STRUCTURAL DIVERSITY OF CAMPUS ENVIRONMENTS IN HIGHER TECHNICAL INSTITUTES: A STUDY ON UNDERGRADUATE STUDENTS OF INDIAN INSTITUTE(S) TECHNOLOGY AND NATIONAL INSTITUTE(S) TECHNOLOGY

Thesis

Submitted in partial fulfilment of the requirements for the degree of

DOCTOR OF PHILOSOPHY
by

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DECLARATION

By the Ph.D. Research Scholar

I hereby *declare* that the Research Thesis entitled, **Structural Diversity of Campus Environments in Higher Technical Institutes: A Study on Undergraduate Students of Indian Institute of Technology and National Institute of Technology** which is being submitted to the **National Institute of Technology Karnataka, Surathkal** in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy in **School of Management** is a *bonafide report of the research work carried out by me*. The material contained in this Research Thesis has not been submitted to any University or Institution for the award of any degree.

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DEDICATION

To

My Parents

Smt. Mechu Kumari Nandalike and Sri Soorappa Salian Barimar

For instilling emphasis on ‘Quality education’ from day one in my life that has entrenched an educational path with disciplined approach for long thereby strengthening and stabilising the momentum of academic integrity and freedom of every niche I placed on in the venture of being addressed to as an ‘academician’.

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Vijayalakshmi N.S

Abstract

The state of diversity at campus environments of Indian Institutes of Technology (IIT's) and National Institutes of Technology (NIT's) for a variety of reasons has stifled to embrace on vivacity of adaptation. The undergraduate four-year B.Tech engineering students of higher technical institutions of Indian Institutes of Technology (IIT's) and National Institutes of Technology (NIT's) aptly *adjust* and not sneeringly *adapt* to the established mechanisms of their campuses. The structural components of student diversity within each campus have a closure of differences existing on perceptive sub-environments of academic, social, physical – psychological and institutional environments operating within one whole of campus environment. This multitudinous nature of functioning of sub-environments has often bigoted by superficial numeric entity of expenditures alone in the sphere of higher education which immaculately threatens the virtual being of the powerful stakeholder – *the student*. The experiences of students in higher education is rote defined by semester, curriculum and grades achieved. The value–added perception that moulds up the student is intercepted by time spent ardently at campus environment. Thus the way students' role has been defined in higher education relies on *challenges* versus the *changes* students face to counter their beliefs which have often remained estranged to be identified at campuses. This motivates the study to embed *students' individual experiences towards student satisfaction*. The research envisages methodology of explanatory sequential mixed method research with deductive reasoning in the first phase of quantitative research that adopts probability sampling techniques of cluster, systematic and simple random sampling. The second phase of qualitative case study research enfolds inductive reasoning with non-probability sampling techniques of purposive and judgemental sampling. In enlisting the required information for quantitative data from the institutes' questionnaires were administered. This data was tabulated and analysed quantitatively using multivariate analysis of variance (MANOVA) followed with discriminant analysis and independent – t tests. Qualitatively a case study approach with semi structured interviews at one of the institutes were conducted and analysed using open, axial and hierarchical coding. The findings suggest that structural component of student adaptability to campus environments differ among the sub environments towards student satisfaction. This makes it vital to value structural diversity among students as it's an interplay of heterogeneous group functioning in a perceived homogeneous campus environment. Further institutional commitment to diversity is encouraging having diversified effects not only on individual outcomes but also campus environment which further

reinforces the benefits associated with diversity. Therefore, it is recommended to emphasise diversity in higher education policies with diversity management penetrating all areas of institutional life of a student. Moreover, diversity aspects remain less observed in Indian universities where there are variations in degree of intensity of campus adaptability at Indian higher technical educational institutions of Indian Institute of Technology (IIT's) and National Institute of Technology (NIT's). Consequently, there is a need to claim the continuing importance of affirmative action on diversity management in multicultural context by colleges and universities in India that could act as means of fostering students' academic, social, physical – psychological and institutional growth across faculty – staff and other diversifications. Finally, the research asserts that engagement with diversity not only supports social justice, but also prepares students, faculty, staff, parents, government and society at large for ethical wellbeing in an interconnected world. Therefore, the study concludes by recommending that regular annual campus environment surveys at higher technical educational institutions could foster a new avenue for introspection on higher education to gather momentum on the less emphasised aspect of student satisfaction.

Key words: Higher Education, Academic, Social, Physical – Psychological, Institution, Campus Adaptation.

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ABBREVIATIONS

ANOVA	Analysis of Variance
MANOVA	Multivariate Analysis of Variance
SSCP	Sums of Squares and Cross Products matrix.

CHAPTER ONE

INTRODUCTION

CHAPTER ONE
INTRODUCTION

1.1 Chapter overview

This chapter provides an introduction to the scope of the thesis. It is divided into eight sections. Following the introduction, section 1.2 presents the backdrop for research. Section 1.3 highlights the statement of the problem with the backdrop of higher education. Section 1.4 covers significance of the study. Section 1.5 provides for research questions. Section 1.6 focuses on research objectives. Section 1.7 focuses on methodology adopted for the study. Finally, the overall configuration of thesis is outlined in section 1.8.

1.2 Research background

An approach to democratising a phase of college education is the need of the day (Grant, 1958). The human capital models of undergraduate student success emphasise variation in undergraduate department resources and environments (Moore & Keith, 1992) focusing the need for evaluating university environment from a comprehensive education system perspective. The future of campus thus relies on looking backwards of its aura on education system (Ehmann, 1997).

Higher education outcomes differ by institutional types (Kempner & Taylor, 1998). The collegiate ideal is the development of the whole student (Wolf-Wendel & Ruel, 1999) where college environments influence student learning (Anaya, 2001). The academic structure in such environments acts as a formal organisation of knowledge (Gumport & Snydman, 2002) often reminiscing that university academics delve in demographic, role, structure, character and attitudes towards merit and equity (Ishmael Irungu Munene, 2002). Further interpreting academic identities is like having a check on reality and fiction on campus (Tierney, 2002).

Student characteristics impact students' engagement in educational activities (Hu & Kuh, 2002) with varying affluence levels of learning styles on student enrollment and student success (Buerck etal., 2003). Hence the vitality of student engagement on

campus (Ellis, 2004) has not only the less magnified student characteristics towards student engagement (Kuh & Umbach, 2004) that contributes to student outcomes (Hu & McCormick, 2012) and student achievement (Wawrzynski et al., 2012) but also the less thoughts of assistance required in transition when students' move into institutions of four-year undergraduate engineering program from two-year institutions (Rowland et al., 2004).

The Carnegie classification of institutions based on students' experiences (Pike & Kuh, 2005) reflects that for India's ambitions to be a world leader in science and technology depends on a drastic revamp of the university system of education (Lakhotia, 2005) with effective educational practices focusing on students' engagement (Zhao et al., 2005). College and universities as stakeholders have vital role on and off campus (Bromley, 2006) conceptualising the academic life from undergraduate students' perspectives (Bieber & Worley, 2006) that encourage formation of engineer identities as a figured world (Tonso, 2006). Moreover moving towards a knowledge-based society (Deshpande, 2006) campuses shoulder the spirit to reawaken a sense of community (Wilson, 2006) that create more engaged citizens (Raill & Hollander, 2006). Never the less this calls for an approach to undergraduate engineering education for the 21st century (Kastenberg et al., 2006) reasserting by far that educating the millennial student has challenges of academics (Smith, 2006) and a student's perception of engineering education as an academic discipline (Dalrymple & Cox, 2006) is important to be interrogated.

Students' exchange experiences in undergraduate engineering education (Dams & Pagola, 2007) impacts student development (Engberg, 2007) and overall quality of college life on students' wellbeing (Sirgy et al., 2007). At the farther end, college students' have been deficient in the humanistic care and education of value with importance towards life ; so university programs must aim at students' importance for life (Xingyan, 2008) that fosters student success in campus community (Penny et al., 2008; Laura;Rowan-Kenyon, 2009).

College or institutional impact on campus environment can be known by multi-campus studies (Astin & Denson, 2009) that reveals student experiences on

educational outcomes (McCormick et al., 2009) as it is more often revered that education impacts human development and influences quality of life (Narayana, 2009). Education as engineering (Dewey, 2009) has an objective of effective student engagement in engineering to enhance students' performance (Wilson & Cambron; Dunn & Mulvenon, 2009). It is in this regard that it is often found vital to improve engineering education towards recognising and learning from the ways in which educators take into consideration educationally relevant student differences (Sattler et al., 2009). University outreach programs that leverages knowledge economy and knowledge society (Narasimharao, 2009) fosters a relationship between student learning and student development (Pizzolato & Hicklen, 2009). The pre-college factors too have their role in assessing and understanding student engagement (Dunn & Mulvenon, 2009).

Campus management system (Alt & Auth, 2010) need to have a vigil on student engagement that leads to the decline of the normal student; increasing students' success and retention (Wyatt, 2011) differing by context of engagement in engineering studies (Patterson et al., 2011) and student perceptions (Bevins, et al., 2011). Human resource management in college and universities (Qinglin & Xinqi, 2011) is vital to bring everyday life into engineering education (Pasman & Mulder, 2011) as it is the consumption value of education which is an important stimulus for educational selection (Alstadsæter, 2011) with breadth and intensity of activity involvement influencing transition towards university (Busseri et al., 2011). Moreover, it is the great expectations that leverage students' educational attitudes towards transition to post-secondary institutions (Elffers & Oort, 2013). Thus, students' are primary customers of education who receive services directly while secondary customers are family and tertiary customers of society at large (Tohidi & Jabbari, 2012).

The growth effects of education that impact human capital (Paradiso, 2013) reflects the fact that the new century students' have multiple challenges ahead (Ladson-Billings, 2013) often finding a student juxtaposed in learner-centred inquiries (Galt et al., 2013). Hence the campus traditions that have followed from the past to the present (Gutowski, 2014) stress on students' active engagement determining to learn on

college students'(Barr, 2014) prodding it that in the long run, it could act as a strategic tool to develop the quality of education (Saha, 2014). Never the less, the often shrugged integration of college students' towards educational outcomes (D'Amico et al., 2014) with structural background characteristics plays a stronger role in shaping educational aspirations towards educational choice (Hegna, 2014) highlights the fact that regular reflections on academia from time perspective is needed (Sabelis, 2015).

1.2.1 The perceptions of campus climate and campus diversity

Campus climate

Campus climate has practices, patterns, and trends of college campuses as a public realm of the place predicts everyday urbanism functioning where the dimensions of student engagement occur to identify one with the climate of campus. Human capital models of undergraduate student success emphasizes variation in undergraduate department resources and environments (Moore & Keith, 1992) calling for the need to evaluate university environment from a comprehensive system perspective. The personal, demographic, and environmental character influences academic performances (Cejda et al., 1998). It is the campus environment that shapes the attributes required of graduates for the future workplace (Gow & McDonald, 2000) so the emphasis on student learning amidst college environment (Anaya, 2001) is vital as it is said to strengthen student enrollment and student success (Buerck et al., 2003). The factors related to study success in engineering education has student perceptions of study environment determining study orientations leading to study success (Tynjälä et al., 2005). College environment influences learning and development among students' (Inkelas et al., 2006) contributing to their academic achievement (Lang et.al., 2007). However, students' perceptions of learning environment that impacted students' learning and performance (Struyven et al., 2008) relied on study environment with different approaches changing along external demand in the program (Jungert, 2008). This makes us comply that if the prime focus is laid to understand and define campus climate (Hart & Fellabaum, 2008), then effective assessment of campus climate could enhance student success (Vogel et al., 2008). Further students' strategies influence their study environment by applying strategic

approach to studying (Tomas Jungert & Rosander, 2009) in harmonious campus environment initiates innovation (Miao, 2009).

Educational setting impacts youths transition to post-secondary life (Britten & Borgen, 2010) where individual & environmental factors signify short and long-term interest in engineer (Creamer et al., 2010) determining quality of life and motivation to learn (Henning et al., 2010). The student perception of the educational climate strategies to improve the student-centeredness and student-friendliness of the school's educational environment (Pierre et al., 2010) renders that climate in undergraduate engineering education (Chatman, 2010) relies on campus management system (Camacho et al., 2010).

Environment impacts academic performance of engineering students' (Zakaria et al., 2011). The learning environment influences career competencies of students' (Kuijpers et al., 2011) with a sound educational environment being fostered by the institution despite demographic variations (Palmgren & Chandratilake, 2011) contributing positively to integration of international students' into domestic campus environment (Guo & Chase, 2011).

Learning environment and learning approaches among engineering students' (Rahman et al., 2012) are vital as it is the perception of the learning environment by students' (Al-Kabbaa et al., 2012) with positive experiences of campus climate and students' educational experiences (Glass, 2012) that makes it more personal, environmental and opportunity with factors towards career choice (Korir, 2012). Thus, a part of student learning progress and positive perceptions of campus climate are their educational experiences (Glass, 2012).

Campus climate assists students' personal and social responsibility (Ryder & Mitchell, 2013). Building harmonious educational environment by making it more student oriented (Bian & Ma, 2013) intimidates living environment to turn positive towards reading attitudes (Morni & Sahari, 2013) and sensitises academic environment to be more welcoming towards better access to higher education to a wider audience (Ramsey et al., 2013). Never the less, learning climate or environment influences commitment to academics as a correlation between academic, social

adjustment in urban environment contributing to academic achievement (Ismail et al., 2013).

Perception of academic education environment impacts undergraduate college students' (Ousey et al., 2014) as campus climate imbibes a sense of belonging (Stebleton et al., 2014) with person-environment fit framework of students' enrollment and persistence in engineering education (Le et al., 2014) making student engagement inclusive connected towards purposeful campus environments (Glass et al., 2014).

In brief, students' are in search of perfect learning environments in higher education (Kahl, 2014). With profound difference among students' perception of actual versus preferred classroom environment (Lai et al., 2015); the immediate learning environment chases students' achievement goals (Lee & Bong, 2015). Therefore learning climate impacts effective commitment of academics (Southcombe et.al, 2015) and perceptions of campus climate vary by parents, students', faculties who are the vital stakeholders of higher education (Cavrini et al., 2015).

Campus diversity

Campus diversity relies on future growth of Indian higher education which is based on historical development, depth, spatial spread and diversity dimensions (Khanna, 1994). The level of student involvement in activities, people, experiences and communities or organization also depends on diversity (Terenzini et al., 1994).

It is observed that friendship groups impact diversity (Antonio, 2001). Student feelings of association to the campus and openness with tolerance to diversity which was higher at larger universities (Summers et al., 2002) have the real discourse on diversity relying heavily on as a dilemma between preservation or transformation (Chang, 2002). Diversity in higher education has an impact on students educational outcomes(Gurin et al., 2002) making college desegregation and trans-demographic enrolments facilitate good intention of diversity (Brown, 2002) with overall retention towards enhancing diversity (Anderson & Northwood, 2002).

A diverse pool of engineering undergraduate students' (Powers et al., 2003) enhances students' experiences with increased levels of diversity in campus (Singley &

Sedlacek, 2004). This sort of institutionalising campus diversity in higher education (Cross, 2004) makes diversity a challenge of heightened nature in higher education (Brown, 2004).

Diversity has many facets (Beidler et al., 2005). Student involvement with campus diversity results in action-oriented democratic outcomes (Zuniga et al., 2005). This makes policy discourses and changing practices arrange for a new dimension to diversity (Chan, 2005). Student experiences with diversity is a claim for distinctiveness (Umbach & Kuh, 2006) where perceptions of campus environment influence the structural diversity of students' (Pike & Kuh, 2006). Diversity trumps freedom on campus (Talkington, 2006) as campus diversity impacts students' educational outcomes (Kuklinski, 2006) making perceptions of diversity in a multicultural setting to remain diverse (Cachon, 2006). This rever us that institution size, organization, and content impact institutions diversely (Darling-Hammond et al., 2006).

Diversity at institutions has to be good and feasible. Effective strategies to increase diversity in science, technology, engineering and maths fields (Tsui, 2007) need to act on diverse target group orientation as a key aptitude in engineering education (Ihsen & Buschmeyer, 2007). Diversity experiences renders changes in attitudes among students' (Aberson, 2007) emanating retention and progression of students' with diverse educational backgrounds (Bamforth et al., 2007) from diverse identities contributing towards diversity in engineering education (D'Cruz, 2007).

Diversity is imperative for engineering education (Bouville, 2008; Fleming, 2008). For growth and diversity in education, assessing educational experiences of students' remains vital (Pearson et al., 2008). Critical self-assessment about their commitment to diversity (Hurtado et al., 2008) promotes diversity, retention and outreach impacting globalization readiness of engineers (Doerschuk et al., 2008). Thus managing diversity in higher education (Joy Gaston Gayles, 2008) amidst campus socio-economic diversity is missing in application (Koffman & Tienda, 2008) tethering that higher education's diversities like student institution experiences and

outcomes (Brennan & Osborne, 2008) rely on student interaction alone especially at elite institutions (Kramer, 2008).

Addressing diversity issues within undergraduate engineering education (Tooley & Umphress, 2009) helps to deal with student satisfaction with diversity (Park, 2009; Tooley & Umphress, 2009) thereby increasing diversity documents on college and career success (Winkleby, 2009). Student affairs thereby need to be diversely researched or studied (Pope et al., 2009) as it is only integration in campus with diversity (Thornton et al., 2009) that impacts retention in engineering (Kelley, 2009).

Diversity in higher engineering education (Patko et al., 2010) has its diverse courses on wellbeing on campus (Nicholas A. Bowman, 2010) that broaden diversity in undergraduate education (Goins et al., 2010). Educating in diversity impacts educational quality (Alegre & Villar, 2010) and it is the virtual paradox of diversity (Marichal, 2010) that adorns attracting, retaining, and preparing a assorted academic engineering workforce (Donnelly et al., 2010).

The power of diversity in engineering education creates excellent campus excellence (Valdés et al., 2012). The diversity directed towards student engagement (Crede & Borrego, 2012) emphasise a model for diverse learning environments (Hurtado, 2012) that helps manage diversity in engineering organisation (Sharp et al., 2012) enhancing campus climate for diversity (Astin, 2012) as also facilitating framing of access in university diversity policies (Iverson, 2012). Transition to university reflects the diversity of student voices (Gazo-Figuera, 2013). Student perspectives on the diverse climate need for a broader definition of diversity within climate for inclusiveness (Dhaliwal et al., 2013) re-envisions multicultural education in diverse academic contexts (Ndura & Dogbevia, 2013). The staged experiences from differences in diversity (Frieze & Quesenberry, 2013) has its imprint even on civic engagement of students' (Cole & Zhou, 2013).

In brief, diversity experiences and perceptions of campus climate varies across institutions (Bowman & Denson, 2014). The openness to diversity remains a challenge towards college experiences, achievement and retention of students' (Bowman, 2014) affecting self-perceived gains in critical thinking (Cole & Zhou,

2014). In short, social acceptance as a part of diversity (Chen & Hamilton, 2015) mesmerises students' experiences of vivid diversity on perceptions of campus climate (Bowman & Denson, 2014) as after all ; for an engineering student it remains as an uncommon thread in education (Chen & Hamilton, 2015).

1.2.2 The juxtapose of adjustment versus adaptation in higher education

The concept of adjustment

College experiences impact students' college adjustment (McClure, 2007). The campus climate and diversity extends notions of adjustment even to students' in the transition from high school towards college (Locks et al., 2008) with structural adjustment and posts adjustment policies having a say in access to higher education institutions (Espinoza, 2008). Students' perceptions of students' adjustment to college vary (Jenkins & Galloway, 2009). The college adjustment problems persisted among first-year college students' who witnessed adjustment disorder which was higher in female than male students' (Rodgers & Tennison, 2009). Further stability impacts adjustment outcomes of students' of first years who are in their initial phase of transition to college (Marnie Hiester et al., 2009). Moreover, student adjustment to higher education is influenced by alternated educational pathways that help to cope with the demand of college life (Shankland et al., 2010).

Students' witness challenges to university adjustment (Wu, 2011) as undergraduate needs impact adjustments on campus (Olofintoye, 2011). Factors that move students' adjustment at a university relies on personal, emotional, social and academic issues (Julia & Veni, 2012) with academic, social, psychological adjustment influencing university life (Yau et al., 2012). Thus students' adjustment to the university environment is an important factor in predicting university outcomes and is crucial to their future achievements (Yau et al., 2012).

The demographic variables for long have had their effect on college students' adjustment (Aderi et al.,2013). It is often said that 'Like Playing with Fire Under a Hut' – 'You Will Get Burnt If You Do Not Adjust' (Sibanyoni & Pillay, 2014) so the undergraduate students' adjustment which is academic, social, personal physical and institutional attachment (Rajab,et al., 2014) has within its fold has academic anxiety,

social segregation, career demands, study life unevenness all of them impacting adjustment outcomes in college students' (Bergin & Pakenham, 2015).

Vivacity of adaptation

For long there has been an estranged view on how objective environments influence perceptions of environment impacting structural adaptations (Yasai-Ardekani, 1986) but the level of adaptation with degrees of its multiple kinds at the campus are left unanswered across institutional campuses all over India. Higher education of the twenty-first century provides a chance of adapting to learning environments (Poce, 2009).

1.3 Statement of the problem

Higher education is being built for decades on the power of interaction of forces. This when viewed in a supply chain context staging from power of globalisation to the flow of economics, thrives towards industry and its needs with challenging workplace attributes and to the long drive for skill enhancement. All these settle down to the fundamental crux of higher education. The boon of 21st century, however, is that it had at foreplay of the fusion of globalisation and information technology revolution that led the world from a phase of being connected to hyper-connected and from interconnected to being interdependent. This has been varying by degrees and of kind kindling differences in universities and later to a superlative level of the job. The scenario now is that everybody lives in this fusion but does not know how to explain this fusion. The answer to this perhaps lies in the campus environments

For long the survey reports in higher education have been forecasting in digits of outlays and expenditures made on higher education over the years. It only highlighted funding aspect of higher education which over the decade has been felt never enough with the hue and cry daunting for more and more. This exuberated logic that resources alone could fulfil the gap and enrolments alone did it is even more ghastly paranoid. The shift of pendulum on one of the vital stakeholder or the centrifugal point of higher education, being referred to as "student" at large, is very minimal or running to even a zero. This drift could essentially chance the betterment factor of students'

whose vitality could be rebooted towards enhanced performance with multiple functioning practicalities at campus environments.

1.4 Significance of the study

The research makes a contribution to both higher education institutions and academic knowledge. From the literature review, there is evidence that the diversity existing as structural components among students' are drivers for campus environments. There is scope for presenting a framework which is capable of effectively evaluating campus environment in the higher education arena. From a practical point of view, this study could be used for up gradation of multi-institutional campus environments serving as guidelines for the empowerment of the student stakeholder at higher education institutions.

Accordingly, the following questions set out the problem of this research

1.5 Research questions

The study envisages the following research questions:

(1) What makes campus environments of higher technical educational institutions unique in its nature and characteristics?

(2) Which factors influence academic adaptation of students' at undergraduate engineering institutional campus environments?

(3) Why are social factors vital for adaptation to undergraduate engineering institutional campus environments?

(4) Which are the physical–psychological adaptation factors that intervene students' academic life at undergraduate engineering students' institutional campus environments?

(5) How have institutional adaptation factors matched career goals of students' leading to successful retention of students' at undergraduate engineering institutional campus environments?

1.6 Research objectives

In order to answer the above research questions, the following objectives are envisaged:

(1) To identify the factors that determine structural diversity that sets forth the institutional campus environment for undergraduate engineering students' of higher technical educational institutions.

(2) To examine the factors contributing to academic adaptation of students' at undergraduate engineering institutional campus environments

(3) To assess the factors contributing to social integration of students' at undergraduate engineering institutional campus environments

(4) To determine the perception of physical–psychological integration of students' at undergraduate engineering students' institutional campus environments.

(5) To make suitable recommendations that support mechanisms for successful retention of students' at undergraduate engineering institutional campus environments.

1.7 Research methodology adopted for the study

This study addresses campus environments. An explanatory sequential mixed methods design is used that involves at first collecting quantitative data and then explaining the quantitative results in depth with qualitative data. Questionnaire was used to collect data at quantitative phase of study and data was collected from undergraduate student population alone of higher technical educational institutions of IIT's and NIT's to assess whether structural components of student diversity (independent variables) relate to academic, social, physical – psychological and institutional adaptations (dependent variables) with a parametric test of multivariate analysis of variance (MANOVA) followed up with discriminant analysis. The second phase of qualitative analysis was held as a follow-up to the quantitative results. In the exploratory follow-up, campus adaptation of students' who had been a part of earlier quantitative data collection with purposive sampling is considered. Open, axial and Hierarchical axial coding undertaken for qualitative data analysis supports the quantitative findings, especially to that of significant outcome being observed in first generation college students' divergence in campus adaptability. Therefore, the study

concludes by recommending that regular annual campus environment surveys at higher technical educational institutions could foster a new avenue for introspection on higher education to gather momentum on the less emphasised aspect of student satisfaction.

1.8 Structure of thesis

The thesis includes total of five chapters. Chapter one introduces the issues related to the topic under investigation with the background for research, statement of the problem, research questions, research objectives and a brief overview of the methodology used in the study. Chapter two provides a review of literature that forms the theoretical framework by identifying structural components of variability in campus adaptation across students'. Based on the research gaps identified, a conceptual framework is developed with hypotheses to be tested. Chapter three includes all the details of research design that empirically examine the proposed model as outlined in chapter two. The methodology comprises of explanatory sequential mixed method design with quantitative and qualitative methods, scale items used to measure the underlying constructs, sampling, with reliability and validity of the research instrument used to collect data for the study. Chapter four represents data analysis and interpretation with hypothesis testing as stated in research. Chapter five draws major findings and conclusions aiming to answer the five research questions that fulfil all five research objectives. Recommendations are drawn from the results reported. Limitations of this thesis and avenues for further research are also discussed.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

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REVIEW OF RELATED LITERATURE

2.1 Chapter overview

This chapter focuses on review of related literature. Following the literature review the section 2.2 consists of literature review on structural components of student diversity (independent variables). Section 2.3 consists of literature supporting academic, social, physical – psychological and institutional adaptations (dependent variables). Section 2.4 focuses on literature map. Section 2.5 highlights on research gaps. Section 2.6 provides for theoretical framework. Section 2.7 indicates the operational definition adopted for the study. Section 2.8 emphasises on hypothesis developed for the study and finally section 2.9 covers summarisation of the chapter.

2.2 Structural components of student diversity

The structural components of student diversity are age, gender, disability, academic year, academic major, religion, caste, generation status, college expense and socioeconomic status measures like parent's education, occupation and income level. Each component is being discussed in detail in the following sections.

2.2.1 Age

Age is a prime feature of student life on all of the higher education campuses (Thornton et al., 2016). As per census of India 1991, the student population in engineering and technology in the age group of 15 -19 were 18,258 and in the age groups of 20 -24 were 55,701. The census records state that the age cohort of 20 – 24 years saw a drastic rise in student population in engineering and technology with 5, 97,984 and 22, 62,700 in the years of 2001 and 2011 i.e. a 37.8 % rise in student population. The total number of undergraduate students at IIT and NIT was 81,802 for the year 2013 – 14 as per reports of all India survey on higher education (AISHE). However, the adaptability of these students at campus environments of institutions of higher learning, particularly in the field of engineering and technology remains untouched.

Age as a vital demographic item has a positive effect on college duration (Bers & Smith, 1991). Though there is a choice of entry into higher education by age, students spanning an age range of 18 – 24 years "the youth age" (Sriranganathan et al., 2012; Çilan & Can, 2014; Fousiya & Mohamedunni, 2014) and as the "undergraduate age" (Gasaymeh et al.,2014) are usually found on higher education campuses. It is said that there is an "age for engineering;" a point at which pre-college students are sufficiently mature to understand and appreciate the activities that are common to engineering practice where initiative and activities besides curriculum indicate a minimum age at which the engineering profession can comprehensively be introduced (Mountain & Riddick, 2005) and so 18 years is an optimal age of entry to higher education campuses. The determinants of this optimal age of entry are Joint Entrance Examination (JEE) / All India Engineering Entrance Examination (AIEEE) along with the academic standing of higher secondary schooling being completed.

2.2.2 Gender

The transformative possibilities of feminism in engineering education (Riley et al.,2009) is finding more women and diversity in engineering fields (Hopewell et al.,2009) that could transform women in non-traditional sectors of the economy with less gender segregation in workplace (Potter & Hill,2009). It's a teaser to worry about women in science (Rosser & Taylor,2009) though the larger concern would be women who stand out as a highly efficient way of shaping more gender-equitable situation in higher education (Tjomsland,2009). Understanding women's underrepresentation in engineering (Morganson et al.,2010) states back to identifying a low representation of women in engineering with fewer opportunities than male peers and acutely feel the lack of role models, in work domain and indirect roles (Smith & Dengiz,2010). Education, hence by far is gender shaped (Apple,2010) with feminism in engineering being just more than girls talk (Larkin & Quinn,2010).

The representation of student population at the institute of national importance in the field of engineering and technology as per all India survey reports of higher education from 2011 – 2016 are as follows:

Table 2.1 Classifications of students by gender

Academic year	Male	Female
2011 – 12	292482	81512
2012 – 13	325731	85867
2013 – 14	339726	90347
2014 – 15	384586	102410
2015 – 16	381730	102910

Source: All Indian Survey on Higher Education (AISHE) reports 2011 – 2016

From the Table 2.1 we infer that feminism on campus today (Agness, 2010) with feminist standpoint theory on experiences of women college students (Cox & Ebbers, 2010) vindictively points out that experience, motivation and gender difference persist in undergraduate studies (Mirjana, 2011). The door theory states that there are gender differences in attainment of engineering education (Ma, 2011b) believing that human capital in India with transition probabilities of moving from a number of different educational levels to higher educational levels is low and worse for women in India (Chakrabarty & Bhaumik, 2012). This gives a confirmation that the legitimacy of female participation in engineering (Watermeyer, 2012), especially of women undergraduates in engineering education in India, is growing (Namrata Gupta, 2012). Lastly the dilemmas of girls and women in engineering from masculine world versus feminine world (Saavedra et al.,2013) with true stance for value of the capability policy model on world bank approach (Manion & Menashy, 2013) need to look into student satisfaction that deter gender factor alone (Strayhorn & Johnson, 2014).

2.2.3 Disability

Post-secondary institution forms a crucial path from high school to work for students with disabilities (Fleming & Fairweather, 2012). Individual skills impact performance on college admission test with students without disability performing better than a student with disabilities (Padilla-Munoz et al., 2013).

The student strength of the disabled students in undergraduate engineering and technology at institutes of national importance over the years has been shown in the table:

Table 2.2 Classifications of physically disabled students

Academic Year	Male Students	Female Students
2011 - 12	499	57
2012 - 13	814	94
2013 - 14	1159	137
2014 - 15	1130	108
2015 - 16	1293	123

Source: All Indian Survey on Higher Education (AISHE) reports 2011 – 2016

Table 2.2 indicates that there is an enrolment rise in engineering and technology among disabled students with relatively poor enrolment among female students in engineering. Higher education of disabled students from human capital theory (Liu et al.,2011) seek to have an introspection on disabled students who witness the lack of adaptability in academic, social, psychological - personal and institutional level (Mckay et al., 2016) at campuses. A person-centred approach to profiling adjustment among post-secondary students with disabilities (Murray et al., 2014) needs to look towards inclusion practises to commit itself to adopting proactive measures that eliminate the barriers which do not permit the learning and full participation of student in question (López Gavira & Moriña, 2014) thereby undoing the educational barriers like social isolation with fewer attitudinal, programmatic, financial, or health barriers and the much talked about career barriers like social/communication and architectural/environmental (Stumbo, 2010). Thus higher education needs to work towards inclusion of students with special needs - the disabled students (Westwood & Graham, 2003) as it remains observed phenomena that campuses in India are ill equipped physically and academically to deal with issues related to disabled students (Jain, 2011).

2.2.4 Academic year

Addressing the transition to tertiary education in engineering - the small fish in a big pond, especially in the first year where student is unaware of faculty and other institutional features (Hargreaves, 1998), are a huge challenge in educational setting.

The student population at the institute of national importance in the field of engineering and technology as per all India survey on higher education reports from 2011 – 2016 are as follows:

Table 2.3 Classifications of students across academic year

Academic year	First year		Second year		Third year		Fourth year	
	Male	Female	Male	Female	Male	Female	Male	Female
2011 – 12	90299	23741	77793	20487	66365	18978	57413	17999
2012 – 13	92329	23282	86769	23526	76281	20443	70080	18246
2013 – 14	89366	23085	89420	23548	84607	23189	76178	20466
2014 – 15	104303	27132	97583	24967	91859	24570	90635	25676
2015 – 16	100378	27810	99205	26551	92532	24381	89296	24039

Source: All Indian Survey on Higher Education (AISHE) reports 2011 – 2016

As per the Table 2.3 above there has been a persistent drop in student enrollment over the year. In other words, there has been a decline in persistence rate among students in undergraduate B.Tech education. The engineering elements profile among first and final year engineering students differs (Phang et al., 2011) indicating that first year students transition to university (Bowles et al.,2011) has more of propensity score adjustments that assess the effectiveness of a colleges first year students (Clark & Cundiff, 2011). Exploring epistemologies of sophomore or first-year engineering students (Frye et al., 2012); the newcomers to the academic environment (Majzub, 2012) face adjustment to college differing by academic year and study level (Al-Khatib et al., 2012). These adjustments differ from making friends, culture difference, adapting to food etc (Barnes & Loui, 2012). Thus diversity in first-year college classrooms facilitates student engagement (Lee, et al.,2012). In short, pre-college student experiences influences first-year student experiences (Cheong & Ong, 2014) and adjustment to university (Nikfal Azar & Reshadatjoo, 2014). In short, treading the first year characteristics and campus experiences maneuvers learning outcomes of students (Liu & Chang, 2014).

2.2.5 Academic major

Academic major courses in engineering often have witnessed a change in the choice of the pursuit of course by college students (Probert,1978 ; Jackson & Laanan,2014) where student take the time to accommodate themselves to academic major (Young & Litzler, 2013). This leaves each one of us intriguing with the perceived role of each academic engineering major or discipline (Hastad,1979) inclusive of its role as non-technical studies whose existence can never be nullified in academics (Jenkins,1979). Engineering academic majors and the emerging planetary future (Davidson,1986) makes one rely on systems theory which states that focusing on inter-disciplinary being in engineering education needs a review and critique (Fincham & Roslender,1988). The ghastly choice of academic majors depends on pecuniary and non-pecuniary factors at play (Somers, 1991) with traditional engineering academic department often being referred to as obsolete (Olds & Miller, 1991) makes one revere in the arena of higher education the basis of diversification in the much talked about specialisation of academic majors (Kogan, 1997).

There is a divergence in choices of first and second major academic disciplines that affect earnings premiums (Hemelt,2010) as young people do not want to become engineers - shy away from 'tough majors' or make irrational choices, based on an absence of information (Becker,2010). Demographic variation thus exists in basic science education in India (Saini & Luthra,2011) heavily influencing students conception of nature of technology (DiGironimo,2011). Further heterogeneity within, between and among student impacts rate of return on education (Henderson et al.,2011; Ahinful et al.,2012) with net financial returns varying by academic majors (Walker & Zhu, 2011; Grave & Goerlitz, 2012).

The student population at the institute of national importance in engineering and technology academic major field as per all India Survey reports from 2011 – 2016 are as follows:

Table 2.4 Classifications of students across engineering academic majors

Academic year	Aeronautical		Agriculture		Architecture		Chemical	
	Male	Female	Male	Female	Male	Female	Male	Female
2011 – 12	9779	2052	8694	4288	14816	15464	24370	7280
2012 – 13	11848	2465	6771	3630	19159	20574	29465	10028
2013 – 14	11171	2479	8188	4222	24235	27472	31452	10602
2014 – 15	12213	3064	9869	4746	29053	31315	35115	11388
2015 – 16	10498	3047	10508	5255	30395	32952	34712	11473
Academic year	**Civil**		**Computer**		**Dairy**		**Electrical**	
	Male	Female	Male	Female	Male	Female	Male	Female
2011 – 12	213528	50763	330662	255288	1468	610	271361	91868
2012 – 13	309404	69077	347495	285535	1335	507	308241	97565
2013 – 14	405526	89652	377435	322664	1497	545	341100	109301
2014 – 15	476504	109081	397621	338294	1496	543	354017	116666
2015 – 16	500874	118883	407164	340318	1245	549	340702	116993
Academic year	**Electronics & Communication**		**Food Technology**		**Information Technology**		**Marine Technology**	
	Male	Female	Male	Female	Male	Female	Male	Female
2011 – 12	433962	259842	2008	1269	132756	105561	3460	77
2012 – 13	458675	295376	3967	1791	118653	102963	4020	63
2013 – 14	476160	328497	4789	2194	115585	104323	2312	102
2014 – 15	448936	337453	3979	2431	103948	95120	3144	120
2015 – 16	402031	325225	4199	2948	97082	85680	3035	108
Academic year	**Mechanical**		**Metallurgy and Minerals**		**Mining**		**Other Engineering**	
	Male	Female	Male	Female	Male	Female	Male	Female
2011 – 12	482146	25034	5145	1038	3167	55	178767	75744
2012 – 13	652585	29244	6170	1774	4297	53	190074	78085
2013 – 14	816132	36805	7456	2424	5309	155	193472	80618
2014 – 15	926794	41576	9047	3049	6824	270	192594	80523
2015 – 16	946525	42102	7538	2317	7964	169	189899	77190
Academic year	**Planning**		**Transport Planning**		**Urban Planning**			
	Male	Female	Male	Female	Male	Female		
2011 – 12	256	151	-	-	-	-		
2012 – 13	355	244	-	-	-	-		
2013 – 14	363	293	-	-	-	-		
2014 – 15	471	388	-	-	-	-		
2015 – 16	498	399	-	-	-	-		

Source: All Indian Survey on Higher Education (AISHE) reports 2011 – 2016

As per AISHE reports (Table 2.4) there has been a visible gender disparity in engineering academic majors where women are found relatively higher in soft technical majors like information technology and electronics and communication engineering than hard engineering disciplines like mechanical and metallurgy.

The qualifications determine the return on education (Dickson & Smith, 2011) as it is this returns that expand education in future (Devereux & Fan, 2011; Olitsky, 2014). Thus a vital assessment of student program outcomes through a comprehensive exit strategy (Ayob et al.,2011) and educational policies impact young people's post-

compulsory choices (Brunila et al., 2011). In brief, the human capital theory states that choice of major is an investment in human capital (Yang et al.,2013) and in recent years commercialization of academic science has impacted science education (Irzik, 2013). Though differences in work values influence college major choice (Balsamo et al.,2013) student outcomes in academic major courses not only rely on enrollment in each course (Cho & Karp, 2013) but also the variation in college pipeline inflicting future earning gap (Alon, 2015). In short, academic major differences impact student satisfaction (Barnes & Randall, 2012).

2.2.6 Religion

Religion on campus impacts campus ethos (Proctor, 2002) with religious inclusion influencing higher education (Stevenson, 2014) resulting in college adjustment varying by students religious background (Jackson et al., 2001). It is often observed that when education and religiosity are taken into consideration, colleges do not dampen or damage students religious commitment (Schmalzbauer, 2013). Religiosity impacts life of students (Abdel-Khalek & Lester, 2015). Of recent years there is a shift from religiosity to spirituality (Cragun et al., 2014). Spirituality and religiosity are overlapping construct with one forming the subset of the other sharing some characteristics but also retaining nonshared features (Joshanloo, 2012). Exploring the essence of spirituality where spirituality is the human attempt to make meaning of the self in connection to and with the external world (Mayhew, 2004) proves vital to understand and assess the spiritual health of students (Fisher, 2009). Spirituality relates to each students field of study influencing them in their making of sound professionals especially in that of engineering (Halsmer et al., 2010) where spiritual wellbeing heavily influenced college adjustment (Mansor & Syahidah, 2012).

The student undergraduate B.Tech population of Institute of National Importance of IIT's and NIT's classified as per All India Survey Report on Higher Education (AISHE) from 2011 – 2016 on the basis of religion are as follows:

Table 2.5 Classification of students as per one's religious faith

Academic Year	Total Student Across Religions		Muslim		Other Minorities	
2011 - 12	56640	8099	6712	1285	5275	2783
2012 – 13	68296	10327	8118	1490	5146	2474
2013 - 14	71801	11332	9864	1795	6136	2871
2014 – 15	82281	13425	11929	2230	7489	3158
2015 – 16	73566	12796	11876	2222	7773	3071

Source: All Indian Survey on Higher Education (AISHE) reports 2011 – 2016

It is observed from the (Table 2.5) above, it is evident that there has been a rise in the enrolment of Muslim and other minority community student population of 0.32% and 0.61% of the year 2011 – 12 towards 1.21% and 2.25% of the year 2015 – 16. However much noticeably, the enrolment of female students continuing to be low compared to that of male students. Hence it's vital to introspect the underrepresented minority student population adaptation at the campus by religion.

Further campus climate experiences and perceptions differed by religious and spiritual views of students impacting diversity (Mayhew et al., 2014). The campus spiritual climate affects students diverse worldviews shaping student satisfaction (Rockenbach & Mayhew, 2014). Hence religion and spirituality impacts quality of life of college students (Hsien-Chuan Hsu et al., 2009). In brief, religion impacts higher education (Mayrl & Oeur, 2009) where religious belief impacts college adjustment among college students (Edmondson & Park, 2009) and religiousness impacts college life (Moran et al., 2008) as it contributes to giving a meaning in life and general wellbeing (Khan et al., 2015). In short within campus context, one finds that college encounters, and religious spiritual struggle impact ecumenical worldview development (Bryant, 2011) where religious coping depends on individual levels of religiosity and spirituality (Krägeloh et al., 2012).

