

# Academic Factors Influencing Students Career Choices in the IT Field: Insights from South African IT Students

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**Abstract.** Making informed career choices is crucial for high school students as they navigate the transition to higher education and eventual professional paths. The decision on what course to pursue is influenced by a myriad of factors, including social, economic, and academic considerations. Understanding the interplay of these factors is essential for developing effective educational and career guidance programs. This study focuses on exploring the academic factors that influence high school students' choice of courses, specifically examining why students opt to study Information Technology (IT). Employing a qualitative research methodology, the study investigates the role of academic performance, interest in the subject, exposure to IT courses, and the perceived relevance of IT skills in the job market as key determinants in making this crucial decision. The findings reveal that academic factors play a significant role in shaping students' career choices, highlighting the need for educational institutions to tailor support programs, refine curricula, and foster an environment that nurtures holistic development. Furthermore, the study offers valuable insights for employers on the attributes of high-performing individuals, facilitating better talent management and recruitment strategies. Ultimately, by delving into the academic factors that influence IT students' career choices, this research contributes to the broader discourse on career guidance, educational planning, and workforce development in the IT sector.

**Keywords:** career choices, IT students, academic performance, career outcomes, career advancement, IT Field, employment rate

## 1. Introduction

Career path selection in higher education plays a crucial role in shaping students' future and significantly enhances their employability. Choosing a suitable career impacts individuals and has broader implications for the industries they serve and the societal progress they contribute to [1]. While career choices in various fields present unique challenges and opportunities, this study focuses on the realm of Information Technology (IT), a dynamic and ever-evolving sector characterized by its complexities and continuous transformation.

Regardless of the field, students must make important decisions in their lives when it comes to their careers. These decisions dictate the career paths individuals will choose, influencing the industries they

will work in. According to [2], the degree of congruence between a person's educational background and career goals is essential in determining their degree of success and satisfaction in their chosen field.

As the digital age unfolds, the IT sector has emerged as one of the most dynamic and influential domains in the contemporary workforce landscape. IT's profound influence extends far beyond the technological realm, impacting nearly every facet of modern life, from business operations to healthcare, education, entertainment, and beyond [3]. Within this ever-evolving sphere, career choices in IT have become increasingly significant, and understanding the interplay of academic factors and personal decisions is crucial to career success and industry progression. The development of the internet, which revolutionized global communication and information exchange, further propelled the IT industry into the digital age. As the internet became integral to daily life, IT professionals played a pivotal role in creating and maintaining the infrastructure that underpins this digital world. The proliferation of mobile devices, cloud computing, and the Internet of Things (IoT) expanded the boundaries of IT, offering new dimensions for innovation and specialization [4].

The complexities of IT careers arise from the multifaceted nature of the industry. IT is not a monolithic field but a constellation of interconnected subfields, each with unique challenges and opportunities. For instance, a software developer may face different challenges than a network administrator, cybersecurity analyst, or data scientist. Moreover, the rapid pace of technological change adds an additional layer of complexity. Staying current in the IT industry requires continuous learning and adaptability, as today's tools and technologies may become obsolete within a few years [5].

Given the evolving and intricate nature of the IT sector, individuals pursuing IT careers face many choices. They must decide not only on a specific IT subfield but also on their career trajectory. These choices can be influenced by factors such as personal interests, job prospects, earning potential, and educational opportunities. Understanding the academic factors that impact these career choices is of utmost importance. Academic requirements, educational experiences, mentorship and guidance, access to resources, and institutional support all play vital roles in shaping students' career preferences and capacity to excel in IT.

The significance of this study on academic factors influencing students' career choices in the IT field lies in its potential to provide invaluable insights that shape the educational landscape, students' professional journeys, and the dynamism of the IT industry. By comprehending how academic factors, including curriculum design, faculty guidance, and educational resources, influence students' career decisions, the study informs academic institutions on better-preparing students for the workforce, thereby enhancing educational outcomes and employability. For students, this research offers clarity in navigating the complexities of IT careers and assists them in making well-informed choices that align with their aspirations.

Within the literature, academic factors have been identified as substantial determinants in shaping students' career choices. Factors such as educational experiences, education quality, mentorship, guidance, access to resources, and institutional support all contribute to the development of student's career preferences and their ability to excel in the IT field. The academic requirements within the IT field, including proficiency in mathematics and other core subjects, are of particular interest. These requirements can significantly influence students' career decisions, as they may perceive certain academic prerequisites as essential or potential barriers to their chosen paths [6] [7].

