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The job prospects of ICT graduates in internship programmes – A comparison between public sector and private sector internships.

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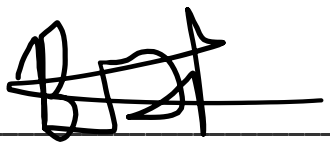
Signature:  **Date:** 30/06/2023

Abstract

The ICT skills paradox is a phenomenon in South Africa where there is industry demand for ICT skills, yet there remain many unemployed ICT graduates. The motivation for this study is to investigate the reason why this demand does not lead to the wholesale absorption of graduates, and how internship programmes remedy this paradox by bridging school and work for ICT graduates. The knowledge gap here lies in why graduates with the requisite skills, do not attain jobs after their graduate internship programmes, despite the demand for those skills in the industry. This paper argues that human capital theory and its application to graduate internship programmes is non-linear, because the investment of learning and upskilling in these programmes does not necessarily guarantee higher wages, and sometimes not even a job offer following the internship. This challenges the expectation of returns from the investment made into the graduates and thus the base assumptions of human capital theory. Secondarily, the paper also argues that even if the assumptions of human capital theory are true, the investment made into the graduates in the form of learning can be impeded by the structure of the programme and the resources that are made available. The quality of the learning thus challenges social learning theory and its assumptions about the impact of learning in and through the work environment. The research design of this paper is qualitative, and it investigates ten case studies of managers from the public and private sectors. The data was analysed by coding the responses of the managers about how interns learn in the workplace, what resources are available for learning in and through work, and finally whether interns are retained and how managers determine which interns ought to be retained. The codes were then measured against the assumptions of human capital theory – specifically if there is linearity in the investment into human capital (learning) and returns (in this study, the attainment of a job after the programme). The study finds that two factors influence the employment prospects of ICT graduates in the labour market. The first influencing factor is the capacity of their programme host organisation to retain their interns as full-time staff, which is informed by government policy and directives, as well as the organisation's budget for wages. The second influencing factor, where managers have the capacity to retain interns, is the set of skills that the managers screen for, which, in this study, are unanimously soft skills such as problem-solving and "self-motivation". This study concludes by contemplating the non-linearity of human capital theory as it applies to the programmes that are studied, as well as the limits to social learning theory as it applies to learning in and through work in graduate internship programmes. Following this is a discussion of the remaining gaps in the knowledge and how they could be studied further.

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All glory to God!

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Chapter 1 – Introduction

1.1 Context

The phenomenon of graduate unemployment in South Africa, which stands at 10.7% (Maluleke, 2022), has called for numerous interventions from the public and private sectors. These include calls for tertiary institutions to make graduates "more employable" (K. N. Ohei & Brink, 2019), the introduction of the Youth Employment Service (*YES4Youth)* (The Presidency, 2018), and finally graduate internship programmes in corporate companies. Authors like Maake-Malatji describe graduate internship programmes, as a *"*bridge between education and work". This description raises the question of whether these programmes can help to solve the youth unemployment crisis in South Africa, as several researchers like Maake-Malatji believe. Secondly, the emphasis on information and communication technology (ICT) skills in South Africa stems from the sentiments of private businesses (van der Westhuizen, 2022) who report experiencing a shortage of key ICT skills in their organisations. The government's own reporting on which skills are in critical demand (Department of Higher Education & Training, 2022), also elevates the discussion about the shortage which they believe negatively impacts the economy of the country and the ability of both private and public organisations to adopt technologies and make use of them. Thus, the relationship between graduate internship programmes and plugging skills gaps highlights whether these programmes can help organisations meet their demands, whilst employing potentially unemployed ICT graduates.

The obsession with ICT skills in South Africa in recent times can be broadly linked to the discourse around the fourth industrial revolution (4IR) (Kayembe & Nel, 2019)**.** Along with reported shortages in employer organisations, is the race to increase the number of workers with ICT skills to prepare the country for the "Information Age" (Vu & Asongu, 2020)**.** This is seen as a priority to make the South African economy more competitive. Private and public organisations will have sufficient ICT talent to meet their technological needs and to remain competitive within their industries and internationally. This further highlights the ICT skills paradox, which will be discussed in section 1.2 in depth, and why despite the reported demand for these skills, there remain unemployed ICT graduates or even internship alumni. the.

1.2 Rationale

The Department of Public Service and Administration introduced a directive that guides government departments on how to run employment opportunity programmes like internships and learnerships (Department of Public Service and Administration, 2018). These programmes are compulsory for all departments to execute, and part of their objectives is to lower the graduate unemployment rate. YES4Youth increasingly partners with digital skills implementation partners to train, among many youth profiles, unemployed ICT graduate interns (Youth Employment Service, 2021). Despite these interventions, which are meant to make ICT graduates more employable, there is a complaint from various sectors about the shortage of technology skills in South Africa (Calitz, Cullen & Fani, 2020). This is the knowledge gap that I aim to explore, which is whether graduate internship programmes make ICT graduates more employable from the perspective of employers and whether they help graduates secure employment after the programme.

The reason for this study focusing on and even comparing the private and public sectors is to broaden the data set that speaks to the employment prospects of ICT graduates and their experience in the labour market. Investigating one sector would narrow the exploration of the linearity of human capital theory and thus leave gaps in whether this investigation's findings are true of the broader labour market, or just one sector's labour market. Both sectors are also liable to Broad-based Economic Empowerment (B-BBEE) directives which, among many aims, incentivise companies to hire black youth, which these organisations do to claim B-BBEE points with the Department of Labour. Thus, stemming from similar legislative motivations, comparing the two sectors is made easier and thus the outcomes of the research are more meaningful. The outcomes of the research can also then be measured against the assumptions of human capital theory, about the employment prospects of graduate interns. Additionally, by comparing the two sectors, I can provide recommendations for the public sector, having extensively compared their system to the private sector and what works and what does not seem to work in their programmes.

An unemployed ICT graduate experiences low returns on their investment into their tertiary education, due to a lack of economic opportunities, employment prospects and wages. This brings into question the returns of tertiary education alone. A graduate internship programme, as per the government and private sector, is meant to give graduates work experience, and thus increase their employment prospects in the labour market when competing with experienced workers. This study investigates whether these employment prospects are realised by graduate interns. The realisation or lack of attaining work after the programme's end further highlights the ICT skills paradox. This paradox illustrates the demand that exists in the marketplace for ICT skills, versus the many unemployed ICT graduates (Twinomurinz, Schofield, Hagen, Ditsoane-Molefe and Tshidzumba, 2017) who in theory, should be hired by those who have a demand for ICT skills in their organisations. Thus, if employers are not satisfied with the skills that graduates possess after tertiary education, then internship programs that they run should theoretically help them to plug

that skills gap and get in the interns, the skills that they need for their technological assignments. Thus, the participants that were chosen for this study can help to plug the knowledge gaps in the paradox because they work closely with the interns and have knowledge of the skills that they possess versus the needs of their employer organisations.

I have interviewed information technology (IT) and human resources (HR) managers. These participants execute graduate internship programmes in the public and private sectors, and they are likely to have a perspective on three factors that influence the prospects of the graduates that they work with, which helps to answer the research questions. The first is that these managers execute the programmes, from recruitment of candidates to completion. Secondly, these managers screen for the qualities of strong-performing candidates and they influence who gets retained and who does not, thus influencing the employment prospects of the graduates. Thirdly these managers are privy to the information of what the results of these programmes are, in the form of retention rates and the employment prospects of graduate interns at the end of their programmes.

1.3 Research aims and questions

The main aim of this study is to investigate the linearity of human capital theory by looking at whether the investment made into interns in the form of learning in and through work, leads to better employment prospects following internship programmes. By investigating the different case studies, I can thus make a comparison between the private and public sectors to see what the differences in outcomes are and how they confirm or challenge the assumptions of human capital theory.

This study asks one main question and four supporting questions. The main question is:

- Why do some alumni of ICT internship programmes find jobs and others do not? – This question aims to investigate the factors that influence why candidates get retained or find jobs at other organisations at the end of their graduate internship programmes.

The supporting questions include:

- What are the post-internship job prospects of candidates in the public sector versus private sector programmes? - This question aims to compare which sectors present the best employment prospects for programme alumni.
- Why do some organisations hire interns straight from their own internship programmes, while others do not hire any? – This question aims to investigate the reasons from the employer which influence whether or why organisations retain their interns at the end of a graduate internship programme.
- What are employers' incentives for hiring? – This question aims to look at the host organisation's motivations for hiring interns and secondly for retaining interns at the end of their programmes.

- What criteria do employers use to screen for who they hire and who they let go of? – This question aims to investigate what qualities managers who retain interns look for when making their decision, as the qualities could influence the employment prospects that these candidates will experience.

1.4 Organisation of research paper

This chapter is followed by a literature review that explores how graduate internship programmes work internationally and in South Africa, by also cutting across sectors to look at the different structures of these programmes. The review then discusses the nuances of the ICT skills shortage. Finally, the review presents a conceptual framework that is built on using human capital theory to investigate the returns on employment prospects of internship programmes, as well as social learning theory to evaluate how learning occurs in and through work because these skills are evaluated by managers to measure the performance of interns. The third chapter presents the research methodology that was used in this study. The fourth chapter presents the findings of this study which are organised into high-level findings about the different programmes that were studied, before presenting an in-depth analysis of the phenomena that influence the employment prospects of the ICT graduate interns that participate in these programmes. The fifth chapter offers a discussion of the findings against the literature, by evaluating them against the conceptual framework. The discussion chapter also explores the reasons behind the ICT skills paradox. Finally, the sixth chapter is the conclusion of this paper, which will summarise the study in its entirety. What is important to establish first, is what knowledge is already available regarding the phenomenon of the employment prospects of graduates who participate in graduate internship programmes.

Chapter 2 – Literature Review

2.1 Introduction

Due to the insignificant amount of literature on this niche group of graduates, the review pieces together the literature that pertains to the experience of graduate interns as they transition from education to work and explores the employment prospects that graduate internship programmes provide to information and Communication Technology (ICT) graduates.

In this chapter, I explore three themes, each about the research question. Firstly, I explore how graduate internship programmes work, first by exploring literature from international researchers, and then by focusing on South Africa. I also explore the role of Broad-based Black Economic Empowerment (B-BBEE) and how it attempts to motivate organisations to create internship programmes for, especially, black youth. Secondly, I go into greater detail on the characteristics of graduate internship programmes across sectors from the public sector to internally run and funded private sector programmes. I will examine the literature on case studies and government directives that pertain to graduate internship programmes and ICT graduates, by illustrating some of the benefits and drawbacks. Thirdly, having discussed the programmes and host employers, I move on to a discussion on the skills profiles that are in the labour market and how the demand for them drastically differs depending on the profile. Here I explore literature on the demand for technical ICT skills, and soft skills, as well as the low enrolment figures in tertiary-level courses and how this negatively affects the supply of ICT skills. Fourthly, having characterised the programmes that absorb interns and the type of skills profiles that are available in the labour market, I will present a conceptual framework that synthesises the employment prospects of graduate interns firstly by establishing how human capital theory will be used to evaluate the returns to graduates in the form of their employment prospects, and secondly how social learning theory will be used to evaluate how effective the learning interventions in the different programmes are. Before exploring the four themes above, however, I will discuss how ICT is seen as a driver of economic growth in South Africa, and why there are job opportunities across industries that need ICT skills. This grounding in the discourse around ICT and growth is key to understanding why there is an emphasis on creating jobs around these skills.

2.2 ICT and the Economy in South Africa

Technology is seen as a key economic driver in Africa, with the supposed intention of helping Africa to "leapfrog" the stages of development that would start with the development of a manufacturing economy, all the way to an advanced technology and knowledge-based economy. This section will explore how the discourse about the fourth industrial revolution has equally fuelled the discourse around the need for ICT skills to grow the South African economy. Adeleye and Eboagu's (2019) research shows that investment in the ICT sector in Africa is directly linked to economic growth, as well as the theory of "leapfrogging" economies whose development is not hinged on first having to develop an industrial economy. Gleason (2018) argues that for South Africa to benefit from the

advancements that will come with the fourth industrial revolution, which is a revolution where artificial intelligence, machine learning and 3D printing become more ubiquitous in the industry, we will need more graduates to possess digital literacy. However, authors such as Stanley, Doucouliagos and Steel (2018) state that the growth that comes with investment in ICT infrastructure is more pronounced in developed economies than in developing countries. This counterargument brings into question just how focused on ICIT the South African government should be. However, the discourse on the need to make technological advancement is already a focal point for the government and their development agenda and is not a matter of speculation or cautious observation.

What follows the discourse on the benefits of investing in ICT infrastructure, the race to adopt fourth industrial revolution technologies and to grow the South African economy, is a discussion on skills shortages. Sutherland (2020) argues that South Africa lacks good policy implementation for technology advancement, as well as a supply of skilled researchers, workers and managers for the fourth industrial revolution. This paper centres on the discourse about ICT skills, jobs, and graduates in internship programmes. The inquiry looks at how or whether ICT graduate interns attain jobs following their internships, and what the role of their skills is. To understand the value of ICT internship programmes and the employment prospects of ICT graduates, we first need to explore how graduate internship programmes work in South Africa.

2.3 How graduate internship programmes work

There is a large volume of studies from South Africa that report on graduate internship programmes, as well as directives from the government about how they ought to work. In this section, I will explore why these programmes exist and what motivates employers to implement them. I will begin with an outline of internship programmes, including literature on international case studies. Following this, I explore the role of graduate internship programmes in South Africa.

Internship programmes take place in a social setting that encompasses technical learning, learning non-technical skills and building a network of people in the same professional domain. Professional development programmes like internships and work-integrated learning align the theory that graduates learn in tertiary education, with the needs of the workplace (Jackson, 2018, p. 24). Mseleku (2022), in his study of public sector interns in the eThekwini region in South Africa, states that internships are important in that they create protected market entry access into the labour market for graduates who would otherwise have to compete with experienced workers in the market. This notion is important because, in the ICT domain, managers state that it is not just technical skills that they need from their employees, but soft skills as well such as communication, problem-solving and creative thinking (Matturro, Raschetti & Fontan, 2019). If students do not learn these soft skills in tertiary education, as I explore further in section 3.3., internship programmes provide the best platform for them to learn these skills and eventually compete in the labour market with experienced professionals. An example that illustrates how these skills can be taught in an internship comes from a company in India that sees its managers creating a 22-question survey to measure the performance of their interns to guide them on which areas of their

soft skills they need to refine (Bist, Mehta, Harshadbai & Meghrajani, 2020, p. 156). This type of focused development is meant to make graduate interns more employable through the development of soft skills. What is also noteworthy is that in a study of 60 university graduates in South Africa, Case, Marshall, McKenna and Disaapele (2018, p. 109) report that getting one's first job after university is partly based on social networks as well as location (rural versus urban). This further demonstrates the value of internship programmes as well, because as a protected, graduate-exclusive programme, it allows graduates to build their social networks for future employment opportunities.