2.2.7 Caste

Social origin is a very important factor predicting the probability of transition to university (Saar, 1993). In a multi-cultural and multi-ethnic Indian society, the parameters of caste are crucial in determining access to higher education (Chanana, 1993). The campus climate determines all forms of campus adaptations especially

among students of a minority race (Hurtado et al.,1996) with evidence of perceptions of prejudice and discrimination existing on the adjustment of minority race students to college (Nora & Cabrera, 1996). The perceived barriers to education and career vary by ethnic race (Hawley McWhirter, 1997). This calls a need to enhance campus climate by race to ensure student diversity (Hurtado et al.,1998). The campus racial climate (Miller et al.,1998) should module educational policies that are directed towards enhancing campus climate for racial ethnic diversity (Hurtado et al.,1998) so that these minority students who remain as underrepresented populations in engineering education (Reichert & Abdher, 1998) become a very much part of mainstream engineering education.

The student population at the institute of national importance in the field of engineering and technology as per all India Survey reports from 2011 – 2016 are as follows:

Table 2.6 Classification of students by caste or social category

Academic Year	**Scheduled Caste**		**Scheduled Tribe**		**Other backward castes**	
	Male	Female	Male	Female	Male	Female
2011 – 12	20793	6000	8239	2005	62343	16587
2012 – 13	23838	6011	10300	2422	74673	16644
2013 – 14	27598	6674	10983	2598	74003	17556
2014 – 15	30817	7953	12391	2942	88612	22095
2015 – 16	30932	8041	11974	3086	90298	23137

Source: All Indian Survey on Higher Education (AISHE) reports 2011 – 2016

Table 2.6 indicates that there has been a persistent drop in student enrollment over the year. In other words, there has been a decline in persistence rate among students in undergraduate B.Tech education.

Caste education syndrome (Verma, 2013) depicts access to higher education is a social justice issue (Gray, 2013). Campus racial climate impacts students academic outcomes (Lascher & Offenstein, 2012) with academic, social, and psychological dimensional measures being invariant across race ethnicity (Young & Litzler, 2013). College adjustment and transitions that vary by race of students (Strayhorn et al.,2013) create campus cultures that foster success among racially diverse students (Felder, 2013). The critical race theory of colour blindness and racial coding impacted

faculty perceptions of high-achieving male college students (Comeaux, 2013). Further educational privatisation has influenced access to higher education among scheduled castes students (Bhoi, 2013) where still an equality of opportunity remains a distant ideal for student discriminated by race (Nidhi Gupta & Pooja, 2014). Moreover higher education stratification in the reproduction of social inequality in the labour market (Triventi, 2013) indicates that minority students are systematically underrepresented in four-year institutions (Xiaobing Wang et al.,2013) diversifying nature of socio-economic diversity, racial diversity and cross-class interaction (Park & Denson, 2013).

The reservation policy and Indian constitution (Jangir, 2013) need to gear up for slow rate of growth of students of minority race in engineering (Kaba, 2013) across stages of science and engineering education (Garrison, 2013) keeping in perspective student perceptions of discrimination on campus (Gokce, 2013) and subsequent repercussions of education on employment (Gatchair, 2013). There is a need to increase representation of underrepresented minority race in engineering education by enhancing their participation rate (Salto et al.,2014). Students of colour and race thrive for success in different pathways of undergraduate education (Schreiner, 2014). Students of race find it difficult to adjust to college environments (Ritter & Roth, 2014) with resulting student satisfaction differing by race (Strayhorn & Johnson, 2014) making academic success outcomes to also differ among students of race (Crisp et al., 2014). The caste discrimination prevails in higher education where scheduled castes are marginalised (Parul, 2014).

As of recent caste exclusion observed in engineering admission in Karnataka (Rajasenan, 2014) of representation of other backward castes in higher education (Thakur, 2014) reveals that interracial campus environments impacts overall campus environments (Lowe et al., 2014) with social class inclusive of ethnicity affecting college experiences of students (Kim, 2014). Unequal returns to academic credentials acts as a hidden dimension of race and class inequality in higher education (Wildhagen, 2014) and it goes without saying that inclusion of students of race cultivates diversity (Jones, 2014). In short, race impacts diversity discourses on campus (Hikido & Murray, 2015). Diversity and inclusion on campus vary by students of race and ethnicity as underrepresented groups in higher education

(Trolian, 2015) reflect an observed difference noted in indigenous students obtaining tertiary education (Lumpur, 2016). This could essentially be set across by social class, ethnocultural adaptation, and masculinity ideology affecting college students well-being especially that of a minority race (Ojeda et al.,2016).

2.2.8 Generation status

College students generational status impacts students adjustment to college (Hertel, 2002). It is observed that first-generation students navigation in educational system differs from non - first generation students (Kirshner et al., 2011) impacting differed experiences among first generation college students at campuses (Spiegler & Bednarek, 2013) resulting in diverse educational outcomes among first generation and non - first generation students (Bodovski & Benavot, 2006). The youth as generation (Naafs & White, 2012) serving as first generation students of human resource provide motivation and aspiration for next generations (Rahim & Azman, 2010) that best prepares millennial generation engineering students for complex challenges (Kahle & Hansen, 2009) broadening participation in science and engineering of the next generation (Madsen & Tessema, 2009).

First generation college students in engineering (Trenor, 2009) are usually driven to achieve (Rood, 2009) resulting the much needed intergenerational breakthrough of first generation college students in education (Gofen, 2009) who by far have remained underrepresented at university (Lam et al., 2005). The type of education impacts enrolment of first births in the family - first generation (Martin-Garcia & Baizan, 2006). Further college readiness and academic preparation for postsecondary education of first-generation urban college students define first generation students (Lang, 2009). Hence special attention to the needs of first generation engineering college students in learning is warranted (Trenor & Grant, 2009). This is supported by generation theory in higher education indicating that educational competencies between successive generations persist (Knight, 2009) with cultural capital theory impacting first generation student success as put forward by cultural capital theory (Dumais & Ward, 2010).

2.2.9 College expense

The reflection on cuts in resources in engineering education (Chretien & Gaillard, 1982) though not new to the education system; have relentlessly stressed on affordability in quality education (Aguerrrondo, 1997). The ever-daunting question of cost sharing in education by government, household expenses on education reveals that the economic or financial aspects do influence students to attend college (Sedaie, 1998). It is being noted that in post-independence India, higher education has been of those who are culturally dominant and economically stronger sections of society (Kumar, 1998). The cost and price of college determined the value of higher education (Casse & Manno, 1998) where the economics of attending college depended on returns to investment and responsiveness to price in education in terms of salary earned and fees paid by students (Paulsen, 1998).

The economic reforms and financing of higher education in India has been dwindling the long-term equilibrium and short-term dynamic between educational input and economic Output (Wang et al., 2012) with high-poverty youth self-determination and involvement in educational planning (Washington et al., 2012) making financial aid at institution and differential student tuition fees differentiating low socio-economic status students into engineering (George-Jackson et al., 2012). This could also debilitate graduate school enrolment (Malcom & Dowd, 2012). Added on public funding of higher education has college and universities use their resources inefficiently and focus insufficiently on their mission to expand students human potential (Viaene & Zilcha, 2013). Moreover, viewed from benefit-cost analysis in appraisal and planning projects of higher learning institutions (Javed et al.,2013) economics of higher education states that education has its reverence on economic outcomes with return to college being decision to attend college (Nica & Popescu, 2014). Hence much noticeably, on the one hand finance policies leverage higher education access (Yang & McCall, 2014) while on the other financial incentives determine study duration of students in higher education (Gunnes et al., 2013). Therefore, cost of accessing institution versus the monetary value of attaining an academic major (Davidovitch et al., 2013) also relies on parents and financial knowledge along with students credit card use (Hancock et al., 2013).

The cost benefit analysis of university undergraduate education with heterogeneity in the unit cost of higher education (Iyiomo & Olayiwola, 2014) seeks to abolish tuition costs from higher education leading to increasing in enrollment of lower socio-economic students into higher education (Denny, 2014). Thus decentralised university setting with a flexible tuition structure impacts students (Fethke, 2014) making their withdrawal from higher education based on cost reflecting its intensity on the efficiency of the institution (Merrill, 2015).

2.2.10 Socio-economic status of the family by parent's education, occupation, and income

Socioeconomic status is a demographic variable (Stockwell, 1966) that impacts the structural change in society (Coover,1977) resulting in education attainment of college students (Barger & Hall, 1966) where it is often found that students with low socioeconomic status have their path critical towards college (Cabrera & Nasa, 2001). Occupation is an indicator of socio-economic status (Ganzeboom et al., 1992). The lower graduation rates being associated with socioeconomic disadvantage points out at parent's occupational status and family wealth (Carpenter et al., 1998). Parent's occupation representing the socio-economic status of the family impacts students in educational attainment at higher educational institutions (McMillan & Western, 2000). Parents traditional occupation impacts children's educational aspirations (Fulcher, 2011) and parental job loss impacts education enrolment of youth (Coelli, 2011). It is to be noted that females in higher education are from families whose father's education was high and earned higher net income (Gürel, 2011). Hence parental job loss impacts household or family income (Ehlert, 2013). Maternal occupation influences college students by gender (Weer et al., 2006) as mothers' full-time employment is found to alter self-efficacy among students of a minority race (Buchanan & Selmon, 2008). Parental employment affects children's educational attainment (Schildberg-Hoenisch, 2011) with the effectiveness of developing pathways to university entry for low socio-economic status of students varying by intensity and degree of a kind (Sydney, 2011). Parental socio-economic status impacts students educational achievement (Memon et al.,2010). Socioeconomic determinants of academic achievement are average monthly income of family (Tomul & Savasci,

2012) and so socio-economic status is viewed as a dynamic concept whose fundamental scales of measurement vary over time (Gaur, 2013). Parental spending on education differs from rural to an urban area (Mussa, 2013) and parental credit constraints impacts children's college education (Sorokina, 2013). Further parental borrowing has shown to have impacted the higher education of children (Cha et al., 2005). Family economic status determines students educational outcomes (Cuc & Griffin, 2007) with students academic and social integration levels differed significantly based on family income level and types of institution (Düzeylerinin et al., 2013). Therefore, social status in society coupled with economic affordability to quality education seems to have a significant influence on the performance of students (Rajasenan, 2014).

Socio-economic status impacts the educational attainment of students (Patel, 2012). Thus there is a need to reimagining engineering diversity from an institutional perspective on the socio-economic status of students (Lundy-Wagner, 2013). Engineering diversity thus can be improved by the enclosure of students from low socio-economic status into engineering (Lundy-Wagner, 2013). Ball and Vincent's concepts of 'hot' (informal) and 'cold' (formal) knowledge provide a complimentary resource for exploring low socio-economic status students contact with knowledge (Smith, 2011). In short, socio-economic status diversifies in higher education (Ahmar & Anwar, 2013). Parents vary by their insightful influence on college planning process (Hallett & Griffen, 2015) which has extrapolative effects of parental involvement on academic achievement (Veas et al., 2016).

Summary of structural components of student diversity

Higher education is posed for decades as the learner-centered environment. The recognition and respect on which it is have relied on so far is much broader than forethought. The dynamism of higher education itself is a heterogeneous mega pot that responds to questions on finger tips but least on consequences and future roles of student diversity could play. Hence it is essential that applications of adaptability are seen as an opportunity that channelizes manifestations in a proactive and promoting student force for generations to come.

2.3 Campus adaptations across structural component of student diversity

The literature supporting academic, social, physical – psychological and institutional adaptations to campus environments of undergraduate B. Tech students at Indian Institute of Technology (IIT) and the National institute of Technology (NIT).

2.3.1 Academic adjustment versus academic adaptation

Academic adjustment

Academic adjustment and attachment best predicts academic success of students (Fastre et al., 2008) who keep refining academic goals (Sheldon, 2008). The adjustment to the university also has its say majorly on academic performance (Petersen et al.,2009) as adjustment problems faced by students also vary by faculty perceptions (Jenkins & Galloway, 2009). The prominent among them being curriculum adjustment towards academic performance (Chang et al.,2009) with self-efficacy and motivation determining the academic adjustment of students in higher education institutions (Thomas et al., 2009). Further with motivation and learning strategies determining academic adjustment of college students (Cazan & Anitei, 2010), the academic achievement on the fore lore of academic adjustment among first-year college students (Calaguas, 2011) makes academic self-concept churn academic adjustment in higher education (Wouters et al., 2011). Academic adjustment in found gendered among students of minority race (Kiang et al.,2012) with students adjustment to college differing by gender and study level of academic year (Al-Khatib et al., 2012) and having its say on self-regulated learning of academic adjustment (Cazan, 2012). The extra-curricular involvement also derails academic adjustment and achievement in higher education (Leandro et al., 2012). Thus academic achievement impacts college adjustment of students (Sangeeta & Chirag, 2012). Students academic adjustment also relies on english language difficulty that acts as a barrier impacting social adjustment which indirectly influences academic adjustment at university (Sam et al., 2013). Students with specific types of reading spelling disorders also differ in their adjustment problems (Müller et al.,2013).

Academic adjustment, social adjustment, psychological adjustment and institutional attachment varies among international students (Rajab et al.,2014) with academic

adjustment to university (Clinciu & Cazan, 2014) predetermining academic resilience towards academic adjustment of first year students (Cazan, 2014). Academic self-efficacy along with academic motivation and satisfaction at college environment affects college adjustment of first-year students (Salmain et al.,2014). The academic self-efficacy positively influences adjustment to college (Azar & Reshadatjoo, 2014) with demographic variables impacting academic adjustment of first-year students (Adeniyi et al.,2014) and determining adjustment that delve to the academic achievement of students (Patel, 2014). Of late, even with test anxiety having its role in academic adjustment (Rana & Mahmood, 2015), supplemental instruction in engineering education enhances students to adjust to and succeed in university institutions (Malm et al.,2015).

Academic adaptation

Adaptation level to university environments influences academic grades (Hewitt, 1975). The students adaptation to college in terms of academic adaptation differed by gender (Valeri-gold et al., 1998) with insights also largely snooping off adapting curriculum to patterns and perception of students of race and colour (Sawyer, 2000).

2.3.1.1 Age

Academic goal achievement changes with age (Cowan, 2011) as students of diverse age have a motivational conflict that develops only with age (Grund et al.,2015). Attendance in regular classroom teaching influences academic performance of students in engineering institutes in India (Singh & Rajoria, 2014) where increase in age negatively influences grades and lowers students academic performance (Ercan et al.,2013).The regular assessment of engineering courses, improves quality and it's an initiative drive to step up the academic performance of students across age groups (Grimoni & Nakao, 2007) while 'context - based' teaching of faculty that parts away from relating it to daily life are regarded as 'not – adequate' influencing academic performance of students adversely (Ültay & Usta, 2016). Thus, age influences the performance of students academically.

2.3.1.2 Gender

It is vital to debunk myths on gender and academic achievement (Kane & Mertz, 2012) as academic failure differs by gender where for male students teacher-student interaction and socio-demographic factors contribute towards it (Jeludar et al.,2012). The need for horizontal analysis of gender equality in different academic areas (Silander et al.,2013) stresses on academic experiences that differed among undergraduates on manhood and masculinity identities (Strayhorn & Tillman-Kelly, 2013). In brief, gender bias in engineering admission persists in Karnataka (Rajasenan, 2014) as fundamentally its gender difference in learning styles that impact academic performance of students (Rahimabadi, 2014). Lastly, teachers' effect on students creative self-beliefs is moderated by students gender (Karwowski et al.,2015). So gender difference exists in attitude, knowledge and career choice among students (Mudavanhu, 2016) influencing students overall academic success (Altermatt & Painter, 2016).

2.3.1.3 Disability

Learning difficulties are associated with the health status of students especially the ones with disability (Soubhi et al.,2015) At the academic forefront, individual differences and situational factors moderate relationships between physical disabilities and early career opportunities (Feldman, 2004). This increases the urge on the need to speed up recruitment strategies for disabled students in engineering (Martin et al., 2011) while ensuring employability skills valued by employers as important for entry-level employees with disabilities (Ju et al.,2012). On the other hand, faculty must show a positive attitude toward disability to promote inclusive practices using alternative methodologies, make curriculum adaptations, use new technologies and be trained in attending the needs derived from disabilities (Morina et al.,2015) who often when observed on the contrary distance their behaviours towards students with disabilities impacting the later academic performance (van Jaarsveldt & Ndeya-Ndereya, 2015). Faculties on the contrary face difficulties of adapting university teaching to students with disabilities (Alvarez-Perez, et al., 2012). The major block often noticed in this regard is attitudes of faculties that impacts inclusiveness of

students with disabilities (Novo-Corti et al.,2015) and that it differed across institutions (Lombardi & Murray, 2011). Therefore faculty adaptation standard to teaching especially in favour of students with disabilities (Browder et al., 2012) need to sharpen faculty attitudes towards students with disabilities in regular classroom (Dukmak, 2013) impacting adaptation of academic course by disabled students (Di Nardo, 2014). In short, learning experiences of disabled students indicate need for more of inclusion practices (Kioko & Makoelle, 2014) as academic achievement does vary by disability (Dawn, 2007).

2.3.1.4 Academic year

Undergraduate students academic performance differed across academic levels of first to final year (Akinrefon & Adejumo, 2012) as knowledge and interest in engineering academic majors differ across academic levels from the first year to final years (Jin et al., 2012). Developing independent learning and non-technical skills amongst final year engineering students (Knobbs & Grayson, 2012) is possible by self-directed learning in the first year of engineering (Taratutin et al., 2012). The greatest help that could occur for first-year engineering students in transition is by promoting transformative learning in the student by faculty development (Leung et al.,2012). Added on an engineering introductory seminar course for first year engineering students (Fan et al., 2012) or an introduction of activity week into the first year of a chemical engineering undergraduate (Gan et al., 2012) may contribute to academic engagement influencing learning at four-year institution (Sinanan, 2012).

Moreover academically, the four main engineering elements which are inquiry, design, optimisation and sustainability differ from the first year to final year (Phang et al., 2012). As observed the first semester academic results in terms of fail or pass influences student motivation (Stanton & Siller, 2012) as it is students academic preparation with students backgrounds develop problem-solving skills in the first year that helps to close gap achievement gaps between diverse student population (Grigg & Benson, 2012). Academic engagement impacts students engagement in four-year institutions (Flynn, 2014) towards baccalaureate attainment of college students at 4-year institutions (Flynn, 2014). In short, though grades have a dampening effect on academic performance of students at post-secondary institutions (Rajandran et al.,

2015 ; Jacobs et al., 2015) and varying perception of attendance of students across academic years (Lowder et al., 2015) could hopefully set right by seminar intervention to enhance first-year academic performance (Jacobs & Pretorius, 2016).

2.3.1.5 Academic major

Holistic approach is needed to develop engineering outcome from academic major programs (Al-atabi et al., 2013) by integrating multidisciplinary engineering knowledge (Wolffa & Lucke, 2013). For this hour of instruction has been impacting students competency in engineering academic majors (Perdigones et al.,2013). Further, though elite engineering education programme is a way to attract talented students into engineering (Chuchalin et al.,2013); critical thinking acts as a resilience factor in an engineering academic major program (Benitez & Canales, 2013). Moreover, digital proficiency leads to digital inclusion across academic major where information technology increases personal performance and professional knowledge and skills (Marques et al.,2013). Thus students who valued science and engineering courses planned to continue their education, made good grades and had varied types of career expectations for jobs as engineers (Mativo et al.,2013). Never the less, though students choice of academic major relies on image, interest, laboratory work, enrichment activities, and physics textbooks (Oon & Subramaniam, 2013); motivation and strategic self-regulation have impacted post-secondary students persistence in academic major (Shell & Soh, 2013) influencing academic performance (Murphy et al., 2013) and academic major achievement that reveres on test score and curriculum performance (Taniguchi et al., 2013). Campus-wide study of engineering academic major courses impacts teaching perceptions and practices (Smith et al.,2014) as teacher's ability determines students' performance in an academic major (Espinoza,2014). The merit-based academic major programs are more effective (Domina, 2014) paving way for learning experiences and role model predominance of female academic major choice (Bieri Buschor et al., 2014) perpetuating academic motivation on learning strategies that varies by academic domains like maths science which requires laborious learning than humanities major (Andrei et al.,2014). It was also felt that choice of engineering as an academic major was related to higher competencies in mathematics and placed more importance on pursuing investigative

activities (Bieri Buschor et al., 2014). Moreover, the plethora of low representation of female staff to teach academic majors (Giannoula, 2014) has hard hit the departmental climate on student-faculty interaction varying by race of students and faculty accessibility (Kim & Sax, 2014) proving detrimental on attitudes (Ali et al.,2014) and anxiety levels of academic motivation and academic achievement in academic majors (Lavasani et al.,2014). Thus student representation in an academic major heavily relies on academic motivation (Alivernini et al., 2015; Maican et al.,2016) which needs to be massively strengthened especially in engineering education.

2.3.1.6 Religion

Religious faith impacts performance (Aruguete et al., 2012) where spiritual wellbeing influenced good academic achievement (Mansor & Syahidah, 2012). Religion influenced students academic major choice (Nudelman, 1972) which is supported of recent that religious variables are generally strong predictors of attitudes toward individual involving contested science issues like human evolution and other (Jelen & Lockett, 2014) as opposed to students perceptions of conflict on dichotomy of religion and science (Martin-Hansen, 2008). The frequency of religious service attendance impacted college adjustment varying by gender and achievement (Suppaiah, 2003) revealing that students who had non-religious club involvement and non-religious attendance service had the higher academic achievement (Good & Willoughby, 2011). Further, it is observed that spirituality impacts learning (Sucylaite, 2013) and individuals who have a strong spiritual relationship with a higher power and are religious due to intrinsic motivation tend to be more confident in their ability to make a career (Duffy & Blustein, 2005). Hence students who are spiritual are more motivated as students than non-spiritual students (Barmola, 2016) and college students who are more religiously engaged have a positive academic performance (Mayrl & Oeur, 2009).

2.3.1.7 Caste

College experience differs by race impacting academic achievement at institution (Guiffrida & Douthit, 2010). Academic success among students of race needs initiatives (Palmer et al., 2010) as disparities in engineering academic major does not

vary by race (Riegle-Crumb & King, 2010). Ethnic differences affected women enrolment in engineering academic field (Varma, 2010) thus enhancing research experience in engineering education for minority race could strengthen the engineering pipeline (Pender et al.,2010). Earlier days of childhood has social class and sense of belonging laying the foundation for students career aspirations (Ostrove et al., 2011) that vary among adolescents by race (Riegle-Crumb et al.,2011). The ethnic patterns penetrate mathematic skills in early childhood (Lee et al., 2011) deterring career aspirations in youth (Howard et al., 2011). The discrimination awareness oblivious in occupational interests (Hughes, 2011) influences occupational aspirations to vary by race (Plata & Pirtle, 2011).

Academic adjustment in gendered among students of a minority race (Kiang et al., 2012). The earning benefits of majoring in engineering academics is only among high-achieving minority students of race (Melguizo & Wolniak, 2012) indicating that ethnic difference persists as perceived career barriers (Lipshits-Braziler & Tatar, 2012). The factors influencing career choice among students of race are the family; the ability to the learner self to identify higher preferred career choice; and teacher (Shumba & Naong, 2012). Grades, however, seem to impact minority student success in the long run (Slovacek et al.,2012) as predictors of learning differs by students of race (Lundberg, 2012). Further the representation of faculty of minority race in higher education is low (Henry et al.,2012) and such racialised faculty (James, 2012) especially women of minority race in engineering (Lee et al.,2012) have lower motivation to engage in research activities impacts faculty of race in higher education (Lechuga, 2012). This could also have a ripple effect on understanding students experience of transition from lecture mode to case-based teaching (Roy & Banerjee, 2012).

Moreover students of race witness participatory challenges and experiences in career choices in academics (Fletcher & Cox, 2012) as the role of ethnicity, academic and social impacts the academic performance of college students (Rienties et al.,2012). Career trajectories relies on individual traits like race (Kim, 2013) where ethnic differences in precollege mathematics impacts engineering pathways (You, 2013) but e – learning tools could emerge as a major rescue for progress in academic

performance of minority race students (Johnson & Galy, 2013) enhancing overall academic achievement (Nesbitt, et al., 2013) in near future. Students of the race felt disconnected from teachers and process of education (West, 2013) as strength and liability of faculty of race in institutions (Philip, 2013) relies on campus racial climate determining faculty satisfaction at four-year institutions (Victorino et al., 2013).

College experience differs by race impacting merit or academic performance (Park & Liu, 2014) the academic performance of other backward castes (OBC) students in universities (Lens, 2014) reveals that race impacts academic performance (Malcolm & Mendoza, 2014; Stewart, 2014) and that career choice are tokenised in particular occupational field is chosen by race and not by ability (Poon, 2014). To fuel achievement among students of race, academic motivation differs among students of race (Cokley, 2014) with social inclusive teaching in higher education affecting retention , bridging social incongruity (Thomas & Heath, 2014). In short, unequal access impacts differential consequences in academic achievement (Agirdag et al.,2015) rendering the fact that ethnicity and schooling influences learning (Yarnold, 2016) with long-term engagement and identity-in-practice determinig underrepresented youths in engineering (Rahm & Moore, 2016).

2.3.1.8 Generation status

First generation students academic transition in higher education (Inkelas et al., 2007) impacts student engagement by generation status (Gibson & Slate, 2010). The intellectual development transformation observed in first and second generation students (Pike & Kuh, 2005) sharpens generic skills and competency development among undergraduate students (Choi & Rhee, 2014). It is observed that non-first generation students have higher levels of academic involvement positively resulting in better academic performance than first generation students (Grayson, 1997) reflecting on the fact that educationally purposeful activity supports academic performance of first-generation college students (Carr et al., 2014). Further with impressive learning on the go with generation Y students (Blashki et al., 2007) motivation and integration of first-generation college students impacts their academic performance (Próspero & Vohra-Gupta, 2007) contributing to academic achievement (Trevino & DeFreitas, 2014) that fosters educational attainment especially of first generation ethnic students

of race (Próspero & Vohra-Gupta, 2007). This is backed up by the current scenario of self-regulated learning – the online learning revealing that first generation students report significantly lower levels of self-regulation for online learning than second generation students (Williams & Hellman, 2004) impacting class attendance that varied by student of race of first and second generation students (Keller & Tillman, 2008). Further with academic dishonesty also differing by generation status (Wotring & Bol, 2011) creating cross-generational co-learning opportunities through inquiry-based curricula (Théroux, 2009) could better the grades often differing among first generation and continuing generation (Aspelmeier et al., 2012) which in long run replicates as barriers to career plans among engineering students of first generation (Fernandez et al.,2008).

With regard to academic disciplines, first generation undergraduates students experiences at college differ at first year (Padgett et al.,2012) and across academic disciplines (Peguero et al., 2015) especially among engineering academic disciplines (Hicks & Prairie, 2014). This may be due to lack of proper guidance among first generation students on the prominence of academic disciplines compared to continuing generation students (Trenor, 2009) impacting students persistence in engineering academic major (Virnoche & Eschenbach, 2010). It could also have the sibling effect, where sibling educational choices impact educational choices of the next sibling towards a particular academic discipline (Meurs et al., 2016). The extended academic arena of student–faculty interaction also vary by first generation status of students (Kim & Sax, 2009) as first generation traditional college students understanding of faculty expectations (Collier & Morgan, 2008) and undergraduate expectations and preferences for instructors vary (Trammell & Aldrich, 2016) impacting college success of first generation students (McKay & Estrella, 2008). This acts as a paranoid with undergraduate college students especially of a minority race who differ by gender and generation status on their views of the effectiveness of faculty (Schulte et al.,2011). Never the less, soft skills could gear up the first generation teacher students interaction (Thirumalai, 2014) that positively facilitates the academic and social transition of first generation students in the academic arena. Thus college academic activities differ in levels among the first generation and non-first generation engineering students (Hicks & Prairie, 2014) influencing academic

achievement to vary by generation status (Duong et al.,2016) and educational achievements to vary from first and subsequent generation in education (Pandey, 2015).

2.3.1.9 College expense

Scholarships and academic recognition should be given to gifted learners to support high aspirations towards excellence in academic performance (Robinson, 1997). The financial payoff on academic majors influences educational choices of students (Xie & Goyette, 2003). The reasons for non-attendance or absenteeism also relies on financial hardships (Paisey & Paisey, 2004) as more evidently it's the access to resources that determines students achievements in academics (Darling-Hammond, 2004). Never the less, one could always say that the cost and benefit factors influence academic expectation (Pasternak, 2005). Further, as educational expenditure impacts student engagement (Pike et al.,2006), it is the academic scholarship program for engineering as per one's academic major acts as a survivor (Anderson-Rowland, 2006). As already known abolishing school fees influences education access and equity (Al-Samarrai & Zaman, 2007) that could change the course equity effects and institutional risk amid policy shift in financing higher education (Ishmael et al.,2008) focusing students perceptions of higher education services - academic advising , instructional effectiveness ,"recruitment and financial aid" and "student-centeredness" (Nadiri, 2006). Debt constrain influences choice of academic major (Callender & Jackson, 2008) making college attendance embark on college earnings (Fan et al.,2009) revering always that financial aid determines post-secondary choices even by students of race (Kim et al., 2009). Scholarships aid in improving success rates of students in undergraduate engineering academic majors (Navarra-Madsen et al., 2010) making student success dependable on an academic scholarship (Anderson-Rowland, 2011). Undergraduate students who are not satisfied with their financial status and academic achievement were depressed (Shalini et al.,2011). Students continued to remain stressed mainly due to financial and academic reasons (Al-Dubai et al., 2011). Thus merit-based financial aided academic programs could only positively lead to students degree attainment in engineering (Zhang, 2011). Further financial aid policy contributes to postsecondary enrolment choices (Kim, 2012) determining person-job

fit and financial rewards on career choice of engineers (Choo et al., 2012). College academic integration and financial aid receipt exhibit differential effects on entering engineering (Xueli Wang, 2013). The financial information influences students borrowing behavior and academic performance (Schmeiser et al., 2015). Lastly poverty impact attendance (Chen et al.,2015) and its poverty that leaves a huge maneuvering on academic abilities of especially of low-income students (Kaya et al., 2016).

2.3.1.10 Socio-economic status of the family by parent's education, occupation, and income

Students quality of academic performance enhances by parent's education (Farooq et al., 2011). Further parental control over academic behaviors impacts academic adjustment of students (Bernardo, 2012) reflected in students attitude to examination and academic performance (Okorodudu, 2013). Hence, socioeconomic status impacts students academic achievement even to that of students of minority race (Nesbitt et al.,2013) leaving an observable note that socialisers like parents especially fathers prove as motivational factors for employment, profession money status and more importantly career choice (Muhammad & Rasool, 2014).

In short, parenting styles influence academic motivation and academic achievement in students (Reshvanloo & Hejazi, 2014) making learning experiences vivid with parental support and role models from one's academic major choice (Bieri Buschor, et al.,2014) to that of enhancing lower verbal abilities cripples unduly by poverty towards academic performance (Kaya et al., 2016).

Summary of academic adaptation

Students live through a non-routine work or a less automated routine defining and refining the possibilities of benefits. It's more of like if a student shows up in academics daily, does the entire required academic regularly would enable him or her to be over average and raise the bars of potential benefits. So every student works towards individual contribution – create a 'value-added' perspective as the world pays off for what one knows or for the desired productivity results of students but not for

their efforts. In brief if a student doesn't commit to finish his academics, he or she is finished.

2.3.2 Social adjustment versus social adaptation

Social adjustment

Social adjustment acts as predictors of values and academic achievement (Elhassan & Hassan, 2015). As students experiences vary in socio-cultural context of adjustment (McGarvey et al., 2015) the social competence, perceived usefulness and use patterns of social networking sites like facebook impact college students adjustment (Yang & Brown, 2015). Moreover, with cultural background determining social adjustment dilemmas of students at college (McGarvey et al., 2015) with diverse cultures determine social life in higher education persuading college adjustment of peer interaction especially among first generation college students of minority race (Burgos-Cienfuegos et al.,2015). Thus social life adjustment impacts academic life achievement (Iyamu, 2012) as it only "a sense of belonging" at institutions that successfully aids towards adjusting to college life for undergraduate students (Massi et al., 2012).

Social adaptation

Adaptation to minority status at campus impacts success of students on campus (Ogbu, 1992) with campus climate determining all forms of campus adaptations especially among students of minority race (Hurtado et al.,1996).

2.3.2.1 Age

Tremendous developmental changes in the social, biological, and cognitive domains are characterised at adolescent age-period as it's a time of critical transitions in education and learning of a students life (Oberle et al.,2010). It is in age of 18 – 24 that students establish autonomy from parents (Klima et al.,2014) where students become more selective about the relationships that they maintain (Swenson et al., 2008) vindictive that cross-sectional age peers have higher social competence than same age peers (Cowan, 2011). Thus discrimination at campus could also exist on grounds of age (Thornton et al., 2016) though vehemently age is a part of the social

hierarchy (Nakassis, 2013) influencing the socialisation process (Panizzon & Levins, 1997) responsible for bringing about the social change in society (Francis, 1999).

2.3.2.2 Gender

The intra-household educational expenditure varies by gender (Azam, 2011) penetrating that the natural landscape or terrain impacting gendered construction or construction of feminine gender roles in India (Datta, 2011). The transition of women students from higher education to industry is poisoned chalice - with short-term benefits only (Powell et al., 2011) as socialisation process of engineering students differ by gender (Riney & Froeschie, 2012) and attachment styles scores differ in terms of gender and presence or absence of a romantic relationship in the past and their settlement (Tagay & Karatas, 2012). Social experiences differed among undergraduates on man hood and masculinity identities (Strayhorn & Tillman-Kelly, 2013) revering benevolent sexism with men's advantage on the prescription of warmth to women (Delacollette et al.,2013) . In short females in science are affected by underlying gendered assumptions and structural power relationships (Watts, 2014).

2.3.2.3 Disability

Social adjustment influences motivation of disabled students to their level of social alienation and perceived competence (Wiseman et al., 1988). Negative stereotypes still mark the social representation of disability in society (Cambra, 1996) with disability being socially constructed to see' students with different eyes on new pathways to personalise assessment, learning on curriculum, assessment, and pedagogy (Moore et al.,2008). Disabled student experiences of college varied by race were among disabled students educational satisfaction was negatively associated with the perception of discrimination and racial conflict (Parasnis & Fischer, 2005).

Further on social ties, families of disabled students impacted their college adjustment (Smith et al.,1998) with parental care positively impacting disabled students to view disability not more as a differential factor (Raya et al.,2013) followed by peer acceptance vehemently impacting inclusion of students with disabilities (Adibsereshki & Salehpour, 2014) without which risk of isolation would soar high especially among first generation disabled college students (Murray et al., 2013). As

an extended note on social ties, students who stutter avoid communication and social interactions on campus form an undisclosed invisible disability (Meredith & Packman, 2015).

It is also vital to change the attitudes of faculty and student academic staff towards disabled students (Junco & Salter, 2004) where university staff must have adequate awareness on disabilities of students studying in post-secondary educational institutions (Padden & Ellis, 2015). After all an institute needs to showcase its cultural policy that impacts inclusion, exclusion, and diversity (Gilson & DePoy, 2011). Thus two types of social support (total support and satisfaction with support) had positive effects on the post-secondary adjustment of college students with disabilities (Murray et al., 2013).

2.3.2.4 Academic year

Social factors impact adjustment among first-year students (Salami, 2011). The advice-seeking behavior among first-year engineering students impacts retention (Groll, 2011) influencing identity development especially of first year engineering students (Louis & Matusovich, 2011). This also positively influences learning communities on first-year students growth and development in college (Rocconi, 2011). Further vehicle ownership affects time utilization on the study, leisure, social activities, and academic performance of first year engineering students at rural institutions (Limanond et al., 2011).

Social engagement has an effect on learning at four-year institution (Sinanan, 2012). Social and cultural capital differences impacts students expectations of achievement on their performance and learning in the first year (Dukhan et al.,2012). The social adjustment problems seemed greater than education and psychological adjustment problem among first-year college students (Jemal, 2012) where female first-year students academic experience (Joyce & Hopkins, 2012) especially of engineering impact next year recruitment (Lehr et al., 2012). Social achievement goals for social behaviors also have a bearing adjustment in the first semester among the first year at college (Shim & Ryan, 2012). Academic advising improves the success of first-year students (Abdykhalykova, 2013) as mentoring and counseling facilitates the cultural and educational transition of first-year students (Sinacore & Lerner, 2013). This

boosts academic persistence that differs among ethnic students of first-year students (Rigali-Oiler & Kurpius, 2013) especially among poor, minority and rural female students who are systematically underrepresented in four-year institutions (Xiaobing Wang et al., 2013). Hence socio-demographics impacts the academic performance of first-year students (Deliens et al., 2013) with demographic and socio-economic contextual factors as predictors in first-year educational attainment (Mcmanus et al., 2013). Social engagement impacts students engagement and baccalaureate attainment of college students in four-year institutions (Flynn, 2014). The effect of perceived social support by peer than family support in first academic year of student adjustment (Páramo et al.,2014) indicates that demographic variables (Adeniyi et al., 2014) which are a part of students cultural background (Burgess et al.,2014) can be set off as structural diversity facilitating interracial friendships across college years (Martin et al., 2014).

2.3.2.5 Academic major

Stratification in higher education results in social inequality (Triventi, 2013). Social and individual factors influence academic major choice at the institution (Hervás et al.,2013) with college students drawn from higher castes classes and of urban background were found in advanced academic major courses (Astagi, 2013). Thereby social influence and occupational knowledge are predictors of career choice among undergraduates (Amani, 2013). Social support also has a bearing on students perceived abilities and attitudes toward math and science academic majors (Rice et al.,2013) with social cognitive predictors of adjustment to engineering academic majors also varying by ethnicity (Lent et al., 2013). Stereotypical segregation of occupation exists (Kulkarni & Hatekar, 2013) with more observant occupational structure intruding socio-economic development (Anikin, 2013). This calls for students supports in academic major programs for development (Bettinger et al.,2013).

Lastly, though students positions of social interaction in small group discussions impact competency in students academic major (Due, 2014) the choice of academic major impacts the academic pipeline and creates earnings gap especially among students of minor race. Thus there exists a need to choose academic majors wisely

(Alon, 2015). Solo status of being a single woman in academic major and body image status impacted women's academic performance (Kiefer et al., 2006). It is observed that demographic group representations in technical occupations at societal level have significant positive influence on choosing corresponding college major fields (Ma, 2011a) with nutrition and physical activity programs impacts diverse nature of students in adopting academic major programs (Quintiliani et al.,2011). The less indicative are person variables in higher education to influence academic college major choice (Germeijs et al., 2012).

2.3.2.6 Religion

Religious socialisation has positive implication on adjustment among youths (Jackson et al., 2001) where religion and region impact women's autonomy (Jejeebhoy & Sathar, 2001) with vehemently noticed religious commitment higher in men than women (Schludermann et al., 2001). This was particularly observed in campus experience that varied by religious origin especially of minority religion like Muslims (Peek, 2003) who have been easily adhered to dress code impacting college adjustment (Rangoonwala et al., 2011).

Spirituality and religion are social indicators of university students (Yiengprugsawan et al., 2012). Contradiction and conflict between 'leading identities' of becoming an engineer versus becoming a 'good muslim woman is always counter backed religion (Black & Williams, 2013). Differentiation of self-impacted relationships between spiritual well-being and both social justice commitment has intercultural competence (Sandage & Jankowski, 2013) with religion influencing social relation and lifestyle of people (Baloch et al., 2014) and spirituality enhancing nurturing and caring (Yilmaz & Gurler, 2014). Among college students' everyday theologies, personal religious beliefs that emerge through individuals' lived experiences and social interactions had the influence of attitudes than religion (Walls et al.,2014). Communication and interaction patterns impact student spiritual identity formation among students over four-year period in undergraduate community institutions (Forward et al.,2014) as some observe that religion hampers students entrance and progress in education with slow growth and low level of attainment (Rissler et al.,2014) with an off late player of

academic staff at campus also witnessing spiritual intelligence on job burnout at campus (Karampoor & Beig, 2015).

Religious and non - religious activity engagement as an emotional regulation acts as assets in promoting social ties throughout university (Semplonius et al., 2015), especially where social life and identity of women on campus varied by religion (Pschaida, 2015). In short, spiritual quality of life and spiritual coping is impacted by spirituality, religiousness and personal beliefs module (Krägeloh et al.,2015) with spirituality increasing and religiosity decreasing at college and it varied by culture of students of minority race (Nunez & Foubert, 2015) having a positive bearing on underrepresented students in higher education (Hicks, 2016).

2.3.2.7 Caste

Racial identity impacts academic performance of students (Stewart, 2014). The autonomy and engagement that authenticates women of colour of race (Rose et al., 2014) into personal and contextual variables related hopes to work among undergraduate students from underrepresented backgrounds (Thompson et al.,2014). Interracial friendship impacts self-segregation (Kim et al., 2014) moulding interpersonal climate of learning among students of race (Lundberg, 2014) with student organisations or clubs facilitating interracial climate on campus (Park, 2014). Learning communities determine goal development among students of minority race (Lorch, 2014) where often being a language minority student impacts language proficiency (Hwang et al., 2014). Further college should have a culturally responsive approach to attract college pathways for students of minority race or colour (Welton & Martinez, 2014) as social class shapes selves fuelling inequality (Stephens et al., 2014) with race masculinity impacting experiences of students on campus (Sweeney, 2014).