This study is grounded in the recognition that while existing literature provides a general understanding of the relationship between academic factors and career decisions, a more detailed exploration is required. To address the complexities of career choices in IT with regards to this research focus, the main research question for this study is: What are the academic factors that influence student's decision-making processes when choosing IT careers, and how can a deeper exploration of these elements inform improvements in IT education and career guidance.

To accomplish this, the study employs a thorough mixed-methods approach, combining quantitative analysis with qualitative insights. We will investigate the academic factors influencing students' career choices and explore the intricate relationships between these factors and their career decisions. A diverse sample of students from various backgrounds will be recruited to ensure a comprehensive exploration of these dynamics.

The paper's remaining structure is as follows: Section 2 provides a comprehensive literature review and explains the methodology in Section 3. Section 4 delves into the discussion of the findings, with Section 5 presenting the conclusions.

## 2. Literature Review

In IT, career choices are influenced by various academic factors. These factors include educational experience and background, academic performance, instructional quantity and quality, knowledge about available career options, and the potential rewards they provide [1]. Furthermore, career choices are influenced by many factors, including educational outcome, motivation, instructional quantity, and quality, as well as knowledge about the type of careers available and the rewards they provide.

Undergraduates, especially those from disadvantaged backgrounds, often lack knowledge about viable career options in IT, impacting workplace diversity [8]. They may not be aware of the various paths and opportunities within the IT field, limiting their options and potentially steering them toward other academic disciplines. Similarly, [9] found that early attention to students' skills and aptitudes, especially when dealing with underprivileged ones, is critical in encouraging them to follow future STEM careers." This finding relates to the study of teacher guidance and its impact on student's decision to pursue science-oriented careers. Additionally, the belief in limited job scope in the IT field can also influence career choices. Parents who may have experienced difficulties in securing IT jobs themselves may discourage their children from pursuing a career in IT [10]. This can lead students to choose other academic disciplines that they perceive as having better job prospects and career advancement opportunities.

Furthermore, the career choice model of Dick and Rallis highlights the influence of skills, experiences, socialization factors, and cultural milieu on self-concept and career-related values, which in turn affect career choices in the IT field [11]. It is important for academic institutions and career counselors to provide accurate and comprehensive information about the IT field, its diverse career options, and the potential rewards and opportunities it offers. This literature is structured in that it addresses the themes specifically related to academic factors as influencers for students to make career decisions. Literature related to each theme is discussed below.

### 2.1. Educational Experience and Background

The educational experience and background of students have been identified as influential factors that impact their decision to pursue IT studies. These factors include family and educational background, cultural influences, peer relationships, and academic experience [2]. Studies have shown that students with a family background or experience in IT-related fields are likelier to study IT. Additionally, students with positive educational experiences in IT, such as engaging and effective teaching methods, access to resources and technology, and supportive learning environments, are more likely to be motivated to study IT [12][13]. These factors can influence students' attitudes, beliefs, abilities, and interests in the field of IT. Overall, students' educational experience and background play a significant role in influencing their decision to study IT. Studies have found that students' educational experience and background in IT studies are influential factors in their decision to pursue a career in IT [14]. These factors can shape their perception of the field, interest, and motivation to learn, and overall academic success in IT studies.

### *2.2. Academic Performance*

The career choice in Information Technology is influenced by various factors, including academic performance. Several studies have examined the relationship between academic performance and students' decision to pursue a career in Information Technology. Sathapornvajana and Watanapa conducted a study on students who selected areas related to information technologies and found that factors such as interest, helplessness, occupational advantage, recommendations, family factors, grades, and personal characteristics influenced career choice [15], the influence of academic performance on career choice is not limited to the field of Information Technology. Research has suggested that personality composition, self-esteem, learning styles, and cognitive thinking influence a person's academic performance and decision to pursue IT education and careers [16]. Additionally, literature has found a positive association between student career choice, academic persistence, and better academic performance [17]. Moreover, career choice motivation can be related to burnout syndrome in students, which may negatively influence their academic performance. The literature review suggests that academic performance significantly influences students' decision to choose Information Technology as a career.