Further evidence of the outcomes of internship programmes, other than further learning, professional development, and the building of a social network, are the employment prospects of graduates which are reported to be higher because of taking part in internship programmes. The European Commission's Eurobarometer shows that people who took part in internships of at least 6 months have better employment prospects in the form of retention at their host companies and opportunities in other organisations (O'Higgins & Pinedo, 2018). This phenomenon could be due to the opportunity that employers have to screen, further develop, and further screen their interns until they develop the skills that their organisations need. However, some studies show that although interns in the EU tend to have better employment prospects in the labour market than new graduates with just a tertiary qualification, the returns in the form of higher wages do diminish over time and the gaps begin to close (Comyn & Brewer, 2018). If this phenomenon is true for South Africa, internship programmes would still be valuable and provide better returns in the form of employment and wages compared to the situation that graduates increasingly find themselves in – unemployment.

There are, however, critics of internship programmes who view them as exploitative job setups that benefit employers and their profit motives, over the interns. Jacobson and Shade's (2018) critique of internship programmes concludes with three major implications of exploitative programmes, of which I will discuss two. The first critique describes internship programmes as being a "free trial" for employers to make young people work for them, without the potential regulatory burdens that come with hiring a full-time employee, like long-term contracts and benefits. This trial benefits employers who are then empowered to decide to either retain the interns or to release them at the end of their programmes while having benefitted from their labour. The second critique states that internship programmes are meant to displace regularly waged labour (Jacobson & Shade, 2018). What this argument states is that by hiring interns, employers are attempting to reduce their wage costs by hiring cheap interns to do work. This challenges the stated value of internships as a pathway to secure work for interns, which is at the core of this research paper. Additionally, it opens the room for interrogating what role internships play in the lives of ICT graduates and their employers in South Africa.

To focus on South Africa, I first need to provide context about the state of employment in the country. With the graduate unemployment rate in South Africa sitting at 10.7% (compared to 32.9% for the general population) (Maluleke, 2022), Maake-Malatji (2021) argues for the educational cum professional development value of internship programmes. The South African Board for People Practices makes recommendations aiming to realise this value too (South African Board for People Practices, 2014). These recommendations include

communicating clearly to interns the duration of the programme, giving them clear and diverse work tasks/deliverables that allow them to demonstrate their strengths, as well as providing mentorship and supervision. This recommendation partly establishes how I will evaluate the literature in this review as well as the programmes that I will study. Ohei, Brink and Abiodun's research, which studied literature about ICT and non-ICT skills experiences in the labour market, found that students with ICT courses in their qualifications are more likely to be employed after tertiary education compared to their peers (Ohei, Brink & Abiodun, 2019). However, their research also concludes that ICT graduates are not considered "employable" enough by employers and that universities should emphasise "practical pedagogy" to close the skills mismatch between the supply of ICT graduates and the demands of employers.

Mentorship and supervision are how graduate interns are guided to apply their theoretical knowledge to practical work (De Villiers, van Heerden & van Schalkwyk, 2018). Supervisors provide interns with their work tasks and then review them. Mentors focus on the holistic development of interns from the application of their technical skills to their soft skills (how they communicate with and collaborate with their colleagues to deliver work) (South African Board for People Practices, 2014). However, some organisations might have the challenge of not having enough mentors for every candidate. Some local government graduate internship programmes struggle to develop or even retain their interns due to insufficient mentors (LGSETA, 2021). This insufficiency demonstrates the gaps between the ideal that the SABPP proposes and the reality of graduate internship programme experiences. Giving interns work tasks while measuring their skills and professional development is key to internship programmes across sectors, as I will explore in section 3.2.

Other than talent shortages and manpower needs, organisations in South Africa create these programmes to comply with Broad-based Economic Empowerment directives (Broad-Based Black Economic Empowerment Act (No. 53 of 2003), 2003). The role of B-BBEE focuses on wider socio-economic issues that affect black people, such as employment opportunities, whereas the original Black Economic Empowerment (BEE) in the 1990s focused mainly on the ownership of private sector businesses (Mudau, 2022, p. 26). This means that B-BBEE laws affect the employment prospects of ICT graduates who participate in graduate internship programmes in organisations that aim to be B-BBEE compliant. This is how B-BBEE influences the structure of the programmes. Thabela-Chimboza and Chigona's (2019) study found noteworthy sentiments from private-sector businesses regarding B-BBEE from their analysis of news media.

The sentiments from company leaders affect the B-BBEE strategy of employers and thus internship programmes that could absorb ICT graduates (Thabela-Chimboza & Chigona, 2019). Some organisations perceive B-BBEE as providing them with a "competitive advantage" because they are viewed as being "ethical" and "normative". An example of this is MTN advertising its pledge to create 1000 jobs in partnership with the president's Youth Employment Service (YES4Youth) (Thabela-Chimboza & Chigona, 2019, p. 6). This research highlights the advantages for companies, though, with less of an emphasis on the cost to the organisation's bottom line. There is research which emphasises the costs more, by reporting on how companies find B-BBEE to be cumbersome and costly to comply with and that it is based more on ideology than pragmatism (Chimboza & Chimboza-Thabela, 2022, p. 204).

Evidently, companies could deploy lacklustre and lean graduate internship programmes to comply with legislation, but not really achieve transformation in the ICT sector by empowering black ICT graduates. Regardless of this perspective, B-BBEE plays a significant role in organisational strategy and how company resources are allocated (Mudau, 2022, pp. 233-34), which informs if and how an organisation will invest resources in the deployment of graduate internship programmes for ICT graduates.

These structural issues influence the employment prospects of ICT graduates in the amount of work opportunities that exist for them in the labour market. B-BBEE compliance is particularly important for organisations that would like to attain contracts with the state or be in the supply chain of large companies. This is why small companies have the incentive to hire young people through the YES4Youth programme (Ismail-Saville & Mazza, 2021) because it gives them B-BBEE points for the interns that they host and develop. Musabayana and Mutambara (p. 76, 2022) report that the government places a premium on small to medium enterprises (SMEs) in job-creation and alleviating poverty, which is why they put SMEs in their supply chains. Thus small and large businesses alike are subject to complying with some or all seven of the stated dimensions of the B-BBEE Act, which include human resource development, employment equity and enterprise development (Vilakazi & Bosiu, 2021). In short, the requirements for organisations to comply with B-BBEE provide a structural advantage for ICT graduates to attain professional work experience in a market where potential employers want their profile for their own manpower and compliance needs.

Having established some of the post-apartheid motivations behind graduate internship programmes, namely labour equity and economic empowerment of young black people, as well as exploring how these programmes work and what structural factors (legislation) inform them, I will now provide an outline of the characteristics of these programmes across the public and private sectors. Graduate internship programmes close the gap between theoretical knowledge and practical experience (Mabiza, Mahlalela & Mbohwa 2017) for ICT graduates and thus the different ways in which they are run across sectors, will inform the quality of bridging and thus the employment prospects that graduates experience.

2.4 The characteristics of graduate internship programmes across sectors

In this section, I outline the structure, curricula, and directives of each of the three types of South African graduate internship programmes in this study. Then I explore the benefits and drawbacks of the programmes as per the literature. Despite the literature suggesting that graduate internship programmes are a bridge between education and work and considering the influence that they have on graduate intern employment prospects and the employer's returns, there is no agreement across sectors about the ideal duration or even contents of an effective programme.

Public sector programmes are meant to provide interns with work experience that makes the labour market consider them "experienced" and "employable". These programmes last a standard two years, which is the duration of experience required for most entry-level jobs (Department of Public Service and Administration, 2018; Mchunu & Mutereko, 2020; Pietersen & Malatjie, 2022). The Department of Public Service and Administration provides

a directive to all departments meant to guide the deployment of graduate internship programmes. As a result, before considering market forces and manpower planning, national, provincial, and local government departments need to consider complying with this directive and account for their programmes. However, this is not to say that the government does not hire based on market forces at all, because they consider the annual "Finalisation of Critical Skills List" when deciding which skills profiles they ought to target (Department of Higher Education & Training, 2022). These two directives, like B-BBEE legislation, are structurally advantageous for ICT graduates who seek work experience when they graduate, because there is protected access to the labour market, where they do not need to compete with experienced workers for jobs. This directive also calls for mentorship and supervision to be provided through the programmes, centring on work tasks and career development as it states "A designated mentor shall be appointed for each person or a group of persons involved in a developmental programme. The mentor can be a line manager or any other suitable person who can render appropriate development and support in line with the career development of the protégé and the department's strategic objectives of implementing the programme." (Department of Public Service and Administration, 2018).

It is clear from the directive and from Mchunu and Mutereko's (2020) study from the eThekwini Municipality as well as February's (2022, pp. 76-77) study of interns at Groote Schuur Hospital in Cape Town and Pietersen and Malatji's (2022, p. 19) study of the National School of Government's graduate internship programmes, that public sector programmes aim to nurture the career development of graduates. According to these studies, this takes the form of clear work deliverables, a career development trajectory, guided workstreams and mentorship. This directive could be important for graduates and their employment prospects, especially if prospective employers screen for the details of their graduate internship experience to ascertain the graduate's employability. This directive is also in line with the SABPP's (2014) own recommendations about effective internship programme management, which demonstrates a widely understood narrative about the necessary traits of these programmes, against which we can evaluate private sector programmes too. Despite the compliance with standard practices from these programmes, there remain challenges which Barkhuizen and Gumede attribute to a lack of "talent management" and "career development" with staff in a select government department that they studied (Barkhuizen & Gumede, 2021). They found, through surveys, that 68% of the employees considered resigning due to a lack of talent management. The developmental strategies employed by government departments to manage talent influence the employability of graduates and thus their employment prospects. This literature provides a basis for studying public sector internships. Private sector internships too, are reported to have advantages as well as drawbacks that can be studied further.

In this section, I explore two categories of private-sector graduate internship programmes. These two types are not exhaustive of the programmes that exist in the private sector; however, they are distinct enough to provide a broad overview of how different actors in the private sector conceive of graduate intern development.

The first programme type is what I will call “private sector internally run programmes”. These programmes, such as the Huawei Authorised Information & Network Academy which Tsui studies, comprise employers running their own internal programmes to source graduate talent and develop it, either for their own manpower needs or for complying with B-BBEE legislation (Tsui, 2016). Employers determine the duration of their own programmes. The Huawei academy, as well as Vodacom’s (2022) own programme, are 12-month fixed-term contract programmes. Both are noticeably shorter than the 24-month government programmes, whose rationale hinges on the notion of two years of work experience being a prerequisite for most “entry-level” jobs. It is interesting to note that public sector and private sector programmes either do not share this rationale or do not act on it in the same way. Should a prospective employer screen for the duration of an intern’s work experience, then this rationale influences the graduate interns’ employment prospects. Tsui’s research highlights the questions that remain regarding the employment prospects of alumni interns. “How effective are the training centres and training programs? For trainees who were not hired by Huawei after completion of training programs, did their credentials open the door to other opportunities? What is the retention rate for trainees? Will successful trainees that are hired by Huawei continue to work for Huawei or leave to find other firms to work for?”.

There remain gaps in the literature regarding the rate of retention for interns in private sector programmes compared to public sector ones. This question of employment prospects, following the graduate internship programmes, is what this study seeks to explore. The case studies on Huawei and Vodacom demonstrate that protected entry into the labour market is provided, as well as supervision for the delivery of work tasks, however, there is little research to suggest that mentorship is provided for further learning in their programmes.

The third category, although technically under the private sector, is what I call “private sector funded programmes”. These are programmes where large companies donate a portion of their corporate social investment (CSI) or skills development levy funds to train workers internally or sponsor a small to medium enterprise to host interns on a stipend. Effectively, this gives the smaller businesses free labour. Programmes such as the Youth Employment Service (YES4Youth), first launched by the president of the Republic of South Africa (The Presidency, 2018), provide graduate interns with 12 months of work experience and the host company with enough funding for stipend payments. Hiring YES-funded candidates or paying small companies to host them, attributes B-BBEE points to large companies, which is an incentive for them to participate in the scheme (Ismail-Saville & Mazza, 2021, p. 2). Along with this, interns are given smartphones with which to complete online learning and receive mentorship. For ICT graduates, these programmes would take place at the companies that host them, along with all the stipulations above. Similarly, small companies can receive funds from a Sector Education and Training Authority (SETA) to use large companies’ unused skills development levy funds, to absorb and host ICT graduates, effectively using them for free, whilst the SETA pays their stipends (Department of Higher Education & Training, 2021).

There is insufficient research into the post-programme employment prospects of these types of programmes or whether they provide adequate career development support and mentorship. Research from the U.S. suggests that unpaid internships tend to be less well-structured in terms of work deliverables and developmental outcomes, as well as mentorship (McHugh, 2017). This is noteworthy because funded private sector internships are technically "unpaid" on the part of the host employer, and thus raises the question of whether these programme types operate differently to the other two reviewed in the literature and if alumni employment prospects also differ.

Having explored the configuration of graduate internship programmes I will now focus on the interns and their skills profiles and how these affect their employment prospects.

2.5 ICT skills shortages and skills profiles

In this section I explore the literature about the ICT skills paradox - the question of why there is a shortage of ICT skills in the labour market, but at the same time unemployed ICT graduates. I then outline how the demand for ICT skills varies by skill profile, as well as how soft skills enhance the employability of graduate interns.

The ICT skills paradox illustrates a phenomenon where there is a shortage of ICT skills in the labour market, yet there exists a significant number of unemployed ICT graduates (Twinomurinz, Schofield, Hagen, Ditsoane-Molefe & Tshidzumba, 2017). Abbas, Clemens, Gareis, Husing & Schmidtmann's (2019) report that South Africa employs close to 250 000 people in the ICT industry, which is 2.2% of the total labour force and the lowest in the BRICS (Brazil, India, Russia, China, South Africa) bloc. Their research finds that 75% of ICT managers feel that the shortage of ICT skills is having a "major effect" on their businesses. Their research finds that software developers and ICT security specialists are as difficult to find as profiles with ICT management and leadership skills (Abbas et al., 2019, p. 16). Several researchers attribute this shortage to insufficient enrolment in ICT tertiary courses (Kirlidog, van der Vyyer, Zeeman & Coetzee, 2018; Nthutang, 2021).