Racial socialisation or inter group interaction impacts academic motivation (Byrd, 2015) where cross-racial interaction, close interracial friendship impact college student outcomes (Bowman & Park, 2015). The awareness of social inequities and enactments of diversity can function as catalysts for campus cross-racial interaction (Sulé, 2015) with bilingual students sociocultural learning and cultural assets at

institutions determining student success of race (Borrero, 2015). The cultural factors predict academic motivation among students of race (Piña-Watson et al., 2015) significantly highlighting that diverse cultures can impact their social life in higher education and college adjustment peer relation impact first generation college students of minority race (Burgos-Cienfuegos et al., 2015). Thus social and ethnic origin breeds educational inequalities (Grigoras, 2015) while social class explains students mobility (Yarnold, 2015) with time and money explaining social class differences in students social integration at university (Rubin & Wright, 2015) among visibility of minority groups of race (Henry, 2015).

2.3.2.8 Generation status

Socialisation experiences varied by the generation of students (Shields, 2002). First generation students social transition in higher education (Inkelas et al., 2007) reflect that the invisible barriers are real for first generation college students (Gardner & Holley, 2011) indicating that the invisible hand of social capital impacts first generation college students in engineering (Martin, 2015) with first generation college students access to engineering social capital aiming towards developing a richer understanding of the same (Pfirman et al.,2014). The social perspective seems incomplete without the cultural introspective where language difficulties are challenges first generation students witness at campuses (Hailu & Ku, 2014) especially among first year first generation students academic success where language holds the key at the distant place (Amelink, 2005). The association of students with cultural norms, where following independent cultural norms results in negative emotions with cultural mismatch among first generation college students (Stephens et al., 2012). Culture acts as a source of support among students of minority race among first and second generation college students (Kouyoumdjian et al.,2015) and second generation students quality of integration process in institutions depends on heritage and culture with identity and group dimensions (Damigella et al., 2016). The lack of culture awareness is next best challenges first generation students face (Hailu & Ku, 2014). However, the cultural capital impacts academic achievement of first generation students (Paul Grayson, 2011) and the cultural shifts impacts positive self-evaluation by generations (Twenge et al., 2012). Lastly, the touch of spirituality combats

loneliness and homelessness which is higher among first generation students than non-first generation students (Ferrari et al., 2015). In brief, socialisation of first generation students of engineering impact nurturing next generation students in an academic discipline (Szelenyi, 2013).

2.3.2.9 College expense

The evaluation of college education on earnings and productivity is usually made by comparing private gains and social gains from a college education (Becker, 1975). The high school grades are said to predict career plans which vary by students of low socioeconomic status and race in terms of paying towards college expense (Rosenbaum, 1998). Therefore person factors (interest) contextual factors (financial aid and social support) determines career choice among students (Lent et al., 2002) with gender bias in resource allocation in Indian household especially towards education expenditure of girls being observed (Jose, 2003). Further scholarship incentive influences minority students enrollment in college (Bergin et al., 2007) as college financing negotiating family support and responsibility, and campus racial dynamics perceived and behavioral affect student adjustment with a sense of integration (Hurtado et al., 2007). It is thus the ethical dilemmas in individual and collective rights-based approaches to tertiary education scholarship (Lehr, 2008) reflecting family and institutions personnel dominance on students willingness to borrow loans to pay institutional fee price (Perna, 2008). A glommed picture emerges in this regard where much noticeably household expenditure on education in India depends on returns to education in terms of employment and academic major (Fang & Mohnen, 2008) and uneven childhood investment in education impacts skills formation in the later stage of one's career (Esping-Andersen, 2008). Hence engineering education is a debt trap for poor students (Venkataraman, 2009). Social differences in the students concern for the student loan repayment persists (Opheim, 2011) where gender ethnicity and work experience impacts college students debt experience (Wang, 2011). Increasing access to engineering education for economically disadvantaged students by financial aid and mentoring (Wilson et al.,2012) could be meted out by feminist scholarship in engineering education which owes to its own challenges and tensions (Beddoes, 2012). However parents socio

economic status is related to students loan debt (Houle, 2013) which varies on repayment rates among minority students of race (Belfield, 2013) influencing students attainment (Gross et al., 2013). The negative trends with respect to financial resources on institutional priorities also influence minority race students participation in engineering education (Rotberg, 2013). In India by tackling social exclusion and marginality, it is only poverty reduction on higher education experiences that could be counted on (Thorat, 2014). In short, life course resources impacts minority students educational aspirations (Paat, 2015) where as a solution college personal finance courses may serve as positive inputs for financial socialization among young adults regardless of their demographic backgrounds (Mimura, Koonce, Plunkett, & Pleskus, 2015).

2.3.2.10 Socio-economic status of the family by parent's education, occupation, and income

Social support for long has proved to impact students' individual college adjustment (Lipschitz-Elhawi & Itzhaky, 2005) with parental attachment with separation-individuation influencing college students' adjustment (Mattanah et al., 2004). The impact of socio-economic status on family functioning (Tiffin et al., 2007) makes parenting belief on adjustment differ by race on college students (Farver et al., 2007). The gender difference too found to have inflicted on leaving parental home for higher education (Blaauboer & Mulder, 2010) making social capital via social network formation (Brooks et al., 2011) rely on subjective expectations that parents have about the costs and returns to education differing by region, gender and caste (Maertens, 2011).

Further social returns exceed economic returns in higher education (Hout, 2012) but still one finds gender difference existing in parental investment in children's education as it a determinant of future earnings and composition of labour market and human capital (Yamauchi & Tiongco, 2013). In brief, family structure impacts attachment in college student (Gourneau et al., 2013) with working-class students experiencing a lower sense of belonging, perceive a less welcoming campus climate, and pursue fewer courses (Soria & Bultmann, 2014) contributing to mother's belief

about children's education and socialisation differ by gender and social class (Yamamoto, 2015).

Summary of social adaptation

Socialisation is a process. It's a day to day phenomenon differing in its own pace among students. Some socialise soon, some later over a period of time but the environment to which the undergraduate student is pressed to undergo could make a student a better person towards an individual social student or ascertain ones' perceptions of persistence at the campus. It's consistency in socialisation that could enshrine forming the base for maturity in a student. In short, students are unique individuals in themselves who bring their unique selves into any social interaction. The process of socialization does not come from norms, rituals, routines, and rules as it is based solely on interaction. These experiences might be the most challenging because you might find that the social rules change depending on the people, time and place.

2.3.3 Physical – Psychological adjustment versus physical – psychological adaptation

Physical – psychological adjustment

Physical factors influence adjustment of students to college (Adler et al., 2008). At college, the psyche on social adjustment of students (Hersh & Hussong, 2006) relies on college adjustment that deters health (Adler et al., 2008). Poor adjustment to college life mediates the relationship between drinking motives and alcohol consequences (LaBrie, et al., 2012). This couples with physical aggression impacting social and psychological adjustments (Kawabata et al., 2012) and any poor adjustment to college life mediates the relationship between drinking motives (LaBrie et al., 2012) having its association of acculturation alongside psycho social adjustment and weight status among students (Chang & Halgunseth, 2015).

Students perceptions of institutional climate vary across years impacting psychological and behavioral adjustment (Way et al., 2007). The ethnocultural person–environment fit has its different level of college adjustment (Hutz et al., 2007)

as it's often the psychological and behavioral adjustment that deters students perception of campus climate (Way et al., 2007). The students role is sought to be maximized when perfectionism is linked with college adjustment (Chang et al., 2011). The domain specific approach of optimism and pessimism impacts college adjustment and educational outcome expectancies (Chang et al., 2011). Students initial poor adjustment at institution can be guarded by emotional management and emotional self-efficacy (Nightingale et al., 2013) where negative emotions (Nyamayaro & Saravanan, 2013) self-esteem (Pasha & Munaf, 2013) along with psychological capital (PsyCap) and proactive behaviours influences new comer's adjustment to college (Klemme Larson et al., 2013). Students who have better cognitive abilities and socio-emotional adjustment charge over-representation in college academic major (Chen et al., 2013) and students who have similar types of enhanced cognitive abilities have better socio-emotional adjustment (Chen et al., 2013). The social cognitive career theory and theories of environment fit that predict adjustment of engineering students to be varying by ethnicity (Lent et al., 2013) manoeuvres callous-unemotional traits and behaviours (Ciucci et al., 2014) to seek out coping (Cristina & Dias, 2014) and emotional maturity (Sinha, 2014) towards psychological need satisfaction from early to late adolescence as a predictor of adjustment in institution (Ratelle & Duchesne, 2014). After all it is planfulness among college students that impacts psychological adjustment (Yang & Chang, 2016).

Physical – psychological adaptation

Students adaptation to college measures mental health variables, satisfactions, interpersonal orientations, and assessments of the learning environments (Rooijen, 1986). Based on social adaptation theory, the task and habit situation are vital elements of attitude and behavior making a personality, social support and emotional intelligence determining personal and emotional adaptation in universities or institutions environment (Tomás et al., 2014). This also leverages ahead on college freshmen's self-efficacy, effort regulation and perceived stress on students' adaptation to college (Seong, 2014). In short, student experience three styles of adaptation - A person-focussed approach on patterns of wellbeing - positive and connected,

unconnected and finally the style of adaptation of stressed (Russell et al., 2010) that overall perspires the threshold over adaptation.

2.3.3.1 Age

Age is an unchangeable attribute of an individual with a personal human face characteristic (Thornton et al., 2016). On health grounds, college-age young adults are among those who consume the greatest amount of sugar-sweetened beverages, with half reporting daily consumption (Byrd-Bredbenner et al., 2012). Thus age influences health and its priorities. As for safety, the perception of safety significantly varied across student age groups on campus (Patton & Gregory, 2014). Campuses are at-risk environments because they are heavily populated with individuals in the most at-risk age group for sexual and physical relationship violence. (Yazedjian et al.,2009).

On the emotional front, age is a centre for association of interest (Swenson et al., 2008) Age influences how people treat. Appropriate behaviors are associated with age groups where same age group has similar interests impacting individual behaviors (Panizzon & Levins, 1997). Age influences levels of both aggression and depression (Laible et al., 2000) among college students where life experiences that varied by age; impacted education (Ardelt, 2010).

2.3.3.2 Gender

Health behaviors of students differed by gender (Stock et al., 2001) influencing eating disorders among students impacting health where the erratic eating disorder is observed in females than male students (Sciacca et al., 1991). An increase in real safety while enhancing women's freedom and mobility on and near campus as sexual assault exists on campus (Day, 1995). Campus safety among male and female college students and issues on self-reported campus victimization (Jennings et al., 2007) also reflect on transgender issues on a college campus (Beemyn et al., 2005). With respect to expenditures per household for health, there is an observed gender difference (Rout, 2010) signifying that cardiovascular fitness in females is poor due to obesity among undergraduates. The eating disorder which is higher among undergraduate women students (Villarroel et al., 2011) reveals that gender is a significant predictor of students food choices on a college campus (Boek et al.,2012). However formal

food and nutrition education impacts dietary behaviour among female young adults (Kanabur & Reddy, 2014).

The social-cognitive theory provides a valuable framework for studying student academic confidence that varies by gender (Litzler et al., 2014). Psychopathic personality traits risky sexual behavior, impacts psychological adjustment among college women (Fulton et al., 2014) as a psychological difference by gender varied among college students living in a hostel and living in the home (Manickam, 2014). Lastly, though stress and its coping strategies differ among college students by gender (Lee & Padilla, 2014); self-esteem and gender was negatively correlated with anxiety among college students (Mustafa et al., 2015).

2.3.3.3 Disability

Physically disabled students faced physical abuse at university (McQuiller Williams & Porter, 2014) and on campuses (Findley et al., 2015). It is noted that disability magnifies by the sexual orientation of the students (Harley et al., 2002). This is followed by poor health & hyperactivity increasing the odds of having a disability about two to three times, while poor close perceived friendship & academic competencies predicted disability of same magnitude (Vaz et al., 2015) with oral health conditions and behaviours of disabled and non-disabled students differing vastly (Vichayanrat & Kositpumivate, 2014). In this regard a prominent step could be the university staff who must have adequate awareness on disabilities of students in postsecondary educational institutions (Wehman, 2001) as they are the most revered people, disabled students can rely on campuses. Personal characteristics play an important role in higher education among students with disabilities (Swart & Greyling, 2011) especially to that of one's attitude that makes immense difference to students with disabilities (Rodríguez Martín & Álvarez Arregui, 2013). It was found that non-disabled peer had negative thoughts about disabled students in campus (Fichten et al., 1988) highlighted by theory of planned behaviour of intentions on non-disabled students to play with disabled students (Obrusnikova et al.,2011) with of only recent positive attitude developing towards disabled students (Sanchez et al., 2011). So more importantly, its attitude toward the sexuality of persons with a physical disability showing better adaptability (Hasson-Ohayon et al., 2014). This

could be attributed to the self-determination of physically disabled students contributing to positive educational outcomes for students with disabilities (Wehmeyer, 1997).

Further psychologically, disabled students are mostly depressed (Elliott et al.,1988) with non-disclosure of disability possessed by negative attitude amongst wider non-disabled student body (Miller et al.,2009) coupled in low self-efficacy (Jenson et al.,2010) enhancing stress making them more vulnerable to adverse psychological wellbeing (Koca-Atabey et al., 2011). This nugget the interpersonal theory that physically disabled students are more inclined towards suicide (Khazem et al., 2015). However social support systems which come to rescue of disabled students in this regard provide better ways of coping with disability and college adjustment (Okoye, 2010 ; Murray et al., 2013). After all, it is the coping strategy, that eases of their psychosocial adaptation to disability (Livneh & Wilson, 2003) and strategies for building a belief in ability and self-esteem (Hearn et al.,2014) can be of immense help.

2.3.3.4 Academic year

The flourishing and substance use have an effect on students involvement or engagement in the first year of entering college (Low, 2011) rendering that health behavior impacts academic performance of first-year student (Deliens et al., 2013). The body weight also correlates to academic performance in first-year university students (Deliens et al., 2013) where any indication of chronic illness among first-year students has an indefinite bearing on students academic performance (Herts et al., 2014). From a health perspective, social context for sexual behavior among college students of first years also varied (Uecker, 2015). Psychological distress of students increased over four years of education at university campus (Sher & Wood, 1970).

More observable, first-year students have high levels of stress (Al-Daghri et al., 2014) and test anxiety that creates psychological distress dampening academic motivation among first-year students (Rajiah et al., 2014). Further self-perception, beliefs control over events (feeling of mastery), believe human nature, trust in people feeling of alienation (David & Nită, 2014) pressures up identity diffusion and identity distress

envisaging identify coping among first-year students (Sica et al.,2014). Psychological capital determines adaptive to stress among first-year students (Wen & Lin, 2013). The personality type variables (Adeniyi et al., 2014) coupled with loneliness (Wohn & Larose, 2014) and self-perception, trust, mastery and alienation impacts adjustment of first-year students to university (David & Nită, 2014). However much-needed optimism and self-efficacy has a slow maneuvering on transition and adjustment of first-year students (Mergler & Boman,2014; Nikfal Azar & Reshadatjoo, 2014). Lastly, though the behavioral perceptions of students experience persist in terms of bullying at high school; it is carried forward at college having an endurance on motivation (Goodboy et al.,2016) between college students and older adults (Buchanan et al., 2015).

2.3.3.5 Academic major

Cognitive predictors impact academic acquisitions in academic majors towards academic success (Stan, 2013). Students who have better cognitive abilities and socio-emotional adjustment impact over-representation in college and academic major (Chen et al., 2013). The emotion experienced in the classroom has been shown to influence subject-level academic major satisfaction and loyalty to the institution (White, 2013). Emotional maturity and decision making styles do differ among women students of engineering and non-engineering majors (Punithavathi, 2013). Psycho communication disorder impacts academic major performance (Touri et al., 2014) where students academic drift of student faculty interaction with academic major has its footprints on academic self-concept of students (Kim & Sax, 2014). An observed academic misconduct too has a bearing on academic performance which varies by academic majors (Freire, 2014). Further expected earnings and perceived ability with heterogeneous tastes impact academic major choice (Wiswall & Zafar, 2014) making the role of industry attitude of perceived social status, and salary expectations impacting career prospect and industry commitment (Penny Wan et al., 2014).

2.3.3.6 Religion

There is an interrelationship between spirituality religiosity and health (Tomasso et al., 2011) where delving towards spirituality reduces stress among students of Indian institute of technology bombay (Yadav & Khanna, 2014) with parent's religious involvement influencing psychological health, family functioning and development of their children (Kong & Chan, 2014). The purpose in life is also said to mediate the relationship between religiosity and happiness (Aghababaei & Błachnio, 2014). Spirituality influenced the quality of life of undergraduate students impacting cognitive and psychosocial development (Lau et al., 2015). Thus there is a relationship between religion and spirituality and students who are religious have better mental health (Ahmadi & Shahmohammadi, 2015) with observed positive psychosocial functioning in adolescents and young adults (Sanders et al., 2015). Spirituality among students helps to combat anxiety (ecl et al., 2015) and it tethered that students resiliency can be predicted by spirituality (Mehrinejad et al.,2015).

Religious belief aspects and customs with religiousness (Ahmadi & Shahmohammadi, 2015) enhances quality of life with religious awareness (Parniyan et al., 2016) required especially among students of minority race, low socioeconomic status students at first academic year (Zhao et al., 2015). Of late, prayers, the aspect mostly ignored by students at higher education at large could help in restoring the mental wellbeing (Shaikh et al., 2015). Religion also helps to combat depression and homesickness among college students (Longo & Kim-spoon, 2013) which is higher among first generation students than non-first generation students (Ferrari et al., 2015). In brief, spirituality undoubtedly impacts mental health (Karimipour & Md.Sawar, 2015) with its extended hand of attitude towards the external environment with nature at its green side (Nunn et al., 2016) and religiousness soaring high on psychological outcomes with subjective wellbeing impacting life satisfaction (Aghababaei et al., 2016).

2.3.3.7 Caste

Race and ethnic diversity impacts campus safety (Stotzer & Hossellman, 2012). The perceptions and experiences of women student on safety in campus differed by race

where most often they witnessed chilly climate (Kelly & Torres, 2006). This is fuelled by hate crimes on campus (Stotzer & Hossellman, 2012) along with alcohol and other drug use among sexual minority college students (Manning et al., 2012) creating incivility and hostility on campus especially towards students of race by drugged and alcoholic students (Woodford et al.,2012). Further social life correlates gender to casual sexual activity (Lyons et al.,2015) with ethnicity having its toll even on weight status among students (Chang & Halgunseth, 2015) reveals that dietary practises of students varied by racial and ethnic differences in the home food environment (Ranjit et al.,2015). Added to this stress impacts self-esteem resulting in eating disorder among students of race adversely affecting their health (Claudat et al., 2016).

Further race and ethnicity impacts stress leading to depression among minority students of race (Arbona & Jimenez, 2014) especially of current times where campus life is moving to online and online racial discrimination culminating online stress and has a significantly more negative view of campus racial climate (Tynes et al., 2013). Sociocultural competence impacts the development and delivery of socio-emotional learning among students of race (Garner et al., 2014) where social networking sites impact students acculturation stress and psychological well-being among student of race (Park et al., 2014). The psychological and experiences at campus climate affects students academic and social integration on campus especially of sexual minority students (Woodford & Kulick, 2014). This is reflected on Bean and Eaton's psychological model of retention where stress influences students persistence of race in campus (Johnson et al., 2014). Hence social cognitive and self-construal factors influence wellbeing of students of race at college (Ezeofor & Lent, 2014) though at times self-efficacy of underrepresented students is low (Enriquez et al., 2014) focusing that counselling programs should aim at mental health status of minority students (Smith et al., 2014). In brief, ethnicity impacts psychosocial adjustment (Chang & Halgunseth, 2015) where ethnic identity in ethnic group association results in discrimination impacting depressive symptoms (Brittian et al., 2015). Social exclusion thus enhances the ability to manage others emotions (Cheung & Gardner, 2015) where self-perceived feeling of marginalisation by students of race on campus

(Wilson et al.,2015) are very much dependent on cognitive factors that predict academic motivation among students of race (Piña-Watson et al., 2015).

2.3.3.8 Generation status

Psychology differs among generations (Lub et al., 2016) with family achievement guilt impacting the mental well-being of college students (Covarrubias et al., 2014). Social cognitive career theory states that self-efficacy outcome expectations, barriers, and goals can help with career and academic decision-making meeting the needs of first generation college students (Gibbons & Shoffner, 2004) resulting in lower self-efficacy of first generation students (Gibbons & Borders, 2010) adversely impacting their academic performance and college adjustment (Ramos-Sánchez & Nichols, 2007). Self-efficacy also impacts academic success among ethnically diverse students of minority race of the first generation (Majer, 2009) where social academic self-efficacy differs among first and non-first generation students of higher education (Finch, 2016). Further self-efficacy, coping efficacy impacts underrepresented first generation low-income college students persistence towards graduation (Tate et al., 2015). Students at campuses face a lack of social support influencing depression impacting life satisfaction of first generation college students (Jenkins et al., 2013).

First generation students also witness higher bullying, violence and suicidal behaviors than the third generation (Pottie et al., 2014) impacting self-esteem and locus of control that differs among first generation and continuing generation (Aspelmeier et al., 2012).This builds up the stress which varies by the generation of students where the second generation is able to counter balance stress effectively (Shields, 2002). Hence stressors and supports differ among first generation and non-first generation students (Dumais et al., 2013). To this, the great source of help could arrive at the campus is through counseling. Counseling impacts retention of first generation college students (Pham & Keenan, 2011) by enhancing the sense of belonging (Stebleton et al., 2014) especially facilitating first generation female college students transition into higher education environment which is challenged with the process of forming self-identity (O'Shea, 2014). Counselling thereby gives a sense of direction to first generation students who are often stranded by time constraints and inadequate guidance (Hailu & Ku, 2014). Thus behavioural typology of first-time first generation

students (Bahr, 2010) reflect that social cognitive factors impact academic and student life satisfaction varies among first and non-first generation students (Garriott et al., 2015).

2.3.3.9 College expense

Student loans impact suicide where engineering student Rajani's suicide urgently address issues of equity in our educational system where student loans and lack of repayment impacts suicide (kanitkar, 2004). Early resources result in psychological adjustment influencing college adjustment (Zamostny et al., 1993). The financial difficulties bereave psychological wellbeing among university staff as well. (Winefield et al., 2003). Though a solution persists where seminar participation can change college students financial knowledge attitudes and behaviors (Borden et al., 2008); sensation-seeking and risk-taking add on more to problematic financial behaviors of college students (Worthy et al., 2010). The financial behavior on financial wellbeing of college students (Gutter & Copur, 2011) creates tendencies of loan aversion among students (Johnson et al., 2011) as it is known that students financial attitude vary over time among college students (Norvilitis, 2014). Moreover with financial knowledge contributing subjective risk tolerance among college students (Ramudzuli & Muzindutsi, 2015); the correlations between materialism, spending tendencies, and debt are prominently significant among college students (Naruetharadhol et al., 2015).

2.3.3.10 Socioeconomic status of the family by parent's education, occupation, and income

Socio-economic status impacts health in developing countries (Bollen et al., 2001). Socio-economic differences in eating-related attitudes behaviors and environments impact health (Utter et al., 2011) especially among students who find it difficult to adjust to dietary practices at distant location institute campuses. A much-noted feature here is the parenting styles that impacts substance use like alcohol and drugs among students (Luk et al., 2015) causing adverse health hazards. Parental attachment and psychological separation impacted undergraduate students adjustment to college (Schwartz & Buboltz, 2004) with family support providing an emotional outlet for

reducing stress among students (Barnett, 2004) impacting individual coping style among undergraduate students adjustment to college (David & Leichtentritt, 1999). Parental attitude impacts students decision-making skills (Doğan & Kazak, 2010) with perceived parenting style and the five-factor model of personality affecting first-year student adjustment to college severely (Schnuck, 2011). This could be due to the accumulated past of parental behavior of harsh punishment on children resulting in the holocaust of behavioral problems in children (Manrique Millones et al., 2014). Further perceptions of class status impact socioeconomic status (Zang, 2012) where parents socio-economic status impacts childhood intelligence, adult personality traits, social status and mental well-being (Cheng & Furnham, 2014) with stressful life events also leaving an extended hand on college students (Yan et al., 2014). Hence amongst all, the autonomy support from teacher's peers, fathers and mothers act as psychological mediators influencing self-determined motivation predicting basic competencies of students (Moreno et al., 2015). In short, parental levels of education are significant predictors of anxiety and depression among college students (Ozer, 2015) with the mental health status of students being heavily dependent on socio-economic status (Yarnold, 2016).

Summary of physical – psychological adaptation

"A sound mind in a sound body" – this phrase indicates the interconnectedness between the physical entity of a human being and the psychological persistence in it. The student life at beginning of adolescent age ventures out into a new arena of exploration where socialisation boosts up the psychological forefront. It could add up to the multiplicity of adventures at campus or destitute into emotional metamorphism that could endanger students' persistence and commitment to undergraduate education. Thus a perfect approach that helps a student to balance on mental being with his outward physicality at the campus is worth a check of introspection.

2.3.4 Institutional adjustment versus institutional adaptation

Institutional adjustment

Early adjustment to university has positive outcomes such as relatively high grades and credit completion (Grayson, 2003). The student perception of institutional climate impacts socio-emotional and academic adjustment (Jia et al., 2009). This also personified by gender-typed behaviors negatively persuading one's institutional adjustment (Ueno & McWilliams, 2010). Further adjustment to college varied by place of residence (Al-Qaisy, 2010) as growing up in foster families' impacts institutional attachment (Nowacki & Schoelmerich, 2010). Thus temperament of students towards institution adjustment (Al-Hendawi, 2013) within an institutional culture (Cesaroni & Peterson-Badali, 2013) varies on academic and social adjustment perspective across different institutions (Al-hattami et al., 2014). However, student attachment to place as an institutional attachment (Terrazas-Carrillo et al., 2014) could be hindered with negative life events impact adjustment to the institutions psychological capital (Liu et al., 2015).

Institutional adaptation

Students increasingly adapt their career goals to their environment which is positively related to interest and achievement but achievement overtakes interest in adaptation (Hirschi & Vondracek, 2009). Thus affirmation and adaptation values of the elite residential college institutions vary (Gomes, 1999) which seeks sneak peek into systemic adaptation to a changing environment in higher education as a move towards the next generation of quality assurance models (Jeliazkova & Westerheijden, 2002).

2.3.4.1 Age

Age is a predictor of persistence at an institution (Cabrera et al., 1992). An age of early entry indicates an improvement in institutional quality (Bommier & Lambert, 2000) where significant differences in institution readiness among students of same age cohort persisted (Gagne & Gagnier, 2004).

2.3.4.2 Gender

Institutionalisation of gender and diversity management in engineering education (Leicht-Scholten et al., 2009) recognizes identity formation and learning the culture as gendered barriers for women's persistence in engineering education (Wolffram et al., 2009). Re-engineering engineering education to retain women has retention relying on retention of academically elite women students without engineering backgrounds in undergraduate engineering education are impacted by the culture of engineering education (McLoughlin, 2009). Household and regional gender equality impact choice of the institution (Kambhampati, 2009) and persistence in engineering differ by gender (Lord et al., 2009). Retention of women in undergraduate program (Kasarda et al., 2010) relies on retention and attrition of women in engineering (Godfrey et al., 2010). A mixed-methods study of retention, and career plans of women in engineering (Paretti et al., 2010) states that gender-typed behaviors impact institutional adjustment (Ueno & McWilliams, 2010) and women's confidence and self-rated abilities affects completion (Chao & Cohoon, 2010).

2.3.4.3 Disability

The theory of planned behavior predicts graduation among college and university students with disabilities (Fichten et al., 2014). Further student motivation and decision to utilize support services was framed by the level of acceptance of their disability i.e., their integration of their disability to their authentic self (O'Shea & Meyer, 2016). Hence institutions need to provide barrier-free campus environment for students with disabilities (Chen et al., 2015) stressing that physical environment of campus like institution building more significantly impacts students experience on campus (Coulson et al., 2015).

2.3.4.4 Academic year

Students expectations and preparedness encourage a better match between student and institution among first year (Jansen et al., 2013) students who attended single-sex two year pre-secondary institute had higher rate of attendance at later four-year bachelor education colleges than students with coeducational academics (Park et al., 2013) grades and financial status have a bearing on student retention (Djulovic & Li, 2013)

determining that first year academic performance influences persistence in academics in future years of study at college (Cabrera et al., 2013) where first-year programs like orientation programs impact adaptation of students resulting in retention of students (Mayo, 2013). The causes for retention and attrition in first-year transition, academic advising, career planning and placement etc (Zerna & Ph, 2014) has more to do with student engagement in the type of academic and social engagement influencing bachelorette attainment or degree completion in four-year institutions (Flynn, 2014). Though course preference, and first-year educational performance were significant predictors of attrition (Harvey & Luckman, 2014); knowledge and skills imparted among first-year influencing retention of students (Pande et al., 2014). Lastly, effective academic library use and e-resources in campus positively affects academic performance of the first year undergraduate students impacting their retention (Tewell, 2015).

2.3.4.5 Academic major

Academic governance and product design should be in relation to the requirements to the educational market (Adina & Liviu, 2013) as it remains a well acknowledged fact that education predicts markets for employment (Damnjanovic et al.,2013). The students patterns of use as per ones academic major classifies an academic institution (Bahr, 2013a) where students have limited access to institutions when it comes to selecting prestigious top institutions and choice of academic major that relied heavily on institution feasibility (Tavares, 2013). Further academic failure results in attrition with unsuccessful academic major leading towards transfer to other academic major that ensure academic success by undoing failure (Arias Ortiz & Dehon, 2013). Thereby college persisters differ in their academic majors and career choices (Morgan et.al 2013) and persistence in engineering academic major determine career outcomes in engineering (Xu, 2013). Moreover with lack of completion of previous years course or academic major revere degree completion (Donhardt, 2013) with attributed failure at academic major competencies lowering rate of degree completion (Bahr, 2013b). This could also have a long lasting effect on returns to education in terms of earning diversifying by the type of academic major course chosen (Hérault & Zakirova, 2013). Lastly, persistence patterns of students differ in engineering academic majors

and non-engineering academic major (Wei et al., 2014) as it observed that switching over to alternate academic major deters persistence of students (Higgins & Staley, 2014) especially impacting retention of female students in engineering academic major course (Varol & Varol, 2014).

2.3.4.6 Religion

Student spiritual identity is formed at religiously affiliated university to a greater extent (Forward et al., 2014) Persistence patterns of religious minority students are at a greater level of introspection in religious affiliated universities (Patten & Rice, 2008) as it is observed that attendance at religious services influences persistence and retention of students at four-year higher education institutions (Burks & Barrett, 2009). Further individual privileged religious experience impacts spiritual development of students within dynamics of the institution (Bowman & Small, 2010) especially when religion performs a support factor function among women of race or colour impacting their persistence towards degree attainment (Ceglie, 2013). Moreover, attending an institution with an inclusive religious worldview climate is positively associated with participation in student engagement (Bowman et al., 2015).

2.3.4.7 Caste

Institutional barriers to diversity persist in inclusion efforts (Elliott et al., 2013) with thrust efforts on recruitment and retention of students of a native minority race in higher education institutions (Mosholder et al., 2013). The college persistence thus of minority students of race differs among ethnic students of a minority race (Rigali-Oiler & Kurpius, 2013) impacting their academic achievement (Boyraz et al..,2013). Institutional support predicts learning among students of race (Lundberg, 2014) where cross-racial interaction and interracial interactions is influenced students by institutional characteristics and participation in a student organisation (Bowman & Park, 2014). The students racial identification preferences also seem to change between the time they enter and leave college (Harper, 2014). Institutional responses to social inclusion (Kilpatrick & Johns, 2014) with retention of minority students of race in higher education is vital (Samuel & Scott, 2014). Student involvement in ethnic student organizations also has its civic outcomes even after graduation

(Bowman et al.,2014).Thus race impacts choice of institutions (Squire & Mobley, 2014). Race is celebrated leading towards institutional diversity persisting in multiracial spaces (Hikido & Murray, 2015b). Institutions may have on individuals' race frames or colour blind frames impacting diversity (Warikoo & de Novais, 2015) leaving its embracement on skill development by a race having its replicated effect on admissions into selective institutions (Roksa & Arum, 2015). In short, students commitment to the institution is fundamental to academic success and it varies by race (Ansong et al., 2016).

2.3.4.8 Generation status

Institutional culture impacts first generation college students (Erin & Nadine, 2014) The early experiences and integration in the persistence of first-generation college students in engineering and non-engineering academic majors (Dika & D'Amico, 2016) needs an on look as the supposed attrition factors could hard hit first generation more (Ishitani, 2003) resulting in lack of belongingness in lower academic achievement school dropouts, and less institutional involvement among first generation students (Williams & Ferrari, 2015). Hence retention of first generation students need to be focused with special attention (Watt et al., 2008) on for their success (Hawthorne & Young, 2010) where first generation students often are left demining with lower grades (D'Amico & Dika, 2013). This can be tethered further by positive academic engagement among first generation students resulting in successful retention over the academic years (Soria & Stebleton, 2012) with concerns of retention of first generation minority students in post-secondary institutions still brewing over the matter for long (Harrell & Forney, 2003). The less spoken off living learning community positively impacts academic performance of first-generation college students (Flynn et al., 2015) with residence halls greatly influencing the academic and social transition of first generation students (Inkelas et al., 2007). Further, it leaves one jaw down where one notices that first generation or non-native english speakers have high rate of degree completion (Schuetz, 2014).

2.3.4.9 College expense

The ability to pay to college influences persistence of students (Cabrera et al.,1990) with financial aid adding on to the mileage of students persistence at college (Cabrera et al., 1992). Pricing and financial aid vary by institutions diversifying students responses towards college experiences (Basch, 1997) even when increasing in government funding by student aid prude on persistence (John, 1999). However academic and social integration have seeped into persistence than financial aid (Wetzel et al., 1999). It is observed that financial and academic problem led to attrition (Errico et al., 2000) but appropriate financial aid impacts retention (John, 2000) and influences persistence especially of underrepresented minority students in engineering (Fenske et al., 2000). The short-term budget cuts by government can have long-term impact on functioning of higher educational institutions or university (De Pillis & De Pillis, 2001) where frequent changes in institutional aid and policy by government lowers enrollment (Desjardins, 2001) and state grants in terms of financial aid influences persistence (St et al., 2001).

The institutional expenditure patterns influence development of leadership competencies in students (Smart et al., 2002) and the institution are sponsored research expenditures are positively related to undergraduates' graduation (Kim et al., 2003).The cost and benefit factors (Pasternak, 2005) and financial aid (Kim, 2004) influence the institutional choice of students. The financial resources enhance students learning and development affecting student engagement and student development (Ryan, 2005). In other words, It is resources that have a sway in students retention especially of a minority race (Seidman, 2005). The financial context of institutions influences students persistence and completion of college at four-year institutions (Titus, 2006). The government financial aid to is a booster towards persistence and completion (Singell & Stater, 2006). Loans too are not left far behind in impacting students persistence towards college and educational attainment (Dowd & Coury, 2006) resource allocation being uneven in public research universities (Santos, 2007) raises a commoners brow on successful retention of low-income students (Tinto & Tinto, 2007). It is vivid that financial aid impacts students drop out or attrition by income level (Chen & DesJardins, 2008) encompassing debt constraint on the choice of university too (Callender & Jackson, 2008b). Further financial aspects like debt n

credit issues deliver persistence of students towards the second year of higher education (Buzynski, 2010). Added on though scholarship lead to students college attendance, choice, financial aid renewal, persistence, and graduation (Zhang et al.,2013) with economic composition of institution stressing on persistence of students (Niu & Tienda, 2013); the education policy always needs to determine access to college a reconsideration of the national education (Daun-Barnett, 2013). Never the less, the seeming funding has its large foot hold on institutional engagement (Weerts, 2014) revering growing costs of attending college fall on retention (Marsh, 2014). Student loan thus has a bearing on persistence (McKinney & Burridge, 2014) with institutional diversity-related to funding of university (Piché, 2015) predetermining that money influences life-satisfaction among students especially between new and old Indian Institutes of IIT's students institution (Mukherjee, Nargundkar, & Manjaly, 2014).

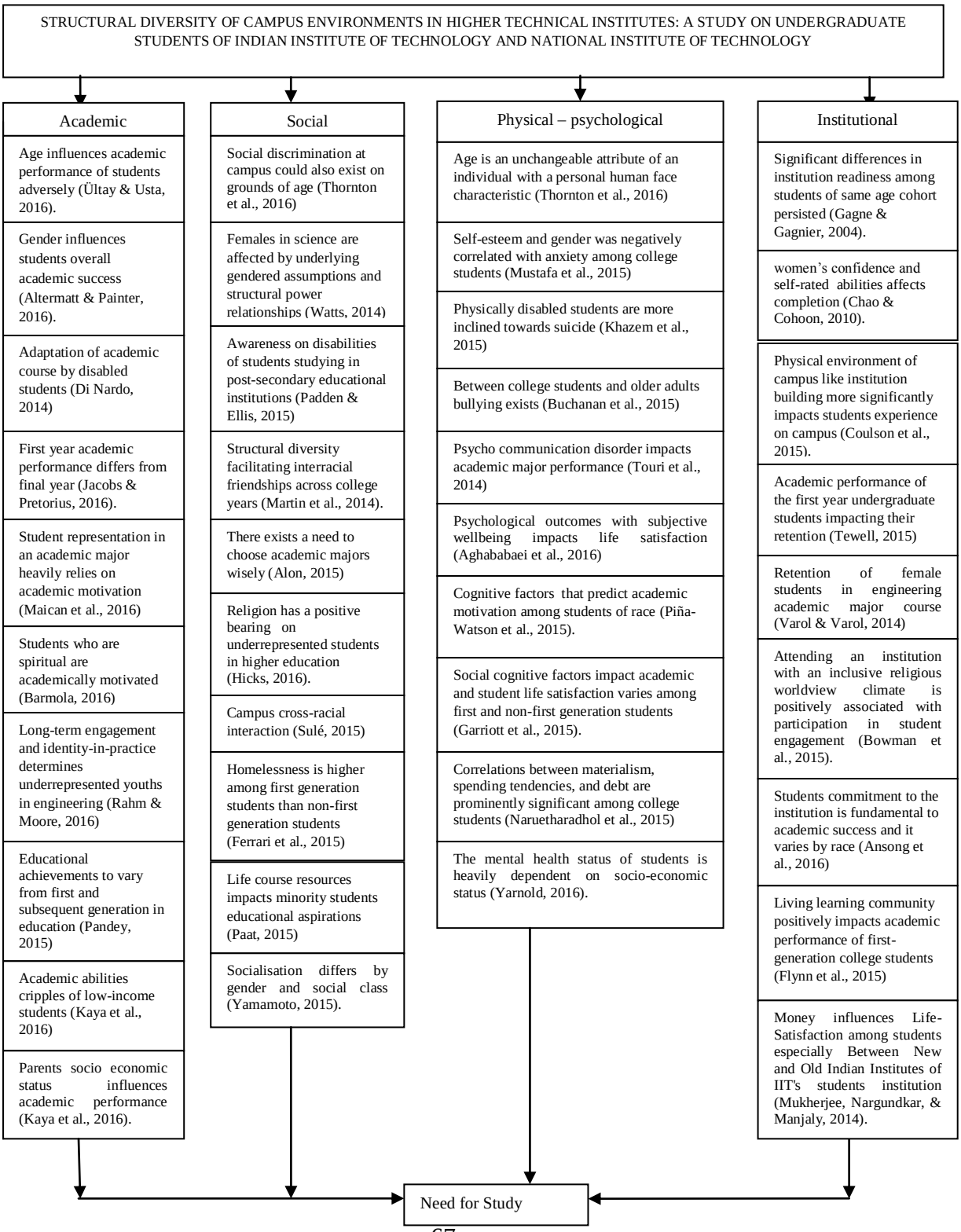
2.3.4.10 Socio-economic status of the family by parent's education, occupation and income

Family variables impact individual relation with institutional adjustment (Jiménez et al., 2009) where parenting styles, family structure, birth order, gender and academic achievement impacts commitment to college adjustment or retention (Hickman & Crossland, 2005). Institutional financial context is also said to impacts college completion of students especially from low socio-economic status (Titus, 2006). Further socio-economic trends in engineering enrolments are an indication in itself of persistence and academic achievement (Orr, 2011). It is thus social class that impacts persistence of college students (Muñoz & Maldonado, 2012) with parenting relationship with child embarking adult functioning patterns at dorms (Rostad et al., 2014).

Summary of institutional adaptation

Campuses are known by their institutional identity. It is this identity that establishes the institute in the academic arena as the epitome of excellence. While private institutes are in a rat race thriving to espionage their entity, the public institutions like IIT's and NIT's have been functioning since long in academic arena providing education towards excellence with a drive in their vision and mission. Thus it's vital to know undergraduate student realm of vision envisioned for their commitment towards persistence and successful graduation.

2.4 Literature Map – According to Creswell (2003) literature map helps to organise the literature and enables a person to understand how the proposed study adds to, extends, or replicates research already completed. The literature review is summarised as a map shown below:



2.5 Research gaps identification There is no consensus about the key elements that capture the concept of campus environment towards student satisfaction particularly in the arena of higher education. There is a need to fill up the research gap by integrating student campus adaptations by student experiences towards student satisfaction that offer a foundation for research. Further very few studies are documented emphasising the need of the study. Hence it's vital for scientific study that enables policy makers to rejuvenate environments of campuses that elevate students' experiences in the long run.

2.6 Theoretical framework for the study

The theoretical framework (Figure 2.6) is developed based on literature review. It signifies the natural vow of students' experiences on diversified nature of campus adaptations.

