori, PhD Student, shakil.ghori@brookes.ac.uk.

I do hope you will consider taking part.

Annex 3 – Information Sheet

Information Sheet

Longitudinal Study to Assess Student Satisfaction with Their Learning Experience through Time

You are being invited to take part in this research study that will look into various aspects of your learning experience at Oxford Brookes University. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

What is the purpose of the study?

The longitudinal study will only focus on first year students 2008/2009 in all eight schools at Oxford Brookes University. It will focus on your learning experience covering various aspects such as modules, teaching, teaching staff and personal tutoring, assessment, feedback, facilities and administration, and the learning and social environment at Brookes.

Why I have I been invited to participate?

In response to our invitation interested students were requested to send us an email with basic information. We have developed a list of all students who sent us email to show their willingness to participate in this study. To achieve a representative sample we have selected students randomly and you are one of these students.

Do I have to take part and do I have to answer all the questions?

Taking part in this study is entirely voluntary and it is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form.

By choosing to either take part of not take part in the study will have not impact on your results, assessment or future study.

You do not have to complete any questions that make you uncomfortable. If you decide not to take part you are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?

You will be invited to take part in 4 one-to-one discussions over a two year period (one discussion per semester). The duration for each one-to-one discussion will be approximately 30 minutes.

The discussion will be informal and could take place on any of the campus locations at Oxford Brookes University.

What are the possible benefits of taking part?

By agreeing to take part in this study, you will positively contribute towards a greater understanding of these issues. You participation will benefit in terms of improvement in policies, procedures and practices that affects your and thousands of other students at Oxford Brookes.

Will what I say in this study be kept confidential?

All information collected about the individuals will be kept strictly confidential (subject to legal limitations) and your data will be de-identified using simple coding. Since the number of participants is not great, it will be easy to use simple digital coding.

The study will ensure confidentiality, privacy and anonymity in the collection, storage and publication of research material. Data generated by the study will be retained in accordance with the University's policy on Academic Integrity. Data generated in the course of the research will be kept securely in paper or electronic form for a period of five years after the completion of a research project.

What should I do if I want to take part?

Please send an email indicating your willingness to take part in this study with the following information:

- Your name
- Student number
- Course
- School
- Suitable date for first interview
- Suitable time for first interview

What will happen to the results of the research study?

Part of the results and findings from this research will be used in my thesis for PhD. There will be a number of paper published focusing of various aspects of the study. You are welcome to request copies of papers if you like to take a look. PhD thesis, once completed could be obtained form the library thesis service.

I am working towards my PhD within Department of Mathematics and statistics, School of Technology under supervision of Prof. Denise Morrey, Dean of School of Technology, dmorrey@brookes.ac.uk and Dr. Reza Oskrochi, Senior Lecturer in Statistics, roskrochi@brookes.ac.uk.

For further information please contact Shakil Ghori, PhD Student, shakil.ghori@brookes.ac.uk.

Please note that the project has received clearance the University Research Ethics Committee (UREC).

If you have any concerns about the way in which the study has been conducted, please contact the Chair of the University Research Ethics Committee on ethics@brookes.ac.uk.

Thank you for taking part in this study.

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Annex 4 – Participants' Consent Form

CONSENT FORM

OXFORD BROOKES UNIVERSITY

Full title of Project:: Longitudinal Study to Assess Student Satisfaction with Their Learning Experience Through Time

Name, position and contact address of Researcher: Shakil Ghori, PhD Student, School of Technology, Oxford Brookes University, Oxford OX33 1HX, shakil.ghori@brookes.ac.uk.

Please initial box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.

3. I agree to take part in the above study.

Please tick box
Yes   No

Note for researchers:
Include the following statements if appropriate, or delete from your consent form:

4. I agree to being interviewed once a semester for the next two years and to being audio recorded where appropriate

5. I agree to the use of anonymised quotes in publications

6. I agree that the research team will collect demographic and academci progress data from the university database

7. I woul prefer to provide demographic and academic progress data during my first interview

Name of Participant	Date	Signature

Shakil Ghori

Name of Researcher	Date	Signature

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