Twani (2021) studies the factors that influence young people's choice to study ICT in tertiary institutions. Influencing factors include their self-perceived cognitive abilities and perceptions of the ICT field as being "boring" and lacking employment opportunities. This research study explores the employment prospects of ICT graduates, and if they are found to be high or low, then this would either challenge this narrative or confirm their bias. These perceptions influence the eventual supply of ICT skills into the labour market, which ICT managers already feel is too low (Abbas et al., 2019). Low enrolment is also split across demographics, with only 1700 of the 10,000 members of the Institute of Information Technology Professionals South Africa being women (Calitz, Cullen & Fani, 2020). This demographic skew is interesting because it leads to an undersupply of women ICT practitioners in a market where B-BBEE laws are not only split across racial representation in the workplace but gender too (Chimboza & Chimboza-Thabela, 2022). Having established that there is a perceived shortage in ICT skills, I will further evaluate the paradox by splitting across skills profiles to understand the disequilibrium in demand and supply. The

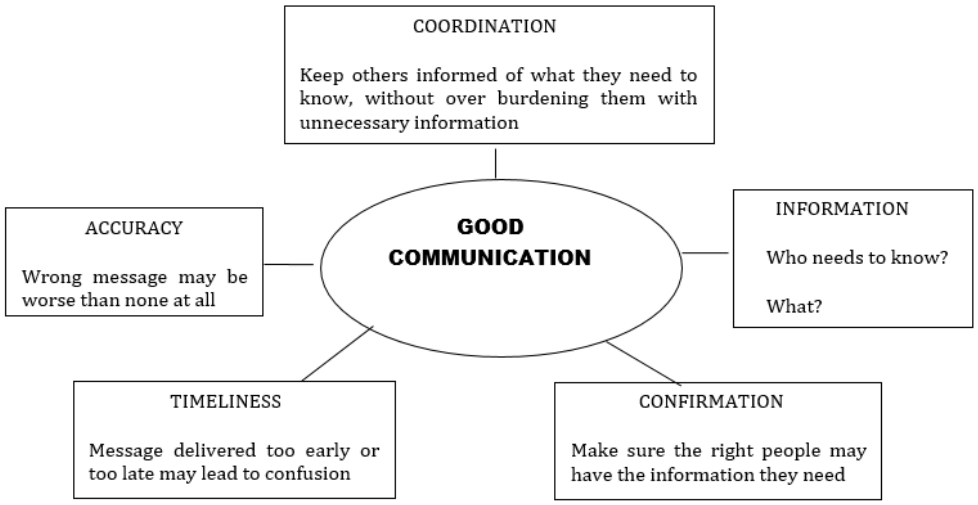
reconciliation of this paradox will explain how distinct skills profiles influence the employment prospects of graduates.

Lotriet, Mathee & Alexander (2010) argue that ICT job profiles change rapidly and therefore the demand for skills. This would explain why an ICT Systems Analyst is on the Critical Skills List, but an ICT Systems Administrator no longer is (Department of Higher Education & Training, 2022). This dissection clarifies why there can be a "shortage of ICT skills" in the market and a supply of unemployed graduates because the skills in demand might not be the ones that are in supply, due to how broad the skill sets in ICT are. The same applies to graduates who were trained in programming languages that businesses no longer use. They may possess ICT skills, but not the ones that employers have evolved to need. Twinomurinz et al. (2017) argue that instead of defining ICT skills narrowly, tertiary institutions need to create "trans-disciplinary" practices that teach and make use of various skills within ICT, to give graduates a better chance of attaining employment. Tertiary institutions complain that due to a packed 3-year tertiary programme and decreasing government subsidies, along with the bureaucracy that complicates curriculum reform, it is impossible for them to redesign their curriculum to meet the skills needs of employers "in 10 years", or to "future-proof" their students as employers demand (Twinomurinz et al., 2017, pp. 224-25)**.** This perceived skills mismatch by employers and the inability of tertiary institutions to meet these demands negatively influence the employment prospects of ICT graduates in the labour market. Having outlined the challenges in the supply of technical skills, I now proceed to another set of skills that employers deem to be a priority for graduates to possess – soft skills.

The discourse centring on the fourth industrial revolution and its adjacent skills such as problem-solving, communication and collaboration (Mabe & Bwalya, 2022) is why some researchers advocate for these skills to be taught in tertiary institutions (Kayembe & Nel, 2019; Ohei, Brink & Alao, 2019, p 13504). An example of how soft skills such as communication are conceptualised in the workplace is demonstrated in Figure 1 below.

Figure 1

Depiction of "Good Communication" in the workplace (Vasanthakumari, 2019)



Cimatti (2016) discusses how soft skills lead to the better delivery of products and services to clients. The arguments presented by Mabe & Bwalya, Butler-Adam (2018) and Cimatti (2016) point to an ICT practitioner who can interact with colleagues and clients to deliver the results that they demand, thus being more productive. The delivery of work as a measure of productivity highlights why managers advocate for soft skills to be taught in school. This phenomenon also explains the conclusions that Caputo, Cillo, Candelo and Liu reach, that the possession of soft skills leads to "greater economic performance", which in isolation is an opaque notion, but when linked to productivity, is clear. Graduate internship programmes offer unique opportunities for graduates to develop these skills because in a university classroom, where students will all pursue different careers, it would be difficult to focus on the employability skills of one career pathway to the detriment of others. However, in a graduate internship programme, where graduates are trained for the same profession, it is easier to ascertain what employability is in that industry, particularly if there is structure to the programme. The SABPP's recommendation demonstrates how internships, as a setting of learning, can develop interns professionally when they state that "Interns will probably benefit from the assignment of one "buddy", close in age and hierarchy, plus one "mentor", being a more senior person in the occupation or profession." (South African Board for People Practices, 2014, p. 9). The possession of these skills means that ICT graduates, at least in theory, stand a better chance of getting a job if they are in a graduate internship programme.

Furthermore, McQuaid and Lindsay (2005, pg. 201) list two types of soft skills, or "employability skills'. These are "Initiative Employability", which are skills that are transferable across industries and occupations, and "Interactive Employability". The latter illustrates an environment where the employability of an individual is relative to the employability of others. What this means is that if there is an abundant supply of workers in a particular labour market, then one's employability is determined by what else is available in the market, as opposed to the employability of the individual in isolation. This leads to

individuals wanting to differentiate themselves from other jobseekers in the market, which will be discussed in the conceptual framework of human capital theory in section 2.6. An abundant supply of employable workers in the market diminishes the employability of an individual, which then challenges the notion that these employability skills are static or even measurable as units. However, the dominant discourse remains that there are skills profiles that are in particular demand because of employers' stated needs.

Having established that the focus on the supply of skills profiles versus the broad supply of ICT skills is more helpful in understanding the ICT skills paradox than simply stating that "there is a shortage of ICT skills", it is easier to focus on the qualities that make graduates more employable. A discussion on soft skills proved to be as helpful in discerning the paradox as the clarity on broad ICT skills versus narrow skills profiles. Ndaba believes that the government should work to close these skills gaps and better align students and graduates for the demands of businesses. Currently, however, tertiary institutions are not seen to be doing this. This raises the question of the roles of graduate internship programmes as a bridge between education and work. Generally, technical skills are attained in a graduate's tertiary qualification (Ohei et al., 2019, p. 13505), and the graduate internship programme offers the opportunity for graduates to develop soft skills. However, controversy remains among researchers regarding whose burden it is to teach soft skills. The position of internships as a setting for learning will be discussed in the conceptual framework, along with the assumptions of human capital theory about the employment prospects of graduate interns.

2.6 Conceptual framework

The conceptual framework of this review centres on human capital theory, and how it helps to illustrate the stated outcomes of internship programmes for the employment prospects of ICT graduates. Secondly, this framework will outline social learning theory how learning and professional development occur in a graduate internship programme, and how these skills influence the employment prospects of ICT graduate interns.

Human capital theory has come to dominate the discourse on the value of education, as measured in economic outputs and returns (Brooks, Gupta, Laino & Lazetic, 2022). The theory suggests that investments in education and training, provide returns for workers in the form of higher wages and improved economic opportunities and that this investment provides returns to employers who thus have more productive workers (Schultz, 1961). In this regard, human capital theory would predict that ICT graduate interns should attain better employment prospects following their participation in a graduate internship programme, due to the knowledge and skills that they have attained in their work experience. Some of the literature that has been reviewed in this chapter makes similar arguments (Jackson & Collings, 2018; O'Higgins & Pinedo, 2018).

Additionally, the ability of interns to signal their skills to the labour market is important, because this closes the information gap (Spence, 1978) that exists between employers and the abilities of young ICT professionals. Because when a graduate has taken part in a graduate internship programme, they can signal to the labour market that they have work experience, and potentially that they possess technical and soft skills that make them

employable. These skills include some of the most in-demand ICT skills profiles that were discussed in section 2.2. (Department of Higher Education & Training, 2022), such as ICT systems analysis and software development and soft skills like communication and problem-solving that they have attained through mentorship and supervision, which tertiary institutions do not develop, as per the literature (Botha, 2021; Mchunu & Mutereko, 2020; K. Ohei et al., 2019). Thus, because the literature reports that this skills premium is important to managers, human capital theory would assume that the possession of these skills should increase the employment prospects of the interns. This is the linear assumption of human capital theory, of investment into training leading to employment prospects, that underpins the first part of this conceptual framework. However, it is not just the possession of these skills that managers assess or screen for, but instead how strongly they demonstrate the possession of these skills in and through their work (Bist et al., 2020; Mseleku, 2022). I use this notion to test whether possessing these skills presents better employment prospects for graduate interns.

The challenges to these linear assumptions of human capital theory can be found in the work of Brown, Lauder and Cheung (2020). They argue that credentials alone do not determine the returns that individuals will reap in the labour market. They illustrate how, when there is an oversupply of a particular credential in the market, and the demand for them in the form of suitable jobs is low, then employers are more likely to underpay workers or not even hire them at all. What this means is that even if ICT graduates attain internship experience which bestows on them advanced technical skills and enhances their employability through soft skills acquisition, if the market does not have enough suitable jobs for them, then they will either be underpaid by their prospective employer, or they will not even be hired in the first place. This could also lead to a market where employers inflate the basic credentials required for hiring in a bid to acquire even more highly skilled workers. Brown et al. (2020) argue that this also leads to the extension of credentials to focus on soft skills that might discriminate according to class, gender and race, such as “business awareness” and the knowledge of a foreign language.

Additional critiques of the assumptions of human capital theory, particularly in South Africa, challenge the discourse on “skills shortages” (Treat, 2014, pg. 182)**.** The discourse on skills is largely centred on the needs of businesses for them to make a profit. As a result, businesses berate the lack of skills in South Africa and make ever greater demands for skills attainment, which allows them to inflate the base credentials needed for workers, in a market that is oversupplied with unemployed people, which empower business to suppress wages because the workers are competing for scarce jobs (Treat, 2014)**.** Thus, despite the additional skills that ICT graduates could gain from an internship programme, the structural economic issues that have led to a scarcity of suitable jobs, means that the attainment of skills alone might not be enough to increase the employment prospects of these interns. This too poses a serious challenge for human capital theory and its assumptions around investing in learning leading to greater returns in the labour market.

The second consideration in this conceptual framework is exploring the role of skills and knowledge in helping graduate interns increase their prospects in the labour market and potentially get retained. Firstly, I test the capacity of a graduate internship programme to develop technical and soft skills in graduate interns, which tertiary education might not have

taught them. I make use of social learning theory (Bandura, 1969) to investigate the learning of technical and soft skills in these programmes. This theory states that a significant part of learning happens through the observation of others practising a craft and then learning to practice and even behave like them. Additionally, learning takes place through social interactions. This theory demonstrates how graduates can develop further technical skills as well as soft skills that improve their professional judgment.

Winch (2022) states that professional judgment is often inarticulable. This means that for the inarticulable professional judgement and action, a mentor in the workplace who is experienced is well-placed to train interns to develop professional judgement along with technical and soft skills. Thus, an internship programme possesses educational value in that it is a setting for learning, where interns can learn new skills, that human capital theory argues will increase their returns in the form of economic opportunities, such as employment. In this research study, I investigate whether organisations design learning pathways for further technical development, as well as how they nurture the development of both technical and soft skills in and through work. This investigation helps to illustrate whether a particular programme is effectively bridging education and work for ICT graduates, such that when managers screen for candidates to retain, they are basing it on established competencies that candidates have either learnt or have had the opportunity to learn.

The conceptual framework will test the assumptions of human capital theory as far as the employment prospects of these interns are concerned and secondly, it will test social learning theory as far as the graduate internship programmes are a setting for learning. The literature illustrates the value of learning and possessing skills that differentiate individuals in the labour market, thus the evaluation of these programmes against social learning theory will enhance the evaluation of the assumptions of human capital theory as well, as far as the predictions around increased returns and employment prospects for ICT graduate interns.

2.7 Conclusion

This chapter presented four sections, each to further explore graduate internship programmes and how they are structured as well as the profiles of ICT skills in the labour market and how this affects the employment prospects of ICT graduates. These characterisations are important for understanding what knowledge exists about the employment prospects of ICT graduates. The conceptual framework uses human capital theory to study the employment prospects (returns) of ICT graduate interns who complete an internship programme. Secondly, the framework uses social learning theory to evaluate the learning that takes place in these programmes and how effective it is in training and teaching interns, to impart employability skills to them. This framework was developed on the information from the literature about how these programmes work and what value they provide to graduate interns, and the two theories are used to evaluate these assumptions as well as the findings of the research study.

Chapter 3 – Research Methodology

3.1 Introduction

To explore the employment prospects that ICT graduates gain from graduate internship programmes, I applied the conceptual framework containing human capital theory and social learning theory, which I outlined in the previous chapter. Along with using this framework, I made use of the qualitative research methodology. I interviewed ten managers from information technology (IT) managers to human resources (HR) managers, all of whom supervise or mentor ICT graduate interns. This chapter contains six sections. The first section outlines the research design of the study which includes semi-structured interviews. The second section presents the research methodology employed in the study, which is the qualitative methodology. The third section deals with the analysis of the data, in the form of reading the transcripts and pulling out important information, as well as evaluating it against the conceptual framework. The fourth section discusses the ethical considerations of this study. The fifth section details the limitations of the study, mainly its generalisability and the sixth and final section concludes the research methodology section.

3.2 Research design

3.2.1 Data collection

This research project was made up of ten participants who were broken up into two categories, and three sub-categories. The two broad categories are “public sector” and “private sector”, however, the private sector is further split into “internally run programmes” and “funded programmes”. Four participants were IT managers in provincial government departments, two in the Gauteng province and two in the Mpumalanga province. There were three managers (two IT and one HR) from the private sector internally run programmes (who fund and execute their programmes). Finally, there were three managers or small business owners (two IT and one HR) whose interns’ stipends are funded by the Yes4Youth programme or MICT-SETA. The interviews ranged between 17-53 minutes long, depending on the amount of information each participant provided. These interviews all took place via online video calls, such as Google Meet and Microsoft Teams. The audio recording of these interviews was done on my mobile phone and finally transcribed on transcription software.

The semi-structured nature of the interviews allowed the participants to share details that the standard questions could not have exhaustively sought. Because the interviews were semi-structured, follow-up questions proved to be particularly useful in understanding how managers view and screen for technical, and especially soft skills. Each question started with a leading question before being followed by a supporting question (Wu, 1967). The leading

question is meant to establish generalisability across the findings of all participants in the study, whilst the supporting questions could be linked more to the unique set-up of a particular programme. Some of these supporting questions were standard and written down on every interview schedule, such as follow-up questions on how the participant feels about the current tertiary education curriculum and what they believe could be done to improve it. However, other supporting questions were unwritten and were based on the unique outcomes of the response to the leading question as it applies to a specific programme type or even a specific organization.

One follow-up interview was conducted with one of the IT managers from the Mpumalanga provincial government, to ascertain why they do not retain any interns at all. This is because the directive from the Department of Public Service & Administration (2018) states that graduate interns should be turned over every two years, although in Gauteng they still retained some of their interns based on good performance, whereas in Mpumalanga they do not retain any at all.

The questions that were asked are in **Appendix B**, while some supporting questions were asked, which were not on the schedule. The nature of these interviews was *descriptive/interpretive* (McIntosh & Morse, 2015). What this means is that I situated the participant of the interview as the "knower" and myself as someone who does not know what the details of these programmes are. This positioning was applied even though I am a practitioner in the field of ICT, who has also worked with interns before. This meant that when recording responses and later analysing the data, I would have to analyse the responses that I received reflexively.