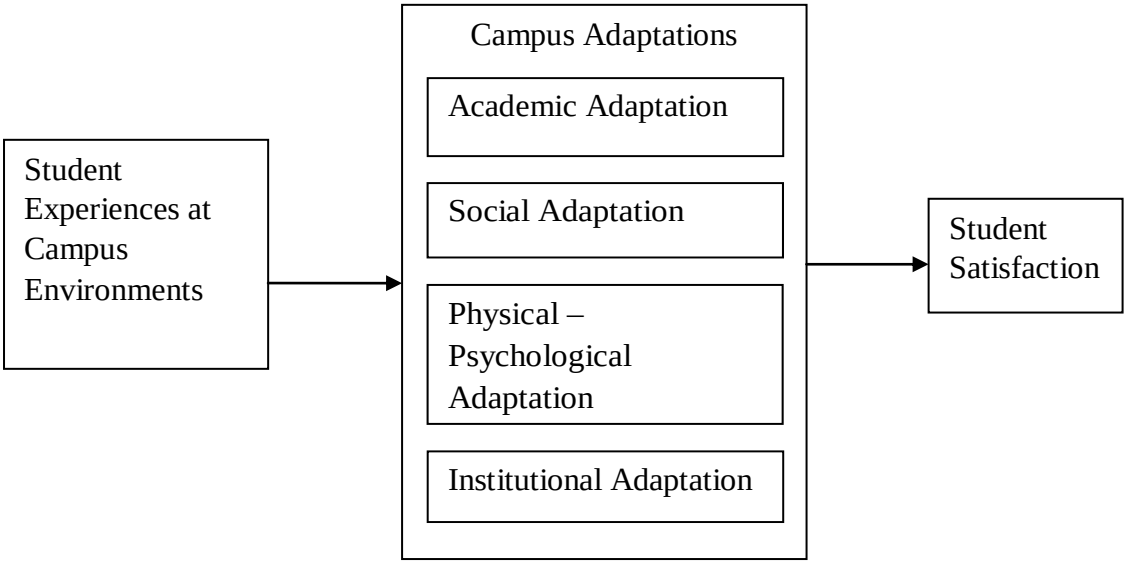


Figure 2.6 Theoretical framework

The theoretical framework on perspectives of student satisfaction

For long the quality of engineering education rested on customers perceptions of quality, their vital ratings often loomed large assuming towards overall satisfaction (Owlia & Aspinwall, 1998). The university as a quality measure on student growth

(Tam, 2002) finds a divergence in its early regular and late registration affecting college students success (Smith et al., 2002). College experience determines students educational plans (Pascarella et al., 2003) forecasting that student adaptation to new learning environments can have unexpected outcomes (Taylor et al., 2004). This has called out for a collective approach to enhancing engineering education for undergraduates (Mcalpine et al., 2005) with strategies for improved academic and social outcomes needs to enhance student success skills (Webb & Bringman, 2006) that nourishes students perceptions in educational choices (Aboh, 2006). Further the undergraduate college experiences impact workforce of the 21st century (Engberg, 2007). The perceptions of education among students of engineering (High & Dockers, 2007) acts as a planning process perspective on upward influence determining campus change (Barnett et al., 2008) of college students towards personal growth of recognition and life satisfaction (Stevic & Ward, 2008).

Uncovering hidden information within university's student enrolment (Siraj & Abdoulha, 2009) has its demography correlates with domain-based life satisfaction of college students (Zullig et al., 2009) transcending towards student engagement (Queensland, 2009). The undergraduate education satisfaction of the higher education institutions (He & Xiaohua, 2010) is based on customer satisfaction has a great impact on customer behavior. Service quality and image of colleges (Jing-yan et al., 2010) pressures up the multilevel model of educational expectations (Lowman & Elliott, 2010).

A snapshot of young India's perspective in engineering from access to satisfaction and future undergraduate education at the Indian Institutes of Technology (Varma & Kapur, 2010) reflects students perceptions of university life (Lin, 2010) treading a path of student satisfaction with higher education being of teaching, skills and knowledge acquired and not just the curriculum itself (Gibson, 2010). However much noticeably student satisfaction differs from full time to part time students (Moro-Egido & Panades, 2010).

A transformative collegiate discourse (Ortlieb, 2011) at college campus help students to find the purpose of life that contributes to a lot of meaning making of student life (Chesbrough, 2011). The student satisfaction with higher education is critical for

student development (Lourdes et al., 2011) and all of the students educational experiences must relate to student satisfaction (El Ansari, 2011) as it only student understanding of satisfaction contributes to student performance (Walker & Palmer, 2011). Thus it is quality of life at campus that impact subjective wellbeing of students (Malkoç, 2011) that often leaves a student rendezvous with memorable messages of navigating across college life (Nazione et al., 2011).

College education emancipates ecumenical worldview development among students (Mayhew, 2012). student satisfaction depends on students perceptions of quality of institutions (Wilkins et al., 2012) relies on students experiences at college (Julia & Veni, 2012) and especially among students of engineering (Wilson et al., 2012). The implementation of student satisfaction index model in higher educational institutions (Temizer & Turkyilmaz, 2012) sets apart the institutional differences in student satisfaction (Barnes & Randall, 2012) that relates to a much farther end that students educational experiences impact student satisfaction (Zhai, 2012).

Student success in engineering education that start off with students' background and disposition variables, education attributes, variables concerning educational climate etc (van den Bogaard, 2012) needs a deeper understanding of undergraduate students' experience (Chambers & Chiang, 2012) which though has its initial steps of measurement with enrollment differences towards student satisfaction (Barnes & Randall, 2012) seeking out that less has been worked about on students satisfaction with teaching ,learning and overall university experiences impacting engineering students performance (Choudhary, 2012) and the less talked about life satisfaction out of one's educational experiences (Daraei & Mohajery, 2013). Thus an assessment of factors that impacts success for incoming college students (Reisel et al., 2012) is vital.

Engineering undergraduate experience which is a qualitative experience (Ganguly et al., 2013) has to have its Quality Function Deployment (QFD) technique as a total quality management (TQM) tool, for planning and improvement of quality to gain competitive edge by satisfying student needs (Verma & Dawar, 2013). The customer focus in higher education has to speak volumes of student satisfaction (Mark, 2013)

that always has been dwindling in between demographic and attitudinal factors of student satisfaction (Nwenyi & Baghurst, 2013).

Student life helps in identity construction (Lairio et al., 2013) with the ability towards lifelong learning (Lord et al., 2013) and more of self-reported learning gains experiences at college (Porter, 2013). So as students identity with science impacts students performance (Merolla & Serpe, 2013), it's the virtual academic performance determine life satisfaction of college students (Malik et al.,2013). Therefore though the eventual personal development of youth expeditions (Stott et al., 2013) transcends students satisfaction in higher education differing by gender age academic year and other parameters (De Jager & Gbadamosi, 2013), the national priority always depends on a student equation of Academic learning + social - emotional learning = national priority (Weissberg & Cascarino, 2013).

Student satisfaction differed among different college students (Sarrico & Rosa, 2014). The Student Quality Circle (SQC), an initiative for raising the bar of quality learning and quality teaching impact on students' traits, learning attitudes etc (Faridi et al., 2014) emphasises Quality of College Life (QCL) of students towards students' life satisfaction and identification (Arslan & Akkas, 2014). The gap between students' expectation and experiences at colleges and institutions of higher learning (Awang et al., 2014) reflect on student aspirations may be extremely resistant to change and intervention, but students' understanding of 'where science can lead' may be more amiable to intervention (Archer et al., 2014) towards a better understanding of becoming an excellent student among engineering undergraduates (Monteiro et al., 2014).

Further the construction of college students' satisfaction model (Guo et al., 2014) highlights problems students face at university (Kiraz, 2014) where even foreign undergraduate students' experiences diversity of the university (Liu & Winder, 2014). This indicates that though academic quality primarily intensifies student satisfaction (Negricea et al.,, 2014) every student has a personal responsibility of building and making an inclusive campus (Abes, 2014) that converges cultural humility towards transformative complicity and empowerment among undergraduate students in higher education (Duntley-Matos, 2014).

Lastly, college students must speak success (Fauria & Zellner, 2015). The far long educational strategies that aim academic success (Milne et al., 2016) has been unidirectional focusing only on academic engagement that leads to student satisfaction and success (Thalluri, 2016). It more often forgotten that students wellbeing impacts academic progress (Sibley et al., 2016). The quality of academic life impacts academic performance, loyalty and institutional or university recommendations (Pedro et al., 2016) ensuring in the long run the quality of students institutional experiences and their level of integration into the academic and social systems of their academic institutions results in successful retention (Aljohani, 2016). After all college students subjective wellbeing is all vital at the campus (Renshaw & Bolognino, 2016).

2.7 Operational definition of variables

Independent variables	Operational definition
1. Age	The length of time the student spends at campus from the age of enrolment of 18 to 24 for undergraduate education
2. Gender	Biological identification of student at the campus as a male and female student.
3. Academic year	Academic progression of students from the date of enrolment up to 4 consecutive years
4. Academic major	Choice of academic major as on enrollment of the student and persistence for consecutive 4 years
5. Religion	Religious faith and religious practices associated since one's birth.
6. Caste	Social classification at one's birth and being associated to with a social status.
7. Generation	The first in the family to pursue an engineering education, whose predecessors did not pursue an engineering education.
8. College Expense	the source of economic assistance to a student to pursue as well as help in sustain nice over a period of four years at the campus
9. Socio-economic status	Its a measure of social well-being of people in the society measured by education, occupation, and income

Dependent variables	Operational definitions
1. Academic Adaptation	Adaptability to academic work that gives a high to attend classes regularly with quality of courses and teaching boosting the overall academic performance towards one's academic goals and purpose
2. Social Adaptation	Adaptability to a social life that helps build bonding enhancing the quality of individual social well-being at campus
3. Physical – Psychological Adaptation	Physical – mental well-being that boosts the confidence of students towards acquainting themselves for a prolonged stay at campus
4. Institutional Adaptation	Adaptability to the institutional support system and facilities that aid towards successful completion of undergraduate education

2.8 Hypotheses Formulation

The following hypotheses are developed based on literature review

Age

$H_{01:}$ There is no significant difference among student-age cohort of 18 – 24 in campus adaptations of academic, social, physical – psychological and institutional environments

$H_{a1:}$ There is a significant difference among student-age cohort of 18 – 24 in campus adaptations of academic, social, physical – psychological and institutional environments.

Gender

$H_{02:}$ Campus adaptations of academic, social, physical – psychological and institutional adaptations did not differ by gender among undergraduate students.

$H_{a2:}$ Campus adaptation of academic, social, Physical – Psychological and institutional adaptations varied by gender among undergraduate students.

Disability

$H_{03:}$ Campus adaptations of academic, social, physical – psychological and institutional adaptations did not differ by disability among undergraduate students.

$H_{a3:}$ Campus adaptation of academic, social, Physical – Psychological and institutional adaptations varied by disability among undergraduate students.

Academic year

$H_{04:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by academic year.

$H_{a4:}$ There is a significant difference among undergraduate students across four academic years in campus adaptations of academic, social, physical – psychological and institutional environments.

Academic major

$H_{05:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by academic major.

$H_{a5:}$ There is a significant difference among undergraduate students across academic majors in campus adaptations of academic, social, physical – psychological and institutional environments.

Religion

$H_{06:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their religion.

$H_{a6:}$ There is a significant difference among undergraduate students across religion in campus adaptations of academic, social, physical – psychological and institutional adaptations.

Caste

$H_{07:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their castes.

$H_{a7:}$ There is a significant difference among undergraduate students across castes in campus adaptations of academic, social, physical – psychological and institutional adaptations.

Generation

$H_{08:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their generation status

$H_{a8:}$ There is a significant difference among undergraduate students across first to generations in campus adaptations of academic, social, physical – psychological and institutional adaptations.

College expense

$H_{09:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by sources of college expenses

$H_{a9:}$ There is a significant difference among undergraduate students on sources of college expenses in campus adaptations of academic, social, physical – psychological and institutional adaptations.

Fathers' education level

$H_{010:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their father's education level.

$H_{a10:}$ There is a significant difference in campus adaptations of academic, social, physical – psychological and institutional adaptations impacted by undergraduate students father's level of education attained.

Mothers' education level

$H_{011:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their mother's level of education.

$H_{a11:}$ There is a significant difference in campus adaptations of academic, social, physical – psychological and institutional adaptations impacted by undergraduate students mother's level of education attained.

Fathers' level of employment

$H_{012:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their father's level of employment

$H_{a12:}$ There is a significant difference in campus adaptations of academic, social, physical – psychological and institutional adaptations impacted by undergraduate students father's level of employment attained.

Mothers' level of employment

$H_{013:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their mother's level of nature of occupation

$H_{a13:}$ There is a significant difference in campus adaptations of academic, social, physical – psychological and institutional adaptations impacted by undergraduate students mother's level of occupation attained.

Fathers' level of income

$H_{014:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their father's income level

$H_{a14:}$ There is a significant difference in campus adaptations of academic, social, physical – psychological and institutional adaptations impacted by undergraduate students father's level of income gained.

Mothers' level of income

$H_{015:}$ Campus adaptations of academic, social, physical – psychological and institutional environments do not vary among undergraduate students by their mother's Income level

$H_{a15:}$ There is a significant difference in campus adaptations of academic, social, physical – psychological and institutional adaptations impacted by undergraduate students mother's level of income gained.

2.9 Chapter summary

The literature reviewed in this chapter provides the theoretical framework for the measurement of student experiences at campus environments. The review illustrates the importance of the dearth of student satisfaction research with the integration of student empowerment perspective. There is a need to approach the research problem from the perspective of students at higher education arena. As discussed, there is an immense need for exploring the satisfaction factors that represents an opportunity to contribute to the existing body of knowledge. The literature revealed that there is a need to develop a holistic approach to evaluating campus environments using campus adaptability factors in higher education. The literature review provides little research evidence to the effectiveness of adaptability in higher education institutions. There is a challenge for satisfaction measurement due to causality factors that affects education system. Traditionally, student satisfaction has focused exclusively on financial aspects alone. Thus satisfaction did not monitor the process outcomes of campus adaptability patterns. Now a day's higher education systems use the separate evaluating process for quality effectiveness and enhancements and higher education institutions are evaluated as effective and efficient only on basis of intake and turn out of students. However, campus environments of higher educational institutions are multidimensional with a demanding thrust on taking into account student satisfaction. Therefore, it is necessary to have a holistic adaptability perspective that allows for assessment of campus environments from the multidimensional perspective at key institutions of higher education. The research framework aims to integrate adaptability perspective towards student satisfaction in higher education institutions.

CHAPTER THREE

RESEARCH METHODOLOGY

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Chapter overview

The study adopts mixed method explanatory sequential research design with section 3.2 highlighting the defined purpose of mixed method research. Section 3.3 provides for sampling. Section 3.4 showcases quantitative methods. Section 3.5 highlights qualitative methods and finally, section 3.6 covers the summary.

3.2 Mixed method research

Mixed method research is defined as research in which the investigator collects and analyses data, integrates the findings and draws inferences using either qualitative and quantitative approaches or methods in a single study or a program of inquiry (Tashakori & Creswell, 2007).

3.2.1 Philosophical foundations of worldview

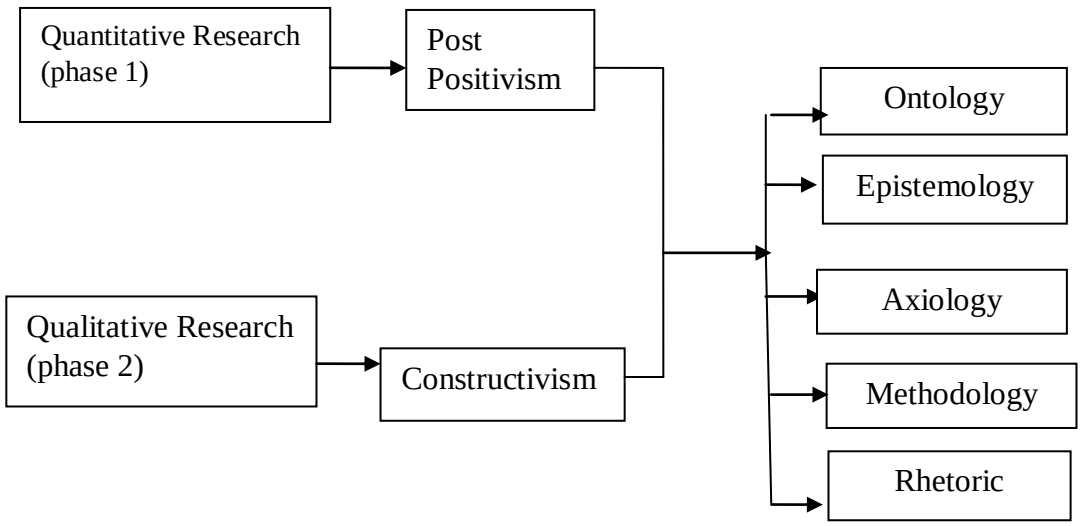


Figure 3.1 Worldview on philosophical foundations

With reference to figure 3.1, quantitative research relies on post-positivist world view where the nature of reality or ontology focuses on singular reality of accepting or rejecting the hypotheses ; the relationship between the researcher and that being

researched or epistemology focuses on distance and impartiality where researchers objectively collects data on instruments ; the role of values or axiology reflects unbiased attitude of researcher as researcher uses checks to eliminate bias; the process of research or methodology being deductive as researchers test on a priori theory and lastly the language of research or rhetoric that renders formal style where researchers use agreed on definitions of variables. (Creswell, 2003)

Qualitative research relies on constructivism world view where the nature of reality or ontology focuses on multiple realities enabling researchers to provide quotes that illustrate different perspectives; the relationship between the researcher and that being researched or epistemology focuses on closeness of researchers visit participants at their sites to collect data ; the role of values or axiology where biasedness of the researchers actively talk about their biases and interpretations ; the process of research or methodology being inductive as researchers start with participants' views and build up to patterns theories and generalizations and lastly the language of research or rhetoric that renders informal style where researchers write in a literary, informal style (Creswell, 2003).

3.2.2 Research approach

The explanatory sequential research design that occurs in two distinct interactive phases starts off with deductive theory and quantitative data that addresses research questions. The results from quantitative analysis lead to an inductive approach to the qualitative collection of data and analysis. In other words, qualitative results help to explain the initial quantitative results. As per this study, finding a significant differentiation among students' of first and non-first generations in campus adaptation, qualitative interviews were conducted with adolescent on types of campus adaptations, thereby attempting to explain the unexpected results.

3.3 Sampling

The study adopts *probability sampling technique* with *multistage sampling* followed by *cluster sampling* in the identification of institutes of IIT's and NIT's. This is gathered up with *stratified sampling* in sample choice of undergraduate student population and simple random in collecting data from the chosen student population

as stated above. To determine the sample, the population for the study remained a finite universe of undergraduate 4-year B. Tech engineering students' enrolled on a regular study mode at higher technical educational institutions of IIT's and NIT's. As per all India survey report on higher education for the year 2015 – 16 higher technical educational institutions of IIT's and NIT's as of year represents the *sampling frame* of the undergraduate B.Tech student population which is 4, 84,640. Thus the undergraduate 4-year b. tech student is the *sampling unit*. Further, the sample size for the study is

Sample Size: - $n = \frac{N}{1+Ne^2} = \frac{4,84,640}{1212.6} = 399.6$ or 400

3.3.1 Research tool

The survey was conducted using a structured online questionnaire with reference to student's campus and non - campus email accounts. At all times, the students were informed of the anonymous, confidential, and voluntary nature of their participation and any doubts that arose were clarified. All the 21 items in the questionnaire were measured with the rating on a five-point likert scale ranging from "1 = strongly disagree" to "5 = strongly Agree". A total of 1460 students' participated with 1420 of valid responses for an overall 97.26 percent participation rate after deducting the questionnaire that contained empty answers. Data was collected for 20 weeks across institutions of IIT's and NIT's.

3.3.2 Reliability and validity of the research tool

Reliability of all constructs tend to be individually measured using Cronbach's Alpha that checks the internal consistencies of items in measuring the constructs. The Alpha value greater than 0.7, indicates good reliability of the survey instrument. Confirmatory Factor Analysis (CFA) was used to substantiate construct validity of the scale. Kaiser- Meyer- Olkin measure of sampling adequacy (KMO) value greater than 0.5 and factor loading values greater than 0.5 indicates that the measurement scale is adequate and indicates good construct validity. As shown in Table 3.1, reliability and sampling adequacy for all constructs are good enough. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, with a value of 0.908, and the statistically

significant Bartlett's test of sphericity, $X^2(210) = 10009.330$; $p < 0.01$, confirmed the benefits of conducting an Exploratory Factor Analysis (EFA).

Table3.1
Details of reliability and validity

Construct	Number of items	Items	Mean	SD	Factor loading	Cronbach alpha	KMO
Academic Adaptation	6	Academic purpose and goal	3.81	1.106	.579	.760	.759
		Academic work	3.24	1.195	.737		
		Attendance	4.00	1.121	.678		
		Quality of courses	3.02	1.172	.561		
		Intellectual calibre of faculty	3.11	1.189	.610		
		Overall academic performance	3.13	1.078	.626		
Social Adaptation	5	Socially well with fellow classmates	3.86	1.034	.602	.650	.711
		Socially well with students' of opposite sex	3.09	1.255	.586		
		Faculty are mentors	2.38	1.298	.728		
		Non-teaching staff	3.19	1.178	.505		
		Overall social life at college	3.48	1.091	.619		
Physical – Psychological Adaptation	5	Physical health	3.66	1.071	.624	.777	.767
		Mental health	3.56	1.106	.717		
		Sharing problems	3.83	1.170	.719		
		Confident to face future challenges	3.87	1.052	.683		
		Safety	4.19	0.979	.546		
Institutional Adaptation	5	Institutional facilities	3.36	1.294	.775	.791	.772
		Hostel facilities'	3.17	1.261	.741		
		Course completion	4.08	1.049	.512		
		Choice of institute	3.67	1.173	.638		
		fit in well to the campus environment	3.72	1.051	.500		

Source: Research Survey Data

3.4 Quantitative method

Two types of data analysis were adopted for the study

3.4.1 Multivariate analysis of variance (MANOVA) were conducted to assess' student's group differences in campus adaptation. This was followed by discriminant analysis to determine the nature of the effect of campus adaptations by each group. There are several assumptions behind an MANOVA, including multivariate normality, the linearity of relationships, the low influence of univariate and multivariate outliers, homogeneity of variance

- covariance matrices and an absence of multicollinearity. Each assumption was tested, and no serious violations were noted.

3.4.2 The **independent t-test** also called the two-sample t-test, independent-samples t-test or student's t-test, is an inferential statistical test that determines whether there is a statistically significant difference between the means in two unrelated groups.

3.5 Qualitative method

Qualitative multiple case study approach is used for the purpose of investigating in depth the contextual factors that shaped the student experiences at the campus and their subsequent satisfaction (Yin, 2009). The selection of a qualitative study was based on its ability to generate a description of a given event or an understanding of a specific setting or environment (Corbin & Strauss, 2008). According to Attinasi (1989) No matter, how theoretically and analytically sophisticated, this approach (quantitative) will never be capable of fully informing us as to how and why particular student outcomes occur. This is because such methods do not, and cannot, adequately capture the perspectives of the individuals whose outcomes are of concern. The focus of this study is to use the findings to develop interventions or student support strategies aimed at improving the student experiences of students' at IIT's and NIT's, with the expectation that the findings from the study would also add to the body of knowledge of student satisfaction that would be unique in nature to elite institution of engineering in India. Creswell (2003) supported the use of qualitative research as an appropriate research model where the rationale was based on the desire for specific reform or change.

3.5.1 Research context and participants

The background setting for the study involves examining campus environment experiences of the 12 students' of NITK who had taken part earlier in the data collection through questionnaire and voluntarily followed up back on the survey. Here each student represented a case on which individual case analysis was performed as well as a cross-case analysis of all twelve students'. This provided rich contextual information and insights into the individual learner's personal struggles and how these

all related to the bigger context in which they experienced crucial issues that other form of inquiry for long that may not have been able to address. Data was collected from within the student campus environment where the study participants had experienced the kinds of environmental variables informed by the literature to be associated with measures of student satisfaction. According to Creswell (2003), qualitative research takes place within a natural setting where events occur. Therefore, this methodology was well suited for an examination of the experiences of at-risk students at a specific institution.

3.5.2 Rationale for case study methodology

The interpretive qualitative method is used for the study. Merriam (1998) describes interpretive qualitative studies as the most common form of qualitative studies found in education. Case studies emphasize detailed contextual analysis of a limited number of events or conditions and their relationships. Researcher Robert Yin defined the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used (2009). Case studies help to understand (a) interpretation of students' experiences (b) creation of student's own world and (c) student's attribution of meanings to their own experiences.

3.5.3 Case study protocol

Yin (2009) recommends the case study protocol where the researcher's skills come to foreplay like the ability to ask good questions, interpret responses, be a good listener, be adaptive and flexible so as to react to various situations, have a firm grasp of issues being studied, and be unbiased by preconceived notions. This could help rule out the critics of being unscientific in nature and lowered utility as replication of findings could not be adorned.

Yin (2009) emphasized that there was more to a case study protocol than the instrument as the protocol had rules and procedures that enhanced the reliability and validity of case study methodology as an important research tool. According to Yin (2009), a viable protocol should be meticulously comprehensive, and must cover the

following material: an outline of the project's objectives, case study issues, field procedures, researcher credentials for access to data sources, a detailed description for the handling and location of those sources; case study questions, and a guide for the case study report.

3.5.4 Constructivist view

According to Yin, 2009 case study is an ideal methodology when a holistic, in-depth investigation is needed where the researcher has little control over the events within a real life context. Yin's (2009) approach was based on the constructivist paradigm claim that truth is relative and that it is dependent on one's perspective. Constructivism is built upon the premise of a social construction of reality where a close collaboration between researcher and the participants enables each one to tell their story. In this research study, the researchers' objective is to construct the individual truths about students' campus environment experiences in college.

3.5.5 Explanatory case study

The overarching goal of explanatory case study is to gain understanding of the causal association between first generation students' and their patterns of campus adaptation experiences.

3.5.6 Analytical generalization

Statistical generalisation of quantitative study based on the developed study is used to compare the empirical results with the analytical generalisation of qualitative case study research (Yin, 2009).

Merriam (1998) further clarified the relationship between the notion of generalizability and qualitative case study methodology—saying, "In qualitative research, a single case or small non-random sample is selected precisely because the researcher wishes to understand the particular in depth, not to find out what is generally true of the many". Merriam further championed that the reliability of qualitative case study is by pointing out that in multi-case or cross-case analysis, the use of predetermined questions and specific procedures for coding and analysis enhanced the generalizability of findings in the traditional sense.

3.5.7 Single case study methodology

The qualitative tradition of research can be undertaken to utilize one of five specific traditions: biography, phenomenology, grounded theory, ethnography, or a case study (Creswell, 2003). A case study may involve the study of a single industry or a particular firm participating in that industry (Yin, 2009). Thus the case study convention is chosen for this study based on the focus of research and objectives of the study. This qualitative study takes place at the single institute of NIT, representing a particular niche within the larger domain of higher technical educational institutions.

3.5.8 Sample selection by purposive sampling

Purposive sampling as a form of sampling is a tool common to non-probability sampling, where the goal of the researcher is to discover, understand, and gain insights rather than to generalize to a larger population reflecting the purpose of study (Merriam, 1998).

3.5.9 Sample size in qualitative research by judgemental sampling

Yin (2009) explained that the selection of the sample should be large enough to detect an effect; however, the likelihood of detecting an effect as part of a power analysis was not based on any formula; rather, it was a matter of judgmental choice.

3.5.10 Data collection

Case study aspires to use of multiple sources and techniques in the data gathering process like semi-structured interview, person-to-person interviews, descriptive institutional data, and institutional documentation related to the participants in the study.

3.5.11 Interview protocol

The primary means for collecting data for the case study is semi-structured interview—referred to as an interview guide (Yin, 2009). The semi-structured format enabled the researcher to establish a relaxed yet focused setting for eliciting the narrative responses accounting for the participants' college experiences. The researcher conducted the one to one interview using skype and face to face interview

with open-ended questions during a six -week period. The researcher used an outline of issues—a series of broad questions—to interact with each participant, using prompts and follow-up questions to fully develop each student's profile. Sensitivity to enhance clarity with due ethical considerations of student participant's privacy was adhered to by assigning pseudonyms as student 1 to student 12.

3.5.12 Triangulation of data

The case study with multiple data collection methods and analysis techniques provided the researcher with rich opportunity to triangulate data in order to strengthen the research findings and conclusions by minimizing the bias which persists due to the direct involvement of researcher in data collection and analysis (Yin, 2009). Further, it is a triangulation of participants' perceptions and during all phases of the research process that aligns the element of *trustworthiness* between qualitative research and quantitative research. In all cases, the researcher treated the evidence fairly to produce analytic conclusions answering the original "how" and "why" research questions for the study (Yin, 2009).

The rich data uncovered during student's interview were coded. Codes denote the words of participants or incidents as concepts derived from observation or video. Coding is conducted in three different phases: (a) *open coding* – uncovers key meaning to questions within the data (Corbin & Strauss, 2008). (b) *axial coding* — researcher involves theoretical questions to identify variations in the data and to make connections between concepts and categories created during the open coding phase (c) hierarchical Coding.

3.5.13 Single case analysis

A case analysis for each participant by writing up each story, the researcher was successful in understanding the context of each participant's experience. Following the write-up of each case began a process of cross-case analysis that informed both the initial interviews for each participant and any additional notes that accompanied the interviews.

3.5.14 Reliability and validity of qualitative methods

Stringer (2004) suggested that the question of the reliability and validity of qualitative methods, including case study research, was due, in part, because the traditional academic criteria used for assessing quantitative research was inappropriate for qualitative research. The essential nature of qualitative case study research is different from quantitative studies. Qualitative methods are essentially subjective in nature and local in scope, procedures for assessing the validity of research are quite different than those used for the experimental study (Stringer, 2004).

3.6 Chapter summary

The research envisages the scope of four year undergraduate B.Tech students' with an methodology of explanatory sequential mixed method research of deductive reasoning in the first phase of quantitative research that adopts probability sampling techniques of cluster, systematic and simple random sampling. The second phase of qualitative case study research enfolds inductive reasoning with non-probability sampling techniques of purposive and judgemental sampling. In enlisting the required information for quantitative data from the institutes' questionnaires were administered. This data was tabulated and analysed quantitatively using multivariate analysis of variance (MANOVA) followed with discriminant analysis and independent – t tests. Qualitatively a case study approach with semi structured interviews at one of the institutes were conducted and analysed using open, axial and hierarchical coding.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Chapter overview

This chapter discusses data analysis and interpretation with section 4.2 to 4.16 highlights data analysis on Multivariate Analysis of Variance (MANOVA) followed with Discriminant analysis and Independent t – tests across dependent variables through independent variables. Section 4.3 focuses on Qualitative research analysis using hierarchical axial coding and finally section 4.4 focuses on the summary of the chapter.

4.2 Age

4.2.1 Hypothesis testing by age of students'

H_{01} *There is no significant difference among student-age cohort of 18 – 24 in academic, social, physical – psychological and institutional adaptations.*

H_{a1} *There is a significant difference among student-age cohort of 18 – 24 in academic, social, physical – psychological and institutional adaptations.*

4.2.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by age group of students'

The Pearson correlation test (Table 4.2.1) indicates that the dependent variables are highly correlated

Table 4.2.1

Pearson Correlation among dependent variables by age group of students'

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.61	0.702
2.Social Adaptation	0.576	1.00			2.72	0.754
3.Physical – Psychological Adaptation	0.519	0.573	1.00		2.28	0.772
4.Institutional Adaptation	0.578	0.613	0.789	1.00	2.14	0.784

*Note: - n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research survey data

4.2.2.1 Descriptive statistics on dimensions of campus adaptations by age group of students'

Table 4.2.2

Distribution of difference in dimensions of campus adaptations by age group of students'

Age Groups	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
18 (n = 102)	2.34	0.625	2.56	0.702	2.22	0.627	2.10	0.710
19 (n = 327)	2.57	0.712	2.77	0.742	2.30	0.817	2.15	0.814
20 (n = 419)	2.66	0.690	2.80	0.783	2.36	0.797	2.20	0.830
21 (n = 357)	2.69	0.700	2.68	0.758	2.27	0.782	2.12	0.755
22 (n = 163)	2.59	0.669	2.68	0.727	2.26	0.681	2.12	0.741
23 (n = 28)	2.22	0.784	2.45	0.786	1.81	0.620	1.82	0.622
24 (n = 24)	2.14	0.710	2.44	0.471	2.00	0.560	2.07	0.692
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey data

The mean in the descriptive statistics (Table 4.2.2) indicate that among undergraduate B.Tech students', social adaptation had high level of adaptation with students' age of 18 (M = 2.56, SD = 0.702), 19 (M = 2.77, SD = 0.742), 20 (M = 2.80, SD = 0.783), 22 (M = 2.68, SD = 0.727), 23 (M = 2.45, SD = 0.786), 24 (M = 2.44, SD = 0.471) and academic adaptation was high with students' age of 21 (M = 2.69) (SD = 0.700).

However, institutional adaptation was at low level with students' age of 18 (M = 2.10, SD = 0.710), 19 (M = 2.15, SD = 0.814), 20 (M = 2.20, SD = 0.830), 21 (M = 2.12, SD = 0.755), 22 (M = 2.12, SD = 0.741) followed with low level of physical – psychological adaptation with students' age of 23 (M = 1.81, SD = 0.620) and 24 (M = 2.00, SD = 0.560).

Further within academic adaptation, students' of age 21, had high level of adaptation (M = 2.69, SD = 0.700) and students' of age 24 had low level of adaptation (M = 2.14, SD = 0.710).

In social adaptation, students' of age 20 had high level of adaptation (M = 2.80, SD = 0.783) and students' of age 24 had low level of adaptation (M = 2.44, SD = 0.471)

In physical – psychological adaptation, students' of age 20, had high level of adaptation (M = 2.36, SD = 0.797) and student of age 23 had low level of adaptation (M = 1.81, SD = 0.620).

In institutional adaptation, students' of age 20 had high level of adaptation (M = 2.20, SD = 0.830) and students' of age 23, had low level of adaptation (M =1.82, SD = 0.622).

Overall, across campus adaptations and age groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within age groups students' of age 20, had high level of social adaptation (M = 2.80, SD = 0.783) and students' of age 23 had high level of physical – psychological adaptation (M = 1.81, SD = 0.620).

4.2.2.2 Inferential statistics on dimensions of campus adaptations by age group of students'

The Box's M value of 95.347 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.04 (p > 0.001).

The Pillai's Trace test static indicated a significant effect of age on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.052, F (24, 5648) = 3.103 and p = 0.000) *(p < 0.05).

The Wilks Lambda test static showed there was a significant effect of age on students' academic, social, physical – psychological and institutional campus adaptations (Λ = 0.949, F (24, 4916) = 3.126 and p = 0.000) *(p < 0.05).

The Hoteling's trace test static identified that there was a significant effect of age on students'' campus adaptations of academic, social, physical – psychological and institutional (T = 0.054, F (24, 5630) = 3.145 and p = 0.000) *(p < 0.05).

The Roy's largest root test static highlighted that there was a significant effect of age on students'' campus adaptations of academic, social, physical – psychological and institutional (Θ = 0.039, F (6, 1378) = 9.066 and p = 0.000) *(p < 0.05).

The univariate test statistic with levene's test of equality of variances for each of the dependent variable is non-significant i.e. $p > 0.05$ with an academic adaptation of 0.928, social adaptation of 0.178, physical – psychological adaptation of 0.069 and institutional adaptation of 0.557 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (6,1412) for academic, social and physical – psychological adaptation revealed a significant effect with F value (7.100) (2.968) (3.128) and p-value (0.000) (0.007) (0.005) while it revealed a nonsignificant effect of institutional adaptation with F value of (1.314) and p-value (0.247).

Further, the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or age) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of age among dependent variables MANOVA is followed by discriminant analysis.

The first discriminant function explained 71.8% of the variance with canonical $R^2 = 0.039$; the second discriminant function explained 20.2 % of the variance with canonical $R^2 = 0.011$; the third discriminant function explained 6.5 % of the variance with canonical $R^2 = 0.003$; the fourth discriminant function explained 1.5 % of the variance with canonical $R^2 = 0.001$ indicates that the variance in the canonical derived dependant variable was associated with age level.

In combination these discriminant functions significantly discriminated the age groups. The first discriminant function significantly differentiated the student groups of age 18 – 24, with the first function $\Lambda = 0.949$, x^2 (24) 74.623, $p = 0.000$ ($p < 0.05$).

However, second discriminant function $\Lambda = 0.985$, x^2 (15) 21.232, $p = 0.130$ ($p > 0.05$). The third discriminant function $\Lambda = 0.996$, x^2 (8) 6.021, $p = 0.645$ ($p > 0.05$) and the fourth discriminate function $\Lambda = 0.999$, x^2 (3) 1.106, $p = 0.776$ ($p > 0.05$) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that academic adaptation loaded highly on first function (r = 0.887) indicating it contributed more to the age group separation (Bragman, 1970) than the relatively fair high loading in positive relationship with second function (r = 0.078) third function (r= 0.002) and fourth function (r =0.456).

Social adaptation loaded highly on second function (r = 0.752) indicating it contributed more to the age group separation than the relatively high loading in positive relationship with first function (r = 0.466) and fourth function (r = 0.356) negated by negative relationship in the third function (r = - 0.388).

Physical and psychological adaptation loaded highly on second function with (r = 0.713) indicating it contributed more to the age group separation than the than relatively fair high loading in the third function (r = 0.526) first function (r = 0.417) and fourth function (r = 0.202).

Institutional adaptation loaded highly on fourth function with (r = 0.757) indicating it contributed more to the age group separation than the relatively fair high loading in positive relationship with second function (r = 0.512) Third function (r = 0.331) and first function (r = 0.216).

4.2.3 Data interpretation on dimensions of campus adaptations by age group of students'

The age group 18 has positive outcomes on social (0.039) and physical – psychological adaptations (0.124) with negative outcome on academic (-0.404) and institutional adaptation (-0.050).

The age group 19 has positive outcomes in social adaptation (0.088) and negative outcomes with academic (-0.042), physical – psychological (-0.051) and institutional adaptation (-0.015).

The age group 20 had positive outcomes in academic (0.084) social (0.082) and institutional adaptation (0.020) with negative outcomes in physical and psychological adaptation (-0.001).

The age group of 21 had positive outcomes in academic (0.159) and physical – psychological adaptation (0.024) with negative outcomes in social (-0.132) and institutional adaptation (-0.004).

The age group of 22 had positive outcomes in physical psychological adaptation (0.012) and negative outcomes in academic (-0.011) social (-0.050) and institutional (-0.001).

The age group of 23 had all negative outcomes in academic (-0.569) social (-0.316) physical – psychological (-0.279) and institutional (-0.021) adaptations.

The age group of 24 had positive outcomes in physical – psychological adaptation (0.071) and institutional adaptation (0.157) with negative outcomes in academic (-0.822), social (-0.118) adaptations.

Therefore, we reject the null hypothesis (H_{01}) and accept the alternate hypothesis (H_{a1}) that undergraduate B.Tech students' differed across age groups of 18 – 24 in their campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.3 Gender

4.3.1 Hypothesis testing by gender of students'

H_{02} Academic, social, physical – psychological and institutional adaptations did not differ by gender of students'

H_{a2} Academic, social, physical–psychological and institutional adaptations did differ by gender of students'.

4.3.2 Data analysis using independent t – test on dimensions of campus adaptations by gender of students'

On an average, male students' (n = 1268) had higher level of academic adaptation (M = 2.62, SE = 0.0199) than female students' (n = 152) with (M = 2.40, SE = 0.049).

On an average, female students' (n =152) had higher level of social adaptation (M = 2.79, SE = 0.05) than male students' (n = 1268) with (M = 2.71, SE = 0.021).

On an average female student (n =152) had higher level of physical – psychological adaptation with (M = 2.30, SE =0.050) than of male students' (M = 2.28, SE = 0.022).

On an average male student (n = 1268) had higher level of institutional adaptation with (M =2.15, SE = 0.022) than of female students' (n = 152) with (M = 2.09, SE = 0.05).

4.3.3 Data interpretation on dimensions of campus adaptations by gender of students'

The mean difference of 0.224 in academic adaptation with BC_a 95% CI [0.11945, 0.32938], was significant at t (203.584) = 4.215, p = 0.000 ($p \leq 0.05$).

The mean difference of 0.059 at social adaptation, BC_a 95% CI [-0.07241, -0.19187] was not significant at t (1418) = 0.887, p = 0.375 ($p > 0.05$).

The mean difference of -0.0150 at physical – psychological adaptation, BC_a 95%, CI [-0.12361, 0.09354] was not significant at t (213.782) = - 0.273, p = 0.785 ($p > 0.05$).

The mean difference of -0.077 institutional adaptation, BC_a 95% CI [-0.19675, 0.04114] was not significant at t (197.111) = -1.290, p = 0.199 ($p > 0.05$).

Therefore, we reject the null hypothesis (H_{02}) and accept the alternate hypothesis (H_{a2}) that undergraduate B.Tech students' differed across gender on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.3 Physical disability

4.4.1 Hypothesis testing by physical disability of students'

H_{03} Academic, social, physical – psychological and institutional adaptations did not differ by physical disability of students'.

H_{a3} Academic, social, physical – psychological and institutional adaptations did differ by physical disability of students'.

4.4.2 Data analysis using independent t - tests on dimensions of campus adaptations by physical disability of students'

On an average non-disabled students' (n = 1389) had higher academic adaptation (M =2.60, SE = 0.018) than disabled students' (n = 31) with (M = 2.51, SE = 0.130).

On an average non-disabled students' (n = 1389) had higher social adaptation (M =2.72, SE = 0.020) than disabled students' (n = 31) with (M = 2.67, SE = 0.1444).

On an average non-disabled students' (n = 1389) had higher physical – psychological adaptation (M =2.29, SE = 0.1381) than disabled students' (n = 31) with (M = 2.28, SE = 0.020).