### *2.3. Mentorship and Guidance*

In information technology, mentorship and guidance are crucial in shaping students' career paths and development. According to the sources cited, effective mentorship in IT education provides guidance and support for students in various aspects. This support includes job satisfaction and retention, career development, increased research and education engagement opportunities, and improved technical skills and confidence. Moreover, mentorship has been found to contribute to students' personal and professional development by providing guidance in career planning, communication skills, research and scholarship skills, managerial and leadership skills, negotiating and networking skills, and navigating the institutional culture [18]. This support is especially important in IT education, where there are constantly evolving technologies and rapidly changing job market demands. Mentorship and guidance help students in IT education make informed choices regarding their specialization, develop professionalism, reduce stress, and engage in extra-curricular activities. By receiving mentorship in IT education, students are able to navigate the complexities of the field and gain a better understanding of their career options [15]. Additionally, mentorship helps students in IT education build a professional network and gain exposure to different perspectives within the industry.

### *2.4. Access to Resources*

Access to resources is crucial in shaping students' decisions to pursue an IT career. According to the career choice model proposed by Dick and Rallis, environmental factors such as skills, experiences, socialization factors, and cultural milieu have a significant impact on the self-concept and career-related values, which ultimately influence career choice [11]. Several studies have highlighted the importance of resources in influencing students' career choices in the IT field. For example, a study conducted by Sathapornvajana and Watanapa in 2011 found that access to resources related to information technologies, such as information and finance, had a significant effect on students' choice of IT professions. Furthermore, research suggests that factors such as personality composition, self-esteem, learning styles, and cognitive thinking are also influenced by the technological sophistication of a person's environment [16] variables can moderate the relationship between personality and IT career choices.

## **3. Research Method**

This study employs an explanatory mixed-methods research design to comprehensively investigate the role of academic factors in influencing career choices among first and extended curriculum program (ECP) students enrolled in the Diploma in IT department at a University of Technology in South Africa. The chosen methodology incorporates quantitative and qualitative data collection methods, ensuring a

holistic and in-depth exploration of the research topic. This is essential as it combines the breadth of quantitative analysis with the depth of qualitative insights, ensuring a comprehensive understanding of how academic factors influence career choices among students at a university. This approach enhances the study's credibility, relevance, and potential for practical application in educational contexts.

### *3.1. Research Methodology*

The research population for this study encompassed 149 students actively engaged in their IT program within the Information and Communication Technology (ICT) department. This population included 100 first-year students and 49 Extended Curriculum Program (ECP) students, providing a balanced student body representation.

### *3.2. Survey Development*

Structured questionnaires were designed based on the core themes of academic factors that influence student decisions. The questionnaires consisted of closed-ended questions, systematically addressing a range of academic factors that are known to influence career choices. These factors included educational experiences and background, mentorship, access to resources, academic performance, quality of education, and other pertinent influences guiding students' decisions to pursue IT education.

### *3.3. Sample and Sampling Method*

The survey distribution included the entire first-year student cohort and (ECP) students within the (ICT) department. The selection of first-year IT students as their pivotal stage justifies the study population in career decision-making within higher education. This phase is marked by exploration and openness to new information, making it an ideal point to examine the initial factors influencing career choices in IT. Focusing on first-year students allows for analysing foundational attitudes and influences before they are shaped by deeper, discipline-specific knowledge. This approach provides insights into pre-university factors, initial perceptions of the IT field, and the impact of introductory academic experiences. Studying this group aids in understanding the broad range of influences on career aspirations at the beginning of their university journey, offering valuable information for educational strategies and support systems in IT career guidance.

A total of 149 first-year students were invited to participate in the survey, with 86 students providing responses. This response rate was deemed representative of the population, enhancing the quantitative phase of the study.

### *3.4. Data Collection*

Data collection encompassed a two-fold approach, integrating online surveys and focus group interviews to facilitate a comprehensive exploration of academic factors influencing career choices in IT. Online surveys were chosen for accessibility and convenience, allowing participants to respond at their convenience. This method also afforded convenience for researchers, who were familiar with the department's operations and had direct access to the student population.

The qualitative phase involved focus group interviews designed to delve deeper into the nuances of the quantitative findings. These interviews fostered in-depth discussions among participants, allowing them to share their unique perspectives and experiences on the academic factors influencing their career choices. The interactive and flexible nature of these interviews facilitated open conversations, enabling clarification of responses and an in-depth exploration of emergent themes.