3.2.2 Site of interviews

In all instances, the interviews were done via online video call using either Google Meet or Microsoft Teams, recorded on a mobile phone voice recorder, and then run through a transcribing software. Following the software's transcription, I edited the errors that the software made, to align the text with the audio recordings. All the participants were given informational, as well as consent forms to complete more than 72 hours before the interviews, and these were signed and sent back to me via email.

3.2.3 Selection of participants

Here I detail the programme types that I researched, and then secondly, I provide a profile of the managers that were interviewed. Table 3.1. below illustrates how the different programmes were categorized.

Table 3.1.

Programme Type	**Funding Source**	**Policy-backing**	**Venue of Internship**	**Responsibility of Actor**
Public sector programme	Provincial government departments	*National Skills Development Act, B-BBEE Act, Directive on the Employment of Persons to Development Programmes in Public Service*	Provincial government department offices	To fund and host the interns on their premises throughout training for further certification and work experience.
Private sector internally run programme	Private employer training funds	*B-BBEE Act, National Skills Development Act, Basic Conditions of Employment Act*	Company offices	To fund and host the interns on their premises throughout training for further certification and work experience.
Private sector funded programme	CSI funds (1% of corporate profits). SETA funds from skills development levies from larger corporations	*King Code IV, B-B-BBEE Act, National Skills Development Act, Basic Conditions of Employment Act, Skills Development Act*	Host company offices/Youth career accelerators	Interns are funded by Yes4Youth through CSI funds, or by SETA funds and they work at the host company, who

				are recipients of the funds.

Table 3.1. provides a useful illustration of the programme types that were investigated in this study and how they are structured. The table also highlights the similarities between the programmes, such as the policies that inform them as well as what the responsibility of each actor is. The table highlights some of the differences such as the source of funding and the location of the internship programmes. Having established the different programme types that were investigated, I can now focus on the profiles of the managers.

Based on the literature that was reviewed, I concluded that IT and HR managers who were tasked with mentoring and coaching interns were well-placed to provide valuable responses to the questions of this study for employer organisations. The participants can be described as being "close to the phenomenon" (Morse, 2003). This is the phenomenon of graduate internship programmes as a strategy to plug ICT skills shortages that affect their organisations as well as for them to comply with government directives. The proportion of sectoral representatives in the study was based on nonprobability sampling (Lune & Berg, 2017, p. 38). This helped me reduce the need for all the population elements of employers who take on ICT graduates (Acharya, Prakash, Saxena & Nigam, 2013). I opted for quota sampling, where the split was 40% public sector participants and 60% private sector participants. The process of convenience sampling was used, particularly with private sector employers, most of whom I found on the professional social networking site, LinkedIn.

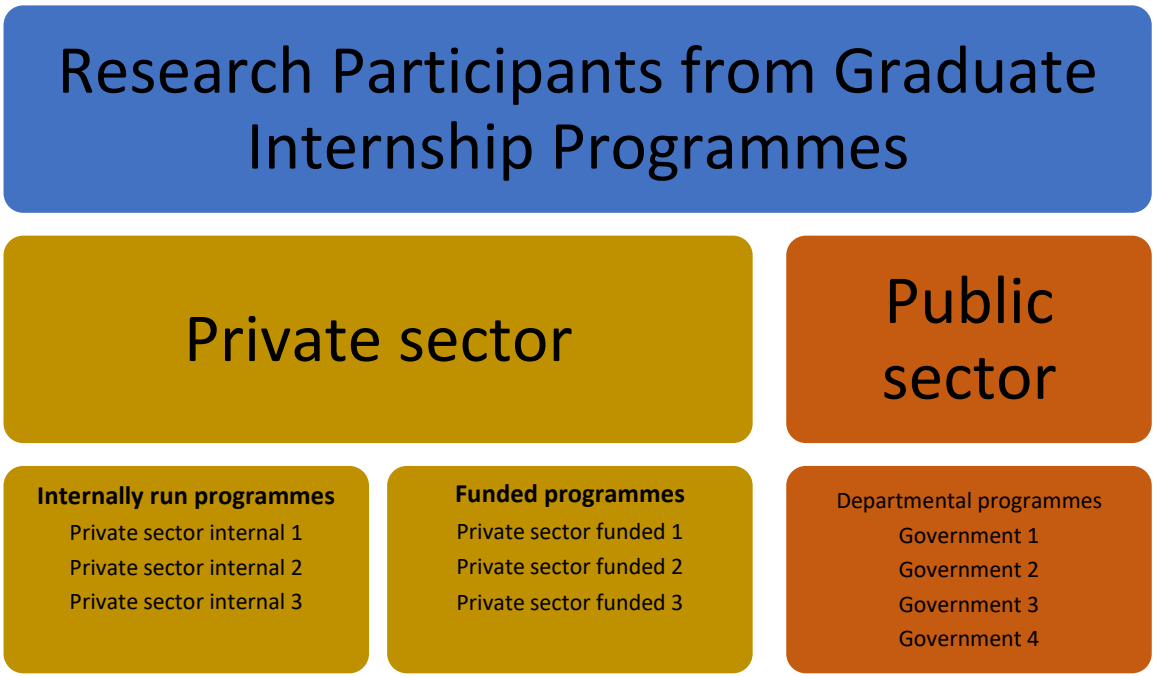
In the instance of government managers, it was more challenging. LinkedIn proved to be difficult, so instead I contacted acquaintances to assist me in finding participants, using snowball sampling, because I was dealing with a population that is difficult to find online and is also dispersed (Parker, Scott & Geddes., 2019). Searches on LinkedIn for IT managers in government departments were difficult, however, participants being connected to an IT manager from a sibling department in government proved to be an easier way of sourcing more participants. As a result, the study contains two government departments from the Gauteng provincial government and two departments from the Mpumalanga provincial government.

Ten managers were interviewed in this research study. Four are from the public sector (two in the Gauteng provincial government and two from the Mpumalanga provincial government). Six managers were from the private sector, with three coming from internally run programmes (funded and run internally), and another three were from private sector funded programmes (two are funded by YES4Youth and one Is funded by MICT-SETA). All four managers from the public sector are IT managers who are tasked with mentoring the interns. In the private sector, two of the internal programme participants are IT managers, and one is an HR manager. In the private sector funded programmes, two of the managers

were small business owners who work closely with their interns, and one of the managers is an HR manager in a medium-sized enterprise. Below is Diagram 3.1 which visually represents the profiles of the managers as well as their pseudonyms

Diagram 3.1.

Depiction of the categories of participants that were involved in the study.



The categorisation of the managers was based on their sectors and sub-sectors, however, the questions were the same for all managers. The sameness of the questions allowed for a more valid comparison between the two sectors. Thus, by comparing both the private and public sectors, I could test the assumptions of human capital theory, as espoused in the conceptual framework. This cross-contextual analysis (Udy, 1973) is necessary for creating generalisations about the outcomes of graduate internship programmes for ICT graduates. These comparisons also allow me to make recommendations for the public sector that are based on evidence of what seems to work and does not work, within the sector and another sector.

The shortest interview was 17 minutes long, with Private sector funded 1, who runs a software development business and receives funding from a multinational technology company's CSI budget through YES4Youth. This participant responded curtly and did not have many complaints about the way his programmes are run. The longest interview was with Government 1. This participant from Gauteng stated from the beginning of the interview that he had a lot of criticism about the way that internship programmes are run in

the public sector, and therefore provided significant context about public sector programmes.

As far as access to the participants, as explained earlier in the section, I found them in different ways, from personal networks to professional networking platforms like LinkedIn. I had one opportunity to interview all of them, using online video platforms like Zoom and Google Meet. I had a follow-up interview with one government IT manager who at that point I was communicating with on WhatsApp, however, the second interview also took place on Google Meet. As far as access to relevant information, all the managers were open in their responses, by providing both praises for their programmes and strong criticism against how their programmes work. This information was gathered under the promise of anonymity.

3.3 Research methodology

The first point to detail regarding the research methodology is the use of the qualitative method. Graebner, Martin and Roundy (2012, pg. 278) state that qualitative research has three fundamental characteristics, of which I will detail two that are relevant to this study. Firstly, qualitative research can be open-ended and exploratory. Secondly, qualitative research can be vivid and concrete, which they state, "activate cognitive processes that foster the development and communication of ideas". Thirdly, qualitative data are often rich and nuanced, which captures details that could be overlooked in quantitative data. The two latter points are more relevant to this research paper.

On concreteness and vividness, because internship programmes and their objectives are to an extent standard practices across industries, it is easy to frame the research objectives for all the case studies, regardless of the sector or business type. All these programmes hire graduates, apprentice them and then are faced with the decision to retain them or not. The managers who were interviewed could all be asked similar questions about how they coach their interns and what opportunities exist for learning in and through work. However, where the third aspect of Graebner et al. (2012)**.** comes in, is that qualitative data are often more complex and nuanced than quantitative data. This is true insofar as the outcomes of the research could show that one sector retains more interns than another, or it could show that there is no clear line of distinction about which sectors retain more interns. Quantitative data and the ensuing analysis would only show the figures that illustrate this phenomenon, but qualitative data gives us testimonies from the interviewees who explain the intricacies of their hiring practices, their intern development practices and their retention practices. This proves to be useful in illustrating a phenomenon if one exists. This also makes it easier to analyse the data according to the conceptual framework which was used for this study.

In using a conceptual framework for this study, my data collection and analysis were guided by the two theories that I am testing. These theories is human capital theory, which states that investment into education and training reaps returns for individuals in the form of higher wages and increased economic opportunities, and in this study employment prospects. The second theory that I am testing is social learning theory, which states that learning takes place through observation and social interactions, thus if ICT graduate interns are being guided by their mentors, the theory predicts that effective learning should take place in and through their work. Therefore, the qualitative research methodology was the most appropriate for this study because managers are often permanent fixtures in employer organisations and are custodians of the development of transitory graduate interns. They are well placed to speak about the context and structure of the graduate internship programmes, as well as the employment prospects of the interns that they manage.

In this study, I used semi-structured interviews. I used Dörnyei and Griffee's guidelines which state that an interview should do two things: flow naturally and secondly that it should be rich in detail (Dörnyei & Griffee, 2010, p. 140). Rubin and Rubin (2011) also illustrate the concept of "Responsive Interviewing", which is a paradigm that this study took on, where, as a researcher, interviewing was the best way to allow the participants to shape the language and the experience of ICT graduate internship programmes for me. Before the interviews, I also had to build rapport with the participants.

McGrath, Palmgreen and Liljedahl provide useful guidelines for building rapport with interview participants. These include drafting a summary for the participants before the interview and giving them reasons to believe that they can speak openly (McGrath et al., 2019, p. 1003). All participants were given this information sheet before I gave them a verbal breakdown and summary. Additionally, providing an ethics form assuring anonymity meant that participants were able to sign up for the interview knowing that they would not be exposed for their contributions. These actions aided in building rapport (Guillemin, Gillam, Barnard, Stewart, Walker & Rosenthal, 2016). These forms were in addition to any other inarticulable reasons why the participants would have trusted me.

3.4 Analysis

After transcribing and correcting the transcripts through transcription software, I then read each one several times to pick out different data each time using thematic analysis. I was able to fit the responses into a framework of categories based on the questions that were asked as well as the conceptual framework that is being applied in this study, particularly in the discourse around whether organisations provide opportunities for learning and professional development, whether they retain interns and which skills they screen for. Following the coding of the different transcripts, the next process is evaluating these codes against the two theories being tested in the study. Once I had grouped the codes according to the theories, I was able to start answering the research question. The questions on the interview schedule that helped to answer these research questions were the questions that centred on how the programmes work and what their stated objectives are (Question 1), their retention rates (Question 7) which was followed up by whether managers fear losing their interns to poaching, and this provided useful information about the shortage of certain skills in the ICT labour market. Finally, the questions that helped to answer what type of learning takes place and how skills are screened are Questions 3, 5 and 6. Once I had placed these codes into the theories in the framework, I could evaluate them against the theories.

McIntosh and Morse state that *"*The analysis of SSI (semi-structured interview) data is designed to provide a comprehensive and accurate descriptive summary of participants' perspectives. Unlike other research methods such as grounded theory or phenomenology, neither are SSI data usually abstracted into theory nor are they mined to discern the essence of participants' experience. Analysis remains close to the data." (McIntosh & Morse, 2015, p. 8). This excerpt informs how the data in this research project was utilised. Ultimately, the interview was meant to gather data on programmes that are similar enough in structure, and then analyse their similarities and differences to ascertain what, if any, employment prospects exist for ICT graduate interns at the end of their programmes. In this section I will describe how the data was analysed and secondly how it was evaluated against the conceptual framework containing human capital theory and social learning theory.

The analysis of the data of this study proved to be useful because the IT and HR managers work closely with the interns. As a result, the language that they use to describe "skilled" and "well-performing" interns and even how they convey government policy, all have a bearing on the experience of ICT graduate interns. For programmes that plan to retain interns, whether these graduates will be retained or not is based on their skills and how their performance is measured by managers and supervisors. This performance measurement influences the employment prospects that graduates will experience. Jones also points out that discourse is not just about making meaning, but also about how we construct our social identities and realities (Jones, 2012, p. 47). This is particularly useful in

enforcing the previous point about how managers understand the directives and mandates given to them and how those affect the way that they mentor interns and screen for the best-performing ones.

The codes on the objectives of the programmes and the retention rates were evaluated against human capital theory to ascertain whether the investment into these interns' training and work experience would translate into improved employment prospects. This meant that I had to evaluate each programme under the study to conclude whether the assumptions of human capital theory manifested in the outcomes of the interns. This is best illustrated in organisations that invest in the interns, and then offer them a job after the programme ends. In this regard, the interns have reaped the returns of the investment in the form of their employment prospects and economic opportunities. Organisations that cannot retain interns, either due to budget constraints or limitations imposed by government directives, illustrate a non-linearity to the predictions of human capital theory. This is because an intern who has had resources invested into them throughout the programme and has no prospects of being retained regardless of this investment challenges the linear assumptions of the human capital theory of investment leading to returns.

Secondly, the codes on learning and screening were useful in ascertaining whether these internship programmes provided effective learning through observation, social interactions, technical certifications, and guidance from mentors. Several authors report that universities do not teach employability or soft skills to students, therefore internship programmes provide a robust platform for ICT graduates to learn these skills, as per social learning theory, in a professional setting that has narrow and specified objectives for its workers, all of whom practice similar work. The attainment of these skills allows the interns to be competitive in the internal labour market (within the organisation) and the external labour market. Ascertaining the extent of learning is crucial for understanding how managers screen for the best-performing interns in the programmes because it is this performance and the demonstration of certain skills that inform whether some of them will be retained or not. If a programme has a lacklustre learning in and through work strategy, then it diminishes the interns' employment prospects when the managers start to screen for certain skills and attributes that determine their retention or release from the organisation.

Thus, having analysed the data against the assumptions of the two theories, I could structure the findings to illustrate the employment prospects of ICT graduates. These are the steps which I followed to analyse and order my findings to present the findings chapter. Before the collection and analysis of the data, I had to establish a set of ethics that would guide the research process.