On an average non-disabled students' (n = 1389) had higher institutional adaptation (M =2.14, SE = 0.021) than disabled students' (n = 31) with (M = 2.09, SE = 0.135).

4.4.3 Data interpretation on dimensions of campus adaptations by physical disability of students'

The mean difference 0.08 in academic adaptation with BC_a of 95% CI [-0.17915, 0.35791] was not significant at t (1418) = 0.700, p = 0.484 (p>0.05).

The mean difference 0.054 in social adaptation with BC_a of 95% CI [-0.21494, 0.32325] was not significant at t (1418) = 0.395, p = 0.693 (p>0.05).

The mean difference -0.002 in physical – psychological adaptation with BC_a of 95% CI [-0.27753, 0.27755] was not significant at t (1418) = -0.0018, p = 0.986 (p>0.05)
The mean difference 0.05 in institutional adaptation with BC_a of 95% CI [-0.22853, 0.33073] was not significant at t (1418) = 0.358, p = 0.720 (p>0.05).

Therefore, we reject the alternate hypothesis (H_{03}) and accept the null hypothesis (H_{a3}) that undergraduate B.Tech students' did not differ across physical disability on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.5 Academic year

4.5.1 Hypothesis testing by academic year of students'

H_{04} There is no significant difference among academic, social, physical – psychological and institutional adaptation across academic years.

H_{a4} There is a significant difference among academic, social, physical – psychological and institutional adaptation across academic years.

4.5.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by academic year of students'

The Pearson correlation test (Table 4.5.1) indicates that the dependent variables are highly correlated

Table 4.5.1

Pearson Correlation among dependant variables by students'' academic year

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.61	0.702
2.Social Adaptation	0.575	1.00			2.72	0.755
3.Physical – Psychological Adaptation	0.519	0.573	1.00		2.28	0.771
4.Institutional Adaptation	0.577	0.613	0.788	1.00	2.14	0.784

*Note: - n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research survey data

The mean in the descriptive statistics (Table 4.5.2) indicate that among undergraduate B.Tech students', first year to fourth year students' had high level of social adaptation, with first year (M = 2.54 , SD =0.679) second year (M = 2.72 , SD = 0.727) third year (M = 2.82 , SD = 0.763) fourth year (M = 2.69, SD = 0.771) However, students' across academic years from first year to fourth year had low level of institutional adaptation with first year (M = 2.06, SD = 0.805) second year (M =

2.07, SD = 0.764) third year (M = 2.23 , SD = 0.782) fourth year (M = 2.13 , SD = 0.785).

4.5.2.1 Descriptive statistics on dimensions of campus adaptations by academic year of students'

Table 4.5.2
Distribution of difference in dimensions of campus adaptations by academic year

Academic year	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
First Year (n = 160)	2.26	0.709	2.54	0.679	2.15	0.729	2.06	0.805
Second Year (n = 273)	2.53	0.697	2.72	0.727	2.23	0.746	2.07	0.764
Third Year (n = 460)	2.68	0.682	2.82	0.763	2.36	0.781	2.23	0.782
Fourth Year (n = 561)	2.67	0.688	2.69	0.771	2.29	0.782	2.13	0.785
Total (n =1420)	2.61	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research survey data

Further within academic adaptation, third year students' had high level of adaptation (M = 2.68, SD = 0.682) and first year students' had low level of adaptation (M = 2.26, SD = 0.709).

In social adaptation, third year students' had high level of adaptation (M = 2.82, SD = 0.763) and students' of first year had low level of adaptation (M = 2.54, SD = 0.679).

In physical – psychological adaptation, third year students', had high level of adaptation (M = 2.36, SD = 0.781) and first year students' had low level of adaptation (M = 2.15, SD = 0.729).

In institutional adaptation, third year students' had high level of adaptation (M = 2.23, SD = 0.782) and first year students' had low level of adaptation (M = 2.96, SD = 0.805).

Overall, across campus adaptations and academic year groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of institutional adaptation (M = 2.14, SD =0.784). However, within academic year groups third year

students' had high level of social adaptation (M = 2.82, SD = 0.763) and first year students' had low level of institutional adaptation (M = 2.06, SD = 0.805).

4.5.2.2 Inferential statistics on dimensions of campus adaptations by academic year of students'

The Box's M value of 36.214 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.209 (p > 0.001).

The Pillai's Trace test static showed that there was a significant effect of academic year on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.052, F (12,4245) = 6.237 and p = 0.000) *(p < 0.05).

The Wilks Lambda test static highlighted that there was a important effect of academic year on students' academic, social, physical – psychological and institutional campus adaptations (Λ = 0.949, F (12, 3738) = 6.289 and p = 0.000) *(p < 0.05).

The Hoteling's trace test static pointed out that there was a significant effect of academic year on students'' campus adaptations of academic, social, physical – psychological and institutional (T = 0.054, F (12, 4235) = 6.328 and p = 0.000) *(p < 0.05).

The Roy's largest root test static reported that there was a significant effect of academic year on students'' campus adaptations of academic, social, physical – psychological and institutional (Θ = 0.043, F (4, 1415) = 15.057 and p = 0.000) *(p < 0.05).

The univariate test statistic with levene's test of equality of variances for each of the dependent variable is non-significant i.e. p > 0.05 with an academic adaptation of 0.826, social adaptation of 0.172, physical – psychological adaptation of 0.218 and institutional adaptation of 0.838 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (3,1416) for academic, social, physical – psychological and institutional adaptation too revealed a significant effect with F value (17.052), (6.188), (3.709), (3.002) and p value less than 0.05 (0.000), (0.000), (0.010) and (0.030).

Further, the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or academic year) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of academic year among dependent variables MANOVA is followed by discriminant analysis.

The first discriminant function explained 79.1% of the variance with canonical R^2 = 0.043; the second discriminant function explained 15.1 % of the variance with canonical R^2 = 0.008; the third discriminant function explained 5.8 % of the variance with canonical R^2 = 0.056; indicates that the variance in the canonical derived dependant variable was associated for academic year level.

In combination these discriminant functions significantly discriminated the academic year groups. The first and second discriminant function significantly differentiated the student academic year groups, with the first function $\Lambda = 0.949$, x^2 (12) 74.813, p = 0.000 ($p < 0.05$) and second discriminant function $\Lambda = 0.989$, x^2 (6) 15.832, p = 0.015 ($p < 0.05$). However, the third discriminant function $\Lambda = 0.997$, x^2 (2) 4.409, p = 0.110 ($p > 0.05$) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that academic adaptation loaded highly on first function (r = 0.912) indicating it contributed more to the academic year group separation (Bragman, 1970) than the relatively fair high loading in positive relationship with second function (r = 0.218) third function (r = 0.317).

Social adaptation loaded highly on second function (r = 0.921) indicating it contributed more to the academic year group separation than the relatively high loading in positive relationship with first function (r = 0.382) and third function (r = 0.070).

Institutional adaptation loaded highly on third function with (r = 0.831) indicating it contributed more to the academic year group separation than the relatively fair high

loading in positive relationship with first function (r = 0.22) and second function (r = 0.511).

Physical and psychological adaptation loaded highly on third function with (r = 0.581) indicating it contributed more to the academic year group separation than the than relatively fair high loading in the first function (r = 0.349) and second function (r = 0.447).

4.5.3 Data interpretation on dimensions of campus adaptations by academic year of students'

The first year students' had positive outcomes on physical – psychological (0.048) and institutional adaptation (0.050) with negative outcomes in academic (-0.537) and social (-0.047) adaptation.

The second year students' had positive outcomes on social adaptation (0.045) with negative outcomes on academic (-0.080) and physical – psychological (0.107) and institutional adaptation (-0.109).

The third year students' had positive outcomes on academic (0.081), social (0.114) physical – psychological (0.040) and institutional adaptation (0.042).

The fourth year students' had positive outcomes in academic (0.131) physical – psychological (0.005) and institutional (0.007) adaptation with negative outcomes in social adaptation (-0.095).

Therefore, we reject the null hypothesis (H_{04}) and accept the alternate hypothesis (H_{a4}) that undergraduate B.Tech students' differed across academic years on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.6 Academic Major

4.6.1 Hypothesis testing by academic major of students'

H_{05} There is no significant difference among academic, social, physical – psychological and institutional adaptation across academic majors.

H_{a5} There is a significant difference among academic, social, physical – psychological and institutional adaptation across academic majors.

4.6.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by academic major of students'

The Pearson correlation test (Table 4.6.1) indicates that the dependent variables are highly correlated

Table 4.6.1

Pearson correlation among dependant variables by academic major of students'

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.702
2.Social Adaptation	0.579	1.00			2.72	0.755
3.Physical – Psychological Adaptation	0.527	0.576	1.00		2.28	0.771
4.Institutional Adaptation	0.579	0.614	0.792	1.00	2.14	0.784

*Note: - n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research survey data

4.6.2.1 Descriptive statistics on dimensions of campus adaptations by academic major of students'

Table 4.6.2

Distribution of difference in dimensions of campus adaptations by academic major

Academic Major	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Information technology (n = 30)	2.83	0.780	2.76	0.816	2.33	0.669	2.02	0.629
Electronics & Communication (n =168)	2.62	0.716	2.78	0.747	2.29	0.733	2.16	0.734
Electrical &Electronics (n =162)	2.61	0.686	2.68	0.776	2.29	0.781	2.11	0.814
Mechanical (n =357)	2.65	0.701	2.70	0.744	2.24	0.797	2.16	0.825
Metallurgy & Materials (n =89)	2.48	0.717	2.69	0.888	2.43	0.887	2.17	0.820
Chemical (n =148)	2.44	0.662	2.65	0.689	2.28	0.691	2.09	0.699
Civil (n =158)	2.52	0.716	2.70	0.724	2.14	0.789	2.12	0.787
Computer Science (n =289)	2.65	0.677	2.81	0.747	2.37	0.748	2.18	0.791
Mining (n = 19)	2.61	0.884	2.28	0.789	2.09	0.737	1.87	0.778
total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research survey data

The mean in the descriptive statistics (Table 4.6.2) indicate that among undergraduate B.Tech students', academic adaptation had high level of adaptation in information technology discipline (M = 2.83, SD = 0.780) and mining engineering discipline (M = 2.61, SD = 0.884) followed with high level of social adaptation in electronic and communication engineering discipline (M = 2.78 , SD = 0.747) electrical and electronic engineering discipline (M = 2.68 , SD = 0.776) mechanical engineering discipline (M =2.70, SD = 0.744) metallurgy and materials engineering discipline (M = 2.69 , SD = 0.888) chemical engineering discipline (M = 2.65, SD = 0.689) civil engineering discipline (M = 2.70 , SD = 0.724) and computer science engineering discipline (M =2.81 , SD = 0.747).

However lower level of adaptation institutional adaptation was observed among all academic disciplines with information technology discipline (M = 2.02, SD = 0.629) electronics and communication engineering discipline (M = 2.16, SD = 0.734) electrical and electronics engineering discipline (M = 2.11, SD = 0.814) mechanical

engineering discipline (M =2.16, SD = 0.825) metallurgy and material engineering discipline (M = 2.17, SD = 0.820) chemical engineering discipline (M = 2.09, SD = 0.699) civil engineering discipline (M = 2.12 , SD = 0.787) computer science engineering discipline (M = 2.18 , SD = 0.791) and mining engineering discipline (M = 1.87 SD = 0.778).

Further within academic adaptation, students' of information technology discipline, had high level of adaptation (M = 2.83, SD = 0.780) and students' of chemical engineering discipline had low level of adaptation (M = 2.44, SD = 0.662).

In social adaptation, students' of computer science had high level of adaptation (M = 2.81, SD = 0.747) and students' of mining engineering discipline had low level of adaptation (M = 2.28, SD = 0.789).

In physical – psychological adaptation, students' of Metallurgy and material engineering discipline, had high level of adaptation (M = 2.43, SD = 0.887) and student of mining engineering discipline had low level of adaptation (M = 2.09, SD = 0.737).

In institutional adaptation, students'' computer science engineering had high level of adaptation (M = 2.18, SD = 0.791) and students' of mining engineering discipline, had low level of adaptation (M =1.87, SD = 0.788).

Overall, across campus adaptations and students' academic discipline, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within engineering disciplines students' of computer science engineering, had high level of social adaptation (M = 2.81, SD = 0.747) and students' of mining engineering had low level of institutional adaptation (M = 1.87, SD = 0.778).

4.6.2.2 Inferential statistics on dimensions of campus adaptations by academic major of Students'

The Box's M value of 110.061 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.023(p > 0.001).

The Pillai's Trace of test static showed that there was a significant effect of age on students' academic, social, physical – psychological and institutional campus adaptations ($V = 0.054$, $F (32, 5644) = 2.408$ and $p = 0.000$) *($p < 0.05$).

The Wilks Lambda test static indicated that there was a significant effect of age on students' academic, social, physical – psychological and institutional campus adaptations ($\Lambda = 0.947$, $F (32, 5194) = 2.411$ and $p = 0.000$) *($p < 0.05$).

The Hoteling's Trace test static highlighted that there was a significant effect of age on student campus adaptations of academic, social, physical – psychological and institutional ($T = 0.055$, $F (32, 5626) = 2.412$ and $p = 0.000$) *($p < 0.05$).

The Roy's Largest root test static reported that there was a significant effect of age on student campus adaptations of academic, social, physical – psychological and institutional ($\Theta = 0.023$, $F (8, 1411) = 4.012$ and $p = 0.000$) *($p < 0.05$).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i, e $p > 0.05$ with academic adaptation of 0.819, social adaptation of 0.062, physical – psychological adaptation of 0.446 and institutional adaptation of 0.513 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (8,1411) for academic adaptation revealed a significant effect with F value (2.361) and p value (0.016) while it revealed a non-significant effect of social, physical – psychological and institutional adaptation with F value (1.745),(1.872), (0.642) and p value (0.084), (0.061) (0.759).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or age) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of academic disciplines among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 41.4% of the variance with canonical R^2 = 0.023; the second discriminant function explained 36.8 % of the variance with canonical R^2 = 0.020; the third discriminant function explained 18.5 % of the variance with canonical R^2 = 0.010; the fourth discriminant function explained 3.3 % of the variance with canonical R^2 = 0.002 indicates that the variance in the canonical derived dependant variable was associated for academic disciplines.

In combination these discriminant functions significantly discriminated the academic discipline groups. The first and second discriminant function significantly differentiated the student academic discipline groups, with the first function Λ = 0.947, x^2 (32) 76.801, p = 0.000 (p < 0.05) and second discriminant function Λ = 0.969, x^2 (21) 45.030, p = 0.002 (p > 0.05).

However, the third discriminant function Λ = 0.988, x^2 (12) 16.814, p = 0.157 (p > 0.05) and the fourth discriminate function Λ = 0.998, x^2 (5) 2.581, p = 0.764 (p > 0.05) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that academic adaptation loaded highly on second function (r = 0.634) indicating it contributed more to the academic discipline group separation (Bragman, 1970) than the relatively fair high loading in positive relationship in third function (r = 0.514) and fourth function (r =0.489); with negative relationship in the first function (r = - 0.309).

Social adaptation loaded highly on third function (r = 0.967) indicating it contributed more to the academic discipline separation than the relatively high loading in positive relationship with fourth function (r = 0.223) first function (r = 0.118) and second function (r = 0.014).

Institutional adaptation loaded highly on fourth function with (r = 0.900) indicating it contributed more to the academic discipline group separation than the relatively fair high loading in positive relationship in third function (r = 0.421) and first function (r = 0.059) with negative relationship in second function (r = -0.094).

Physical and psychological adaptation loaded highly on fourth function (r = 0.702) indicating it contributed more to the academic discipline group separation than the

than relatively fair high loading in the first function (r = 0.553) third function (r = 0.362) and second function (r = 0.265).

4.6.3 Data interpretation on dimensions of campus adaptations by academic major of students'

The students of academic discipline group, information technology has positive outcomes on social (0.555) and physical – psychological (0.078) adaptation with negative outcome on academic (-0.024) and institutional (-0.147) adaptation.

The students of academic discipline groups, electronics and communication, had positive outcomes on physical – psychological adaptation (0.085) with negative outcomes on academic (-0.016), Social (-0.012) and institutional (-0.014) adaptation.

The students of academic discipline group, electrical and electronics, had positive outcomes on academic (0.021) and social (0.079) adaptations with negative outcomes on physical – psychological (-0.053) and institutional (-0.008) adaptation.

The students of academic discipline group, mechanical engineering had positive outcomes on social (0.024) and institutional (0.046) adaptation with negative outcomes on academic (-0.147) and physical – psychological (-0.024) adaptation.

The students of academic discipline groups, metallurgy and materials, had positive outcomes on academic (0.358) and institutional (0.063) adaptation with negative outcomes on social (-0.055) and physical – psychological (-0.098) adaptation.

The students of academic discipline groups, chemical engineering, had positive outcomes on academic (0.180) adaptation with negative outcomes on social (-0.146) physical – psychological (-0.097) and institutional (-0.050) adaptation.

The students of academic discipline group, civil engineering had positive physical – psychological adaptation (0.013) with negative outcomes in academic (-0.177), social (- 0.246) and institutional (-0.045) adaptation.

The students of academic discipline group, computer science engineering had positive academic (0.089), social (0.072), physical – psychological (0.114) and institutional (0.005) adaptation.

The students of academic discipline group, mining engineering had positive social adaption (0.431) with negative outcomes on academic (-0.210), physical – psychological (-0.570) and institutional (-0.061) adaptation.

Therefore, we reject the null hypothesis (H_{05}) and accept the alternate hypothesis (H_{a5}) that undergraduate B.Tech students' differed across their academic majors on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.7 Religion

4.7.1 Hypothesis testing on religion of students'

H_{06} There is no significant difference among academic, social, physical – psychological and institutional adaptation across religion of students'.
H_{a6} There is a significant difference among academic, social, physical – psychological and institutional adaptation across religion of students'.

4.7.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by religion of students'

The Pearson correlation test (Table 4.7.1) indicates that the dependent variables are highly correlated

Table 4.7.1

Pearson correlation among dependent variables by students'' religion

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00	.	.		2.60	0.702
2.Social Adaptation	0.580	1.00		.	2.72	0.755
3.Physical – Psychological Adaptation	0.523	0.575	1.00	.	2.28	0.771
4.Institutional Adaptation	0.575	0.614	0.789	1.00	2.14	0.784

*Note: - n = 1420. **Correlations greater than 0.05 are statistically significant
Source: Research Survey

4.7.2.1 Descriptive statistics on dimensions of campus adaptations by religion of students'

Table 4.7.2
Distribution of difference in dimensions of campus adaptations by religion

Religion	Academic		Social		Physical-Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Hinduism (n = 1206)	2.59	0.698	2.72	0.751	2.29	0.771	2.14	0.783
Islamism (n = 45)	2.82	0.719	2.81	0.752	2.51	0.850	2.32	0.839
Christianity (n = 29)	2.61	0.643	2.78	0.647	2.20	0.684	2.17	0.782
Jainism (n =24)	2.38	0.621	2.54	0.826	2.02	0.794	1.70	0.640
Sikhism (n = 8)	2.43	0.462	2.82	0.704	2.20	0.770	2.00	0.501
Buddhism (n = 3)	2.44	0.254	2.01	0.916	2.33	0.577	2.00	0.871
Indian (n = 28)	2.78	0.755	2.51	0.747	2.12	0.820	2.09	0.780
Humanity (n = 15)	2.73	0.720	2.81	0.860	2.32	0.679	2.24	0.764
Atheist (n = 35)	2.65	0.860	2.82	0.841	2.25	0.672	2.19	0.698
Not Applicable (n = 26)	2.57	0.761	2.83	0.794	2.28	0.841	2.18	0.997
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics (Table 4.7.2) indicate that among undergraduate B.Tech students', students' enjoyed high level of social adaptation irrespective religion , with students' following Hinduism (M = 2.72 , SD = 0.751), Christianity (M = 2.78 , SD = 0.647), Jainism (M = 2.54, SD = 0.826) Sikhism (M = 2.82, SD = 0.704) and students' who did not like to associate themselves with religion by stating themselves as humanity also had high social adaptation (M = 2.81, SD = 0.860) atheist (M = 2.82, SD = 0.841) also not applicable (M = 2.83, SD = 0.794) however Muslim , Buddhism and students' who stated themselves as Indians had high level of academic adaptation (M =2.82, SD = 0.719), (M = 2.44, SD = 0.254) and (M = 2.78, SD = 0.755).

However, across religions students' had low level of institutional adaptation, with Hinduism (M = 2.14, SD = 0.783), Islamism (M = 2.32, SD = 0.839), Christianity (M = 2.17, SD = 0.782) Jainism (M = 1.70, SD = 0.640), Sikhism (M = 2.00, SD = 0.501)

Buddhism (M = 2.01, SD = 0.871) Indian (M = 2.09, SD = 0.780) humanity (M =2.24, SD = 0.764) atheist (M = 2.19, SD = 0.698) not applicable (M = 2.18, SD = 0.997).

Further within academic adaptation, student who followed Islam religion had high level of impact on adaptation (M = 2.82, SD = 0.719) and Sikhism sect students' had low level of adaptation (M = 2.43, SD = 0.462).

In social adaptation, not applicable students' had high level of impact on adaptation (M = 2.83, SD = 0.794) and Buddhism sect impacted in low level of adaptation (M = 2.01, SD = 0.916).

In physical – psychological adaptation, Islamism students' had high impact on level of adaptation (M = 2.51, SD = 0.850) and Jainism impacted in low level of adaptation (M = 2.02, SD = 0.770).

In institutional adaptation, Islamism students' had high impact on student level of adaptation (M = 2.32, SD = 0.839) and Jainism impacted on students' low level of adaptation (M = 1.70, SD = 0.640).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of institutional adaptation (M = 2.14, SD =0.784). However, within religious sect, religion as not applicable to them had high level of social adaptation (M = 2.83, SD = 0.794) and Jainism had low level of institutional adaptation (M = 1.70, SD = 0.640).

4.7.2.2 Inferential statistics on dimensions of campus adaptations by religion of students'

The Box's M value of 82.555 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with $p = 0.613$ ($p \geq 0.001$).

The Pillai's Trace test static reported that there was a non-significant effect of students' religious entity on students' campus adaptations of academic, social, physical – psychological and institutional environments ($V = 0.032$, $F (40, 5636) = 1.132$ and $p = 0.261$) *($p > 0.05$).

The Wilk's Lambda test static indicated that there was a non-significant effect of student religious entity on students' campus adaptations of academic, social, physical – psychological and institutional ($\Lambda = 0.968$, F (40,5333) = 1.132 and p = 0.262) *(p > 0.05).

The Hoteling's Trace test static highlighted that there was a non-significant effect of students''' religious entity on students' campus adaptations of academic, social, physical – psychological and institutional (T = 0.032, F (40, 5618) = 1.132 and p = 0.262) *(p > 0.05).

The Roy's largest root test static stated that there was a significant effect of students'' religious entity on students' campus adaptations of academic, social, physical – psychological and institutional ($\Theta = 0.015$, F (10, 1409) = 2.091 and p = 0.022) *(p > 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant with academic adaptation of 0.365, social adaptation of 0.557, physical – psychological adaptation of 0.871 and institutional adaptation of being close to 0.394 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (10, 1409) for academic, social, physical – psychological and institutional adaptation revealed a non-significant effect with F value (1.018) (1.164) (1.055) (1.277) and p value (0.426) (0.311) (0.395) (0.238) greater than 0.05.

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or religious level) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of religious entity among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 46 % of the variance with canonical R^2 = 0.015; the second discriminant function explained 28.4 % of the variance with canonical R^2 = 0.009; the third discriminant function explained 18.7 % of the variance with canonical R^2 = 0.006; the fourth discriminant function explained 6.9 % of the variance with canonical R^2 = 0.002 indicates that the variance in the canonical derived dependant variable was associated for religious level.

In combination these discriminant functions did not significantly discriminate among the religious groups. The first discriminant function Λ = 0.968, x^2 (40) 45.255, p = 0.262 (p > 0.05) The second discriminant function Λ = 0.983, x^2 (27) 24.464, p = 0.604 (p > 0.05). The third discriminant function Λ = 0.992, x^2 (16) 11.621, p = 0.770 (p > 0.05) and the fourth discriminate function Λ = 0.998, x^2 (7) 3.151, p = 0.871 (p > 0.05).

The correlations between outcomes and the discriminant functions revealed that institutional adaptation loaded highly on second function (r = 0.984) indicating it contributed more to the age group separation (Bragman, 1970) than the relatively fair high loading in positive relationship with first function (r = 0.053) and third function (r = 0.161) with negative relationship in fourth function (r = - 0.047).

Physical - psychological adaptation loaded highly on second function (r = 0.697) indicating it contributed more to the religious group separation than the relatively high loading in positive relationship with first function (r = 0.134) third function (r = 0.664) and fourth function (r = 0.235).

Social adaptation loaded highly on second function with (r = 0.642) indicating it contributed more to the religious group separation than the than relatively fair high loading in the first function (r = 0.499) and fourth function (r = 0.571) with negative relationship from the third function (r = -0.111).

Lastly academic adaptation loaded highly on fourth function with (r = 0.646) indicating it contributed more to the religious group separation than the relatively fair high loading in positive relationship with second function (r = 0.642) with negative relationship in third function (-0.033).

4.7.3 Data interpretation on dimensions of campus adaptations by religion of students'

Hinduism as a religious sect had positive outcomes on academic (0.010) and physical –psychological (0.011) adaptation with negative outcomes on social (-0.003) and institutional (-0.010) adaptation.

Students' who practised Islamism faith had positive social (0.212) physical – psychological (0.189) and institutional (0.173) adaptation with negative outcome on academic adaptation (-0.180).

Christian students' had positive outcomes in academic (0.048) and social (0.079) adaptation with negative outcomes in physical – psychological (-0.252) and institutional (-0.036) adaptation.

Jain sect students' had positive outcomes in academic (0.086) physical – psychological (0.022) and institutional (0.158) adaptation with negative outcomes in social (-0.580) adaptation.

Sikhism sect students' had positive outcomes in academic (0.409) and institutional (0.082) adaptation with negative outcomes in social (-0.196) and physical – psychological (-0.078) adaptation.

Buddhism sect students' had positive outcomes in physical – psychological (0.740) adaptations with negative outcomes in academic (- 0.787) social (- 0.293) and institutional (-0.519).

Students' who stated themselves outside religious sect as Indian, humanity, atheist and not applicable – all of them had positive institutional adaptation (0.008) (0.086) (0.040) and (0.000). However, academic (-0.606) social (-0.004) Physical – Psychological (-0.201) adaptation had negative outcome among students' who preferred to state themselves as Indians.

Students' who referred to themselves as humanitarian had positive outcomes in social adaptation (0.146) with negative outcomes in academic (-0.073) and physical – psychological adaptation (-0.107).

Students' who referred to themselves as atheist or non-believer in god or religious faith had positive academic (0.055) and social (0.092) adaptation with negative outcomes in physical – psychological adaptation (-0.193).

Students' who denied the applicability on religion on them had positive outcomes on academic (0.210) and social (0.055) adaptation with negative outcome on physical – psychological (-0.107) adaptation.

Therefore, we reject the null hypothesis (H_{06}) and accept the alternate hypothesis (H_{a6}) that undergraduate B.Tech students' differed across religious identity on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.8 Caste category

4.8.1 Hypothesis testing by caste category of students'

H_{07} *There is no significant difference among academic, social, physical-psychological and institutional adaptation across caste of students'.*

H_{a7} *There is a significant difference among academic, social, physical – psychological and institutional adaptation across caste of students'.*

4.8.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by caste category of students'

The Pearson correlation test (Table 4.8.1) indicates that the dependent variables are highly correlated

Table 4.8.1

Pearson Correlation among dependant variables by students' caste category

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	.702
2.Social Adaptation	0.576	1.00			2.72	.755
3.Physical – Psychological Adaptation	0.522	0.573	1.00		2.28	.771
4.Institutional Adaptation	0.573	0.613	0.790	1.00	2.14	.784

*Note: n = 1420. **Correlations greater than 0.05 are statistically significant (p < 0.5)

Source: Research Survey Data

4.8.2.1 Descriptive statistics on dimensions of campus adaptations by caste category of students'

Table 4.8.2
Distribution of difference in dimensions of campus adaptations by caste category

Caste Category	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
General (n = 924)	2.57	0.696	2.71	0.738	2.28	0.766	2.11	0.768
Scheduled caste (n = 94)	2.76	0.777	2.90	0.773	2.39	0.772	2.27	0.835
Scheduled Tribe (n = 50)	2.57	0.642	2.71	0.847	2.21	0.771	2.14	0.888
Other Backward castes (n = 255)	2.61	0.662	2.70	0.774	2.28	0.782	2.19	0.793
Indian (n =19)	2.78	0.765	2.53	0.879	2.07	0.904	2.20	0.914
Atheist (n = 10)	2.38	1.059	2.56	0.594	1.98	0.607	2.02	0.511
Humanity (n =9)	2.37	0.616	2.26	0.818	1.86	0.300	1.80	0.793
Not Applicable (n= 59)	2.75	0.781	2.88	0.744	2.42	0.810	2.28	0.799
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics (Table 4.8.2) indicate that among undergraduate B.Tech students', students' enjoyed high level of social adaptation irrespective social caste category, with general category (M = 2.71, SD = 0.78) scheduled caste (M = 2.90, SD = 0.773) scheduled tribe (M = 2.71, SD = 0.847) other backward castes (M = 2.70, SD = 0.774) atheist (M = 2.56, SD = 0.594) and not applicable (M = 2.88 SD = 0.744). it was observed however that for students' who did not wish to associate themselves with caste category like being called Indian and humanity had higher academic adaptation (M = 2.78, SD = 0.765) and (M = 2.37, SD = 0.616).

However, students' had lower level of institutional adaptation with general category (M = 2.11, SD = 0.768), scheduled caste (M = 2.27, SD =0.835) scheduled tribe (M = 2.14, SD = 0.888) other backward castes (M = 2.19, SD = 0.793) humanity (M = 1.80, SD = 0.793) and not applicable (M = 2.28, SD = 0.799). It is observed students' who did not want to associate themselves with social caste category like Indian and atheist had low level of physical – psychological (M = 2.07, SD = 0.904) and (M = 1.98, SD = 0.607) adaptation.

Further within academic adaptation, students' whose stated themselves as Indians had high level of impact on adaptation (M = 2.78, SD = 0.765) and humanity had low level of adaptation (M = 2.37, SD = 0.616).

In social adaptation, scheduled caste category students' had high level of impact on adaptation (M = 2.90, SD = 0.773) and students' who recognised themselves to be out of caste as humanity impacted in low level of adaptation (M = 2.26, SD = 0.818).

In physical – psychological adaptation, students' who felt that caste category did not apply to them and called themselves as not applicable had high impact on level of adaptation (M = 2.42, SD = 0.810) and students' who considered themselves as humanity impacted in low level of adaptation (M = 1.86, SD = 0.300).

In institutional adaptation, not applicable had high impact on students' level of adaptation (M = 2.28, SD = 0.779) and humanity impacted on student's low level of adaptation (M =1.80, SD = 0.793).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within social caste category, had high level of social adaptation (M = 2.90, SD = 0.773) and humanity had low level of institutional adaptation (M = 1.80, SD = 0.793).

4.8.2.2 Inferential statistics on dimensions of campus adaptations by caste category of students'

The Box's M value of 98.499 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.050 ($p \geq 0.001$).

The Pillai's Trace of test static highlighted that there was a non-significant effect of students' social category on students' campus adaptations of academic, social, physical – psychological and institutional environments (V = 0.026, F (28, 5648) = 1.320 and p = 0.120) *($p > 0.05$).

The Wilk's Lambda test static showed that there was a non-significant effect of students' social category on students' campus adaptations of Academic, Social,

Physical – Psychological and Institutional (Λ = 0.974, F (28,5081) = 1.321 and p = 0.120) *(p > 0.05).

The Hoteling's Trace test static reported that there was a non-significant effect of students' social category on students' campus adaptations of academic, social, physical – psychological and institutional (T = 0.026, F (28, 5630) = 1.322 and p = 0.120) *(p > 0.05).

The Roy's Largest root of test static stated that there was a significant effect of students' social category on students' campus adaptations of Academic, Social, Physical – Psychological and Institutional (Θ = 0.013, F (7, 1412) = 2.702 and p = 0.009) *(p < 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant with academic adaptation of 0.141, social adaptation of 0.910, physical – psychological adaptation of 0.382 and institutional adaptation of being close to 0.461 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis on the outcome too revealed non-significant effect of students' social category status on academic, physical – psychological, and institutional adaptation with F (7, 1412) and F values of (1.755) (1.404) and (1.239) with p values above 0.05 i, e (p = 0.093) for academic adaptation, (p = 0.199) for physical – psychological adaptation, and (p = 0.278) for institutional adaptation. But it had a significant effect of social adaptation with F value of (1.945) and p value of (0.059) *(p < 0.05).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or academic year) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of generation status among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 51 % of the variance with canonical R^2 = 0.013; the second discriminant function explained 38.2 % of the variance with canonical R^2 = 0.010; the third discriminant function explained 7.1% of the variance with canonical R^2 = 0.002; the fourth discriminant function explained 3.8 % of the variance with canonical R^2 = 0.001 indicates that the variance in the canonical derived dependant variable was associated for social category.

In combination these discriminant functions significantly discriminated the social category groups. Be it either the first, second , third or fourth discriminant function did not significantly differentiated the social category groups , with the first function Λ = 0.974, x^2 (28) 36.948, p = 0.120 (p > 0.05); the second discriminant function Λ = 0.987 , x^2 (18) 18.144 , p = 0.446 (p > 0.05) ; the third discriminant function Λ = 0.997, x^2 (10) 4.020, p = 0.946 (p > 0.05) and the fourth discriminate function Λ = 0.999 , x^2 (4) 1.400, p = 0.844 (p > 0.05) indicating lack of discrimination among social categories.

The correlations between outcomes and the discriminant functions revealed that academic adaptation loaded highly on second function (r = 0.912) indicating it contributed more to the social category group separation (Bragman, 1970) than the relatively fair high loading in positive relationship with third function (r = 0.406) and fourth function (r = 0.015) with negative relationship with first function (r = -0.047).

Social adaptation loaded highly on second function (r = 0.807) indicating it contributed more to the social category group separation than the relatively high loading in positive relationship with first function (r = 0.462) with negative relationship in the third function (r = -0.337) and fourth function (r = -0.144).

Institutional adaptation loaded highly on second function with (r = 0.749) indicating it contributed more to the social category group separation than the relatively fair high loading in positive relationship with fourth function (r = 0.594) with negative relationship in the first function (r = -0.010) and third function (r = -0.295).

Lastly, physical and psychological adaptation loaded highly on fourth function with (r = 0.656) indicating it contributed more to the social category group separation than

the than relatively fair high loading in the first function (r = 0.500) second function (r = 0.563) and third function (r = 0.053).

4.8.3 Data interpretation on dimensions of campus adaptations by caste category of students'

The students of general social category group had positive outcomes in academic (0.047) and physical – psychological (0.013) adaptation with negative outcomes on social (-0.044) and institutional (-0.002) adaptation.

The students of scheduled caste category had positive outcomes in academic (0.066) and social (0.255) adaptation with negative outcomes in physical – psychological (-0.001) and institutional (-0.056) adaptation.

The students of scheduled tribe category had all negative outcomes in academic (-0.103) social (-0.007) physical – psychological (-0.101) and institutional (-0.058) adaptation.

The students of other backward castes (OBC's) had positive outcomes in social (0.027) and institutional (0.048) adaptation with negative outcomes in academic (-0.104) and physical – psychological (-0.035) adaptation.

The students' who preferred not to referred to any caste category i.e. the other category included students' referring to themselves as Indians had positive outcome in social (0.0176) physical – psychological (0.174) with negative academic (-0.728) and institutional (-0.034) adaptation; students' who referred to themselves as atheist had negative outcomes in all be it academic(-0.330) social (-0.229) physical – psychological (-0.297) and institutional (-0.137) adaptation; students' referring to humanity had positive outcomes in physical –psychological (0.145) adaptation with negative outcomes in academic(-0.454) social (-0.451) and institutional (-0.112) adaptation; lastly students' considering castes as not applicable had positive outcomes in academic (0.060) social (0.230) physical – psychological (0.007) and institutional (0.018) adaptation.

Therefore, we reject the null hypothesis (H_{07}) and accept the alternate hypothesis (H_{a7}) that undergraduate B.Tech students' differed across castes on campus

adaptations of academic, social, physical – psychological and institutional adaptations.

4.9 Generation status

4.9.1 Hypothesis testing by generation status of students'

H_{08} *There is no significant difference among academic, social, physical – psychological and institutional adaptation across generation status of students' of first to fifth.*

H_{a8} *There is a significant difference among academic, social, physical – psychological and institutional adaptation across generation status of students' of first to fifth.*

4.9.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by generation status of students'

The Pearson correlation test (Table 4.9.1) indicates that the dependent variables are highly correlated

Table 4.9.1

Pearson correlation of dependant variables among students by generation status

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.702
2.Social Adaptation	.578	1.00			2.72	0.755
3.Physical – Psychological Adaptation	.524	.579	1.00		2.28	0.771
4.Institutional Adaptation	.575	.616	.790	1.00	2.14	0.784

*Note: n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research Survey Data

4.9.2.1 Descriptive statistics on dimensions of campus adaptations by generation status of students'

Table 4.9.2

Distribution of difference in dimensions of campus adaptations by generation status

Generation Status of students'	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
First generation (n = 956)	2.61	0.712	2.72	0.754	2.26	0.768	2.13	0.782
Second generation (n = 338)	2.54	0.671	2.70	0.732	2.31	0.752	2.14	0.755
Third generation (n =103)	2.67	0.708	2.72	0.807	2.48	0.773	2.26	0.871
Fourth generation (n = 14)	2.50	0.616	2.88	0.879	2.10	1.019	1.91	0.709
Fifth generation (n =09)	2.94	0.790	2.86	1.00	2.15	1.156	2.33	1.122
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics (Table 4.9.2) indicate that among undergraduate B.Tech students', students' enjoyed high level of social adaptation from first to fourth generation with first generation (M = 2.72 , SD = 0.754), second generation (M = 2.70, SD = 0.732), third generation (M =2.72, SD = 0.807) fourth generation (M = 2.88, SD = 0.879). it is observed that the fifth generation alone had high academic adaptation (M = 2.94, SD = 0.790).

However, students' from first to fourth generation had lower level of institutional adaptation with first generation (M = 2.13, SD = 0.782), second generation (M = 2.14, SD =0.755) third generation (M = 2.26, SD = 0.871) fourth generation (M = 1.91, SD = 0.709) It is observed that fifth generation students' had low level of physical – psychological (M = 2.15, SD = 1.156) adaptation.

Further within academic adaptation, fifth generation had high level of impact on adaptation (M = 2.94, SD = 0.790) and second generation had low level of adaptation (M = 2.54, SD = 0.671).

In social adaptation, fourth generation had high level of impact on adaptation (M = 2.88, SD = 0.879) and second generation impacted in low level of adaptation (M = 2.70, SD = 0.732).

In physical – psychological adaptation, third generation students' had high impact on level of adaptation (M = 2.48, SD = 0.773) and fourth generation impacted in low level of adaptation (M = 2.10, SD = 1.019).

In institutional adaptation, fifth generation had high impact on students' level of adaptation (M = 2.33, SD = 1.122) and fourth generation students' impacted on students' low level of adaptation (M = 1.91, SD = 0.709).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of institutional adaptation (M = 2.14, SD =0.784). However, within generations, fifth generation had high level of academic adaptation (M = 2.94, SD = 0.790) and fourth generation had low level of institutional adaptation (M = 1.91, SD = 1.122).

4.9.2.2 Inferential statistics on dimensions of campus adaptations by generation status of students'

The Box's M value of 47.430 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.333($p > 0.001$).

The Pillai's Trace of test static showed that there was a significant effect of age on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.020, F (16,5660) = 1.796 and p = 0.026) *($p < 0.05$).

The Wilks Lambda test static indicated that there was a significant effect of age on students' academic, social, physical – psychological and institutional campus adaptations ($\Lambda = 0.980$, F (16,4314) = 1.798 and p = 0.026) *($p < 0.05$).

The Hoteling's trace static highlighted that there was a significant effect of age on students' campus adaptations of academic, social, physical – psychological and institutional (T = 0.020, F (16,5642) = 1.799 and p = 0.026) *($p < 0.05$).

The Roy's largest root test static reported that there was a significant effect of age on students' campus adaptations of academic, social, physical – psychological and institutional ($\Theta = 0.013$, F (4, 1415) = 4.498 and p = 0.001) *($p < 0.05$).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i, e $p > 0.05$ with academic adaptation of 0.361, social adaptation of 0.682, physical – psychological adaptation of 0.717 and institutional adaptation of 0.206 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (4,1415) for Academic, social and institutional adaptation revealed a non-significant effect with F value (1.437) (0.272) (1.027) and p value (0.219) (0.896) (0.392) while it revealed a significant effect of physical – psychological adaptation with F value of (2.287) and p value greater than 0.05 (0.058).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or generation) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of generation status among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 62.3% of the variance with canonical R^2 = 0.013; the second discriminant function explained 31.5 % of the variance with canonical R^2 = 0.006; the third discriminant function explained 5.1% of the variance with canonical R^2 = 0.001; the fourth discriminant function explained 1.1 % of the variance with canonical R^2 = 0.000 indicates that the variance in the canonical derived dependant variable was associated for generation status.