### *3.5. Data Analysis*

For the quantitative phase of the study, descriptive statistical techniques were applied to the structured survey data. This statistical analysis involved using appropriate software to summarize and interpret the findings, presenting them clearly and concisely. In the qualitative phase, thematic analysis was utilized to

identify recurring themes and patterns within the data collected during the focus group interviews. Transcripts from these interviews will be carefully analyzed to uncover valuable insights into the academic factors that influence career choices within the IT field.

This comprehensive mixed-methods approach was thoughtfully chosen to offer a nuanced and thorough understanding of the academic factors that shape students' career choices in the context of IT education. It provides a robust foundation for the investigation, allowing for a holistic exploration of the research question.

## 4. Results and Discussion

These research findings are based on themes addressing academic factors influencing students' decisions. Those are discussed in the subsections below.

### 4.1. Educational experience and background

This study highlights how the classes students choose in high school, especially in subjects like mathematics and science, strongly affect their decisions about pursuing a career in IT. Those who took these subjects seemed more ready for the challenges of an IT degree and more interested in working in IT. About 70% of students said their high school grades greatly influenced their decision to study IT.

One responded said, *“My friend saw my matric results and informed me of the courses that I can possibly do, out of those courses, IT became my first choice.”* In addition another responded said *“My high school performance made me realize that I will fit perfect with courses that are related to Science, technology and engineering. My first choice was mechanical engineering, and my second choice was information technology.”*

Surprisingly, 80% of students felt that their past academic performance didn't really impact their choice of an IT career. This reveals a gap between what students think influences them and what actually does. While good grades are usually crucial for career choices, this study showed that many students aren't considering their academic performance when picking IT as a career. This is important because 62% of students were unhappy with their career choices after six months into the program, with many blaming their struggle in the first semester.

This suggests that students need more information about how their grades affect their careers. Schools and counselors can help by explaining this connection. Also, 29% of students considered quitting because they felt their schools weren't supporting them well enough.

One responded said *“I almost quit secondary school because of limited support for students that are learning at a slow pace and thus that demotivates to study further.”* This could lead to lower success rates for the school and discourage students.

Even though some students are dissatisfied, most are still in their programs. Schools should create programs to support students in subjects like math and science. Interestingly, 67% of students studied math and science, and 9% studied commerce, showing that students good at these subjects are more likely to be interested in IT. This emphasizes the need for special programs to help students succeed in these areas.

### 4.2. Academic Performance and career decision making

Academic performance plays a crucial role in guiding career choices, reflecting a person's strengths in specific subjects and areas of expertise. It serves as a compass, directing individuals towards fields of study where their abilities shine. This study found that 72% of respondents considered their academic strengths when choosing a career, with an additional 76% choosing IT as their first preference. However, the journey from academic success to career satisfaction is not always straightforward.

One respondent shared, *"I have developed an interest for IT as a career I wanted to pursue citing from my good grades from high school but after enrolling for the course, it became very tough for me and lost momentum to even continue with it."* This poignant reflection illustrates the gap between initial interest, spurred by academic achievement, and the realities of pursuing a chosen field.

Surprisingly, after a few months into the program, 61% expressed a desire to drop out, citing poor academic performance as a significant factor. Another respondent revealed, *"My grades or academic performance have not been positive since I started to enroll for IT hence I am even considering changing the course."* This suggests that while academic performance initially influences career choices and points individuals toward fields aligned with their strengths, the real-world experience of pursuing a chosen path may uncover additional factors contributing to overall satisfaction and success. It highlights the importance of recognizing academic strengths and considering other aspects, such as personal passion, adaptability, and the practical application of skills in the chosen field.

Moreover, the complexity of career choice is further highlighted by another student's observation: *"I feel there are other things to consider when choosing a career and not the academic strength."* This remark underscores the importance of not only recognizing academic strengths but also considering other aspects such as personal passion, adaptability, and the practical application of skills in the chosen field.

The impact of academic performance on career decisions is substantial, exerting either a positive or negative influence. A strong connection between academic achievements and career choices emerges from how students navigate prerequisite school subjects. This connection shapes their aspirations and decisions regarding future career paths. However, the insights from our respondents illustrate that selecting a career path without a thorough assessment of one's academic strengths and an understanding of the field's demands may result in dissatisfaction and, in extreme cases, lead to dropout decisions fueled by frustration.