3.5 Ethics

In this section I cover the pre-interview ethical considerations and secondly, the ethics of the analysis of the data. All participants were provided with the following before their interviews: an information sheet summarizing the key tenets of this study, seen in **Appendix C**; a consent form to sign which was also read out loud before every interview began, seen in **Appendix D;** and lastly a supervisor permission letter to be signed by their superiors or managers, seen in **Appendix E**. These forms were also approved by the Wits School of Education. These forms were meant to ensure that the research interviews could proceed without any complications about what information could be divulged and for what purposes it could be shared with me as the researcher. These documents constitute the procedural tenets of the ethics consideration of this study. Of particular importance was re-assuring the participants that they would remain anonymous and that they may pull out of the study at any time, which they all agreed to. Some participants also requested to see the final research report, to which I agreed I would send them the final draft when it is complete. However, these were not the only considerations that I had to make regarding the study.

As a new researcher and as a practitioner in the field of ICT who carries "conceptual baggage" (Kirby, Lloyd & McKenna, 1995), because I have worked with interns before, reflexivity was key in ensuring that I delivered a research study that is valid and ethical. I achieved this in several ways and in line with the literature on conducting ethical qualitative research, such as Probst (2015), and McGinn & Bosacki (2004, p. 16). These pieces of literature highlight that as researchers in the field, the forms, and guidelines that we have drafted for the study might fall by the wayside if, during the research, we are confronted by our own moral and professional commitments. This meant that if I heard something about the training of interns that I did not agree with, I would still have to document it and treat the data as I would other pieces of information that I received from the participants, without recording it in a biased manner. Watt (2007, p. 84) highlights that it is important for the researcher to pick a topic that they find worthwhile. However, Watt also highlights that it is equally important to use mechanisms that keep one reflective about how they are researching. For me, this included getting feedback from my supervisor as well as a work colleague who works in human resources, who both helped me to shape my questions so that they did not only focus on the areas that I was interested in but could also inquire about the areas that the research question is trying to answer. What these ethical considerations also highlight, are the limitations of the study as far as the conclusions that can be made and those which are not appropriate to be made.

3.6 Credibility

Kodish and Gittelsohn (2011) state that building credible evidence from qualitative research starts with data collection, all the way through to the representation of the findings. They provide examples like how the data is collected, how it is analysed, either through inductive or deductive coding and then how it is represented. Firstly, for data collection, I chose managers who are involved in the end-to-end process of hiring these graduates, overseeing their learning and work, and then also playing a part in the determination of the retention decision. This makes these participants the most credible interviewees to answer the research questions and to achieve the research aims, because of how close they are to the phenomenon of graduate internship programmes. Secondly, interviewing as a method created room for me to gather rich and nuanced insights that could extensively test the assumptions of human capital theory across sectors.

In this study, I used deductive coding, by testing the assumptions of human capital theory as outlined in the conceptual framework. This makes the study generalisable and findings therein testable by other researchers. These codes pertained to the opportunities for learning within the programmes, criteria for retaining interns and the capacity to retain candidates based on resources available organisational policies and procedures. It is these codes that directly confirm or challenge the assumptions espoused in the conceptual framework.

3.7 Positionality of the Researcher

Subjectivity in this research project is unavoidable because the researcher, myself, am a practitioner in the field that I am researching. Probst (2015) points out that to check subjectivity, researchers need to gaze in two directions – the first one being their field of study and the second one being their own projections and assumptions about the object. Supervision, while drafting the lead questions for the interviews was particularly helpful in this, and some of the notes that my supervisor made for me under my questions served to remind me to remain focused on the research question at hand, and not my own agenda or assumptions about what information the participants would give me. Centring the participant as the *knower* also allowed me to be reflexive.

To make the findings of this research more applicable, to other researchers in particular, a theory or concept needs to be used (Reeves, Albert, Kuper & Hodges, 2008). In this case, the concept of employment prospects is the overarching conceptual framework of this research paper. Thus, when other researchers aim to investigate a similar topic or even the same one as I have, they can use the employment prospects to probe the qualities and events that inform the employment prospects of ICT graduate interns.

3.8 Limitations

This research paper did not use representative sampling, and this could be seen to blur the generalisability of the research. I did, however, use concepts from the literature that has been written on the topics of ICT skills profiles and the structure of graduate internship programmes. To make the findings of this research more applicable, to other researchers in particular, a theory or concept needs to be used (Reeves, Albert, Kuper & Hodges, 2008). In this case, the concept of employment prospects, centring on human capital theory, is the overarching conceptual framework of this research paper. Thus, when other researchers aim to investigate a similar topic or even the same one as I have, they can use the employment prospects underpinned by human capital theory to probe the qualities and events that inform the employment prospects of ICT graduate interns. Secondly, the use of social learning theory allows other researchers to evaluate the extent of learning in graduate internship programmes.

Part of what makes this study generalisable is *context similarity* (Larsson, 2013, p.47). When looking at the varying sectors and sub-sectors that were studied in this paper, they all occur in a similar context. This would include features such as hiring new graduates, teaching them further and advanced technical skills as well as the organisations needing the interns to plug some sort of technical and non-technical skills gap, and finally, needing to comply with B-BBEE directives. This similar context allowed me to research further into the employment prospects of ICT graduate internship programmes across sectors. The contextual factors of these programmes and the variables studied can be generalised by other researchers and even expanded to study this phenomenon further (Green, 1999). However, this study, with its limited sample, is not a representation of the broader phenomenon of the employment prospects of ICT graduates across South Africa.

3.9 Conclusion

This research study employs qualitative methodology in the form of semi-structured and responsive interviews with IT and human resource managers. I have evaluated the participants' responses against the conceptual framework to structure the findings, which I present in the following chapter.

Chapter 4 – Findings

4.1 Introduction

In this chapter, I outline the data that emerged from this study. The first section introduces the key findings about the graduate interns who participate in these programmes. The second section illustrates the structure of the different programmes that were studied. Here the main learning was that programmes across sectors are deployed similarly, with differences lying in mentoring and learning programmes. Finally, the third section is an in-depth analysis that is split into two parts. The first part of the analysis looks at all the factors from the employers that influence the employment prospects of these graduates, thus the focus will be on the demand side of the market. The second part of this in-depth analysis outlines the factors of the graduate interns and the skills that they possess, which influence their employment prospects, thus the focus here is on the supply side of the market. This section will lead to the discussion in the following chapter. The conclusion will synthesise the findings and lead to the discussion chapter to follow.

4.2 Findings about the graduate interns

4.2.1 Profile of the graduate interns

All the graduate participants in these programmes have a minimum National Diploma and even bachelor's and honours degrees. The typical background of a graduate is either one who is a new graduate or one who has taken part in an internship programme before. Government 1 highlights that the turnover rate in the public sector is high and that interns are simply brought in to replace old ones. The other three public sector managers also stated that they have a high turnover rate of cohorts every 24 months, as per the Department of Public Service & Administration's directive (2018). The graduates from the private sector, all of whom are based in Gauteng, typically hold qualifications in software development and data science. Governments 3 and 4, from Mpumalanga, listed varying ICT qualifications from networking to software development, but they highlighted that very little software development work takes place at the provincial level and instead takes place at the national government level. All ten managers reported a skills mismatch in what the graduates were qualified in versus the work that they were required to do. I will discuss how these skills mismatches are conceived and resolved in section 4.4.2.2, which discusses the learning that occurs in the programmes. Before that discussion, however, I must break down the structure of the internship programmes as per the findings of this research study.

4.2.2 Sentiments of the managers regarding interns

Each of these managers is tasked with looking after the interns, from structuring learning, mentoring, coaching and performance reviews. Generally, the managers spoke favourably of their interns, and they did not highlight behaviours from the interns that make their jobs difficult or make the programme difficult to deploy. There was a variance in the length of the interviews which was not linked to the sector in which the manager works, but rather the volume of details offered by each of them. Government 1 provided a lengthy critique of public sector graduate internship programmes which included criticism against the public sector and how it functions in general, and his interview was the longest one at 53 minutes. Private sector funded 1 had the shortest interview. He is a small business owner, and he did not provide any criticism against his business but rather provided information about the programmes and the interns. The two primary actors in the phenomenon of this study are the interns and their managers, and having profiled both, I now move on to the programmes and how they are deployed.

4.3 Structure of internship programmes

This section will focus on detailing the structure of the different graduate internship programmes by looking at their durations (Question 1), the learning that takes place to fill the skills gaps (Questions 3 and 5) and the mentorship setup (Question 6). These structural features and differences allow us to understand how the structure of a graduate internship programme, as it is the demand side of the labour market, affects the employment prospects of the graduate interns at the end of the programme.

4.3.1 Public sector programmes

The public sector graduate internship programmes that I studied all have a similar structure and underpinning. All four of them start with an advertisement being put out for interns, with the Z83 application form being released for candidates to complete. Three of the four public sector managers confirmed that their programmes last for 24 months. This is in line with the directive of the Department of Public Service and Administration (2018). This adherence by the three departments shows that the policy is being enforced and that it forms part of the basis of these programmes. The strict adherence to the directive challenges any assumptions that these interns are hired for a purely market-based reason, such as wanting to attract strong profiles for a specific set of work that the organisation needs to complete. Instead, they are hired primarily for the sake of policy compliance. This is not to rule out hiring based on skills needs, however. Departments do hire for skills needs. It is important, though, to point out that policy compliance has a strong bearing on hiring graduates. Government 1 reported that the

> "…national banner internship programs, quite frankly, are two things. One is we have targets. So, we have spending targets, and we have a placement target, we must have a number in our space there. They all get pulled into a program called 'Workforce Development', which links young unemployed people to workplace opportunities. The second reason why we do this is just for capacity. So, we need warm bodies and hands. Yeah. It's… I wouldn't say it's anything more than that. There's no strategic alignment to the skill set that is required. In some instances, there will be specific requests from either program or project managers to say that 'I do need somebody with a particular set of skills and is ICT-driven.'".

This participant believes that his department largely hires for policy compliance over strategic human resource reasons. The other three managers also reported that policy compliance informs why they hire interns, which illustrates a pattern.

Learning in these programmes focuses on technical skills. Question 3 leads to whether there are skills mismatches that the managers perceive between the tertiary qualifications of the graduates and the organisations' needs. The supporting question, which was standard for all participants, asks how the managers close this gap. All four managers agreed that there was a skills mismatch. However, not all of them have a structured way of covering this gap. The two managers from Mpumalanga reported not having a structured learning programme for resolving the skills mismatches. Both Gauteng managers reported having some sort of structured and mentor-led strategy for covering the technical skills gaps. As far as Question 5 is concerned, which asks whether the candidates do any additional technical vendor-specific certification courses throughout their internship programmes, both managers from Mpumalanga (Governments 3 and 4), stated that their candidates did not complete any. Both Gauteng managers stated that their interns do additional technical vendor-specific certifications such as Microsoft Power BI*,* which is a tool for data analytics, as with Government 1's cohorts and for Government 2, the interns get to choose their certification pathways. Therefore, for the most part, there is no directive for structured learning across the board for technical vendor-specific certification.

The final topic under consideration is that of mentorship throughout the programmes. Firstly, there is mentorship focused on guidance in work-related tasks and mentorship focused on learning-related tasks. All four managers stated that their mentorship is based on work-related tasks, and only one of the managers, Government 2 from Gauteng, stated that the mentorship also applies to technical learning and courses. Government 4 from Mpumalanga, speaking about the challenges of providing mentorship to all graduate interns, states that.

> “That's a bit difficult. As I said, we have capacity challenges. Currently, we are sitting with twenty-something interns, but we have approximately ten mentors…So those that are lucky, with us in the provincial office, or at a district level (receive in-person mentoring), there are a handful of those in the sub-districts, if they've got challenges, they have to call (in).”

This quote demonstrates that there are capacity issues as far as providing quality mentoring. This is also reflected in the responses about self-paced learning where three of the managers stated that their programmes emphasise self-paced learning, with one of those three, Government 2, stating that it is 50/50. Thus, this makes it one manager who reported that there is some mentor-led learning. With these features being established, it is now time to compare the public sector to the two sub-categories within the private sector.

4.3.2 Private sector internally run programmes

The first point to note regarding private-sector internships is that they are not guided by the same directive as public-sector internships. Although, they are subject to the same labour laws and skills development laws (Broad-Based Black Economic Empowerment Act (No. 53 of 2003), (Skills Development Act, 1998, Basic Conditions of Employment Act 75 of 1997, 1997 & (Labour Relations Act of 1995, 1995). The length of the three different programmes in the study ranges from twelve months to three years in an ICT academy programme. Private sector internal 1 is an IT services manager in an insurance and asset management corporation, where the length of the programme is determined by the manager’s ability to motivate the budget to be allocated to pay interns. This is already a stark difference between the public and private sector, in that no directive stipulates a minimum period of two years for a programme. Private sector internal 1’s programme is twelve months long, Private sector internal 2’s programme is a three-year long academy internship programme in a cloud computing consulting firm and Private sector internal 3’s programmes are twelve to eighteen months long, in an asset management corporation.

All three managers state that there is a skills mismatch when graduates first enter their roles. Private sector internal 2 stated that

> “But I do think that I think tertiary education [is] getting better at closing that gap. I think, as usual, academia is a little bit behind business, and Africa is a little bit behind the rest of the world, but I think things like problem-solving, like systems thinking, like access to information technology tools, are going to be the things that bridges that gap better.”

All three managers, however, have structured interventions for closing this skills gap, other than just dealing with them on an ad-hoc basis. Despite not being guided by a sector-wide directive, it was interesting to note this uniformity. Private sector internal 3 has a noteworthy system for those interns who might be falling behind on their work, stating that.

> "I've created a 'Learning Board' for any individual that joins my space…as a management team in [cyber] security, what we deem necessary skills [is] to be able to conduct your job, [not] just your basic job description. So, we put together a learning board with various courses that you can go to. I mean, you'll be well aware of … Udemy, for example."

As far as Question 5 is concerned, regarding vendor-specific technical courses and certifications that interns might do, all three managers reported delegating courses for interns to do. This contrasts the two out of four public sector managers who do the same. The final discussion point for this sub-sector pertains to mentorship. All three managers reported that their programmes have mentorship centred around work tasks. Two out of three of the managers stated that the mentorship extends to learning courses (in addition to just delegating which courses to complete), and Private sector internal 2 stated that they prioritise self-paced learning for technical skills and certifications. However, he stated that this is because they have learning platforms that structure the learning for the interns. Therefore, there are differences in programme duration and structured learning and mentorship between the public and private sector. Most of these differences stem from the freedom that each organisation within a sector has, to formulate and structure their programme. These findings so far have demonstrated that the freedom afforded to private sector firms, although leading to shorter programmes in some instances, also leads to more holistic developmentally focused programmes. However, in the next section, I explore, still within the private sector, if funded programmes are structured in the same way as internally run programmes.

4.3.3 Private sector funded programmes

This sub-sector of programmes is different from internally run programmes in numerous ways. For example, YES4Youth programmes usually receive their funding from a larger corporation, which donates the money for Corporate Social Investment (CSI) and tax incentive purposes. They then use this money to fund unemployed ICT graduate interns to work at a company, at no cost to that host company. These host companies could also be in the supply chain of the larger corporations that fund them. About the running and management of his company, Private sector funded 1 states that

> “Well, we’re basically on a program where AWS (Amazon Web Services) helped to grow our company, and as part of this initiative, we need to absorb youth through the YES program. AWS pays YES and the youth directly, so the stipend doesn't come out from us, [it] comes from AWS directly and we were basically told to hire (the) youth.”