In combination these discriminant functions significantly discriminated the generation groups. The first discriminant function significantly differentiated the student groups of generation, with the first function $\Lambda = 0.980$, x^2 (16) 28.724, p = 0.026 ($p < 0.05$)

However, second discriminant function $\Lambda = 0.992$, x^2 (9) 10.850, $p = 0.286$ ($p > 0.05$). the third discriminant function $\Lambda = 0.999$, x^2 (4) 1.800, $p = 0.773$ ($p > 0.05$) and the fourth discriminate function $\Lambda = 0.999$, x^2 (1) 0.330, $p = 0.566$ ($p > 0.05$) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that Physical – Psychological adaptation loaded highly on first function ($r = 0.668$) indicating it contributed more to the generation group separation (Bragman, 1970) than the relatively fair high loading in positive relationship with second function ($r = 0.295$) third function ($r= 0.394$) and fourth function ($r =0.558$).

Academic adaptation loaded highly on second function ($r = 0.737$) indicating it contributed more to the age group separation than the relatively high loading in positive relationship with third function ($r = 0.617$) and fourth function ($r = 0.253$) negated by negative relationship in the first function ($r = - 0.115$).

Social adaptation loaded highly on fourth function with ($r = 0.805$) indicating it contributed more to the generation group separation than the relatively fair high loading in the second function ($r = 0.004$) third function ($r = 0.574$) with negative relationship in first function ($r = -0.147$).

Institutional adaptation loaded highly on fourth function with ($r = 0.801$) indicating it contributed more to the generation group separation than the relatively fair high loading in positive relationship with second function ($r = 0.525$) third function ($r = 0.380$) and first function ($r = 0.209$).

4.9.3 Data interpretation on dimensions of campus adaptations by generation status of students'

The first generation students' had positive outcomes on social (0.015) and physical – psychological adaptations (0.001) with negative outcome on academic (-0.051) and institutional adaptation (-0.008).

The second generation students' had positive outcomes on academic (0.086) and institutional adaptation (0.014) with negative outcomes on social (-0.073) and physical – psychological adaptation (-0.031).

The third generation students' had positive outcomes on academic (0.283), social (0.122), physical – psychological (0.064) and institutional (0.006) adaptation.

The fourth generation students' had positive outcomes on physical – psychological (0.228) and institutional (0.045) adaptation with negative outcome on academic (-0.334) and social (-0.459) adaptation.

The fifth generation students' had positive outcomes on social (0.535) and institutional (0.139) adaptation with negative outcomes on academic (-0.596) and physical – psychological (-0.023) adaptation.

Therefore, we reject the null hypothesis (H_{08}) and accept the alternate hypothesis (H_{a8}) that undergraduate B.Tech students' differed across student generation on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.10 College expense

4.10.1 Hypothesis testing by college expenses

H_{09} There is no significant difference among academic, social, physical – psychological and institutional adaptation by source for college expenses.

H_{a9} There is a significant difference among academic, social, physical – psychological and institutional adaptation by source for college expenses.

4.10.1 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by college expense of students'

The Pearson correlation test (Table 4.10.1) indicates that the dependent variables are highly correlated

Table 4.10.1
Pearson Correlation among dependant variables by college expense

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.70
2.Social Adaptation	0.581	1.00			2.72	0.75
3.Physical – Psychological Adaptation	0.523	0.578	1.00		2.28	0.77
4.Institutional Adaptation	0.574	0.617	0.791	1.00	2.14	0.78

*Note: n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research Survey Data

4.10.1.1 Descriptive statistics on dimensions of campus adaptations by college expense of students'

Table 4.10.2

Distribution of difference in dimensions of campus adaptations by source of college expense

Financial support for college expense	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Parents income (n = 956)	2.62	0.69	2.73	0.75	2.33	0.78	2.13	0.78
Bank loan (n = 144)	2.62	0.72	2.70	0.76	2.25	0.75	2.16	0.78
Government scholarship (n = 85)	2.43	0.74	2.67	0.73	2.20	0.78	2.09	0.78
Private scholarship (n = 06)	2.25	0.40	2.63	0.55	2.03	0.48	1.86	0.39
Loan from private source – a money lender for stipulated interest (n = 1)	3.00	0.44	3.13	0.64	3.00	0.20	2.93	0.70
Borrowing from relatives (n = 1)	2.67	-	1.40	-	1.20	-	1.20	-
Income from internship project at institute (n = 1)	3.67	-	2.80	-	1.00	-	3.00	-
Parents income and bank loan (n = 52)	2.72	0.60	2.80	0.76	2.27	0.62	2.16	0.74
Parents income and government scholarship (n = 121)	2.56	0.76	2.67	0.79	2.13	0.71	2.07	0.75
Parents income, government scholarship and private scholarship (n = 09)	2.38	0.86	2.86	0.82	2.02	0.89	1.64	0.60
Government scholarship and bank loan (n=16)	2.52	0.73	2.62	0.72	2.10	0.81	2.15	0.88
Parents income , government scholarship and bank loan (n = 07)	2.47	0.47	2.17	0.64	1.77	0.69	1.85	0.73
Parents income and private scholarship (n = 9)	2.44	0.79	2.67	0.73	1.84	0.63	1.77	0.98
Parents income, private scholarship and bank loan (n = 3)	2.44	0.75	2.73	0.23	2.33	0.64	2.26	1.13
Government scholarship, income from internship project (n = 1)	1.67	-	3.40	-	1.00	-	1.40	-
Parents Income, Income from Internship project (n = 2)	3.08	0.12	3.20	0.28	3.60	000	2.90	0.70
Parents Income and donor donation (n = 3)	2.55	0.34	2.33	0.50	2.60	0.52	2.46	0.41
Parents Income and Borrowing from relatives (n = 7)	1.83	-	3.20	-	2.00	-	2.60	-
Total (n =1420)	2.60	0.70	2.72	0.75	2.28	0.77	2.14	0.78

Source: Research Survey Data

The mean in the descriptive statistics (Table 4.10.2) indicate that among undergraduate B.Tech students', across sources of college expenses, higher level of social adaptation was sorted with parents income (M = 2.73, SD = 0.75), bank loan (M = 2.70, SD = 0.76) government scholarship (M = 2.67, SD = 0.73) private scholarship (M = 2.63, SD = 0.55) loan from private source – a money lender for stipulated interest (M = 3.13, SD = 0.64) Parents income and bank loan (M = 2.80, SD = 0.76) parents income and government scholarship (M = 2.67, SD = 0.79) parents income, government scholarship and private scholarship (M = 2.86, SD = 0.82), government scholarship and bank loan (M = 2.62, SD = 0.72), parents income and private scholarship (M = 2.67, SD = 0.73), parents income, private scholarship and bank loan (M = 2.73, SD = 0.23), government scholarship, income from internship project (M = 3.40, SD = 0.00), and parents income and borrowing from relatives (M = 3.20, SD = 0.00). Associated with it students had high academic adaptation at borrowing from relatives (M = 2.67, SD = 0.00), Income from internship project at institute (M = 3.67, SD = 0.00) and parent's income, government scholarship and bank loan (M = 2.47, SD = 0.47). Further students' had high level of physical and psychological adaptation from parent's income, income from internship project (M = 3.60, SD = 0.00) parent's income and borrowing from relatives (M = 2.60, SD = 0.52).

However, students' across sources of college expense had low level of institutional adaptation with parents income (M = 2.13 , SD = 0.78), bank loan (M = 2.16 , SD = 0.78), government scholarship (M = 2.09 , SD = 0.78), private scholarship (M = 1.86 , SD = 0.39), loan from private source – a money lender for stipulated interest (M = 2.93 , SD = 0.70), borrowing from relatives (M = 1.20, SD = 0), parents income and bank loan (M = 2.16, SD = 0.74), parents income and government scholarship (M = 2.07, SD = 0.75), parents income, government scholarship and private scholarship (M = 1.64 , SD = 0.60), parents income and private scholarship (M = 1.77, SD = 0.98), parents income, income from internship project (M = 2.26 , SD = 1.13), Parents income, private scholarship and bank loan (M = 2.90 , SD =0.70), Borrowing from relatives (M =1.20 ,SD =0.00) Income from internship project at institute (M = 1.00 , SD = 0.00), government scholarship and bank loan (M = 2.10 , SD = 0.81), parents

income , government scholarship and bank loan (M = 1.77 ,SD = 0.69), Government scholarship, income from internship project (M =1.00 , SD = 0.00), Parents income and donor donation (M = 2.33 ,SD = 0.50), parents income and borrowing from relatives (M = 1.83, SD = 0.00).

Further within academic adaptation, students' had high level of adaptation with income from internship projects at institute (M = 3.67, SD = 0.00) and government scholarship and income from internship project had low level of adaptation (M = 1.67, SD = 0.00).

In social adaptation, had high level of adaptation with government scholarship and income from internship projects at institute and (M = 3.40 SD = 0.00) and students' who borrowed from relative's had low level of adaptation (M = 1.40, SD = 0.00).

In physical – psychological adaptation, students' with parent's income and income from projects, had high level of adaptation (M = 3.60, SD = 0.00) and government scholarship with internship from project students' had low level of adaptation (M =1.00, SD =0.00).

In institutional adaptation, third year students' had high level of adaptation (M =3.00, SD = 0.00) and borrowings from relatives' students' had low level of adaptation (M = 1.20, SD = 0.00).

Overall, across campus adaptations and sources of college expense, students' had high level of academic adaptation with parent's income and income from internship projects (M = 3.60, SD =0.00) and students' with income from projects low level of institutional adaptation (M = 1.00 SD = 0.00).

4.10.1.2 Inferential statistics on dimensions of campus adaptations by college expense of students'

The Box's M value of 134.889 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.034 (p > 0.001).

The Pillai's Trace test static stated that there was a significant effect of source of college expense on students' academic, social, physical – psychological and

institutional campus adaptations (V = 0.072 F (68, 5608) = 1.522 and p = 0.004) *(p < 0.05).

The Wilks Lambda test static noted that there was a significant effect of source of college expense on students' academic, social, physical – psychological and institutional campus adaptations (Λ = 0.929, F (68, 5492) = 1.522 and p = 0.004) *(p < 0.05).

The Hoteling's Trace of test static identified that there was a significant effect of source of college expense on students' campus adaptations of academic, social, physical – psychological and institutional (T = 0.074, F (68, 5590) = 1.522 and p = 0.004) *(p < 0.05).

The Roy's largest root of test static found that there was a significant effect of source of college expense on students' campus adaptations of academic, social, physical – psychological and institutional (Θ = 0.034, F (17, 1402) = 2.766 and p = 0.000) *(p < 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i, e p > 0.05 with academic adaptation of 0.826, social adaptation of 0.172, physical – psychological adaptation of 0.218 and institutional adaptation of 0.838 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (17. 1402) for academic, social, and institutional adaptation too revealed a non-significant effect with F value (1.090), (0.777), (1.110), and p value greater than 0.05 (0.358), (0.721), (0.338). It had a significant effect on physical – psychological adaptation with F value (2.051) and p value less than 0.05 (0.007).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or source of college expense) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to

determine the nature of effect of academic year among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 45.1% of the variance with canonical R^2 = 0.034; the second discriminant function explained 30.7 % of the variance with canonical R^2 = 0.023; the third discriminant function explained 14.3% of the variance with canonical R^2 = 0.011; and fourth discriminant function explained 9.9 % 0f the variance with canonical R^2 = 0.007; indicates that the variance in the canonical derived dependant variable was associated for source of college expense.

In combination these discriminant functions significantly discriminated the source of college expense groups. The first discriminant function significantly differentiated the student source of finance groups, with the first function Λ = 0.929, x^2 (68) 103.302, p = 0.004 ($p < 0.05$) However the second discriminant function Λ = 0.960, x^2 (48) 56.898, p = 0.178 ($p > 0.05$) followed with Λ = 0.982, x^2 (36) 25.189, p = 0.716 ($p > 0.05$) and Λ = 0.993, x^2 (14) 10.286, p = 0.741 ($p > 0.05$). indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that physical – psychological adaptation loaded highly on first function (r = 0.778) indicating it contributed more to the source of college expense group separation (Bragman, 1970) than the relatively fair high loading in positive relationship with second function (r = 0.274) third function (r = 0.407) and fourth function (r = 0.393).

Institutional adaptation loaded highly on third function (r = 0.701) indicating it contributed more to the source of college expense group separation than the relatively high loading in positive relationship with fourth function (r = 0.507) second function (r = 0.44) and third function (r = 0.239).

Social adaptation loaded highly on fourth function with (r = 0.912) indicating it contributed more to the source of college expense group separation than the relatively fair high loading in positive relationship with third function (r = 0.281) and first function (r = 0.209). it had a negative relationship with second function (r = - 0.211).

Lastly, academic adaptation loaded highly on fourth function with (r = 0.784) indicating it contributed more to the source of college expense group separation than the than relatively fair high loading in the second function (r = 0.576) first function (r = 0.159) while negative relationship with third function (r = -0.165).

4.10.3 Data interpretation on dimensions of campus adaptations by college expense of students'

The students' who relied on parent's income had positive outcomes in academic (0.068), social (0.012), and institutional adaptation (0.010) with negative physical – psychological adaptation (-0.005).

The students' who relied on bank loan had positive outcomes in social (0.072) and physical – psychological (0.013) adaptation with negative outcomes in academic (-0.080) and institutional adaptation (-0.004).

The students' who relied on government scholarship had positive outcomes in physical - psychological (0.137) adaptation with negative outcomes on academic (-0.070) social (-0.180) and institutional adaptation (-0.139).

The students' who relied on private scholarship had positive outcomes in physical and psychological adaptation (0.029) with negative outcomes on academic (-0.145), social (-0.180) and institutional adaptation (-0.139).

The students' who relied on loan from private source or money lender had positive outcomes in academic (0.466), social (0.502), physical-psychological (0.669) adaptation and institutional adaptation (0.396) with no negative outcomes.

The students' who relied on borrowing from relatives had positive outcomes in social adaptation (1.273) with negative outcomes on academic (-1.0.15), physical – psychological (-1.507) and institutional adaptation (-0.927).

The students' who relied on income from internship projects at institute had positive outcomes in social (2.110), physical – psychological (0.604) and institutional adaptation (1.299) with negative outcomes in academic adaptation (-3.876).

The students' who relied on parent income and bank loan had positive outcomes in social (0.053) and institutional adaptation (0.171) with negative outcomes on academic (-0.067) and physical – psychological adaptation (-0.108).

The students' who relied on parent income and government scholarship had no positive outcomes but only negative outcomes at academic (-0.223), social (-0.025), physical – psychological (-0.032) and institutional adaptation (-0.019).

The students' who relied on parent's income, government scholarship and private scholarship had positive outcomes in academic (0.042) and institutional adaptation (0.142) with negative outcomes in social (-0.876) and physical – psychological adaptation (-0.480).

The students' who relied on government scholarship and bank loan had positive social (0.067) and physical – psychological (0.157) adaptation with negative outcomes on academic (-0.375) and institutional adaptation (-0.091).

The students' who relied on parent income, government scholarship and bank loan had positive outcomes social adaptation (0.444) with negative outcomes on academic (-0.657), physical – psychological (-0.240) and institutional adaptation (-0.473).

The students' who relied on parent income and private scholarship had positive outcomes in institutional adaptation (0.000) with negative outcomes on academic (-0.467) social (-0.351) and physical – psychological adaptation (-0.291).

The students' who relied on parent income, private scholarship and bank loan had positive outcomes in physical and psychological adaptation (0.381) with negative outcomes on academic (-0.024) social (-0.105) and institutional adaptation (-0.123).

The students' who relied on government scholarship and income from internship projects had positive outcomes in physical-psychological (0.406) and institutional adaptation (0.663) with negative outcomes on academic (-1.792) and social adaptation (-2.597).

The students' who relied on parent income and income from internship projects had positive outcomes in academic (1.749), social (0.404), physical – psychological (0.313) and institutional adaptation (0.287) with no negative outcomes.

The students' who relied on parent income and donor donations had positive outcomes in academic (0.339), social (0.742), physical – psychological (0.439) adaptation with negative outcomes on institutional adaptation (0.607).

The students' who relied on parent income and borrowing from relatives had positive outcomes in physical-psychological (1.881) and institutional adaptation (0.085) with negative outcomes on academic (-1.092) and social adaptation (- 1.186).

Therefore, we reject the null hypothesis (H_{09}) and accept the alternate hypothesis (H_{a9}) that undergraduate B.Tech students' differed across college expense on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.11 Socio economic status by student fathers level of education

4.11.1 Hypothesis testing by student fathers level of education

H_{010} *There is no significant difference among academic, social, physical – psychological and institutional adaptation by student fathers level of education.*

H_{a10} *There is a significant difference among academic, social, physical – psychological and institutional adaptation by student fathers level of education.*

4.11.2 Data analysis - Multivariate Analyses of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by student fathers level of education

The Pearson correlation test (Table 4.11.1) indicates that the dependent variables are highly correlated

Table 4.11.1

Pearson Correlation among dependent variables by student fathers level of education

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.702
2.Social Adaptation	0.577	1.00			2.72	0.755
3.Physical – Psychological Adaptation	0.523	.575	1.00		2.28	0.771
4.Institutional Adaptation	0.577	.614	.789	1.00	2.14	0.784

*Note: n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research Survey Data

4.11.2.1 Descriptive statistics on dimensions of campus adaptations by students' fathers level of education

Table 4.11.2

Distribution of difference in dimensions of campus adaptations by student father's level of education

Father's Level of Education	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Doctorate degree (n = 56)	2.46	0.612	2.59	0.717	2.11	0.584	1.90	0.587
Master's degree (n = 364)	2.64	0.662	2.75	0.734	2.32	0.726	2.14	0.762
Bachelor's degree (n = 515)	2.56	0.716	2.69	0.781	2.27	0.781	2.14	0.796
Diploma (n = 149)	2.66	0.631	2.74	0.669	2.34	0.784	2.17	0.728
Class 12 (n =148)	2.65	0.715	2.77	0.799	2.36	0.795	2.24	0.816
Class 10 (n = 108)	2.58	0.799	2.69	0.711	2.20	0.842	2.12	0.864
Went to School (n = 60)	2.62	0.797	2.71	0.793	2.12	0.790	2.09	0.832
Illiterate (n = 20)	2.42	0.818	2.84	0.939	2.46	0.945	2.44	0.835
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics (Table 4.11.2) indicates that among undergraduate B.Tech students', students' whose fathers had doctorate degree to that of illiterate fathers, enjoyed high level of social adaptation with father being doctorate degree (M = 2.59, SD = 0.717) master's degree (M =2.75, SD = 0.734) bachelor's degree (M = 2.69, SD = 0.781) diploma (M = 2.74, SD = 0.669) class 12 (M = 2.77, SD = 0.799) class 10 (M = 2.69 , SD = 0.711) went to school = (M = 2.71, SD = 0.793) illiterate = (M = 2.84, SD = 0.939). However, father's education level across doctorate degree to being just to school had lower level of institutional adaptation with doctorate degree parent (M = 1.90, SD = 0.587), master's degree (M = 2.14, SD =0.762) bachelor's degree (M = 2.14, SD = 0.796) diploma (M = 2.17, SD = 0.728) class 12 (M = 2.24, SD = 0.816) class 10 (M = 2.12, SD = 0.864) and went to school

(M = 2.09, SD = 0.832). It is observed though that illiterate father impacted lower academic adaptation (M = 2.42, SD = 0.818).

Further within academic adaptation, diploma qualified parent had high level of impact on adaptation (M = 2.66, SD = 0.631) and illiterate parent had low level of adaptation (M = 2.42, SD = 0.818).

In social adaptation, illiterate parent had high level of impact on adaptation (M = 2.84, SD = 0.939) and doctorate qualified parents impacted in low level of adaptation (M = 2.59, SD = 0.717).

In physical – psychological adaptation, Illiterate parent had high impact on level of adaptation (M = 2.46, SD = 0.945) and doctorate qualified parent impacted in low level of adaptation (M = 2.11, SD = 0.584).

In institutional adaptation, illiterate parent had high impact on students' level of adaptation (M = 2.44, SD = 0.835) and doctorate degree qualified parent impacted on students' low level of adaptation (M =1.90, SD = 0.587).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of institutional adaptation (M = 2.14, SD = 0.784). However, within father's educational level, illiterate parent had high level of social adaptation (M = 2.84, SD = 0.939) and doctorate degree qualified parent had low level of institutional adaptation (M = 1.90, SD = 0.587).

4.11.2.2 Inferential statistics on dimensions of campus adaptations by students' fathers level of education

The Box's M value of 92.556 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.052(p > 0.001).

The Pillai's Trace of test static highlighted that there was a significant effect of father's education on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.024, F (28, 5648) = 1.233 and p = 0.185) *(p > 0.05).

The Wilks Lambda test static showed that there was a significant effect of father's education on students' academic, social, physical – psychological and institutional campus adaptations ($\Lambda = 0.976$, F (28, 5081) = 1.233 and p = 0.185) *(p >0.05).

The Hotelling's trace test static reported that there was a significant effect of father's on students' campus adaptations of academic, social, physical – psychological and institutional (T = 0.025, F (28, 5630) = 1.232 and p = 0.186) *(p > 0.05).

The Roy's largest root test static indicated that there was a significant effect of father's education on students' campus adaptations of academic, social, physical – psychological and Institutional ($\Theta = 0.011$, F (7,1412) = 2.273 and p = 0.026) *(p < 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i.e. p > 0.05 with academic adaptation of 0.061, social adaptation of 0.190, physical – psychological adaptation of 0.142 and institutional adaptation of 0.106 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or anova on the outcome with F (7,1412) for academic, social, physical – psychological and institutional adaptation revealed a non-significant effect with F value (1.166) (0.602) (1.674) and (1.554) with p value (0.320) (0.755) (0.111) and (0.145).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or father's education) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of father's education among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 46.0% of the variance with canonical R^2 = 0.039; the second discriminant function explained 34.4 % of the variance with canonical R^2 = 0.011; the third discriminant function explained 17.7 % of the variance

with canonical R^2 = 0.003; the fourth discriminant function explained 1.9 % of the variance with canonical R^2 = 0.001 indicates that the variance in the canonical derived dependant variable was associated for age level.

In combination these discriminant functions did not significantly discriminate the father's education level. The first discriminant function significantly differentiated the student father's education level, with the first function $\Lambda = 0.976$, x^2 (28) 34.488, p = 0.185 (p > 0.05); the second discriminant function $\Lambda = 0.987$, x^2 (18) 18.652, p = 0.414 (p > 0.05). The third discriminant function $\Lambda = 0.995$, x^2 (10) 6.779, p = 0.746 (p > 0.05) and the fourth discriminate function $\Lambda = 1.000$, x^2 (4) 0.649, p = 0.958 (p > 0.05) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that Physical - psychological adaptation loaded highly on second function (r = 0.952) indicating it contributed more to the father's education level group separation (Bragman,1970) than the relatively fair high loading in positive relationship with first function (r = 0.192) third function (r= 0.235) and fourth function (r =0.047).

Academic adaptation loaded highly on third function (r = 0.852) indicating it contributed more to the father's education level group separation than the relatively high loading in positive relationship with second function (r = 0.405) and fourth function (r = 0.376) negated by negative relationship in the first function (r = - 0.332).

Institutional adaptation loaded highly on third function with (r = 0.620) indicating it contributed more to the father's education level group separation than the than relatively fair high loading in the first function (r = 0.43) second function (r = 0.567) and fourth function (r = 0.004).

Lastly, social adaptation loaded highly on fourth function with (r = 0.749) indicating it contributed more to the father's education level group separation than the relatively fair high loading in positive relationship with first function (r = 0.117) second function (r = 0.421) and third function (r = 0.498).

4.11.3 Data interpretation on dimensions of campus adaptations by student fathers level of education

The students' father's education level of doctorate degree had positive outcomes on institutional adaptation (0.039) with negative outcome on academic (-0.154) social (-0.147) and physical – psychological (-0.225) adaptation.

The students' father's education level of master's degree group had positive outcomes in social (0.065) physical – psychological (0.008) and institutional (0.018) adaptation with negative outcomes in academic (-0.092) adaptation.

The students' father's education level of bachelor's degree had positive outcomes on academic (0.048) adaptation with negative outcomes in social (-0.024), physical – psychological (-0.033) and institutional (-0.017) adaptation.

The students' father's education level of diploma degree had positive outcomes in social (0.089) physical – psychological (0.023) adaptation with negative outcomes on academic (-0.054) and institutional adaptation (-0.013).

The students' father's education level of class 12 had positive outcomes in academic (0.065) social (0.081) physical – psychological (0.068) adaptation with negative outcomes in institutional (-0.002) adaptation.

The students' father's education level of class 10 had positive outcomes in academic (0.035) and physical – psychological (0.048) adaptation with negative outcomes in social (-0.133) and institutional (-0.015) adaptation.

The students' fathers who only attended school had positive outcomes in physical – psychological (0.161) and institutional (0.038) adaptation with negative outcomes in academic (-0.022) and social (-0.275) adaptation.

The students' fathers who were illiterate had positive academic (0.674) social (0.117) and institutional (0.097) adaptation with negative physical – psychological (-0.095) adaptation.

Therefore, we reject the null hypothesis (H_{010}) and accept the alternate hypothesis (H_{a10}) that undergraduate B.Tech students' differed across fathers education level on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.12 Socioeconomic status by mothers' level of education

4.12.1 Hypothesis testing by students' mothers' level of education

H_{011} There is no significant difference among academic, social, physical – psychological and institutional adaptations across students' mothers level of education.

H_{a11} There is a significant difference among academic, social, physical – psychological and institutional adaptations across students' mothers level of education.

4.12.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimension of campus adaptations by students' mothers level of education

The Pearson correlation test (Table 4.12.1) indicates that the dependent variables are highly correlated

Table 4.12.1

Pearson Correlation among dependent variables by students' mothers level of education

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00	.		.	2.60	0.702
2.Social Adaptation	0.577	1.00	.		2.72	0.755
3.Physical – Psychological Adaptation	0.523	0.577	1.00	.	2.28	0.771
4.Institutional Adaptation	0.576	0.616	0.791	1.00	2.14	0.784

*Note: - n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research Survey Data

4.12.2.1 Descriptive statistics on dimensions of campus adaptations by students' mothers level of education

Table 4.12.2

Distribution of difference in dimensions of campus adaptations by mother's level of education

Mothers Level of Education	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Doctorate degree (n = 24)	2.59	0.518	2.66	0.645	2.35	0.702	2.08	0.623
Master's degree (n = 278)	2.62	0.698	2.72	0.762	2.31	0.719	2.09	0.744
Bachelor's degree (n = 440)	2.59	0.684	2.74	0.746	2.29	0.766	2.15	0.783
Diploma (n = 77)	2.53	0.684	2.60	0.747	2.24	0.817	2.12	0.858
Class 12 (n =194)	2.63	0.719	2.70	0.758	2.33	0.827	2.19	0.813
Class 10 (n = 166)	2.64	0.722	2.76	0.724	2.32	0.744	2.22	0.741
Went to School (n = 146)	2.55	0.718	2.69	0.783	2.23	0.767	2.13	0.832
Illiterate (n = 95)	2.60	0.773	2.73	0.819	2.10	0.848	2.06	0.824
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics (Table 4.12.2) indicates that among undergraduate B.Tech students', students' whose mothers qualified with doctorate degree to that of illiterate fathers, enjoyed high level of social adaptation with mother being doctorate degree (M = 2.66, SD = 0.645) master's degree (M =2.72, SD = 0.762) bachelor's degree (M = 2.74, SD = 0.746) diploma (M = 2.60, SD = 0.747) class 12 (M = 2.70, SD = 0.758) class 10 (M = 2.76 , SD = 0.724) went to school = (M = 2.69, SD = 0.783) Illiterate = (M = 2.73, SD =0.819).

However, mother's education level across doctorate degree to being illiterate had lower level of institutional adaptation with doctorate degree parent (M = 2.80, SD = 0.623), master's degree (M = 2.09, SD =0.744) bachelor's degree (M = 2.15, SD = 0.783) diploma (M = 2.12, SD = 0.858) class 12 (M = 2.19, SD = 0.813) class 10 (M

= 2.22, SD = 0.741) Went to school (M = 2.13, SD = 0.832) and illiterate father (M = 2.06, SD = 0.824).

Further within academic adaptation, class 10 qualified parent had high level of impact on adaptation (M = 2.64, SD = 0.722) and Illiterate parent impacted low level of adaptation (M = 2.53, SD = 0.684).

In social adaptation, class 10 qualified parent had high level of impact on adaptation (M = 2.76, SD = 0.724) and diploma qualified parents impacted in low level of adaptation (M = 2.60, SD = 0.747).

In physical – psychological adaptation, doctorate degree qualified parent had high impact on level of adaptation (M = 2.35, SD = 0.702) and illiterate parent impacted in low level of adaptation (M = 2.10, SD = 0.848).

In institutional adaptation, class 10 parent had high impact on students' level of adaptation (M = 2.22, SD = 0.741) and illiterate parent impacted on students' low level of adaptation (M =2.06, SD = 0.824).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within mothers educational level, class 10 parent had high level of social adaptation (M = 2.76, SD = 0.724) and illiterate parent impacted in low level of institutional adaptation (M = 2.06, SD = 0.824).

4.12.2.2 Inferential statistics on dimensions of campus adaptations by students' mothers level of education

The Box's M value of 94.620 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.036 (p > 0.001).

The Pillai's Trace test static highlighted that there was no significant effect of mother's level of education on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.020, F (28, 5648) = 1.029 and p = 0.422) *(p > 0.05).

The Wilks Lambda test static showed that there was a significant effect of mother's level of education on students' academic, social, physical – psychological and institutional campus adaptations ($\Lambda = 0.980$, F (28, 5081) = 1.029 and p = 0.422) *(p >0.05).

The Hoteling's trace test static reported that there was a significant effect of mother's level of education on students' campus adaptations of academic, social, physical – psychological and institutional (T = 0.020, F (28, 5630) = 1.029 and p = 0.423) *(p > 0.05).

The Roy's largest root test static followed on that there was a significant effect of mother's level of education on students' campus adaptations of academic, social, physical – psychological and institutional ($\Theta = 0.011$, F (7,1412) = 2.303 and p = 0.025) *(p < 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i.e. p > 0.05 with academic adaptation of 0.242, social adaptation of 0.796, physical – psychological adaptation of 0.562 and institutional adaptation of 0.352 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (7,1412) for academic, social, physical – psychological and institutional adaptation revealed a nonsignificant effect with F value (0.358) (0.468) (1.137) and (0.643) with p value (0.927) (0.858) (0.337) and (0.720).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or father's education) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of age among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 55.8% of the variance with canonical R^2 = 0.011; the second discriminant function explained 27.5 % of the variance with canonical R^2 = 0.006; the third discriminant function explained 10.1 % of the variance with canonical R^2 = 0.002; the fourth discriminant function explained 6.6 % of the variance with canonical R^2 = 0.001 indicates that the variance in the canonical derived dependant variable was associated for mother's level of education.

In combination these discriminant functions did not significantly discriminate the students' adaptations by mother's education level with the first function $\Lambda = 0.980$, x^2 (28) 28.805, p = 0.422 (p > 0.05); the second discriminant function $\Lambda = 0.991$, x^2 (18) 12.764, p = 0.805 (p > 0.05). The third discriminant function $\Lambda = 0.997$, x^2 (10) 4.835, p = 0.902 (p > 0.05) and the fourth discriminate function $\Lambda = 0.999$, x^2 (4) 1.902, p = 0.754 (p > 0.05) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that social adaptation loaded highly on third function (r = 0.963) indicating it contributed more to the mother's education level group separation (Bragman, 1970) than the relatively fair high loading in positive relationship with fourth function (r = 0.064) with negative relationship in first function (r = - 0.028) and second function (r = - 0.260).

Institutional adaptation loaded highly on third function (r = 0.775) indicating it contributed more to the mother's education level group separation than the relatively high loading in positive relationship with second function (r = 0.571) and fourth function (r = 0.271) negated by negative relationship in the first function (r = - 0.031).

Physical – psychological adaptation loaded highly on third function with (r = 0.713) indicating it contributed more to the mother's education level group separation than the than relatively fair high loading in the first function (r = 0.570) second function (r = 0.388) and fourth function (r = 0.127).

Lastly, academic adaptation loaded highly on fourth function with (r = 0.836) indicating it contributed more to the mother's education level group separation than the relatively fair high loading in positive relationship with first function (r = 0.138) and third function (r = 0.524) with negative relationship in the second function (r = - 0.090).

4.12.3 Data Interpretation on dimensions of campus adaptations by students' mothers level of education

The student's mother's education level of doctorate degree had positive outcomes on academic (0.270) adaptation with negative outcomes on social (-0.019) physical – psychological (-0.075) and institutional (-0.012) adaptation.

The student's mother's education level of master's degree had positive outcomes in academic (0.137) and institutional (0.011) adaptation with negative outcomes on social (-0.081) and Physical –psychological (-0.017) adaptation.

The student's mother's education level of bachelor's degree had positive outcomes on physical – psychological (0.030) adaptation with negative outcomes in academic (-0.004) social (-0.012) and institutional (-0.036) adaptation.

The student's mother's education level of diploma degree had positive outcomes in social (0.134) adaptation with negative outcomes in academic (-0.034) physical – psychological (-0.123) and institutional (-0.013) adaptation.

The student's mother's education level of class 12 had positive outcomes in academic (0.043) social (0.086) and institutional (0.055) adaptation with negative outcome in physical – psychological (-0.002) adaptation.

The student's mother's education level of class 10 had positive outcomes in social (0.059) physical – psychological (0.070) and institutional (0.031) adaptation with negative outcomes in academic (-0.053) adaptation.

The students' mothers who only attended school had positive outcomes in social (0.044) adaptation with negative outcomes in academic (-0.102) physical – psychological (-0.034) and institutional (-0.045) adaptation.

The students' mothers who were illiterate had positive outcomes in institutional (0.051) adaptation with negative outcomes in academic (-0.265) social (-0.158) and physical – psychological (-0.039) adaptation.

Therefore, we reject the null hypothesis (H_{011}) and accept the alternate hypothesis (H_{a11}) that undergraduate B.Tech students' differed across mothers education level at

campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.13 Socioeconomic status by father's employment level

4.13.1 Hypothesis testing by students' father's employment level

H_{012} *There is no significant difference among academic, social, physical – psychological and institutional adaptations across students' fathers level of employment.*

H_{a12} *There is a significant difference among academic, social, physical – psychological and institutional adaptations across students' fathers level of education.*

4.13.2 Data Analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by students' father's employment level

The Pearson correlation test (Table 4.13.1) indicates that the dependent variables are highly correlated

Table 4.13.1

Pearson Correlation among dependant variables by students' father's employment level

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.702
2.Social Adaptation	0.577	1.00			2.72	0.755
3.Physical – Psychological Adaptation	0.519	0.575	1.00		2.28	0.771
4.Institutional Adaptation	0.573	0.615	0.789	1.00	2.14	0.784

*Note: n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research Survey Data

4.13.2.1 Descriptive Statistics on Dimensions of Campus Adaptations by Students' Fathers Employment Level

Table 4.13.2

Distribution of Difference in Dimensions of Campus Adaptation by Fathers Level of Employment

Father's Level of Employment	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Employed at Government (n =676)	2.63	0.677	2.73	0.737	2.30	0.772	2.17	0.806
Employed at Private (n =276)	2.60	0.752	2.76	0.778	2.32	0.751	2.14	0.729
Own a Business (n =306)	2.56	0.688	2.67	0.750	2.24	0.761	2.07	0.759
Employed as unskilled Labourer (n=38)	2.66	0.858	2.57	0.906	2.29	0.843	2.26	0.906
Farmer (n =45)	2.35	0.706	2.56	0.786	1.96	0.790	1.91	0.842
Retired from Government service or Pensioner (n = 17)	2.76	0.769	2.89	0.667	2.31	0.717	2.32	0.692
Not Alive (n = 21)	2.45	0.612	2.84	0.625	2.13	0.670	2.14	0.597
Unemployed (n = 41)	2.66	0.703	2.85	0.806	2.45	0.895	2.39	0.837
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics of table 4.13.2 indicate that among undergraduate B.Tech students', students' enjoyed high level of social adaptation irrespective fathers occupation, with fathers employed at government (M = 2.73, SD = 0.737) employed at private (M =2.76, SD = 0.778) own a business (M = 2.67, SD = 0.750) farmers (M = 2.54, SD = 0.786) retired or government pensioner (M = 2.89, SD = 0.667) not alive (M = 2.84, SD = 0.625) unemployed (M = 2.85, SD = 0.806) with exception to parents employed as unskilled labourer whose children as students' had high level of academic adaptation (M = 2.66 , SD = 0.858).

However, father's occupation level across occupations had lower level of institutional adaptation with father being employed at government (M = 2.17, SD = 0.806) employed at private (M = 2.14, SD = 0.729) own a business (M = 2.07, SD = 0.759) unskilled labourer (M = 2.26, SD = 0.906) farmer (M = 1.91, SD = 0.842) and unemployed (M = 2.39, SD = 0.837). The exception being retired father and father who was not anymore alive, where students' witnessed lowest level of Physical – psychological adaptation where (M = 2.31, SD = 0.717) and (M = 2.13, SD = 0.670)

Further within academic adaptation, students' whose fathers who were retired from government service had high level of impact on adaptation (M = 2.76, SD = 0.769) and students' whose father were farmers had low level of adaptation (M = 2.35, SD = 0.706).

In Social Adaptation, students' whose fathers who were retired from government service had high level of impact on adaptation (M = 2.89, SD = 0.667) and students' whose father were farmers impacted in low level of adaptation (M = 2.54, SD = 0.786).

In Physical – Psychological adaptation, students' whose parents where employed at private had high impact on level of adaptation (M = 2.32, SD = 0.751) and students' whose father were farmers impacted in low level of adaptation (M = 1.96, SD = 0.790).

In Institutional adaptation, students' whose parents were unemployed had high impact on students' level of adaptation (M = 2.39, SD = 0.837) and students' whose fathers were farmers impacted on students' low level of adaptation (M =1.91, SD = 0.842).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within father's occupation level, parent father who was retired from government service had high level of impact on students' social adaptation (M = 2.89, SD = 0.667) and students' whose father was a farmer had low level of institutional adaptation (M = 1.91, SD = 0.842).

4.13.2.2 Inferential statistics on dimensions of campus adaptations by students' father's employment level

The Box's M value of 73.488 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.464(p > 0.001).

The Pillai's Trace test static reported that there was a non-significant effect of father's occupation on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.027, F (28, 5648) = 1.350 and p = 0.103) *(p > 0.05).

The Wilks Lambda test static highlighted that there was a non-significant effect of father's occupation on students' academic, social, physical – psychological and institutional campus adaptations ($\Lambda = 0.974$, F (28, 5081) = 1.349 and p = 0.103) *(p >0.05).

The Hoteling's trace test static showed that there was a non-significant effect of father's occupation on students' campus adaptations of Academic, Social, Physical – Psychological and Institutional (T = 0.027, F (28, 5630) = 1.348 and p = 0.104) *(p > 0.05).

The Roy's largest root test static indicated that there was a non-significant effect of father's occupation on students' campus adaptations of Academic, Social, Physical – Psychological and Institutional ($\Theta = 0.011$, F (7,1412) = 2.316 and p = 0.024) *(p < 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i, e p > 0.05 with academic adaptation of 0.144, social adaptation of 0.536, physical – psychological adaptation of 0.754 and institutional adaptation of 0.195 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (7,1412) for Academic, social, Physical – Psychological and institutional adaptation revealed a no significant effect with F value (1.466) (1.246) (1.822) and (1.871) with p value (0.175) (0.275) (0.079) and (0.071).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or father's education) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of age among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 42.8% of the variance with canonical R^2 = 0.011; the second discriminant function explained 30.2% of the variance with canonical R^2 = 0.008; the third discriminant function explained 22.8% of the variance with canonical R^2 = 0.006; the fourth discriminant function explained 4.2% of the variance with canonical R^2 = 0.001 indicates that the variance in the canonical derived dependant variable was associated for father's education level.

In combination these discriminant functions did not significantly discriminate the father's occupation level. The first discriminant function significantly differentiated the student father's occupation level, with the first function $\Lambda = 0.974$, x^2 (28) 37.737, $p = 0.103$ ($p > 0.05$); The second discriminant function $\Lambda = 0.985$, x^2 (18) 21.603, $p = 0.250$ ($p > 0.05$); The third discriminant function $\Lambda = 0.993$, x^2 (10) 10.214, $p = 0.422$ ($p > 0.05$) and the fourth discriminate function $\Lambda = 0.999$, x^2 (4) 1.587, $p = 0.811$ ($p > 0.05$) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that institutional adaptation loaded highly on first function (r = 0.768) indicating it contributed more to the father's occupation level group separation (Bragman, 1970) than the relatively fair high loading in positive relationship in third function (r = 0.591) with negative relationship in second function (-0.204) and fourth function (r = - 0.136).

Physical – psychological adaptation loaded highly on first function (r = 0.757) indicating it contributed more to the father's occupation level group separation than the relatively high loading in positive relationship with second function (r = 0.397) and third function (r = 0.417) negated by negative relationship in the fourth function (r = - 0.308).

Academic adaptation loaded highly on first function with (r = 0.747) indicating it contributed more to the father's occupation level group separation than the than relatively fair high loading in the second function (r = 0.156) third function (r = 0.194) and fourth function (r = 0.616).

Lastly, social adaptation loaded highly on third function with (r = 0.882) indicating it contributed more to the father's occupation level group separation than the relatively

fair high loading in positive relationship with first function (r = 0.246) second function (r = 0.278) and fourth function (r = 0.291).

4.13.3 Data interpretation on dimensions of campus adaptations by students' father's employment level

The students' father's occupation of being employed at government had positive academic (0.046) and institutional (0.014) adaptation with negative outcomes in social (-0.005) and physical – psychological (-0.005) adaptation.

The students' father's occupation of being employed at private had positive outcome at social (0.093) and physical – psychological (0.049) adaptation with negative outcomes in academic (-0.019) and institutional (-0.015) adaptation.

The students' father's occupation of being owning a business had positive outcomes in social (0.045) with negative outcomes in academic (-0.067), physical – psychological (-0.060) adaptation and institutional (-0.007) adaptation.

The students' father's occupation of being employed as unskilled labourer had positive outcomes in academic (0.256) adaptation with negative outcome in social (-0.294) physical – psychological (-0.191) and institutional (-0.039) adaptation.

The students' father's occupation of being son of soil, the farmer had negative outcomes in academic (-0.388) social (-0.243) physical – psychological (-0.083) and institutional (-0.016) adaptation.

The students' father who are retired and now as government pensioner had positive outcome on students' academic (0.121) physical – psychological (0.217) and institutional (0.207) adaptation with negative outcome on social (--0.199) adaptation.

The students' whose father had expired had positive physical – psychological (0.350) and institutional (0.005) adaptation with negative outcomes in academic (- 0.336) and social (-0.229) adaptations.

The students' whose father was unemployed had positive academic (0.190) and physical – psychological (0.207) with negative outcomes in social (-0.130) and institutional (-0.119) adaptation.

Therefore, we reject the null hypothesis (H_{012}) and accept the alternate hypothesis (H_{a12}) that undergraduate B.Tech students' differed across father's employment level on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.14 Socioeconomic status by mothers' employment level

4.14.1 Hypothesis testing by student's mothers' employment level

H_{013} There is no significant difference among academic, social, physical – psychological and institutional adaptations by students' mothers level of employment.

H_{a13} There is a significant difference among academic, social, physical – psychological and institutional adaptations by students' mothers level of employment.

4.14.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by students' mother's employment level

The Pearson correlation test (Table 4.14.1) indicates that the dependent variables are highly correlated

Table 4.14.1

Pearson Correlation among dependant variables by students' mothers level of employment

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.702
2.Social Adaptation	0.579	1.00			2.72	0.755
3.Physical – Psychological Adaptation	0.523	0.576	1.00		2.28	0.771
4.Institutional Adaptation	0.576	0.617	0.790	1.00	2.14	0.784

* Note: - n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research Survey Data

4.14.2.1 Descriptive statistics on dimensions of campus adaptations by students' mother's employment level

Table 4.14.2

Distribution of difference in dimensions of campus adaptation by mother's level of employment

Mothers Level of Employment	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Employed at Government (n = 172)	2.60	0.688	2.83	0.724	2.28	0.745	2.12	0.738
Employed at Private (n =141)	2.49	0.676	2.63	0.745	2.26	0.773	2.12	0.763
Own a Business (n =71)	2.67	0.685	2.79	0.790	2.38	0.789	2.22	0.793
Employed as unskilled Labourer (n=10)	2.50	0.922	2.82	0.990	2.26	1.011	2.18	0.968
Farmer (n = 10)	2.24	0.600	2.60	0.884	2.04	0.798	1.90	0.731
Retired from Government service or Pensioner (n = 6)	2.94	1.118	2.43	0.674	1.86	0.413	2.13	0.776
Not Alive (n = 3)	2.50	0.440	2.40	0.721	2.40	0.692	2.33	0.808
Unemployed (n = 107)	2.61	0.705	2.71	0.755	2.28	0.774	2.14	0.795
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics of (Table 4.14.2) indicate that among undergraduate B.Tech students', students' enjoyed high level of social adaptation irrespective mothers occupation, with mothers employed at government (M = 2.83, SD = 0.724) employed at private (M =2.63, SD = 0.745) own a business (M = 2.79, SD = 0.790) unskilled labourer (M = 2.82, SD = 0.990) farmer (M = 2.60, SD = 0.884) unemployed (M = 2.71, SD = 0.755) with exception to parents employed retired had high level of academic adaptation (M = 2.94 , SD = 1.118) and not alive (M = 2.50 SD = 0.440).

However, mother's occupation level across occupations had lower level of institutional adaptation with mother being employed at government (M = 2.12, SD = 0.738) employed at private (M = 2.12, SD = 0.763) own a business (M = 2.22, SD = 0.793) unskilled labourer (M = 2.18, SD = 0.968) farmer (M = 1.90, SD = 0.731) not alive (M = 2.33, SD = 0.808) and unemployed (M = 2.14, SD = 0.795). The exception being retired mother where students' witnessed lowest level of Physical – psychological adaptation where (M = 1.86, SD = 0.413).

Further within academic adaptation students' whose mothers owned a business had high level of impact on adaptation (M = 2.67, SD = 0.685) and students' whose mothers were farmers had low level of adaptation (M = 2.24, SD = 0.600).

In social adaptation, who were employed at government had high level of impact on adaptation (M = 2.83, SD = 0.724) and students' whose mothers were not alive impacted in low level of adaptation (M = 2.40, SD = 0.721).

In physical – psychological adaptation, students' whose mother owned a business had high impact on level of adaptation (M = 2.38, SD = 0.789) and students' whose mother were retired impacted in low level of adaptation (M = 1.86, SD = 0.413).

In institutional adaptation, students' whose parents were not alive had high impact on student's level of adaptation (M = 2.33, SD = 0.808) and students' whose mothers were farmers impacted on student's low level of adaptation (M =1.90, SD = 0.731).

Overall, across campus adaptations and mothers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within mother's occupation level, parent mothers who was employed at government had high level of impact on student's social adaptation (M = 2.83, SD = 0.724) and students' whose mother was a farmer had low level of institutional adaptation (M = 1.90, SD = 0.731).

4.14.2.2 Inferential statistics on dimensions of campus adaptations by students' mother's employment level

The Box's M value of 57.426 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.814 (p > 0.001).

The Pillai's Trace test static indicated that there was a non-significant effect of mother's occupation on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.022, F (28, 5648) = 1.121 and p = 0.301) *(p > 0.05).

The Wilks Lambda test static showed that there was a non-significant effect of mother's occupation on students' academic, social, physical – psychological and

institutional campus adaptations (Λ = 0.978, F (28, 5081) = 1.121 and p = 0.301) *(p >0.05).

The Hoteling's trace test static reported that there was a non-significant effect of mother's occupation on student's campus adaptations of Academic, Social, Physical – Psychological and Institutional (T = 0.022, F (28, 5630) = 1.121 and p = 0.301) *(p > 0.05).

The Roy's largest root highlighted that there was a significant effect of mother's occupation on student's campus adaptations of academic, social, physical – psychological and institutional (Θ = 0.012, F (7,1412) = 2.330 and p = 0.023) *(p < 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i, e p > 0.05 with academic adaptation of 0.312, social adaptation of 0.827, physical – psychological adaptation of 0.839and institutional adaptation of 0.964 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (7,1412) for academic, social, physical – psychological and institutional adaptation revealed a non - significant effect with F value (1.203) (1.231) (0.609) and (0.302) with p value (0.298) (0.282) (0.749) and (0.953).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or mother's occupation) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of mother's employment among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 51.8% of the variance with canonical R^2 = 0.012; the second discriminant function explained 31.7% of the variance with canonical R^2 = 0.007; the third discriminant function explained 14.3% of the variance

with canonical R^2 = 0.003; the fourth discriminant function explained 2.2% of the variance with canonical R^2 = 0.000 indicates that the variance in the canonical derived dependant variable was associated for mother's level of occupation.

In combination these discriminant functions did not significantly discriminate the mothers occupation level with the first discriminant function Λ = 0.978, x^2 (28) 31.361, p = 0.301 (p > 0.05); The second discriminant function Λ = 0.989, x^2 (18) 15.135, p = 0.653 (p > 0.05); The third discriminant function Λ = 0.996, x^2 (10) 5.173, p = 0.879 (p > 0.05) and the fourth discriminate function Λ = 1.000, x^2 (4) 0.682, p = 0.954 (p > 0.05) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that social adaptation loaded highly on first function (r = 0.561) indicating it contributed more to the mother's occupation level group separation (Bragman, 1970) than the relatively fair high loading in positive relationship in second function (r = 0.533) third function (0.309) and fourth function (r = 0.552).

Academic adaptation loaded highly on second function (r = 0.797) indicating it contributed more to the mother's occupation level group separation than the relatively high loading in positive relationship with third function (r = 0.507) and fourth function (r = 0.232) negated by negative relationship in the fourth function (r = - 0.234);

Physical – psychological adaptation loaded highly on third function with (r = 0.919) indicating it contributed more to the mother's occupation level group separation than the than relatively fair high loading in the first function (r = 0.152) second function (r = 0.011) and fourth function (r = 0.365)

Lastly, institutional adaptation loaded highly on fourth function with (r = 0.882) indicating it contributed more to the mother's occupation level group separation than the relatively fair high loading in positive relationship with second function (r = 0.101) and third function (r = 0.550) with negative relationship in the first function (r = - 0.109).

4.14.3 Data interpretation on dimensions of campus adaptations by students' mother's employment level

The student's mother's occupation of being employed at government had positive academic (0.198) social (0.088) and institutional (0.009) adaptation with negative outcomes in physical – psychological (-0.041) adaptation.

The student's mother's occupation of being employed at private had positive outcome at institutional (0.009) adaptation with negative outcomes in academic (-0.036) social (-0.183) and physical - psychological (-0.031) adaptation.

The student's mother's occupation of being owning a business had positive outcomes in academic (0.025) social (0.038) physical – psychological (0.122) and institutional (0.038) adaptation.

The student's mother's occupation of being employed as unskilled labourer, had positive outcomes in academic (0.203) and institutional (0.186) adaptation, with negative outcome in social (-0.084) and physical – psychological (-0.146) adaptation.

The student's mother's occupation of being son of soil, the farmer had positive outcomes in academic (0.264) adaptation with negative outcomes in social (-0.306) physical – psychological (-0.363) and institutional (-0.066) adaptation.

The student's mother who are retired and now as government pensioner had positive outcome on students' social (0.568) and institutional (0.077) adaptation with negative outcomes in academic (-1.049) and physical – psychological (- 0.457).

The student's mother's whose mother had expired had positive physical – psychological (0.192) and institutional (0.152) adaptation with negative outcomes in academic (-0.536) and social (-0.510) adaptations.

The mothers whose mother was unemployed had positive social (0.010) and physical – psychological (0.010) with negative outcomes in academic (-0.027) and institutional (-0.008) adaptation.

Therefore, we reject the null hypothesis (H_{013}) and accept the alternate hypothesis (H_{a13}) that undergraduate B.Tech students' differed across mother's level of

employment on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.15 Socioeconomic status by father's income level

4.15.1 Hypothesis testing by students' father's income level

H_{014} *There is no significant difference among academic, social, physical – psychological and institutional adaptations across students' father's income level.*

H_{a14} *There is a significant difference among academic, social, physical – psychological and institutional adaptation across students' father's income level.*

4.15.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by students' father's income level

The Pearson correlation test (Table 4.15.1) indicates that the dependent variables are highly correlated

Table 4.15.1
Pearson Correlation among dependant variables by students' fathers income level

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.702
2.Social Adaptation	0.576	1.00			2.72	0.755
3.Physical – Psychological Adaptation	0.520	0.576	1.00		2.28	0.771
4.Institutional Adaptation	0.574	0.614	0.789	1.00	2.14	0.784

*Note: n = 1420. **Correlations greater than 0.05 are statistically significant

Source: Research Survey data

The mean in the descriptive statistics (Table 4.15.2) indicates that among undergraduate B.Tech students', students' enjoyed high level of social adaptation irrespective fathers income, with fathers income upto 1,000 (M = 2.83, SD = 0.612) income limit 1001 - 5000 (M =2.62, SD = 0.826) income limit of 5,001 – 10,000 (M = 2.68, SD = 0.779) income limit of 10,001 – 20,000 (M = 2.76, SD = 0.762) greater than 20,000 (M = 2.70, SD = 0.743) No income (M = 2.87 , SD = 0.734) and i don't know (M = 2.82, SD = 0.761).

4.15.2.1 Descriptive statistics on dimensions of campus adaptations by students' father's income level

Table 4.15.2

Distribution of difference in dimensions of campus adaptation by father's level of income

Father's Income Level	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Upto1,000 (n = 06)	2.72	0.418	2.83	0.612	2.16*	0.557	2.26	0.640
1,001 – 5,000 (n = 76)	2.45	0.769	2.62	0.826	2.08	0.806	2.01	0.793
5,001 – 10,000 (n = 138)	2.59	0.736	2.68	0.779	2.29	0.776	2.15	0.819
10,001 – 20,000 (n = 198)	2.61	0.689	2.76	0.762	2.25	0.770	2.12	0.761
Greater than 20,000 (n = 854)	2.60	0.682	2.70	0.743	2.28	0.755	2.13	0.771
No income (n = 40)	2.59	0.657	2.87	0.734	2.28	0.820	2.26	0.737
I Don't Know (n = 108)	2.71	0.807	2.82	0.761	2.50	0.832	2.31	0.885
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey data

However, father's income level across income limit had lower level of institutional adaptation with income limit of 1,001 - 5,000 (M = 2.01, SD = 0.793), 5,001 – 10,000 (M = 2.15, SD =0.819) 10,001 – 20,000 (M = 2.12, SD = 0.761) greater than 20,000 (M = 2.13, SD = 0.771) no income (M = 2.26, SD = 0.737) and i don't know (M = 2.31, SD = 0.885). It is observed that father's income limit upto 1,001 had low level of physical – psychological (M = 2.16, SD = 0.557) adaptation.

Further within academic adaptation, students' whose father's income limit was upto 1,001 had high level of impact on adaptation (M = 2.72, SD = 0.418) and 1,001 – 5000 limit had low level of adaptation (M = 2.45, SD = 0.769).

In social adaptation, no income had high level of impact on adaptation (M = 2.87, SD = 0.734) and 1,001 – 5,000 impacted in low level of adaptation (M = 2.62, SD = 0.826).

In Physical – psychological adaptation, 5,001 – 10,000 had high impact on level of adaptation (M = 2.29, SD = 0.776) and 1,001 – 5,000 impacted in low level of adaptation (M = 2.08, SD = 0.806).

In institutional adaptation, i don't know had high impact on students' level of adaptation (M = 2.31, SD = 0.885) and 1.001 – 5,000 parent impacted on students' low level of adaptation (M =2.01, SD = 0.793).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within father's income level, no income had high level of social adaptation (M = 2.87, SD = 0.734) and 1,001 – 5,000 had low level of institutional adaptation (M = 2.01, SD = 0.793).

4.15.2.2 Inferential statistics on dimensions of campus adaptations by students' father's income level

The Box's M value of 69.447 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with p = 0.340 (p > 0.001).

The Pillai's Trace showed that there was a non-significant effect of father's income on students' academic, social, physical – psychological and institutional campus adaptations (V = 0.018, F (24, 5652) = 1.038 and p = 0.411) *(p > 0.05).

The Wilks Lambda test static indicated that there was a non-significant effect of father's income on students' Academic, Social, Physical – Psychological and Institutional campus adaptations (Λ = 0.983, F (24, 4920) = 1.039 and p = 0.410) *(p >0.05).

The Hoteling's trace test static reported that there was a non-significant effect of father's occupation on students' campus adaptations of Academic, Social, Physical – Psychological and Institutional (T = 0.018, F (24, 5634) = 1.039 and p = 0.410) *(p > 0.05).

The Roy's largest root reflected thatthere was a significant effect of fathers occupation on students' campus adaptations of Academic, Social, Physical – Psychological and Institutional (Θ = 0.011, F (6,1413) = 2.673 and p = 0.014) *(p < 0.05).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i.e. p > 0.05 with academic adaptation of 0.174,

social adaptation of 0.893, physical – psychological adaptation of 0.802 and institutional adaptation of 0.447 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (6, 1413) for Academic, social and institutional adaptation revealed a non-significant effect with F value (1.083) (1.010) and (1.409) with p value (0.370) (0.417) and (0.208). It had a significant effect on physical – psychological adaptation with F value (2.313) and p value less than 0.05 (0.032).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or father's education) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of age among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 64.1% of the variance with canonical R^2 = 0.011; the second discriminant function explained 25.1% of the variance with canonical R^2 = 0.004; the third discriminant function explained 7.4 % of the variance with canonical R^2 = 0.001; the fourth discriminant function explained 3.4 % of the variance with canonical R^2 = 0.001 indicates that the variance in the canonical derived dependant variable was associated for father's income level.

In combination these discriminant functions did not significantly discriminate the fathers occupation level with the first discriminant function $\Lambda = 0.983$, x^2 (24) 24.918, p = 0.410 (p > 0.05); The second discriminant function $\Lambda = 0.994$, x^2 (15) 8.964 , p = 0.879 (p > 0.05) ; The third discriminant function $\Lambda = 0.998$, x^2 (8) 2.706, p = 0.951 (p > 0.05) and the fourth discriminate function $\Lambda = 0.999$, x^2 (3) 0.844, p = 0.839 (p > 0.05) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that physical – psychological adaptation loaded highly on first function (r = 0.893)

indicating it contributed more to the father's occupation level group separation (Bragman, 1970) than the relatively fair high loading in positive relationship in second function (r = 0.410) with negative relationship in third function (-0.115) and fourth function (r = - 0.149).

Academic adaptation loaded highly on first function (r = 0.536) indicating it contributed more to the father's occupation level group separation than the relatively high loading in positive relationship with second function (r = 0.430) third function (r = 0.529) and fourth function (r = 0.498).

Social adaptation loaded highly on second function with (r = 0.875) indicating it contributed more to the father's occupation level group separation than the than relatively fair high loading in the first function (r = 0.249) third function (r = 0.344) with negative relationship in the fourth function (r = -0.231).

Lastly, institutional adaptation loaded highly on second function with (r = 0.733) indicating it contributed more to the father's occupation level group separation than the relatively fair high loading in positive relationship with first function (r = 0.550) and fourth function (r = 0.255) with negative relationship in the third function (r = - 0.308).

4.15.3 Data interpretation on dimensions of campus adaptations by students' father's income level

The father's income up to 1,000 had positive outcomes on students' social (0.309) physical - psychological (0.036) and institutional (0.317) adaptation with negative outcomes in academic (-0.261) adaptation.

The father's income from 1,001 to 5,000 had negative outcomes on students' academic (-0.278) social (-0.051) physical – psychological (-0.069) and institutional (-0.020) adaptation.

The father's income from 5,001 to 10,000 had positive outcomes on students' academic (0.021) and institutional (0.032) adaptation with negative outcome on social (-0.031) and physical – psychological (-0.045) adaptation.

The father's income from 10,001 to 20,000 had positive social (0.052) and physical – psychological (0.067) adaptation with negative outcome in academic (-0.071) and institutional (-0.007) adaptation.

The father's income greater than 20,000 had positive academic (0.013) and physical – psychological (0.004) adaptation with negative outcome in social (-0.029) and institutional (-0.001) adaptation.

The fathers with no income of students' had positive social (0.292) adaptation with negative outcomes in academic (-0.153) physical –psychological (- 0.073) and institutional (-0.033) adaptation.

The students' who did not know on an average on their parent's earnings had positive academic (0.266) and social (0.081) adaptation with negative outcomes in physical – psychological (-0.028) and institutional (-0.011) adaptation.

Therefore, we reject the null hypothesis (H_{014}) and accept the alternate hypothesis (H_{a14}) that undergraduate B.Tech students' differed across father's income level on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.16 Socioeconomic status by mother's income level

4.16.1 Hypothesis testing by students' mother's income level

H_{015} There is no significant difference among academic, social, physical – psychological and institutional adaptation across students' mother's income level.

H_{a15} There is a significant difference among academic, social, physical – psychological and institutional adaptation across students' mother's income level.

4.16.2 Data analysis using Multivariate Analysis of Variance (MANOVA) and Discriminant analysis on dimensions of campus adaptations by students' mother's income level

The Pearson correlation test (Table 4.16.1) indicates that the dependent variables are highly correlated

Table 4.16.1

Pearson Correlation among dependent variables by students' mother's income level

Campus Adaptation	1	2	3	4	M	SD
1.Academic Adaptation	1.00				2.60	0.702
2.Social Adaptation	.578	1.00			2.72	0.755
3.Physical – Psychological Adaptation	.523	.576	1.00		2.28	0.771
4.Institutional Adaptation	.576	.616	.789	1.00	2.14	0.784

*Note: n = 1420 **Correlations greater than 0.05 are statistically significant

Source: Research Survey data

4.16.2.1 Descriptive statistics on dimensions of campus adaptations by students' mother's income level

Table 4.16.2

Distribution of difference in dimensions of campus adaptations by students' mother's income level

Mothers Income Level	Academic		Social		Physical - Psychological		Institutional	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Upto1,000 (n = 27)	2.55	0.611	2.50	0.647	2.00	0.523	1.91	0.555
1,001 – 5,000 (n = 47)	2.64	0.739	2.83	0.751	2.33	0.756	2.30	0.747
5,001 – 10,000 (n = 49)	2.55	0.706	2.57	0.712	2.24	0.821	2.12	0.874
10,001 – 20,000 (n = 66)	2.50	0.632	2.69	0.863	2.41	0.883	2.26	0.818
Greater than 20,000 (n = 238)	2.57	0.704	2.76	0.718	2.24	0.736	2.08	0.739
No income (n = 911)	2.60	0.699	2.71	0.760	2.28	.773	2.14	0.788
I Don't Know (n = 82)	2.73	0.791	2.79	.0761	2.40	0.792	2.25	0.848
Total (n =1420)	2.60	0.702	2.72	0.755	2.28	0.771	2.14	0.784

Source: Research Survey Data

The mean in the descriptive statistics (Table 4.16.2) indicates that among undergraduate B.Tech students', students' enjoyed high level of social adaptation

irrespective fathers income, with fathers income 1,001 – 5,000 (M = 2.83, SD = 0.751) income limit 5001 – 10,000 (M =2.57, SD = 0.712) income limit of 10,001 – 20,000 (M = 2.69, SD = 0.863) income limit of greater than 20,000 (M = 2.76, SD = 0.718) No income (M = 2.71 , SD = 0.760) and i don't know (M = 2.79, SD = 0.761) with exception to high level academic adaptation with mothers income up to 1,000 per month (M = 2.55 SD = 0.611).

However, mother's income level across income limit had lower level of institutional adaptation with up to 1,000 (M = 1.91, SD = 0.555) income limit of 1,001 - 5,000 (M = 2.30, SD = 0.747), 5,001 – 10,000 (M = 2.12, SD =0.874) 10,001 – 20,000 (M = 2.26, SD = 0.818) greater than 20,000 (M = 2.08, SD = 0.739) no income (M = 2.14, SD = 0.788) and i don't know (M = 2.25, SD = 0.848).

Further within academic adaptation, students' whose mother's income limit they did not know had high level of impact on adaptation (M = 2.73, SD = 0.791) and 10,001 – 20,000 limit had low level of adaptation (M = 2.50, SD = 0.632).

In social adaptation, income limit from 1,001 – 5,000 had high level of impact on adaptation (M = 2.83, SD = 0.751) and up to 1,000 impacted in low level of adaptation (M = 2.50, SD = 0.647).

In physical – psychological adaptation, 10,001 – 20,000 had high impact on level of adaptation (M = 2.41, SD = 0.883) and up to 1000 impacted in low level of adaptation (M = 2.00, SD = 0.523).

In institutional adaptation, 10,001 to 20,000 had high impact on students' level of adaptation (M = 2.26, SD = 0.818) and up to 1000 on students' low level of adaptation (M = 1.91, SD = 0.555).

Overall, across campus adaptations and fathers educational level groups, students' had high level of social adaptation (M = 2.72, SD = 0.755) and low level of Institutional adaptation (M = 2.14, SD =0.784). However, within mother's income level, 1,001 – 5,000 had high level of social adaptation (M = 2.87, SD = 0.751) and upto1,001 had low level of institutional adaptation (M = 1.91, SD = 0.555).

4.16.2.2 Inferential statistics on dimensions of campus adaptations by students' mother's income level

The Box's M value of 69.023 indicates test of assumption of equality of covariance matrices are roughly equal as assumed with $p = 0.247 (p > 0.001)$.

The Pillai's Trace of test static stated that there was a non-significant effect of mother's income on students' academic, social, physical – psychological and institutional campus adaptations ($V = 0.020$, $F (24, 5652) = 1.201$ and $p = 0.228$) *($p > 0.05$).

The Wilks Lambda test static indicated that there was a non-significant effect of mother's income on students' academic, social, physical – psychological and institutional campus adaptations ($\Lambda = 0.980$, $F (24, 4920) = 1.200$ and $p = 0.229$) *($p > 0.05$).

The Hoteling's Trace of test static noted that there was a non-significant effect of mother's income on student's campus adaptations of academic, social, physical – psychological and institutional ($T = 0.020$, $F (24, 5634) = 1.199$ and $p = 0.229$) *($p > 0.05$).

The Roy's Largest Root test static showed that there was a non-significant effect of mother's income on students' campus adaptations of academic, social, physical – psychological and institutional ($\Theta = 0.009$, $F (6,1413) = 2.316$ and $p = 0.042$) *($p < 0.05$).

The univariate test statistic with levenes test of equality of variances for each of the dependent variable is non-significant i.e. $p > 0.05$ with academic adaptation of 0.368, social adaptation of 0.109, physical – psychological adaptation of 0.101 and institutional adaptation of 0.100 enabling the assumptions of homogeneity of variance being met.

However separate univariate analysis or ANOVA on the outcome with F (6,1413) for academic, social, physical – psychological and institutional adaptation revealed a non-

significant effect with F value (0.845) (1.119) (1.408) and (1.531) with p value (0.535) (0.349) (0.208) and (0.164).

Further the between – subjects SSCP matrix indicates that the sum of squares for the error SSCP matrix are substantially bigger than in the model (or father's education) SSCP matrix, whereas absolute values of cross products are fairly similar. This pattern of relationship indicates that the relationship between dependent variables is significant than individual dependent variables themselves. Thus to determine the nature of effect of age among dependent variables MANOVA is followed with discriminant analysis.

The first discriminant function explained 45.3% of the variance with canonical R^2 = 0.09; the second discriminant function explained 27.4% of the variance with canonical R^2 = 0.006; the third discriminant function explained 17.5% of the variance with canonical R^2 = 0.004; the fourth discriminant function explained 9.8 % of the variance with canonical R^2 = 0.002 indicates that the variance in the canonical derived dependant variable was associated for mother's income level.

In combination these discriminant functions did not significantly discriminate the mother's income level with the first function $\Lambda = 0.980$, x^2 (24) 28.780, p = 0.229 ($p > 0.05$); The second discriminant function $\Lambda = 0.989$, x^2 (15) 15.759, p = 0.398 ($p > 0.05$); The third discriminant function $\Lambda = 0.994$, x^2 (8) 7.880, p = 0.445 ($p > 0.05$) and the fourth discriminate function $\Lambda = 0.998$, x^2 (3) 2.823, p = 0.420 ($p > 0.05$) indicates the non-significant effect of discriminant functions.

The correlations between outcomes and the discriminant functions revealed that institutional adaptation loaded highly on first function (r = 0.718) indicating it contributed more to the mother's income level group separation (Bragman, 1970) than the relatively fair high loading in positive relationship in second function (r = 0.237) third function (r = 0.593) and fourth function (r = 0.276).

Physical – psychological adaptation loaded highly on first function (r = 0.640) indicating it contributed more to the mother's income level group separation than the relatively high loading in positive relationship with second function (r = 0.369) and

third function (r = 0.573) negated by negative relationship in the fourth function (r = -0.355).

Social adaptation loaded highly on second function with (r = 0.782) indicating it contributed more to the mother's income level group separation than the than relatively fair high loading in the first function (r = 0.035) third function (r = 0.588) and fourth function (r = 0.203).

Lastly, academic adaptation loaded highly on third function with (r = 0.998) indicating it contributed more to the mother's income level group separation than the relatively fair high loading in positive relationship with fourth function (r = 0.052) with negative relationship in the first function (r = - 0.034) and second function (-0.024).

4.16.3 Data interpretation on dimensions of campus adaptations by students' mother's income level

The students' mother's income up to 1,000 had positive outcomes on students' institutional (0.087) adaptation with negative outcome in academic (-0.269) Social (-0.310) and physical – psychological (-0.098) adaptation.

The students' mother's income from 1,001 to 5,000 had positive outcomes on academic (0.121), social (0.087), physical – psychological (0.048) and institutional (0.225) adaptation.

The students' mother's income from 5,001 to 10,000 had positive outcomes on students' academic (0.089) and institutional (0.002) adaptation with negative outcome on social (-0.212) and physical – psychological (-0.068) adaptation.

The students' mother's income from 10,001 to 20,000 had positive academic (0.321) and social (0.044) adaptation with negative outcome in physical – psychological (-0.126) and institutional (-0.033) adaptation.

The students' mother's income greater than 20,000 had positive social (0.102) adaptation with negative academic (-0.111), physical – psychological (-0.040) and institutional (-0.008) adaptation.

The mothers with no income of students' had positive outcomes on students' physical – psychological (0.006) adaptation with negative outcome on academic (-0.003) social (-0.012) and institutional (-0.006) adaptation.

The students' who did not know on an average on their parent's earnings had positive academic (0.062) and physical - psychological (0.191) adaptation with negative outcomes in social (-0.021) and institutional (-0.038) adaptation.

Therefore, we reject the null hypothesis (H_{015}) and accept the alternate hypothesis (H_{a15}) that undergraduate B.Tech students' differed mothers' income level on campus adaptations of academic, social, physical – psychological and institutional adaptations.

4.4 Qualitative research analysis by Hierarchical Axial Coding

The data indicates the coding pattern of the interview transcripts

Student 1		
Interview transcripts	**Sub category**	**Core category**
"It's hard though at times it is helpful to remain motivated as it craves to be out there more competitive"	Academic motivation with goal and purpose	Academic adaptation
"It's tough to enjoy my academic work as there are no books"	Enjoying my academic work by being upto date on it	Academic adaptation
"if I miss classes I think I would miss vital content of subject"	Attending classes regularly	Academic adaptation

"Subjects are going on fine but I don't understand how far are they interrelated"	Quality of courses	Academic adaptation
"Yes I know that I have all these teachers that would do anything that it takes me to succeed. I feel like it's very possible for me and I see it coming and happening"	Intellectual calibre of professors	Academic adaptation
"I am a little lazy. Initially I thought I was going to struggle but now I think I am doing good still hard on academics"	Overall academic performance	Academic adaptation
"My fellow classmates were very kind. I did not face nor notice discrimination"	Getting along with fellow classmates	Social adaptation
"I am still trying to find me social"	Socially acquainting with opposite sex	Social adaptation

"In high school the teachers would tell us that college professors wouldn't care. They are just there to do their jobs but here I have seen professors honestly show care and they care for me"	Faculty mentoring	Social adaptation
"The support staff has really helped me out in all activities"	Support staff	Social adaptation
"It's like a family environment where everybody is akin to each other"	Overall social life	Social adaptation
"The instruments at gym are few"	Physical health	Physical–psychological adaptation
"Heading fit and fine"	Mental health	Physical–psychological adaptation
"People are easy going"	Good friends and acquaintances	Physical–psychological adaptation
"I will make it for long at campus"	Confidence	Physical–psychological adaptation

"The first aid box at hostel doesn't contain items. It's just a red painted box"	Safety at campus	Physical–psychological adaptation
"Lots of improvements needed like trash half the computers not working, wifi, sanitation etc"	Facilities at campus	Institutional adaptation
"Require regular supply of water at hostel"	Hostel life	Institutional adaptation
"I am not sure of my commitment because of my grades from high school were low which has continued for past 4 semesters"	Institutional commitment with persistence towards completion	Institutional adaptation
"My senior friend at high school, was a big factor in me coming down here"	Choice of institute	Institutional adaptation
"I was thinking that overall everything about the campus was close to perfect, but I guess nothing can be"	Fit in well to college campus	Institutional adaptation

Student 2		
"In the beginning I was completely motivated but right now, I don't have half the motivation"	Academic motivation with goal and purpose	Academic Adaptation
"I am thankful there is no much writing stuff, its more numerical which makes me more engaged to study"	Enjoying my academic work by being up to date on it	Academic Adaptation
"All my classes are pretty average , so no big deed in missing few"	Attending classes regularly	Academic Adaptation
"Maths sometimes a struggle for me."	Quality of courses	Academic Adaptation
"The professors are good and I feel it's a good place to stay"	Intellectual calibre of professors	Academic Adaptation
"It's tough at times like I haven't been studying like I should"	Overall academic performance	Academic Adaptation
"Sharing of notes and learning by sharing views is helping to do academically well"	Getting along with fellow classmates	Social Adaptation

"Some students'' want to party outside. They want to do stuff that I wouldn't agree to. I didn't know it was going to be like that. I didn't know that for some reason"	Socially acquainting with opposite sex	Social Adaptation
"Some faculties help a lot academically and outside classes too. One of the professors off classes talk and views encouraged me on subject learning".	Faculty mentoring	Social Adaptation
"The people I have seen are very kind especially staff"	Support staff	Social Adaptation
"Enjoying my entire being in socialising"	Overall social life	Social Adaptation
"I jog daily round the spacious campus and beach"	Physical health	Physical–Psychological Adaptation
"Mentally headed strong".	Mental health	Physical–Psychological Adaptation

"My friends never leave me alone. They are my first family now"	Good friends and acquaintances	Physical–Psychological Adaptation
"I am confident now because I just feel like I want to do much better"	Confidence	Physical–Psychological Adaptation
"The regular construction around my department building is a cause of concern"	Safety at campus	Physical–Psychological Adaptation
"Facilities are always short, be it to drinking water to basic sanitation ...never we get things at right time. It's not available. It's always short in supply for the need"	Facilities at campus	Institutional Adaptation
"Socialising at hostel is fun but food for a foodie for me is never enough".	Hostel life	Institutional Adaptation
"I know if I go back home, I'll get back in the same crowd. I know I don't want to let my mother and grandma down."	Institutional commitment with persistence towards completion	Institutional Adaptation

"It actually was my first college choice as I had heard a lot of good things about it from my neighbors and friends who studied here".	Choice of institute	Institutional Adaptation
"Campus is bigger than expected and though I don't know everybody on campus I feel I constantly meet new people"	Fit in well to college campus	Institutional Adaptation
Student 3		
"I 'm still doing what I have to do. I still have the mindset, But I want to do everything so that I finish graduation".	Academic motivation with goal and purpose	Academic Adaptation
"I thought I would be clueless at college , but all are going fine"	Enjoying my academic work by being uptodate on it	Academic Adaptation
"Attending classes regularly has helped me to perform well"	Attending classes regularly	Academic Adaptation

"Some subjects are easy but some really go above the head"	Quality of courses	Academic Adaptation
"I would hear nightmare like scary things about teachers but all taught us well"	Intellectual calibre of professors	Academic Adaptation
"I'm doing well better than what I was going to be"	Overall academic performance	Academic Adaptation
"My friends help out with notes and I get on to a higher level of social life with them at hostel"	Getting along with fellow classmates	Social Adaptation
"I'm still trying to find myself socially"	Socially acquainting with opposite sex	Social Adaptation
"Supportive faculty in language skills helped".	Faculty mentoring	Social Adaptation
"People are friendlier. they are likely to help me if I have problems"	Support staff	Social Adaptation
"Socialising at college is fun but it is added fun at hostel"	Overall social life	Social Adaptation

"There is no drinking and it's a tobacco free campus"	Physical health	Physical–Psychological Adaptation
"Even if I feel stressed during exams, I 'am able to cope up with it"	Mental health	Physical–Psychological Adaptation
"I do share my thoughts with friends who help in build-up of a better me"	Good friends and acquaintances	Physical–Psychological Adaptation
"It's just confidence which keep me going"	Confidence	Physical–Psychological Adaptation
"It's really safe out for girls out here."	Safety at campus	Physical–Psychological Adaptation
"Library needs a revamp. Old books with torn pages doesn't suffix reading and learning".	Facilities at campus	Institutional Adaptation
"My sister joined this college this academic year so having an accommodation outside would be fun as it is staying close to my family"	Hostel life	Institutional Adaptation

"I am very much committed to complete my studies"	Institutional commitment with persistence towards completion	Institutional Adaptation
"It was not my first choice, but it was local and close to home and my Dad wanted me to be close to home. And, I don't think I was ready to leave home."	Choice of institute Attend this college in particular	Institutional Adaptation
"I feel accepted by everyone and feel welcomed"	Fit in well to college campus	Institutional Adaptation
Student 4		
"My elder sister struggled to pursue her engineering but she worked and surpassed it. This motivates me also to push harder and to do better"	Academic motivation with goal and purpose	Academic Adaptation
"I just get things done than complain"	Enjoying my academic work by being upto date on it	Academic Adaptation
"I don't want to miss classes but sometime it's too hectic to withstand so that last	Attending classes regularly	Academic Adaptation

hour of the day half the class never attend"		
"Curriculum seems same for my earlier friends and now for me too"	Quality of courses	Academic Adaptation
"Internet is replacing and reframing teaching...I think teachers need to keep themselves abreast"	Intellectual calibre of professors	Academic Adaptation
"I am doing better than average, while most of them are into mobile phones I find myself more focused"	Overall academic performance	Academic Adaptation
"Classmates are good but stiff competition gets away the compliance"	Getting along with fellow classmates	Social Adaptation
"I thought it was harder to make friends but I have made so many friends that took over a period of time I think it was faster than I thought I was going to".	Socially acquainting with opposite sex	Social Adaptation

"Teachers motivate us to work hard"	Faculty mentoring	Social Adaptation
"Support staff are more rigid in attitude than teaching staff"	Support staff	Social Adaptation
"we all are really close and are enjoying social life at college"	Overall social life	Social Adaptation
"The weather doesn't suit well. Feeling ill frequently. The food too doesn't suit well"	Physical health	Physical–Psychological Adaptation
"My low physical health is demotivating me and making me feel all low here"	Mental health	Physical–Psychological Adaptation
"Feeling the dearth of counselling centre"	Good friends and acquaintances	Physical–Psychological Adaptation
"I have to make it though feeling low at times"	confidence	Physical–Psychological Adaptation
"It's safe all the more here"	Safety at campus	Physical–Psychological Adaptation

"It's tough to learn engineering with worn out lab equipment's"	Facilities at campus	Institutional Adaptation
"Hostel life is fun but short of water and power as always especially summer days"	Hostel life	Institutional Adaptation
"College is the most important thing to me right now"	Institutional commitment with persistence towards completion	Institutional adaptation
"I chose it because it was convenient of about 300 km from home"	Choice of institute Attend this college in particular	Institutional adaptation
"I have loved spending past so many years as of my life at campus. I love being here and I feel I fit in well to campus"	Fit in well to college campus	Institutional Adaptation
Student 5		
"I definitely have to study more like my friends sit up for an hour and get A pointers and me end up with B or C pointers"	Academic motivation Goal and purpose	Academic Adaptation

"I don't have books I use my roommate books sometimes"	Enjoying my academic work by being uptodate on it	Academic Adaptation
"I attend classes regularly"	Attending classes regularly	Academic Adaptation
"Courses are relevant to the stream"	Quality of courses	Academic Adaptation
"Faculties need to teach than self-yapping in certain courses"	Intellectual calibre of professors	Academic Adaptation
"Iam getting good grades. I think it would continue the same"	Overall academic performance	Academic Adaptation
"Students'' from other branches of engineering are also very friendly"	Getting along with fellow classmates	Social Adaptation
"I'am still trying to step up and still getting used to everything and everybody"	Socially acquainting with opposite sex	Social Adaptation
"My teachers have helped me channelize my career path too"	Faculty mentoring	Social Adaptation

"The attendee, peon at department and at college are very helpful and kind"	Support staff	Social Adaptation
"It's rocking"	Overall social life	Social Adaptation
"So far health is going good''	Physical health	Physical–Psychological Adaptation
"Exams raises the pressures of stress"	Mental health	Physical–Psychological Adaptation
"Every year i have an rise in number of friends"	Good friends and acquaintances	Physical–Psychological Adaptation
"I thought it was a cliff, but it's now formed into steps"	confidence	Physical–Psychological Adaptation
"I feel safe at campus"	Safety at campus	Physical–Psychological Adaptation
"Facilities are there, but irregular and not up to the mark"	Facilities at campus	Institutional Adaptation
"Enjoying hostel life"	Hostel life	Institutional Adaptation
"I need to keep doing academics and keep going. There is nothing but this as I don't see anything better than this right now"	Institutional commitment with persistence towards completion	Institutional adaptation

"Actually, it was the only place I applied"	Choice of institute	Institutional adaptation
"When one starts to like the campus its natural to feel like one fits well and prefer more to stay at campus"	Fit in well to college campus	Institutional Adaptation
Student 6		
"My mom insisted me in my studies till high school, but now I am all alone. Everyone is self-driven to achieve and do it oneself"	Academic motivation Goal and purpose	Academic Adaptation
"I am not using knowledge while studying as I am not smart about applying one"	Enjoying my academic work by being uptodate on it	Academic Adaptation
"I don't feel like being regular in attendance, but have to be to attain the 75% mark"	Attending classes regularly	Academic Adaptation
"The same old stuff what my seniors learnt, iam also learning"	Quality of courses	Academic Adaptation

"Professors teach well"	Intellectual calibre of professors	Academic Adaptation
"I am doing well as far as my pointers and grades are in A and B's"	Overall academic performance	Academic Adaptation
"Except for notes I would rather not talk to anyone"	Getting along with fellow classmates	Social Adaptation
"It's easy going and enjoying. Their company has helped lighten and brighten the campus environment"	Socially acquainting with opposite sex	Social Adaptation
"A faculty of a particular course actually studies and works along with us. There is career aspects of future discussed regular by him at class"	Faculty mentoring	Social Adaptation
" They make regular lab work seem tough"	Support staff	Social Adaptation
"You have to be dependent at college. Tough being alone or independent"	Overall social life	Social Adaptation

"I don't know when I would like mess food as my health is not so good"	Physical health	Physical–Psychological Adaptation
"I miss home very much. I feel I can cope up but sometimes I really breakdown"	Mental health	Physical–Psychological Adaptation
"Fights with friends are frequent and I am still unable to recognise who is what"	Good friends and acquaintances	Physical–Psychological Adaptation
"I only need to ascertain myself that I need to do it"	confidence	Physical–Psychological Adaptation
"Too many dogs and snakes at campus. It really keeps me alert."	Safety at campus	Physical–Psychological Adaptation
' No response'	Facilities at campus	Institutional Adaptation
"Social life is actually witnessed at hostel"	Hostel life	Institutional Adaptation
"I am sure I will complete college"	Institutional commitment with persistence towards completion	Institutional Adaptation

"I knew many students' from my place studying here who spoke good enough of faculty and academics being taught at here"	Choice of institute	Institutional Adaptation
"Colleges are made for us and many of us like me"	Fit in well to college campus	Institutional Adaptation
Student 7		
"I want my grades to be high"	Academic motivation Goal and purpose	Academic Adaptation
"Having a lot to do at one time with assignments, tests to do simultaneously"	Enjoying my academic work by being uptodate on it	Academic Adaptation
" In an entire calendar year of what I need to do it not just merely attending classes I think"	Attending classes regularly	Academic Adaptation
" Courses are fine as usual"	Quality of courses	Academic Adaptation
" They are better than I though and we have notes passes out regularly making academic learning easy"	Intellectual calibre of professors	Academic Adaptation

"If time is managed well, pay attention in classes, and do ones work regularly then only success can be guaranteed"	Overall academic performance	Academic Adaptation
"My friends are family"	Getting along with fellow classmates	Social Adaptation
"It's not easy to be friends, but id don't think it's needed either"	Socially acquainting with opposite sex	Social Adaptation
"My professors are helping me to be a better reader and writer. It's been beneficial to me which is turning out to be my strength"	Faculty mentoring	Social Adaptation
" Not interacted .so don't know about support staff"'	Support staff	Social Adaptation
"Social life is best part at college"	Overall social life	Social Adaptation
" A fracture, several bruises and lot of medicine – health is on for a toss"	Physical health	Physical–Psychological Adaptation
" Happiness is the key and Iam happy being here"	Mental health	Physical–Psychological Adaptation

"Ending up with my cousins and neighbours in class has it all for me"	Good friends and acquaintances	Physical–Psychological Adaptation
"I am confident but i have to work hard to keep up to the level of confidence so that I remain on academic track and do my work regularly"	confidence	Physical–Psychological Adaptation
"I need not worry about safety. A girl need to"	Safety at campus	Physical–Psychological Adaptation
"Facilities are needs not fulfilled"	Facilities at campus	Institutional Adaptation
"The corridor of the hostel is the one that is filled with music and noise"	Hostel life	Institutional Adaptation
"Iam committed as I have a long way to go"	Institutional commitment with persistence towards completion	Institutional Adaptation
"It was just an option , so no serious thought went into choosing this institute alone"	Choice of institute Attend this college in particular	Institutional Adaptation
"Initially i had come thinking that college	Fit in well to college campus	Institutional Adaptation

is different and difficult than high school but i think i fit i really well. I think i just fit in well"		
Student 8		
"With grades and pointers of A's and B's academics has made me gain more responsibility"	Academic motivation Goal and purpose	Academic Adaptation
"Earlier two semesters was full of trial and error but now I feel like I can do lot of study"	Enjoying my academic work by being upto date on it	Academic Adaptation
"My high school teachers were good at preparing me for attending regular classes"	Attending classes regularly	Academic Adaptation
"Courses going great"	Quality of courses	Academic Adaptation
"Faculties at my course teach well"	Intellectual calibre of professors	Academic Adaptation
"It's been tough. I haven't been studying like I should"	Overall academic performance	Academic Adaptation

"From cricket to football to exam I enjoy doing everything with friends"	Getting along with fellow classmates	Social Adaptation
"Socialising at campus has not been partying all along as it is thought it is. I have good friends to whom i talk to which keeps me grounded and humbled with direction to academics and its purpose"	Socially acquainting with opposite sex	Social Adaptation
"They confine to their few pet students' in class who always are a ten pointer"	Faculty mentoring	Social Adaptation
" I find them pretty jobless"	Support staff	Social Adaptation
"Ï hang out a lot with friends"	Overall social life	Social Adaptation
"Iam not disabled"	Physical health	Physical–Psychological Adaptation
"Going healthy and sound"	Mental health	Physical–Psychological Adaptation

"Getting along. New friends made while old leave"	Good friends and acquaintances	Physical–Psychological Adaptation
"My confidence is a little shaky"	Confidence	Physical–Psychological Adaptation
"It's safe with too high brick compound wall extended every year all over"	Safety at campus	Physical–Psychological Adaptation
"Facilities are good but not great"	Facilities at campus	Institutional Adaptation
"Iam planning for an accommodation soon out"	Hostel life	Institutional Adaptation
"I don't know but i think i will surely complete college"	Institutional commitment with persistence towards completion	Institutional Adaptation
" I think it would be a blunder if N.I.T.K was not my choice"	Choice of institute	Institutional Adaptation
"*My view of campus has not changed over the years. It's the same old thing"*	Fit in well to college campus	Institutional Adaptation
Student 9		
"How other students' are and how they got in here is inspiring and uplifting"	Academic motivation Goal and purpose	Academic Adaptation

"Earlier I had intentions to drop out of academic major and join a different one but now I am having fun and enjoying what iam supposed to study"	Enjoying my academic work by being up to date on it	Academic Adaptation
"My academic abilities are pretty high"	Attending classes regularly	Academic Adaptation
"At the beginning I thought this was not the major I want to be as it was tough, but now iam more accustomed to rigour learning"	Quality of courses	Academic Adaptation
"Prof x teaches with fun. Its content with adequate learning though for one course only"	Intellectual calibre of professors	Academic Adaptation
"So far I am doing good. I have most A's on the tests"	Overall academic performance	Academic Adaptation
"My senior of the department is of great help"	Getting along with fellow classmates	Social Adaptation

"At bigger institute your just like a number"	Socially acquainting with opposite sex	Social Adaptation
"Some faculties are really service oriented and mentoring is seen"	Faculty mentoring	Social Adaptation
"Support exist at lab"	Support staff	Social Adaptation
"Socialising more than academic doing"	Overall social life	Social Adaptation
"No health issue so far"	Physical health	Physical–Psychological Adaptation
"Sometimes I do feel low"	Mental health	Physical–Psychological Adaptation
" I do socialise with older friends than of my same age"	Good friends and acquaintances	Physical–Psychological Adaptation
"I need to stand out at academics"	confidence	Physical–Psychological Adaptation
"It's safe and sound here. Guards are at watch always"	Safety at campus	Physical–Psychological Adaptation
"Facilities are good, but could have been great"	Facilities at campus	Institutional Adaptation

"Apart from studying during exams, socialising only happens here with seniors especially"	Hostel life	Institutional Adaptation
"It is very encouraging to be at the institute"	Institutional commitment with persistence towards completion	Institutional Adaptation
"I can't move out now, though I feel other NIT's are better than this"	Choice of institute Attend this college in particular	Institutional Adaptation
"I think i fit in pretty well. They don't ask for much like the rules and regulation here are kind of what your parents would expect of you. It helps me be a better person. So it think i fit in well with it"	Fit in well to college campus	Institutional Adaptation
Student 10		
"I never doubt my abilities towards success. So iam sure i would make it big for life	Academic motivation Goal and purpose	Academic Adaptation

"I don't think I have done well in subjects where there is shortage of books"	Enjoying my academic work by being uptodate on it	Academic Adaptation
"I never missed classes but my extracurricular activities do not help me to be regular"	Attending classes regularly	Academic Adaptation
"Putting up the content of the subject with English words is tough"	Quality of courses	Academic Adaptation
"One of the faculty is a really good professor who makes you understand while other classes are just meant to be fast and not to make student understand"	Intellectual calibre of professors	Academic Adaptation
"Overall we are on the same potential and same level – trying to do our best	Overall academic performance	Academic Adaptation
"Its tough getting along"	Getting along with fellow classmates	Social Adaptation
"Iam not socially active. I don't really want to talk to them"	Socially acquainting with opposite sex	Social Adaptation

"I don't think the faculty are actually mentoring"	Faculty mentoring	Social Adaptation
"The office staff is fun to be with than the lab support staff"	Support staff	Social Adaptation
"I believe in socialising"	Overall social life	Social Adaptation
"Iam doing fit"	Physical health	Physical-Psychological Adaptation
"Exam stress causes a lot of anxiety"	Mental health	Physical–Psychological Adaptation
" I do share my problems with friends who are a great source of strength"	Good friends and acquaintances	Physical–Psychological Adaptation
"Iam always confident enough"	confidence	Physical–Psychological Adaptation
"It's quite safe"	Safety at campus	Physical–Psychological Adaptation
"Campus is the way usually is. Some there, some not"	Facilities at campus	Institutional Adaptation

"The building blocks of hostel differ in accessing facilities"	Hostel life	Institutional Adaptation
"Iam really committed. I know I need to do this and get ahead with what my parents dint achieve"	Institutional commitment with persistence towards completion	Institutional Adaptation
"No it wasn't my first choice, but eventually I landed up here."	Choice of institute	Institutional Adaptation
"Sometimes I feel different and really lost"	Fit in well to college campus	Institutional Adaptation
Student 11		
"My parents told me that if I wanted to do engineering they would always support and pay for anything during my studies"	Academic motivation Goal and purpose	Academic Adaptation
"I would not say Iam doing well as everybody else but my abilities are on the same level as others. So I am studying well"	Enjoying my academic work by being up- to-date on it	Academic Adaptation

"I don't have good study habits, but neither regular at classes help"	Attending classes regularly	Academic Adaptation
"The test books are slides at class. Content very high not learning"'	Quality of courses	Academic Adaptation
"If I was confused I would rather not go to a faculty over it"	Intellectual calibre of professors	Academic Adaptation
"My last semester was full of trial and error, but now I feel I know what I need to do"	Overall academic performance	Academic Adaptation
"Except for notes and exams there is no sharing"	Getting along with fellow classmates	Social Adaptation
"Sometimes I talk but only when needed"	Socially acquainting with opposite sex	Social Adaptation
"I only greet them beyond which nothing exist"	Faculty mentoring	Social Adaptation
"Iam learning every day to adapt myself improving socially"	Support staff	Social Adaptation
"Got some bruises recently. Rest is fine"	Overall social life	Social Adaptation

"Not really disturbed, unless someone really interferes to disturb my peace"	Physical health	Physical–Psychological Adaptation
"Encouraging friends boosts my confidence"	Mental health	Physical–Psychological Adaptation
"Only to few I can really socially connect than others"	Good friends and acquaintances	Physical–Psychological Adaptation
"Iam on my toe always towards anything at campus"	Confidence	Physical–Psychological Adaptation
"Some lanes after 8 p.m is really secluded"	Safety at campus	Physical–Psychological Adaptation
"Some facilities need to be really updated"	Facilities at campus	Institutional Adaptation
"Socialising at hostel is fun"	Hostel life	Institutional Adaptation
"I see how my parents did not get higher education and they have always regretted it. I definitely want to stay in it"	Institutional commitment with persistence towards completion	Institutional Adaptation

"It wasn't my first choice as my elder sister went to vsnit Nagpur which is pretty close to my hometown by 250 km. This is more than 600 km from home"	Choice of institute	Institutional Adaptation
"Campus has its own values and its true"	Fit in well to college campus	Institutional Adaptation
Student 12		
"I need to motivate myself up to get going with the blind side of college than when compared to what to do with life"	Academic motivation Goal and purpose	Academic Adaptation
"I think now I understand what I need to do to pass at a course"	Enjoying my academic work by being uptodate on it	Academic Adaptation
"Attendance is for 75% line of control only"	Attending classes regularly	Academic Adaptation
"Courses are off track"	Quality of courses	Academic Adaptation
"Professors are smart working than hardworking"	Intellectual calibre of professors	Academic Adaptation

"Iam doing better than I thought I would in my subjects"	Overall academic performance	Academic Adaptation
"I get along with friends of other branches than my own"	Getting along with fellow classmates	Social Adaptation
"I don't want to talk to or about them. Iam afraid to get to know them"	Socially acquainting with opposite sex	Social Adaptation
" I don't seek them to be of great help"	Faculty mentoring	Social Adaptation
"Everybody is supportive"	Support staff	Social Adaptation
" Socialising is good"	Overall social life	Social Adaptation
"Fit and doing well"	Physical health	Physical–Psychological Adaptation
"Iam balancing out well and doing sound"	Mental health	Physical–Psychological Adaptation
"I love playing football with friends. They really make my day come alive"	Good friends and acquaintances	Physical–Psychological Adaptation
"confidence is shattered at class but outside the class its regained"	Confidence	Physical–Psychological Adaptation

“ There isn’t a threat as such in being here”	Safety at campus	Physical–Psychological Adaptation
“Everything seems to be ok”	Facilities at campus	Institutional Adaptation
“Best part of life I would miss it if not in engineering was my hostel life. Hostel need to be regularly cleaned”	Hostel life	Institutional Adaptation
“I know definitely want to graduate, so I would not drop out. I know I would regret it later on if I did”	Institutional commitment with persistence towards completion	Institutional Adaptation
“Initially I wanted to go to IIT Bombay but I wanted to stay local as in my state so I chose NITK as it is pretty close to home”.	Choice of institute	Institutional Adaptation

4.5 Chapter summary

The multivariate analysis of variance with discriminant analysis and the independent t – test was adopted for the study based on nature of variable as categorical and continuous. Other than independent t test which had dichotomous nature of variable, the multivariate analysis of variance test was conducted on categorical variables having more than three levels. Pearson correlation demystified the mystics of

relationship existing between and among dependent variables with each of categorical independent variable. Overall the data analysis indicated that students' campus adaptation does vary significantly among undergraduate B.Tech students' of IIT's and NIT's.

CHAPTER FIVE

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

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FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Chapter overview

This chapter provides for findings conclusions and recommendations with section 5.2 highlights main findings on quantitative research. Section 5.3 embeds on main findings by qualitative research. Section 5.4 focuses on conclusions of the study Section 5.5 identifies the recommendations. Section 5.6 focuses on limitations of the study and section 5.7 lays foundation for future work.

5.2. Main findings of quantitative research

5.2.1 Age

Academic adaptation has the highest positive outcome at the student age of 20 with highest negative outcome at the student age of 22.

Social adaptation has the highest positive outcome at the student age of 18 with highest negative outcome at student age of 22.

Physical – Psychological adaptation has the highest positive outcome at the student age of 22 with negative outcome at student age of 20.

Institutional adaptation has the highest positive outcome at the student age of 20 with highest negative outcomes at student age of 22.

5.2.2 Gender

Academic adaptation remained significant across campus adaptations

Social adaptation remained insignificant across campus adaptations

Physical –Psychological adaptation remained insignificant across campus adaptations

Institutional adaptation remained insignificant across campus adaptations

5.2.3 Disability

Academic adaptation remained insignificant across campus adaptations.

Social adaptation remained insignificant across campus adaptations.

Physical –Psychological adaptation remained insignificant across campus adaptations.

Institutional adaptation remained insignificant across campus adaptations.

5.2.4 Academic year

Academic adaptation has highest positive outcome at third year with highest negative outcome at second year.

Social adaptation has highest positive outcome at second year with highest negative outcome at first year.

Physical – Psychological adaptation has highest positive outcome at fourth year with no negative outcome across academic years.

Institutional adaptation has highest positive outcome at fourth year with no negative outcome across academic years.

5.2.5 Academic major

Academic adaptation has highest positive outcome in electrical and electronics engineering major with highest negative outcome at electronics and communication engineering.

Social adaptation has highest positive outcome in mechanical engineering with highest negative outcome in electronics and communication engineering.

Physical – Psychological adaptation has highest positive outcome in civil engineering with highest negative outcome in mechanical engineering.

Institutional adaptation has highest positive outcome in computer engineering with negative outcome in electrical and electronics engineering.

5.2.6 Religion

Academic adaptation has the highest positive outcome in Hinduism with highest negative outcome in humanity.

Social adaptation has the highest positive outcome in atheist with highest negative outcome in hinduism.

Physical – psychological adaptation has the highest positive outcome in hinduism with highest negative outcome in Sikhism.

Institutional adaptation has the highest positive outcome among not applicable with highest negative outcome in hinduism.

5.2.7 Caste category

Academic adaptation has the highest positive outcome in general category with highest negative outcome in scheduled tribe category.

Social adaptation has the highest positive outcome at other backward castes with highest negative outcome at scheduled tribe category.

Physical – psychological adaptation has the highest positive outcome at general category with highest negative outcome in Scheduled caste category.

Institutional adaptation has the highest positive outcome among other backward classes with highest negative outcome among general category.

5.2.8 Generation status

Academic adaptation has the highest positive outcome among second generation students with highest negative outcome among first generation students.

Social adaptation has the highest positive outcome among first generation with highest negative outcome among second generation students.

Physical – psychological adaptation has the highest positive outcome among first generation with highest negative outcome among fifth generation students.

Institutional adaptation has the highest positive outcome among third generation students' with highest negative outcome among first generation .

5.2.9 College expense

Academic adaptation has the highest positive outcome among parents' income, government scholarship, and private scholarship with highest negative outcome with parents' income, private scholarship and bank loan.

Social adaptation has the highest positive outcome with parent's income with highest negative outcome with parents' income and government scholarship.

Physical – psychological adaptation has the highest positive outcome with bank loan with highest negative outcome with parents' income and government scholarship.

Institutional adaptation has the highest positive outcome with parents' income and private scholarship with highest negative outcome with parents' income and government scholarship.

5.2.10 Socio economic status by students' father's education level

Academic adaptation has the highest positive outcome among education level of class10 with highest negative outcome among education level of who pursued only initial schooling.

Social adaptation has the highest positive outcome among education level of master's degree with highest negative outcome among bachelor's degree.

Physical – psychological adaptation has the highest positive outcome among education level of master's degree with highest negative outcome among bachelor's degree.

Institutional adaptation has the highest positive outcome among education level of master's degree with highest negative outcome among education level of class12.

5.2.11 Socio economic status by students' mother's education level

Academic adaptation has the highest positive outcome among education level of class12 with highest negative outcome among education level of bachelor's degree.

Social adaptation has the highest positive outcome among education level of those who pursued initial schooling with highest negative outcome among education level of bachelor's degree.

Physical – psychological adaptation has the highest positive outcome among education level of bachelor's degree with highest negative outcome among education level of class12.

Institutional adaptation has the highest positive outcome among education level of master's degree with highest negative outcome among education level of doctorate degree.

5.2.12 Socio economic status by students' father's employment level

Academic adaptation has the highest positive outcome among government employed with highest negative outcome among private employed.

Social adaptation has the highest positive outcome among who own a business with highest negative outcome among who employed at government.

Physical – psychological adaptation has the highest positive outcome among who are employed at private with highest negative outcome among who are employed at government.

Institutional adaptation has the highest positive outcome among who were not alive with highest negative outcome among who owned a business.

5.2.13 Socio economic status by students' mother's employment level

Academic adaptation has the highest positive outcome among who owned a business with highest negative outcome among unemployed.

Social adaptation has the highest positive outcome among unemployed with highest negative outcome among employed as unskilled labourer.

Physical – psychological adaptation has the highest positive outcome among unemployed with highest negative outcome among employed at private.

Institutional adaptation has the highest positive outcome among employed at government and employed at private with highest negative outcome among farmers.

5.2.14 Socio economic status by students' father's income level

Academic adaptation has the highest positive outcome among income level greater than 20,000 with highest negative outcome among income level of 10.001 to 20,000.

Social adaptation has the highest positive outcome among students' who reported they dint know parent's income with highest negative outcome among parent's income greater than 20,000.

Physical – psychological adaptation has the highest positive outcome among greater than 20,000 with highest negative outcome among students' who reported they dint know parent's income.

Institutional adaptation has the highest positive outcome among income level of 5,001 – 10,000 with highest negative outcome among income level greater than 20,000.

5.2.15 Socio economic status by students' mother's income level

Academic adaptation has the highest positive outcome among students' who reported they dint know parent's income with highest negative outcome among parents' who had no income.

Social adaptation has the highest positive outcome among income level of 10,001 to 20,000 with highest negative outcome among parents' who had no income.

Physical – psychological adaptation has the highest positive outcome among parents' who had no income with highest negative outcome among income level greater than 20,000.

Institutional adaptation has the highest positive outcome among income level of 5,001 to 10,000 with highest negative outcome among parents' who had no income.

Summary on quantitative findings

As per dependent variable of academic adaptation, adaptation differed by gender significantly where female students' had positive adaptation than male student's
**The second objective is satisfied.*
As per dependent variable of social adaptation, adaptation differed by religion, where Hinduism has a negative outcome. **The third objective is satisfied.*

As per dependent variable of physical-psychological adaptation, adaptation differed where scheduled caste students' and first generation students' had positive outcomes. **The fourth objective is satisfied.*

As per dependent variable of institutional adaptation, adaptation differed by religion, where students' who did not wish to associate themselves with any religious identity by stating it as not applicable had highest positive institutional adaptation. Institutional adaptation also had a positive effect on students' who relied on parents'' income and private scholarship for college expenses.

5.3 Main findings of qualitative research

The qualitative findings point out that the campus environment experiences of 12 students provided rich contextual information and insights on to the individual learner's personal struggles and how these all related to the bigger context in which the first generation undergraduate students experienced crucial issues on campus adaptability at large. The personification of campus adaptability to the environment vehemently differed between first generation when non-first generation students.

5.4 Conclusions

From the quantitative research findings, it is concluded that amongst the independent variable age 20 had the highest negative outcome in physical and psychological adaptation. The independent variable gender had the highest positive outcome in academic adaptation of female students'. The independent variable physical disability had no significant outcomes on campus adaptations. The independent variable third academic year had the highest positive outcome in physical – psychological

adaptation. The independent variable academic major at computer science had highest positive outcome in institutional adaptation. The independent variable religion with not applicability had the highest positive outcome in institutional adaptation. The independent variable caste had negative physical – psychological adaptation among scheduled caste students'. The independent variable generation had positive physical – psychological adaptation. The independent variable college expense of parents'' income with private scholarship had positive institutional adaptation. The independent variable father's' education of class 12 had negative institutional adaptation. The independent variable mothers' education of class 12 had negative institutional adaptation. The independent variable on father's' occupation of being employed at government had negative social and physical – psychological adaptation. The independent variable on mothers' occupation of being unemployed had negative institutional adaptation. The independent variable on father's' income of greater than 20,000 had negative institutional adaptation. The independent variable on mothers' income of 5,001 – 10,000 had positive institutional adaptation.

From qualitative research findings it is concluded that, academic adaptation with high academic expectation with lofty intentions and aspirations were not alone sufficient for enhancing academic performance towards achieving academic success. Most students were insufficiently prepared for self-discipline and independent study that forms the crux for being academically successful.

Social adaptation with disillusionment on college courses through faculty as well as by social distractions have made students' unable to handle personal responsibility that came from sudden freedom discovered at college. Students' motley understood what they need to do inside and outside classroom in order to meet academic demands through social decisions. Students' deliberate choices to reprioritize schedules to decrease the amount of time they spent engaged in social activities and increase time spent on academic responsibilities. Ironically, the students' with the highest academic performance were the less socially active students'. However informal extracurricular activities remained a prime social experience.

Physical – Psychological Adaptation with first generation students enter the campus environment on lower self-esteem regarding their academic potential as compared to continuing generation counterparts. The faculty student mentorship that could be gauged at campus is often stuck between class scheduling. Thus the proactive step to assert such inter personal relationships did not materialise that culminated into negative being of themselves and others at "not – so" properly functioning counselling centres at campus.

Institutional Adaptation of Institutions is majorly determined to sustain persistence patterns among students'. Integration of a student to the multitudinal functioning of campus is not easy. There has always been a deliberate and conscious effort that supports and strengthens students' individual being conforming to academic norms initiating sustaining and well balancing the student forefront at campus.

In brief, students' self-reports of campus environments as they dig out their academic hold reveals that the students' adaptability to campus environments vary by the degree and level of perceptions students' have towards attaining satisfaction of environments.

5.5 Recommendations

Based on the research study, the following recommendations are made:

1. Higher education institution anywhere must comply to an active role in addressing quality education through adaptability at campus, that puts students' intentionally to a systematic enactment of structural diversity on university campuses.
2. Integration, managing and valuing adaptability of multifaceted diversity among student body could raise the level of awareness by breaking the decadal forethought that academic alone was a resolution of respect in higher education.
3. The dynamism of adaptability adds a dimension of balance to uniformity rather confine itself to expense of human uniqueness and distinctiveness.
4. The activism of adaptability could help all of the hostile legal and political challenges that plays a key stroke in legislation expansion towards student academic programs.

5. Finally, a sound adaptability introspect of a student could help focus on challenges of managing student diversity towards enhanced student turnout.

*The fifth objective is satisfied.

5.6 Limitations of the study

1. The research is a cross sectional study where the student campus adaptation has been studied at one point of time.
2. The research restricts itself to undergraduate B.Tech students' alone.
3. The study restricts itself campus environments of IITs and NITs only.

5.7 Suggestions for future work

1. The functioning of multitude campuses in India needs to have an on look at adaptability aspects of the vital student stakeholder of higher education irrespective of academic programs offered.
2. The longitudinal study on adaptability of students at campus at pre college, college and post college transformation could show up the multifaceted aspects of transition that's expatiated at campus.
3. The nature and level of physical disability differs among undergraduate students' at campus posing the immense vitality of a separate study on campus adaptability among undergraduate physically challenged students'.

Appendix A

Campus study Questionnaire

Directions: - Indicate your response by ticking the box next to the appropriate answer & filling up wherever necessary

1. Age:
   - □ 17
   - □ 18
   - □ 19
   - □ 20
   - □ 21
   - □ 22
   - □ 23
   - □ 24

2. Gender:
   - □ Male
   - □ Female

3. Physically Challenged:
   - □ Yes
   - □ No

4. Centrally Funded Technical Institute:
   - □ IIT
   - □ NIT

5. Currently Enrolled academic year:
   - □ first year
   - □ second year
   - □ third year
   - □ fourth year

6. Engineering branch of study: _____

7. Religion: _____

8. Caste: _____

9. Do you belong to the first generation in your family to be pursuing professional engineering course?

   □ Yes

   □ No

   If 'no', then please specify which of the following generation you belong to –

   □ 2nd generation

   □ 3rd generation

   □ 4th generation

   □5th generation

   □ other _____

10. For your college expense you are dependent on:

    □ Parents income

    □ Govt scholarship

    □ Private scholarship

    □ Bank loan

    □ other _____

11. Parents Education level:

    Fathers Education:

    □ Doctorate Degree

    □ Master's Degree

    □ Bachelor's Degree

    □ Diploma Degree

    □ Class 12

    □ Class 10

    □ went to School

    □ Literate

    □ Illiterate

Mothers Education:

□ Doctorate Degree

□ Master's Degree

□ Bachelor's Degree

□ Diploma Degree

□ Class 12

□ Class 10

□ went to School

□ Literate

□ Illiterate

12. Parents Employment Status:

Father's employment status:

□ Employed in Government

□ Employed in corporate

□ Employed in private

□ Own business

□ Employed as unskilled labourer

□ unemployed

□ other _____

Mother employment status:

□ Employed in Government

□ Employed in corporate

□Employed in private

□ Own business

□ Employed as unskilled labourer

□ unemployed

□ other _____

13. Parents Annual Average Income:

Father's annual average income:

□ Upto 1000

□ 1,001 – 5,000

□ 5001 – 10,000

□ 10,000 - 20,000

□ Greater than 20,000

□ No income

□ I don't know

Mother's annual average income:

□ Upto 1000

□ 1,001 – 5,000

□ 5001 – 10,000

□ 10,000 - 20,000

□ Greater than 20,000

□ No income

□ I don't know

Directions: - The 21 statements in this form tend to describe college experiences. Select the one which most closely applies to you with 5 = strongly agree, 4= agree, 3 = neither agree nor disagree, 2 = disagree, 1 = strongly disagree	1	2	3	4	5
Academic Adaptation					
1. I know why I' am in college and what I want out of it with my academic goals and purpose well defined					
2. I' am enjoying my academic work by being up to date on it					
3. I' am attending classes regularly					
4. I' am satisfied with the quality of courses available					
5. I' am satisfied with the intellectual calibre of professors in my courses					
6. I' am satisfied with my overall academic performance					
Social Adaptation					
1. I' am getting along well with my fellow classmates					
2. I' am socially acquainting well with the students of opposite sex					
3. I have informal personal contacts with faculty who act as my mentor					
4. I receive co- operative attitude from the non-teaching staff at college					
5. I' am satisfied with the social life at college.					
Personal – Emotional Adaptation					
1. I have been in good physical health					
2. I have been in good mental health					
3. I have some good friends and acquaintances at college with whom i can talk about the problems I may have					
4. I feel confident to face future challenges in campus					
5. I feel safe at campus environment					
Institutional Adaptation					
1. I am satisfied with the facilities of the campus like Playground, auditorium, computer centre , cafeteria, health care, counselling etc.					
2. I' am satisfied with the facilities provided at college dormitory / hostel and i enjoy living in there (please omit if you do not stay at hostel)					
3. I expect to stay at this college for a bachelor's degree					
4. I' am pleased about my decision to stay in college in particular					

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Appendix A

Campus study Questionnaire

Directions: - Indicate your response by ticking the box next to the appropriate answer & filling up wherever necessary

1. Age:
   - □ 17
   - □ 18
   - □ 19
   - □ 20
   - □ 21
   - □ 22
   - □ 23
   - □ 24

2. Gender:
   - □ Male
   - □ Female

3. Physically Challenged:
   - □ Yes
   - □ No

4. Centrally Funded Technical Institute:
   - □ IIT
   - □ NIT

5. Currently Enrolled academic year:
   - □ first year
   - □ second year
   - □ third year
   - □ fourth year

6. Engineering branch of study: _____

7. Religion: _____

8. Caste: _____

9. Do you belong to the first generation in your family to be pursuing professional engineering course?

   □ Yes

   □ No

   If 'no', then please specify which of the following generation you belong to –

   □ 2nd generation

   □ 3rd generation

   □ 4th generation

   □5th generation

   □ other _____

10. For your college expense you are dependent on:

    □ Parents income

    □ Govt scholarship

    □ Private scholarship

    □ Bank loan

    □ other _____

11. Parents Education level:

    Fathers Education:

    □ Doctorate Degree

    □ Master's Degree

    □ Bachelor's Degree

    □ Diploma Degree

    □ Class 12

    □ Class 10

    □ went to School

    □ Literate

    □ Illiterate

Mothers Education:

□ Doctorate Degree

□ Master's Degree

□ Bachelor's Degree

□ Diploma Degree

□ Class 12

□ Class 10

□ went to School

□ Literate

□ Illiterate

12. Parents Employment Status:

Father's employment status:

□ Employed in Government

□ Employed in corporate

□ Employed in private

□ Own business

□ Employed as unskilled labourer

□ unemployed

□ other _____

Mother employment status:

□ Employed in Government

□ Employed in corporate

□Employed in private

□ Own business

□ Employed as unskilled labourer

□ unemployed

□ other _____

13. Parents Annual Average Income:

Father's annual average income:

□ Upto 1000

□ 1,001 – 5,000

□ 5001 – 10,000

□ 10,000 - 20,000

□ Greater than 20,000

□ No income

□ I don't know

Mother's annual average income:

□ Upto 1000

□ 1,001 – 5,000

□ 5001 – 10,000

□ 10,000 - 20,000

□ Greater than 20,000

□ No income

□ I don't know

Directions: - The 21 statements in this form tend to describe college experiences. Select the one which most closely applies to you with 5 = strongly agree, 4= agree, 3 = neither agree nor disagree, 2 = disagree, 1 = strongly disagree	1	2	3	4	5
Academic Adaptation					
1. I know why I' am in college and what I want out of it with my academic goals and purpose well defined					
2. I' am enjoying my academic work by being up to date on it					
3. I' am attending classes regularly					
4. I' am satisfied with the quality of courses available					
5. I' am satisfied with the intellectual calibre of professors in my courses					
6. I' am satisfied with my overall academic performance					
Social Adaptation					
1. I' am getting along well with my fellow classmates					
2. I' am socially acquainting well with the students of opposite sex					
3. I have informal personal contacts with faculty who act as my mentor					
4. I receive co- operative attitude from the non-teaching staff at college					
5. I' am satisfied with the social life at college.					
Personal – Emotional Adaptation					
1. I have been in good physical health					
2. I have been in good mental health					
3. I have some good friends and acquaintances at college with whom i can talk about the problems I may have					
4. I feel confident to face future challenges in campus					
5. I feel safe at campus environment					
Institutional Adaptation					
1. I am satisfied with the facilities of the campus like Playground, auditorium, computer centre , cafeteria, health care, counselling etc.					
2. I' am satisfied with the facilities provided at college dormitory / hostel and i enjoy living in there (please omit if you do not stay at hostel)					
3. I expect to stay at this college for a bachelor's degree					
4. I' am pleased about my decision to stay in college in particular					

Appendix B

Interview Protocol

Title: Structural Diversity of Campus Environment at NITK

Time of interview: _____

Date of interview**:** _____

Interviewee: _____

Thank you for consenting to participate in this study. There are two options available (1) I would record the interview for accuracy of data. (2) I would write down as and when you make your statements if and only when you would not like your statements be recorded on tape.

The transcribed interview will be shown to you and provision would be made for you to change, delete, or elaborate to reflect on what exactly you would like to convey.

This interview is structured with four sections of campus environments questions: (a) Academic (b) Social (c) Physical – Psychological (d) Institution

Section one: Academic

1. How has academic adaptation to college been so far?
2. Has your academic goals and purpose changed by far?
3. How do you view your academic abilities as compared to other students at campus?
4. What are the academic concerns running through your mind right now?

Section two: Social

1. How do you think you have been fitting in socially this far?
2. Has it been tough to social adapted so far? Why or why not?
3. How do you find social opportunities available to you through student organisation and recreational activities on campus?
4. Have you found it easy to form friendships with fellow classmates and students from other academic majors
5. Have you interacted with faculty outside class? What happened? Why not?
6. Have you spoken to support staff? What you talked? was it specific on lab work only?

Section three: Physical – Psychological

1. How are you keeping up with health?
2. How are you coping up mentally at campus?
3. Do you feel confident enough to face up to any challenges at campus?
4. Have you ever faced issues of safety at campus?
5. How effective do u find the counselling centres at campus? Do they reconcile you towards academics?

Section four – Institutional

1. What brings you to NITK? Just to pursue engineering or some other factor?
2. How committed you feel to attain towards completion of undergraduate study
3. Tell me how has hostel life been this far?
4. Has the campus changed you? Do you often feel challenged to be at campus?

Annexure – 1
List of Publications based on PhD Research Work\

Sl. No.	Title of the paper	Authors (in the same order as in the paper. Underline the Research Scholar's name)	Name of the Journal/ Conference/ Symposium, Vol., No., Pages	Month & Year of Publication	Category *
1	"An Assessment of factors influencing informed choice of discipline in higher technical education"	Vijayalakshmi N.S Sequeira A.H	International Journal of Multidisciplinary Educational Research 4 (1) 192 – 198	January 2014	1
2.	"Women engineering students – an analysis of contextual support and barriers at higher technical educational institutions in India"	Vijayalakshmi N.S Sequeira A.H	ICSSR sponsored two day national conference on "Social Exclusion and Inclusive Growth: Challenges and Strategies" Organised by the department of social work, mangalore university, mangalagangothri, Karnataka	6th and 7th February 2014.	3
2	"Campus Adaptation By Age Cohort"	Vijayalakshmi N.S Sequeira A.H	Man in India 96 (5) , 1533 – 1562 (SCI indexed)	June 2016	1
3.	"Mothers level of Income on students perceptions of campus adaptations"	Vijayalakshmi N.S Sequeira A.H	International Journal of Humanities and Social Studies, 4 (12), 91 - 98	December 2016	1
4	"Institutionalisation of fathers level of income on students nature of campus adaptations"	Vijayalakshmi N.S Sequeira A.H	International Journal of Scientific Research and Management , 4 (12), 4956 - 4969	December 2016	1
5.	"The role of mothers level of education contouring students adaptation at campus"	Vijayalakshmi N.S Sequeira A.H	Indian Journal of Applied Research, 7 (1), 762 - 767	January 2017	1

6.	"Campus adaptation of engineering undergraduate by gender."	Vijayalakshmi N.S Sequeira A.H	Mediterranean journal of social science, 8(3),2017, 305 – 316 (SCI indexed)	May 2017	1
7.	"The nature of mother's employment on nurturing campus persistence among undergraduate students."	Vijayalakshmi N.S Sequeira A.H	Asian Social Science, 13(6), 2017, 36 – 45 (ABDC indexed)	June 2017	1
8.	"Campus Adaptations of Undergraduate Engineering Students by Parent - Fathers level of Education"	Vijayalakshmi N.S Sequeira A.H	"Asian-African Journal of Economics and Econometrics, Vol.17, No.1 (2017). (ABDC indexed)	June 2017	1
9.	"Campus adaptation of engineering undergraduate across academic years."	Vijayalakshmi N.S Sequeira A.H	International journal of environment and science education (ABDC & Scopus Indexed)	July 2017	1

* Category: 1: Journal paper, full paper reviewed 2: Journal paper, Abstract reviewed
3: Conference/Symposium paper, full paper reviewed 4: Conference/Symposium paper, abstract reviewed
5: others (including papers in Workshops, NITK Research Bulletins, Short notes etc.)
(If the paper has been accepted for publication but yet to be published, the supporting documents must be attached.)

Annexure - 2

CURRICULAM VITAE **Vijayalakshmi N.S**

M.A.Economics, UGC/NET (2004)

(Ph.D – N.I.T.K surathkal)

Email: - nandalike17@gmail.com

Phone: - 9731027164 / 9880747054

Objective:

To optimise my fullest potentials in order to excel in the field of education and research that propels towards obtaining satisfaction on the professional front of being addressed to as an 'academician' while sustaining the imbibed values of a good human being.

Personal Details:

Date of birth: 17/11/1981

Age: 35

Gender: Female

Marital status: Single

Religion: Hindu

Caste: Scheduled Caste

Permanent address: "om shree kateeleshwari" , Door No: 4-146/9(3), Ramnagar, Marakada, Mangalore – 575015

Medium of schooling: English

Languages Known: English, Kannada, Hindi, and Tulu

Father's name: Sri.B. Sorrappa Salian

Mother's name: Smt.N.Mechukumari

Education Details:

Sl.No	Name of the Institution	Qualification	Year	Result
1.	National Institute of Technology Karnataka surathkal, mangalore	(Ph.D) – full time School of Management	2012 - 2017	submission
2	University of Mangalore, Mangalagangothri	M.A.Economics	2002 - 2004	64.28% (UGC/NET 2004)
3.	Canara Degree College, Mangalore	B.A	1999 - 2002	60%
4.	Canara Pre – University College, Mangalore	P.U.C	1997 - 1999	67%
5.	St.Ann's English Medium convent High School, Mangalore	8^{th} -10th	1993 - 1996	70%
6.	Mt.Carmel English Medium convent School Mangalore	L.K.G to 7th	1984 - 1992	passed

Employment History: **Work Experience of 8 years + 4 & half of years of research and teaching**

Professional Experience:

1. **10th June 2004 – 10th October 2004**: Lecturer - Government first Grade College for girls – tenkanadiyur, udupi
   Focus Areas: Indian Economics and International Economics for Final year B.Com and Final year B.A
   Responsibilities: Academic duties
2. **11th June 2004 - 11th October 2004** : Lecturer : Sri Niranjan Swamy First grade college – sunkadakatte, Bajpe, Mangalore
   Focus Areas: Indian Economics and Business Economics for final year B.A and second year P.U.C
   Responsibilities: Academic duties
3. **12th October 2004 – 10th April 2006** : Lecturer : St.joseph's pre – university college , Bajpe, Mangalore
   Focus Areas: Micro Economics and Macro Economics for First Year and Second Year P.U.C
   Responsibilities: Academic duties
4. **6th December 2005 to 10th April 2006** : Lecturer : Sri Alva's College Moodabidri , Mangalore
   Focus Areas: Business Economics and Micro Economics for first year B.Com and second year B.A
   Responsibilities: Academic duties
5. **22nd July 2006 – 10th April 2009** : Lecturer : Shree Gokarnatheshwara First Grade College, Mannagudda, Mangalore
   Focus Areas: Buisness Economics and International Economics for first year B.B.M and third year B.B.M
   Responsibilities: Academic duties
6. **26th june 2006 – 10th April 2009** : Lecturer : Sri Madhusudhan D kushe pre university and degree college, attavar, mangalore
   Focus Areas: Micro Economics, Macro Economics for First Year and Second Year P.U.C and Business Economics for First Year B.B.M
   Responsibilities: Academic and Administrative duties
   Faculty in charge of first year B.B.M students
7. **22nd July 2009 – 14th December 2012** : Assistant Lecturer : National Institute of Technology Karnataka Surathkal Mangalore – 575025
   Focus Areas: Engineering Economics for Third Year 6th Semester B.Tech Students
   Responsibilities: Academic and Administrative duties
   Co-ordinated with departmental activities on workshops and conferences
8. **28th Decemebr 2012 – june 2017 :** Research Scholar : National Institute of Technology Karnataka Surathkal Mangalore – 575025
   Focus Areas: Research work, Engineering Economics, Business Research Methodology
   Responsibilities: Academic and Administrative duties
   Co-ordinated with Research Guide to conduct Business Research Methodology classes for M.B.A
   Co-ordinated with departmental activities on workshops and conferences