Selecting a career path without a thorough assessment of one's academic strengths may result in dissatisfaction and, in extreme cases, lead to dropout decisions fueled by frustration. This underscores the importance of aligning academic performance with career choices for a more fulfilling and successful educational journey. It also highlights the need for educational institutions to provide robust support systems, including realistic previews of academic programs, flexible course options, and comprehensive career counseling, to assist students in navigating these pivotal decisions.

#### *4.3. Mentorship and Guidance in Career Decision-Making*

Mentorship and guidance stand as fundamental pillars in shaping informed decisions regarding students' futures. Effective guidance significantly enhances the likelihood of making well-informed choices when selecting a career path. Yet, the influence of mentorship and guidance emerges as a critical factor, with our findings revealing gaps that necessitate attention.

A concerning 63% of students reported not feeling influenced by their teachers, highlighting a potential shortfall in the guidance provided. One respondent poignantly noted, *"My teachers did not provide us with sufficient support towards the right career direction as there are the ones who are the custodians of knowledge and who are expected to guide us through this transition from high school to higher education."* This statement underscores a significant gap in the mentorship process, suggesting that without adequate guidance, students may inadvertently veer towards unsuitable career paths due to a lack of comprehensive information and awareness.

Furthermore, the role of career advisors in this ecosystem appears to be similarly challenged, with 54% of students acknowledging minimal impact from these professionals on their decision-making process. Another respondent lamented, *"Career advisors provided minimal support to none, in guiding us towards the right career path in order for us to make informed decisions."* This indicates a broader issue within the support system available to students, where insufficient support from both teachers and career advisors may leave students navigating their career paths without the necessary tools and knowledge.

These personal accounts and findings call for a reevaluation of the mentorship and guidance framework within educational institutions, urging a more engaged, informative, and supportive approach from both teachers and career advisors. The necessity for a comprehensive support system is clear, one that equips students with the insights, knowledge, and confidence needed to embark on career paths that are not only aligned with their academic strengths and personal interests but also reflective of informed, well-considered decisions.

Addressing these challenges is imperative for educational policymakers, institutions, and professionals to innovate and strengthen the mentorship and guidance mechanisms in place. By ensuring students are not navigating their future in the dark but are instead making enlightened choices, we pave the way for fulfilling and successful careers.

#### *4.4. Access to Resources in IT Education*

The availability of technological resources in educational settings is paramount, especially for students contemplating careers in the dynamic and rapidly evolving field of information technology (IT). Access to cutting-edge IT facilities, extensive libraries, and comprehensive online resources equips students with a nuanced understanding of IT, enabling them to make well-informed career decisions. However, our study reveals a concerning gap in the provision of these essential resources, with 57% of students indicating that the availability of technological resources did not significantly influence their career choices. This suggests a shortfall in educational institutions' capacity to expose students to the vast opportunities within the IT sector.

One student poignantly shared, *"There are no computer laboratories at my high school, and even the teachers never carried a computer during the time I was studying there."* This stark admission underscores the challenges faced by students in some schools, where the lack of basic IT infrastructure severely limits exposure to and engagement with the field.

The consequences of insufficient access to technological resources extend beyond mere academic implications; they can lead to poorly informed career choices, with far-reaching economic and psychological impacts for individuals.

Another student reflected on the disparity in resources, stating, *"I would see pictures of students using a computer from my cousin that is studying in schools that are situated in town. I always wish for my school and schools in my surroundings can have the same infrastructure as to motivate students to pursue IT-related courses."* This sentiment highlights the critical role that access to technology plays in inspiring students to explore and commit to IT careers. Addressing this challenge requires a concerted effort from educational policymakers, institutions, and the community to prioritize and invest in technological resources.

## **5. Conclusion**

Students base their career decisions on a variety of factors; however, this study only focuses on how academic factors influence career choices. It emphasizes that numerous factors play a role in an individual's career decision, with significant influences including educational background, academic performance, mentorship, guidance, and access to resources. As students navigate their academic journeys, recognizing the intricate interplay between academic factors and career choices becomes imperative for informed decision-making and fostering a path towards a fulfilling and successful career. Schools, teachers, and institutions play a vital role in promoting awareness about career choices and assisting students in making informed decisions. Further research is warranted to thoroughly investigate the factors identified in this study. A more in-depth exploration of each of these factors is essential, given their apparent substantial influence on career choice decisions.



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