This demonstrates how internships in this sub-sector are funded and how this effectively provides small businesses with free labour.

MICT-SETA operates in a similar fashion, where the funds derived from large corporations’ skills levies, can be used to pay interns to work in a smaller enterprise at no cost to the host company. This is how Private sector funded 3 runs his company. This type of programme is interesting to note because, from the host company’s perspective, they operate similarly to companies that run unpaid internship programmes. One of the managers, Private sector funded 2, runs a hybrid internally run programme, along with a YES4Youth-funded programme. Following the findings from these interviews, I could also compare them to the features and problems that McHugh (2017) finds with unpaid internship programmes, mainly, how unstructured they tend to be in the work tasks that are given to interns.

These programmes last between three months to twelve months. The length of these programmes is shorter than those of the internally run programmes and significantly shorter than the public sector programmes which last a minimum of two years. Interestingly, all three managers in this sub-sector are sympathetic to the skills gap between what graduates learn in university versus what they do in the workplace. Private sector funded 2 states that

> “From a hard skill perspective, I mean, they learn coding, you know, and we use the same principles when you come to your corporate setup, you know… if the language is Java, you learn that at university, you're gonna use Java when it comes to a corporate setting. So, I don't think there's a gap there.”

These managers are more sympathetic to the role of tertiary institutions in saying that their role is not to meet the exact skills demands of industry, especially for niche technologies.

I probed for what these organisations do if an intern is not experienced in the technology that an organisation uses. Two of the managers have structured interventions that are mentor-led, and one of the managers reported that there is no structure in place for these interventions. All three managers reported that their programmes have compulsory and standard technical vendor-specific certification courses that their interns need to complete. These range from cloud technology like AWS to programming languages like Python, which is key for machine learning and artificial intelligence (AI). Therefore, this also helps in resolving the skills gaps across the board, even for the manager who does not have

structured interventions. This trend is in line with the internally run private sector programmes, and distinct from the public sector programmes, where only two out of the four managers reported the learning of additional certification for technical skills.

All three managers stated that their mentorship programmes apply to work tasks, and two of the managers stated that this mentorship applies to further structured technical learning. Two of the managers stated they prioritise self-paced learning, with one of those managers saying it is 50/50 between mentor-led learning and self-paced learning. The structured learning and working approach challenges McHugh's findings from the U.S. which report unpaid internships being less structured. These programmes, despite being unpaid internships on the part of the employer, demonstrate a high level of structure and clarity for professional development.

Having demonstrated how the programmes work across sectors, there remain gaps between the structural setup of the programmes and the questions on the employment prospects of the ICT graduate interns. I will narrowly analyse some of the major findings of the research study in the next section.

4.4 In-depth analysis of findings

4.4.1 Demand side factors influencing employment prospects

In this section, I present the findings that pertain to the employment prospects of ICT graduate interns and how the structural set-up of these programmes influences them. Secondly, I highlight the findings that pertain to skills and learning in and through work. The second part of this section will also analyse how managers screen for skills when considering which candidates to retain. Through the research, a clear order of influencing factors emerged where the capacity of the host organisation to retain interns was the primary influence on the employment prospects of ICT graduates, with the skills of the interns being a secondary influence. I will begin by outlining how the organisations (demand side) influence the employment prospects of these graduate interns.

4.4.1.1 Compliance with government directives and laws

Question 8 asks if the managers feel that labour laws make it easy for them to hire, retain and even potentially dismiss workers and if that informs how they hire graduates. Private sector internal 1 affirmed that laws such as B-BBEE are positive because they compel organisations to go and look for young talent. Private sector internal 3 had mixed feelings about the consequences of laws like B-BBEE, stating:

> "Yeah. And like I mentioned, our organization focuses mainly on the female demographic, which is not entirely a bad thing, but I also feel that look, you are also then discriminating against other demographics as well. So, they are restrictive in terms of that in terms of the labour laws."

There were no clear patterns along the lines of sectors in the responses to this question. Of the funded managers, Private sector funded 3 believes that labour laws in South Africa are hostile to small businesses, and thus short-term contracts are better for them because they do not have to carry the burden of doing employees' taxes or paying benefits. Interestingly, this manager is also the only private sector participant who reports not retaining any interns. This outcome is due to budget constraints, in that all his programmes rely on external funding, but the use of short-term contracts is also indicative of his sentiments towards government laws. Private sector funded 1, although he retains a high number of his interns, still believes that shorter-term contracts are better, more for budget reasons than due to the fear of the risks of non-compliance with the law.

From the public sector, two managers believed that the laws and policies are fair, with Government 3 highlighting that the requirements for entry into a programme are the same as with any other graduate internship programme which include being a citizen with no criminal record. Government 4 believes that the policies make it easy to hire, but they are not tied to any broad strategy for attracting the best talent to the public sector.

> "So, if government will say, 'Here's the strategy, we want 100 interns in the in the whole provincial government, but at least we will retain 80% of them'. But in this case, we just skill them, after two years they go. So that's the problem".

This quote by Government 4 is echoed by Government 1 who believes that it is "laziness" on the part of the government to not want to reform the policies about the retention of interns. All these responses highlight varying sentiments from managers that range from full on support for labour and equity laws, to reservations about their fairness and effects on employers. From the public sector, the responses too, range from resounding support to the belief that the government needs to be more deliberate about attracting and retaining ICT talent, instead of just strictly following the directive that outlines the 24-month contract terms, without being nuanced in how that is applied practically. Therefore, the figures illustrate that the private sector internally run programmes that were studied, hired more, and retained more candidates, with the public sector in the middle and private sector funded programmes coming last. However, there is a more nuanced finding in the reports on how government laws affect the hiring of candidates, for public sector programmes, the 24-month directive is applied strictly in the Mpumalanga provinces and to varying degrees in Gauteng. In the private sector programmes, the decisions lie with the businesses and in the next section I will explore what influences the decision to retain interns.

4.4.1.2 Rates of retention across programmes

Table 4.1.

The source of the information below is the ten managers who were interviewed in the study, and is based on Question 7 which asks, "How many of those interns have you retained in the last three years?". The goal of this question was to ascertain what proportion of interns each programme retains.

Sector	**Programme**	**Cohort population**	**Number of interns retained**	**The proportion of the cohort retained**
Public sector (Over 2 years)	Government 1 (Gauteng)	5	5	100%
	Government 2 (Gauteng)	4	2	50%
	Government 3 (Mpumalanga)	12	0	0%
	Government 4 (Mpumalanga)	22	0	0%
Private sector – internally run (over 3 years)	Private sector internal 1 (Insurance & Asset Management)	2	1	50%
	Private sector internal 2 (Cloud Computing Consulting)	80	60	75%
	Private sector internal 3 (Insurance Corporation)	15	8	53%
Private sector – funded (over 3 years)	Private sector funded 1 (Cloud Computing Services)	14	13	92%
	Private sector funded 2 (Software Development)	90	11	12%

	Private sector funded 3 (Digital Academy)	30	0	0

Because public sector programmes generally last two years, the question had to be reformulated so that they could provide a valid response. The proportions can still be used to compare which participants have higher retention rates.

What emerges from this theme of hiring and retaining interns is that private sector internally run programmes retain higher proportions of their cohorts past the internship. The private sector funded programmes have very mixed results that do not exactly draw a pattern but demonstrate that each organisation hires differently from the other one. The public sector results were particularly interesting because they tend to have smaller cohorts and the retention ranges from 0% to 100%. However, these figures are not representative of the true phenomenon because this study was not a representative sample. It is, however, interesting to note that both Gauteng programmes retain some candidates, but neither Mpumalanga programme retained any candidates. For this phenomenon, I conducted a follow-up interview with Government 4 from Mpumalanga.

What Government 4 revealed in the follow-up interview is a bureaucratic process of motivating the retention of interns first by creating a post, based on the stipulated hierarchy of government departments and offices that is standard for all the departments in the province. This is a process that involves the Premier's office (executive head of the province). The manager describes this as a "cumbersome process". Additionally, the manager states that the department spends a significant amount of money on consulting companies to assist with ICT needs, instead of retaining interns, which he has tried to motivate. Because the budgets for service providers and wages are earmarked, he cannot use funds earmarked for consultants to pay for the retention of candidates. Finally, he reports that there is no formal process of keeping up with the interns who are not retained unless there is a personal relationship with a colleague at the department who they keep up with.

4.4.1.3 Reasons for differences in retention rates

As far as the capacity to retain interns, the private sector organisations in this study linked it either to targets that they set for themselves or affordability. Private sector funded 2 stated that they aim to retain 10-12% of their cohorts at the end of their programmes. What this means is that the employment prospects of a graduate intern in this programme are lower than they would be in Private sector internal 2, where they have aimed to and have managed to retain 75% of their graduate interns over the last three years. These structural differences supersede the performance of interns through their work alone, and the dynamic of setting targets influences the employment prospects of interns depending on which programme they are in. In a public sector programme, where the directive from the Department of Public Service & Administration (2018) has a significant bearing on the running of these programmes, the capacity to retain interns ranges from 0% in the Mpumalanga provincial government cases to 100% in the case of the Government 1 who has reported having to motivate to keep interns beyond their initial contracts. Thus, the capacity of an organisation to retain interns is a crucial indicator of the employment prospects that an ICT graduate is likely to experience from taking part in a graduate internship programme.

The second point to outline is that of the skills supply within the labour market. All the managers interviewed generally agree that there is a skills shortage. Where the manager expresses frustration, particularly in the public sector, is how the government does human resource planning. Government 1 expressed the following regarding the structure of the programmes and use of interns:

> "…they don't provide maximum productivity for the young person. They don't provide maximum efficiency for the organization. They're very badly run. And we're doing the young people a disservice. But we're also not getting the best out of them for that year."

Therefore, despite there being a strong need for data scientists within his department, he still feels that the interns are not being utilised optimally to their full potential, as per their skill set. Thus, the reasons for retention range from the size of the budget to pay retained interns in the case of the private sector employers and the two Gauteng government managers, to the strict compliance to policies that stipulate that interns must be turned over every two years, as in the cases of the Mpumalanga managers. These points are important to note and will be evaluated against the assumptions of human capital theory in Chapter 5.

4.4.1.4 The fear of poaching

Question 7 leads by asking the managers how many interns they have retained in the last two to three years. The second part of Question 7 asks "Do you have fears about your candidates being poached by competitors (including sibling departments or private sector organisations)*"*. To this, all four public sector managers stated that they do not fear their candidates being poached, and that in fact, they are happy when their candidates get external opportunities. Government 4 even states that:

> "In government, you don't have fear. Because we are not business oriented, but service oriented. So, when they are being poached by other departments, we clap hands that we managed to skill them, and they will go and assist departments."

By contrast, five out of the six private sector managers expressed the fear of their candidates being poached by the competition.
Private sector funded 1 stated that:

"Yes, within our industry, the cloud and DevOps industry, because the skills are so scarce, every corporate particularly is trying to snatch these skills …. So, they'll hire at any cost, which makes it very difficult for us to retain such skills, because you know, then individuals jump for salaries. And as a start-up, we can't compete with corporate salaries."

The private sector managers have an acute awareness of what it means to lose an intern that they have invested money in training, to a competitor.

Private sector internal 3 points out that working in a niche market in South Africa, particularly the cybersecurity domain, which he states is a very rare skill in the country, makes poaching more concerning. However, he also stated that it is a good reflection on the organisation and its training programme if competitors are poaching them. Private sector internal 1 gave an anecdote of her own experience being upskilled by a former employer, who made her sign a contract stating that she would not leave the firm for a set period after completing a qualification whose tuition they funded, otherwise, she would have to reimburse them for the cost of the courses that she completed in a particular period. This demonstrates the extent to which private firms aim to retain their strongest employees. However, she did not report this condition to be part of the internship programme. The point was noteworthy insofar as the differences between the objectives of the public sector, as Government 4 highlighted, that they are not "business-oriented" versus the private sector, where they would even include non-compete clauses against the workers that they have trained. The responses to this question demonstrate a clear lack of aggression in retaining talent from the public sector versus the private sector, which not only fears losing strong employees but uses restrictive practices to attempt to retain them.

4.4.2 Supply side factors influencing employment prospects

4.4.2.1 Perceived skills gap

With all ten managers agreeing that there is some sort of skills gap between what graduates learn in tertiary institutions versus what they need to do their work, the skills mismatch proved to be a prominent point across the interviews. The notable exceptions were the private sector funded-programme managers, all of whom believe that there is a gap, but that either tertiary institutions are doing enough (Private sector funded 1) or that it is not their job to match the needs of industry exactly as they are. When discussing the role of tertiary institutions, Private sector funded 2 states that:

> "So, to answer it directly. The institutions are not doing much. But it's not for us to hold them accountable. We should be in my view, (be) holding ourselves accountable and starting the relationships [with them]."

However, most managers (public sector and private sector internally run programme managers) feel that the gap is significant and that tertiary institutions ought to play a bigger role in teaching skills that are relevant to the ICT sector. Government 1 even believes that tertiary institutions are receiving funding based on how many graduates they produce and not the quality of graduates that they produce. He sees this as being the core reason behind the skills shortage in the ICT sector, as well as many other industries such as engineering. He states that:

> "So, in terms of are they focused on producing the best quality of graduates at the end of the day to meet the demands of the market? Now, they don't get measured on it. They are getting measured on people going through the organization."

Government 1's sentiments demonstrate a clear dissatisfaction with the quality of graduates that are being supplied into the labour market.

Therefore, this sentiment of skills mismatches and the ill-performance of tertiary institutions is widespread within the sample of participants. One area of concern about the ICT curriculum involves how quickly technology evolves versus the reaction of tertiary institutions. Private sector internal 1 stated that she cannot blame tertiary institutions for not teaching industry-relevant skills because of how quickly technology changes. Private sector internal 2 agrees but believes that tertiary institutions are starting to adapt a lot quicker to evolving technology. Government 3 feels that what is lacking is a structure that mediates between industry, government, and tertiary institutions to close the skills gaps that currently exist. Private sector funded 3, who shares the same sentiments as the managers that I just mentioned, is running an initiative with the Department of Higher Education to address this issue of slow adaptation to new technologies. He compares South

African institutions to those of developed countries and says that they have mastered it and we have not mastered this mediation between tertiary institutions and industry.

Private sector internal 2 expressed that he feels that the closing of the gap is happening more at former Technikons, now known as "Universities of Technology", which are producing more work-ready graduates. This, as he reports, is because they integrate practical work into their curricula and focus less on theory. This gives credence to the sentiment that tertiary institutions can in fact create employable graduates. If the broad sentiment is that tertiary institutions are not producing employable graduates, then graduate internship programmes serve as settings of significant learning (as per social learning theory) if the graduates are to develop the skills necessary for them to be productive in the workplace. Secondly, if the managers screen for certain skills when determining which candidates ought to be retained at the end of the programme, but also feel that there are skills gaps that graduates possess when they enter their programmes, then their interventions as far as learning in and through work would strongly influence the employment prospects of their interns.

4.4.2.2 Interventions against perceived skills gaps

The theory that quickly becomes outdated in technology is the reason why Private sector internal 1 state that:

> *"*For example, even with me, I think what helped me advance a lot in my industry is not my diploma. It's the certification(s)."

This would explain why all the private sector managers emphasise the importance of technical vendor-specific certificates in the programmes that they run. Looking at Private sector internal 1's quote, her conviction in further certification plays a role in how she manages her interns and her programmes. This discourse reveals the features of how her programmes are run, and perhaps how other private sector programmes are run. If all the private sector internally run programme managers bemoan the slow adaptation of tertiary institutions in keeping up with ICT developments, then further certification becomes of value in producing technically competent candidates with strong professional judgement, and thus these programmes develop significant educational value. The themes that emerge from the skills gap largely centre on the technical skills of the graduates. The interns are expected to have a minimum National Diploma when entering the programme and they learn further technical skills in the form of further certification, except for three out of the four public sector programmes. However, these technical skills prove to be less consequential in determining the employment prospects of the graduate interns regarding who gets retained in the organisation following the internship programme.

As discussed in section 4.4.1.3 and later in chapter 5, the host employer can retain, if any, interns, which primarily determines the employment prospects of these interns. However, where organisations can retain interns, there are skills that managers screen for that they report candidates do not possess when they first enter the programmes. This means that the programmes, as per social learning theory, serve as settings of learning and further development such that the interns come to possess the skills that managers prioritise when determining which interns to retain at the end of a programme. Secondarily, it is the possession of soft skills, and not technical skills, that determines which interns get retained by their host employers.

4.4.2.3 Skills that managers screen for

Having established that a technical qualification gets a graduate into these programmes, it was interesting to note how prominent "soft skills" feature in the decision to retain a graduate. All ten managers reported soft skills as strongly influencing their consideration to retain candidates. This pattern was consistent across the sector divide. Skills like "problem-solving" featured quite strongly, and so did "self-motivation". Part of this screening is using performance tasks that are measured and graded, through a system of mentorship. Private sector funded 2 explained the concept of a "performance contract", which is a document, based on a scale from 0-5, that interns sign where they commit to performing their work at a certain level, as he states:

> "So, depending on the expectation, if you have met that expectation, [we] will give you a score… if that score is a two and below, we won't even consider a retention conversation. If that score is a four and above, they are the candidates that are the cream of the crop, that we will want to retain, but we will once again go back to the performance scorecard to see what's in there."

One set of characteristics, which were sometimes described as "skills", centres on interns' attitude, curiosity and teachability. All three private sector internally run programme managers, two private sector funded programme managers and two public sector programme managers emphasised these attributes which graduates must demonstrate for them to consider retaining them. These managers believe that it is these skills that help the interns to work well with others and to solve problems. In all instances, managers felt that it was more important to screen for these soft skills than for technical skills. Private sector internal 3 states that:

> "The attitude of an individual… a lot of people can come to you with a lot of certifications and a piece of paper to say that 'Look, I've gone and studied this, I've

> passed this', but an attitude of an individual is what matters most to me as a hiring manager, skills and knowledge can be taught, you can gain the knowledge and expertise over time."

In all ten programmes, the screening is primarily conducted by the mentor. The public sector managers expressed the most difficulties when it comes to the capacity to mentor, for example, how "unstructured" it is (Government 1) to how few mentors they have (Government 4). This lack of capacity in mentoring has a bearing on how well these soft skills are taught, measured, and screened for. Mentors not only act as screening devices but also the teachers of soft skills. Private sector internal 1 reported that in her programme, mentors were also in charge of teaching interns topics such as "how they present themselves". The mentorship in this organisation did not have to necessarily come from one's department. This finding goes to show how little of a bearing interns' technical skills have on their employment prospects in this programme, compared to soft skills. Private sector internal 3 states that in his programme, interns also learn about the business functions within the organisation. This knowledge too is used to screen for strong candidates and has little to do with their technical ICT skills, but rather how well they work in multidisciplinary teams. As a result of the analysis provided on soft skills, the employment prospects of the graduates are informed by a multitude of demand-side and supply-side factors.

Therefore, considering that managers' report there to be a technical and soft skills gap between interns who first enter graduate internship programmes and the work that is required of them, these programmes possess the potential to be of educational value to the interns. Eight out of the ten employers compel their interns to do further technical certification, and all ten managers' report at least attempting to provide mentorship and coaching that is meant to teach the interns soft skills. These skills are learnt through observation, social interactions, and deliberate refinement from mentors when they coach the interns on their professional growth. There are varying levels of success regarding the execution of these learning pathways and programmes, and this challenges the assumptions of social learning theory, which will be discussed further in Chapter 5.

4.5 Conclusion

This chapter presented the findings of the research study by organising the data according to its relevance in helping to answer the research questions. Two influences on the employment prospects of ICT graduate interns emerged. The first influence involves the reasons for and the capacity of an employer to retain graduate interns. This first influence is the primary determinant of these graduates' employment prospects. This influence explains how the structure of the demand side of the labour market supersedes the performance of an intern in their work when considering their employment prospects. Secondly, managers report having candidates who lack skills that can make them technically competent and soft skills that make them employable. Despite this, they screen for those skills, particularly soft skills, when determining which interns to retain at the end of a programme. This brings into question how interns plug these skills gaps. Because all of the programmes studied have some sort of learning pathway, from the completion of technical certificates to mentoring and coaching on soft skills, graduate internship programmes possess educational value as settings of learning that can enhance the skills of interns and increase their employment prospects when managers start reviewing their performance and screening for soft skills. The quality of the mentorship and supervision in this regard, influences how seamlessly the interns learns and thus how high or low their employment prospects are at the end of the programme. Following from this presentation is a discussion that evaluates these findings against the conceptual framework.

Chapter 5 – Discussion

5.1 Introduction

In this section I discuss the implications of the findings against several factors. In the first section I evaluate the findings of the study against the conceptual framework to demonstrate how they partly align with the assumptions of human capital theory and largely align to social learning theory. In the second section I will attempt to respond to the research questions by analysing the employment prospects of the graduate interns in this study. In the third section I explore some of the remaining knowledge gaps pertaining to the employment prospects of ICT graduate interns. Finally, in the fourth section I explore some of the observations regarding the execution of public sector programmes versus private sector programmes and the areas that could be investigate further. The findings highlight important information regarding the influence that internship programmes have on the transition from education to work, and the employment prospects that follow.

5.2 Reflection on conceptual framework

5.2.1 Human capital theory

In chapter two I presented the conceptual framework which starts by highlighting how the assumptions of human capital theory can be tested against the findings of this research study. Human capital theory argues that the investment into an individual's education and training reaps returns in the form of increased wages and increased economic opportunities (Schultz, 1961). In this study, the focus lies more on economic opportunities, in the form of employment prospects, and not wages. Graduate internship programmes as investments into training and education should, according to human capital theory, increase the returns of ICT graduates. The findings of this paper demonstrate that there are returns in the form of retention for some interns. These interns have differentiated themselves in the labour market and in their host organisations because they not only hold a tertiary qualification, but they also possess work experience. This signal to the internal market (the employer) and the external labour market informs employers of the stock of knowledge and skills that the interns possess.

However, managers like Government 4, illustrate that even with the stock of knowledge, skills and experience, some interns do not reap a return on their time invested in a graduate internship programme. Their employment prospects are not enhanced, because none of them are retained at the end of their programmes and there is no opportunity for the manager to even consider retaining them. This is where human capital theory is challenged, in that the mere investment into these individuals does not translate into returns in a linear fashion. Although five of the six private sector managers and two out of four of the public

sector managers retain some of their candidates, the lack of retention by two of the government managers and Private sector funded 3 due to structural limitations, demonstrates that the path from internship (training and work experience) to full-time employment is not linear and that human capital theory does not sufficiently explain this phenomenon.

Therefore, although human capital theory provides a framework for evaluating the returns that ICT graduates experience or do not experience in the labour market, it does not account for the structural factors that influence whether an organisation has the capacity to retain interns (such as budgets and strict adherence to policy directives obligating employers to turn over staff every two years). This further clarifies the ICT skills paradox as well, because although research shows that IT managers believe that the shortage of ICT skills has a negative influence on their organisations (Abbas et al., 2019; Calitz et al., 2020), which highlights a demand for ICT skills, this does not translate into the large scale absorption of interns into organisations. If those organisations, like some the ones studied in this research study need ICT skills, but do not have the budget to retain strong performing workers, then the paradox remains – there is a demand for skills, but there are also unemployed ICT graduates. Furthermore, human capital theories' strongest assumptions about the returns to the investment into education are challenged.

This challenge to human capital theory only challenges the notion that the returns are reaped in a linear fashion (from investment to employment), however if an organisation has the capacity to retain interns, then human capital theory partly explains why some candidates are retained and others are not. Where an organisation, like that of Private sector funded 2 and all three of the Private sector internally run programme managers do retain interns, then human capital theory applies. This is true because managers screen for the interns who have developed a strong set of skills and retain them based on their performance and their demonstration of skill and execution of professional judgement. However, before this performance can be measured, deliverables and standards need to be clearly communicated as the SABPP (2014) argues. Some level of learning needs to occur in these programmes to make the selection more objective as Private sector funded 2 aims to do through his employment of the "performance contract", as well as the managers from the case study from the Indian professional services company that employs a 22-question survey to measure its interns' performance (Bist et al., 2020).

5.2.2 Social learning theory

The findings of this research study demonstrate that learning does occur in the form of observations and social interactions as social learning theory posits (Bandura, 1969). In all ten programmes, interns are given mentors and supervisors who refine their soft skills by teaching them how to act and practice in the workplace. Seven out of the ten managers also report providing mentor-guided learning in their programmes for candidates to complete additional technical vendor-specific certification whose technology those organisations use. Social learning theory is demonstrated in that the workplace skills that researchers claim are not taught in tertiary education (Alao & Brink, 2022; K. Ohei et al., 2019), are taught in internship programmes through mentorship and supervision. The findings of this research also demonstrate that through the mandatory completion of technical vendor-specific certification to narrow technical skills into those that the employer needs, coaching on soft skills and measuring the performance of interns, these managers are attempting to develop their intern's professional judgement too, some of which is inarticulable (Winch, 2022), but demonstrated through the independent completion of work.

However, Government 1 disagrees with the notion that his programme is nurturing the skills of his interns when he states:

> "…they don't provide maximum productivity for the young person. They don't put provide maximum efficiency for the organization. They're very badly run. And we're doing the young people a disservice. But we're also not getting the best out of them for that year."

This quote challenges the notion that internship programmes can teach skills to interns that they will then be able to demonstrate and be evaluated against at the end of their programme. His quote challenges the linearity of social learning theory in an internship programme as well. These findings highlight that the structural setup of the programme is also important because it determines how interns learn or whether they learn at all. In the case of Government 4 in Mpumalanga, where there is limited capacity in the form of mentors, particularly for those interns who are far from the head office, learning in that programme is neither guaranteed nor does it demonstrate the linearity of entering a graduate internship programme and leaving with skills that make them employable. Thus, participating in a graduate internship programme with insufficient mentoring limits the ability of interns to learn through observation and social interactions, as the theory posits (Bandura, 1969).

In chapter 5.3 I will explain further how a lacklustre learning programme affects the employment prospects of these ICT graduate interns. However, to conclude this evaluation against the conceptual framework, neither human capital theory nor social learning theory

can be applied to the programmes that were investigated in this study in a linear fashion. Both these theories' assumptions only provide partial explanations for what the returns of the interns will be, provided that their employers can retain any interns at all. Secondly, despite graduate internship programmes appearing to be a setting for the observation of and learning of professional judgement and work, there are some conditions, such as the provision of mentors, that make this learning possible.

5.3 Employment prospects of ICT graduate interns

In this chapter I have challenged, using the findings, the notion of human capital theory which posits that the investment into individuals in education and training reaps returns in the form of economic opportunities, such as the employment prospects that are being investigated. In a market that is not purely market-driven, but is driven by government directives such as those of the Department of Public Service & Administration (2018), then the employment prospects of ICT graduate interns, particularly those in public sector programmes are not the linear outcome of the investment into further training and work experience in an internship. This extends to programmes which are funded by CSI funds such as YES4Youth (Ismail-Saville & Mazza, 2021; The Presidency, 2018) or Sectoral Education & Training Authorities (SETAs) whereby the employment prospects of interns who participate in their programmes are based on whether those organisations have enough funding to employ them, rather than their prospects being based just on the skills that the interns possess.

Even if we apply social learning theory and position internship programmes as a bridge between education and work (Jackson, 2018; Maake-Malatji, 2021) and we consider them a social setting where learning technical and soft skills can take place that will make graduates more employable, this is not a linear outcome of participating in a graduate internship programme. As I outlined in section 3.4 of the research methodology chapter, chapter 3, a lacklustre learning programme not only limits the application of social learning theory in characterising graduate internship programmes as a setting for learning in and through work, but it also negatively influences the employment prospects of ICT graduate interns. The reason for this is that all ten managers agree that there are skills gaps between what the interns possess at the beginning of their programmes and what is required by their organisations. What a robust learning programme does, particularly the opportunity to be mentored through both work and learning, is that it gives interns an opportunity to develop the skills and the professional judgement that these managers unanimously report they screen for when they are considering retaining interns. Thus, social learning theory can be applied to most of the programmes that were investigated in this study, however its application is limited in the programmes that provide insufficient mentoring.

What is interesting to note, however, are the differences between the Gauteng and Mpumalanga provincial departments programmes and their propensity to retain interns. The Gauteng-based managers that were interviewed reported retaining some of their candidates, and this was based on the capacity to retain (budget and policy flexibility). The Mpumalanga managers stated that they do not retain any candidates. The Mpumalanga cases pose the strongest challenge against the assumptions of human capital theory that an investment into learning reaps returns, in this case, in the form of employment prospects. It is not clear why these differences exist between the two provinces, and it leaves a gap for further study.

Finally, when looking at the research questions, with the main question focusing on why some interns get retained while others do not, the analysis above demonstrates how the structure of programmes (demand side) determines whether interns are retained, and it also informs the motivations that organisations have for retaining interns. For all of the private sector internally run programme managers, the fear of their interns being poached is part of what informs their retention of interns, which demonstrates an aggressiveness about retaining their strongest employees, which the government managers do not demonstrate. This analysis also responds to the supporting questions pertaining to why some organisations hire from their internship programmes while others do not. The final sub-question pertains to the skills that managers screen for when determining who they retain and who they release at the end of their programmes. Technical skills and tertiary education qualifications allow ICT graduates to participate in graduate internship programmes, however soft skills were reported by all the managers to be the determinant of who gets retained at the end of a programme.

5.4 Remaining gaps in the knowledge

The limitation of this study lies in two areas, firstly the sample size and selections, and secondly the broader returns for interns who leave their host organisations. This study employed non-probability sampling, which is not demonstrative of the broader population within the ICT sector in South Africa. Thus, the findings here cannot be said to be representative of the phenomena of returns to ICT graduate interns in the labour market broadly. Secondly, due to a lack of systematic tracking of the prospects of graduate interns who are not retained, it is difficult to ascertain what their employment prospects are in the external labour market. This gap is in contrast to some studies such as those from Eurobarometer (O'Higgins & Pinedo, 2018) and research from Australia (Jackson & Collings, 2018) which follows interns who have left internship programmes and presents data on their prospects in the labour market at large.

Government 4 and Private sector internal 1 offered anecdotal evidence of ensuing unemployment by their former candidates who were not retained. This points to candidates

who are either not retained by their host organisations or those who are not poached, finding themselves unable to find a job after the internship programme has ended. Private sector funded 3 reports that some of his alumni go on to find other jobs, while others start their own businesses, however even he did not provide systematically recorded evidence of these case studies. These anecdotes, while useful in providing a basis for researching further the prospects of programme alumni who are released, do not respond to the research questions of this study.

5.5 Observations pertaining to public sector programmes versus private sector programmes

5.5.1 Employment prospects

This research study found that private sector internally run programmes present the strongest employment prospects for ICT graduates. Public sector programmes mainly differed along provincial lines, where the structural setup of the programmes and the capacity to retain interns meant that Gauteng provincial departments present ICT graduate interns with some employment prospects, comparable to the private sector. If this phenomenon is found to be present in a larger study, then it highlights the non-linearity of human capital theory in government departments outside of Gauteng province. This would mean that an investment into interns and their demonstrated learning and development in the public sector do not lead to employment prospects for them, as with the Gauteng province or with the private sector participants of this study.

5.5.2 Skills development

As far as talent development, only one of the four public sector managers reported that mentorship extends to learning. Only two out of the four managers reporting additional technical vendor-specific certification being completed. This means that interns are not being trained in the latest technical vendor-specific technologies that are constantly evolving and are not taught at school either. This has a bearing on the quality of graduate intern that the public sector will have at the end of their 24-month internship programmes. Such a candidate presents less returns for the government departments in terms of productivity, but they will also be less able to signal technical and professional competency in the labour market. This will negatively influence the employment prospects of public sector ICT graduate interns. Gumede & Barkhuizen's (2021) study of a government department's head office illustrates a similar pattern, where 68% of surveyed employees report considering leaving their jobs due to a lack of professional development

5.5.3 Talent retention

Government 4's follow up interview revealed that there are layers of bureaucracy that make it difficult to retain even well performing interns. This bureaucracy includes rigid team structures and the rigid separation of budgets between service providers and wages that could be used to pay retained interns. The strict adherence to the 24-month policy might help in giving as many young people as possible an opportunity to attain protected access to the labour market to gain work experience, however the lack of a retention plan and the set-up of the organisational hierarchy and budgets, mean that IT managers will struggle to retain strong interns. The sentiment expressed by all public sector managers who state that they do not fear their candidates being poached because they will grow in other organisations, potentially highlight their lack of confidence in the ability of their programmes and organisations to develop ICT talent and provide them with strong employment prospects.

5.6 Recommendations for the public sector

Because the purpose of this research study is to help the public sector in examining its own internship programmes and the dual role of hiring skilled ICT workers and alleviating youth unemployment, I will focus my recommendations on that sector. Despite the intentions of the DPSA's (2018), strict adherence to the policy presents more harms for the dual role of the policy. By not having a standard retention plan for well-performing candidates, not only does the public sector lose out on critical skills in ICT, but it also burdens the young interns with further unemployment should they not be retained or should they not find a job after their programme. As a result, the intention of this policy should be closely aligned with its prescriptions. There should be a prescription for how to retain well-performing candidates, as well as strategy for reducing reliance on outsourced consulting companies and instead to groom young talent internally.

5.7 Conclusion

Comparatively, the private sector cases in this study differ from the public sector in the employment prospects experienced by interns. Private sector programmes tend to have more standardised learning programmes that emphasise vendor-specific certification, whereas with government departments, it largely depends on individual managers. Despite the fact that for private companies it also depends on the individual companies, there seems to exist a standard practice of upskilling across organisations. Secondly, private companies consider strongly the prospect of their interns being poached by competing companies, which probably explains why they invest more in learning and why their rates of retention are higher. Government departments are more beholden to policy-adherence than the need to retain and hoard ICT talent. Because of the structure of the demand-side, in this case the host employers, the assumptions of human capital theory as far as an investment into learning leading to better employment opportunities, is not entirely valid. Instead, these assumptions are based on the demand-side and its capacity to retain learned and skilled interns. This means that the private sector is more likely to possess skilled ICT interns, with work experience, compared to the public sector.

Chapter 6 – Conclusion

This study aimed to plug the knowledge gap between why there is a reported shortage of ICT skills in South Africa, yet ICT graduates find themselves unemployed. By studying graduate internship programmes and interviewing the managers who run them, I was able to ascertain the influence that they have on the employment prospects of ICT graduates, some of whom would have been unemployed otherwise. I interviewed ten managers from information technology to human resources who all work intimately with the ICT graduate interns, to gather data on this phenomenon. What I found was that the two most significant influences on the employment prospects of ICT graduates post-programme are, firstly, the capacity of the host organisation to retain its interns. The second influencing factor, if they have both the budget and policy capacity/permission to retain those interns, is what qualities they look for in candidates. These two factors represent the make-up of the demand side of the labour market, in the form of the employers' capacity to retain interns, and secondly the supply side of the market, in the form of the graduate interns and the skills, and now, experience, that they possess and can signal to the labour market.

The findings of the research demonstrated that the skills shortages are largely linked to specific profiles, and not ICT skills broadly, as confirmed by managers who state that tertiary institutions are not producing graduates with the skills that they need. This means that it is unhelpful to only refer to literature which speaks about ICT skills shortages broadly. Most of the literature that was reviewed speaks to ICT skills broadly but does not state how this paradox can be solved, which is clearly linked to skills profiles more than just broad skills. Instead, when researching the ICT skills paradox, we should delve into which skills are in demand as reported by industry and the government. Secondly, the findings confirm that ICT professionals ought to have soft skills, which the literature outlines. The possession of skills like communication, problem solving, and collaboration are highlighted by every manager in the study as being critical in their determination of which interns get retained. This concord is interesting to note, and the findings show little variance to what the literature states. Finally, the policies that were reviewed in the literature are what managers stated inform their programmes and their decision to hire interns. Government departments hire for two years, as per the literature and private sector businesses hire based on B-BBEE policies, along with making use of SETA funds and programmes like YES4Youth.

Interviewing managers was particularly helpful in that they are the custodians of the development of graduate interns, and they are also aware of the limitations of their own programmes. As a result of this awareness of the limitations, such as the capacity to retain interns, they are the ones who must draw up priorities pertaining whether and even how they will retain a limited number of graduate interns at the end of the programme.

Structural limitations such as earmarked budgets also mean, that even in the event where hiring strong interns might make more sense, organisations might use the money meant for outsourced services, strictly for those services instead of making the budget fungible between service providers and wages for retained interns.

The conceptual framework of this study centred on two theories – human capital theory and social learning theory. Human capital theory is meant to outline the returns in the form of employment prospects that the graduate interns should reap after participating in these programmes and after the investment into their training. This is not true for some programmes, particularly when interns underwent training and learning or gained work experience but participated in a programme that has no capacity to retain them. Secondly, as far as graduate internship programmes as a setting for learning through observation and social interaction, which can impart on interns the skills that manager screen for when they are considering retaining them, a lack of mentorship can hamper their learning pathways. A lacklustre learning programme means that these interns will not have an opportunity to develop the skills that their managers report they do not possess at the beginning of the programme. Additionally, they will not develop these skills, despite managers reporting that they screen for them when considering whether to retain their interns.

Further research needs to be conducted with a representative sample size of the ICT sector in South Africa to better illustrate what the employment prospects of ICT graduate interns are, more broadly. Most importantly, which is where this study was limited, is to ascertain how many of the candidates who are not retained enter unemployment or find alternative work opportunities following their exit from their host organisations. A more in-depth study, if the findings were the same, would inform tertiary education students on which learning, and career pathways present the best employment prospects for them in the labour market. These findings would influence what students choose to study and which sectors or organisations' programmes they choose to apply for.

In a bid to professionalise the public sector, the observations of this study show that the difficulties will lie in attracting ICT graduates, considering that the employment prospects are lower compared to the private sector. These low employment prospects are due to the lower rate of retention in the public sector versus the private sector. Additionally, there are limitations on the running of public sector programmes, such as the capacity to retain well performing candidates and to pay them better wages, as well as the capacity to mentor them while they are still in the programmes. Further studies will highlight if the public sector should reformulate its talent attraction, development, and retentions strategy.

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Appendix A – Ethics Clearance Form

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | WSoE Wits School of Education

SCHOOL OF EDUCATION ETHICS COMMITTEE

CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER:** 2022ECE041M
PROJECT TITLE	The job prospects of ICT graduates in internship programmes – A comparison between public sector and private sector programmes.
INVESTIGATOR	Masilela Bongani
SCHOOL/DEPARTMENT OF INVESTIGATOR	**WSOE**
DATE CONSIDERED	22 July 2022
DECISION OF THE COMMITTEE	Approved unconditionally
RISK LEVEL	No Risk
EXPIRY DATE	Date of submission of the Research Report
ISSUE DATE OF CERTIFICATE	**CHAIRPERSON** Dr. Batseba Mofolo-Mbokane

cc: Prof Stephanie Allais

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

Signature **Date** 28/07/2022

Appendix B – Schedule of questions

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

Good Day (Participant Name)

We will now begin the interview for the study of *"The job prospects of ICT graduates in internship programmes – A comparison between public sector and private sector programmes.*
First, I'll just confirm that you are aware of the ethics disclaimer by reading them out to you. The questions are as follows:

1. To start with, I'm interested in understanding how your internship works. Could you take us through the process from start to finish? Internship programmes will usually start off with orientation, where candidates learn about the organisation's mission and values. Following this, they will start to learn about the technologies that the organisation uses, and finally their work will begin for several months, where they will complete work tasks, create/test/maintain/install software and shadow /assist more senior managers. This programme usually culminates in a selection process where some candidates a retained and others are let go off. Is this the case with your organisation? Are there any differences in the way your internship programme works?

2. There are three main models in South Africa now. The first is public sector internship/learnership (part of a government strategy to absorb young skilled people). Secondly, internships can be private sector programmes based on BBB-EE legislation. Thirdly, a company could hire YES4Youth-funded candidates as 'free labour', who complete the internship as per normal, but with Yes4Youth requirements such as regular learning online. Which category best describes your programme and why?

   ANSWER:

3. Many technology and digital organisations complain that there is a skills mismatch between what graduates have learnt in tertiary versus what organisations need. Do you feel that there is a skills mismatch between graduates and the needs of your organisation? Have you had discussions with other managers about these skills mismatches? What do they say could be done to fix it? How do you go about fixing with your internal learning programmes?

ANSWER:

4. Graduates have a firm grasp of programming and cloud knowledge but not vendor-specific skills that organisations use. Do you agree with this statement? Why?

   ANSWER:

5. Do candidates learn any additional vendor-specific certification in cloud computing or software development in your programme?

   ANSWER:

6. Internship programmes offer mentors to individuals or smaller sub-sets of the cohort. Is this true for your organisation? How do you mentor your candidates? Does mentorship only apply to work that needs to be completed, or does it apply to further learning within the organisation as well? In other words, is there an emphasis on mentor-led learning or self-paced learning?]

   ANSWER:

7. How many candidates have you hired in the last 3 financial years? How many of those have you retained (potential follow-up: *Give me a ballpark figure?*)? Do you have any fears about candidates being poached by competitors?

   ANSWER:

8. Do you feel that government/laws make it easy for you to hire and develop young graduates? Do you find yourself having to offer short-term contracts to protect yourself from labour laws that give candidates too many entitlements?

   ANSWER:

9. Do you feel that tertiary institutions are doing enough to listen to the needs of industry? What do you think they need to change about their curriculums?

   ANSWER:

10. What qualities do you look for in an intern that you are considering retaining at the end of their internship? Do you find any benefits in tertiaries teaching industry-wide/vendor-agnostic skills, or would you rather they focused on software vendors that your organisation uses?

    ANSWER:

11. Do you have any additional comments regarding your programme or the interns that you host?

    ANSWER:

Thank you for your time.

Appendix C – Participant information form

Good Day

My name is Bongani Frank Masilela, I am a master's student in *Education – Specialising in Education & Work* at the University of the Witwatersrand, Johannesburg. My supervisor is Professor Stephanie Allais, of the Centre for Research into Education & Labour. I am conducting a research study about the job prospects of ICT graduates after completing their internships in both the public and private sectors. The study title is *The job prospects of ICT graduates in internship programmes – A comparison between public sector and private sector internship programmes.*

I am inviting you to take part in an interview regarding this study. If you decide to take part, your participation in this research interview will last about 1 hour in total. The interview will take place at a time and place of your convenience during the month of August 2022.

With your permission, I would like to audio record the interview via the video conferencing software or my mobile phone. If it is a live interview, then I will make an audio tape of the interview. This data will be stored in electronic audio form for 2 years and it will be deleted following that. Only the researcher, Bongani Frank Masilela, will have access to the data. Your identity will be protected and anonymity ensured for the final research report. Your name, surname, role in the organization and the name of your organization will be noted during the interview, and this information will only be available to the interviewer. None of these details will be in the final research report.

If you decide to take part in the research study, it should be because you want to volunteer. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. You will not get any direct benefits if you choose to join the research study. You will not lose any services, benefits or rights you would normally have if you decide not to join. Taking part in the research study will not cost you anything. You will not be paid for being in this research study.

The risks for this research study are no more than what happens in everyday life. OR Some of the questions asked may be sensitive information that your organisation would not be comfortable with you sharing. If this happens, I will stop the interview and continue another time, after you have clarified if you are able to share the information or not.

This research study will be written up as a research report. If you would like to receive a summary of this report, I will be happy to send it to you.

If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human

Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,
Bongani Frank Masilela

Master of Education Student:
Bongani Frank Masilela, 800378.students@wits.ac.za, 072 073 5270

Supervisor:
Professor Stephanie Allais, Matseleng.allais@wits.ac.za, 011 717 3076

Appendix D – Participant consent form

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Research into *The Job prospects of ICT graduates in internship programmes – A comparison between public sector and private sector internship programmes.*

Bongani Frank Masilela, 800378

I, ……., agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about.	YES	NO
I understand that I can volunteer to take part in the study.	YES	NO
I understand that I may withdraw from the study at any point.	YES	NO
I agree that the interview may be audio recorded.	YES	NO
I agree that direct quotations from my interview may be used by the researcher in their research report.	YES	NO
I agree that my participation will remain anonymous in the final research report (my name will not be used by the researcher in their research report).	YES	NO

…… (signature)
…… (name of participant)
…… (date)

…… (signature)
…… (name of researcher/person seeking consent)

…… (date)

Appendix E – Participant permission form

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

Permission Letter for the Consent to participate in the Master of Education Research on *The job prospects of ICT graduates in internship programmes – A comparison between public sector and private sector programmes.*

I _____ confirm that I have been given permission to take part in the research study on the topic mentioned above.

I have looked through the questions that will be asked and I have been cleared by the relevant authorities in my organization to take part in the study.

Date:

Signature of Programme Manager:

Signature of Superior:

Signature of Researcher: