



Skills audit framework in the naissance of the Fourth Industrial Revolution: The case of the National Department of Human Settlement

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Mini dissertation accepted in partial fulfilment of the
requirements for the degree *Master of Public Administration* at
the North-West University

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Graduation: June 2025

DECLARATION

I, Helga Winkler, declare that the contents of the mini-dissertation titled “Developing a Skills Audit Framework in the naissance of the Fourth Industrial Revolution: a case of the National Department of Human Settlements”, hereby submitted in partial fulfilment of the requirements for the degree Masters in Public Administration (Potchefstroom Campus) at the North West University is my own work and the sources and all material contained herein have been duly acknowledged.

Helga Winkler

12 February 2025

ACKNOWLEDGEMENTS

I thank my God almighty, for giving me the ability to complete this study; you say I know the plans that I have for you, and truly you do, through all life's tribulations you carried me in the palm of your hand.

I dedicate this Master's degree to my dad, Vincent James Winkler, without your guidance throughout my life I would never have come this far, even on your deathbed, you ensured that I attend to my studies. You will always be my happiest good morning and my saddest goodbye.

To my mother, thank you for taking care of everything when my world was collapsing around me, ensuring that the house stayed clean, my children were fed and that I worked on my studies. I will forever be grateful for your love and appreciate everything you do for me.

To my children, Jesse-Cole, Joshua and Athena Winkler, thank you for accepting me for who I am, giving me time to pursue my studies and mostly sacrificing your me-time. I love you mountains high and rivers deep.

To my brother Quintal Winkler, "just the two of us", my brother, thank you for your love and support, no matter what I needed or demanded, you ensured that it was provided.

Dr. Christa de Wet, thank you for walking this journey with me, your continuous support, encouragement and attention to detail is unprecedented.

To Ntombikayise Sambo, we embarked on this journey together, you completed your studies before me but ensured that I remain on track. When I was in my little corner you always came to check on me and encouraged me to continue.

To my language editor, Monica Botha, we have not met but your caring nature, humbleness, words of encouragement and support is unmatched.

To the Department of Human Settlements, the Skills Development Committee, and the HRU and D team, thank you for granting me this opportunity to further my education.

To the Chief Directors who participated with the research, thank you for your participation. Your wealth of knowledge, contributions and insights prove that the Department has a management team that is dedicated and truly understand the meaning of providing sustainable human settlements to the citizens of South Africa.

Acknowledgement to the DPSA and the PSETA, for ensuring that the Skills Audit Methodology Framework and Toolkit is introduced in the Public Service.

ABSTRACT

The problem that this study investigated was to present a Skills Audit Framework that guides the skills audit process in the National Department of Human Settlements (NDHS). This would ensure that accurate information for the different Core-Function job families within the NDHS are recorded and the workforce is equipped with the required skill sets to assist in implementing core functions to implement the mandate of the NDHS. The latter was necessary to develop a Skills Audit Framework for the NDHS, which was underpinned by a theoretical framework, and an alignment to a statutory legislative and regulatory framework that informed skills audit frameworks in the context of 4IR in the South African Public Service.

Skills audits are utilised to establish the current available skills, identify skill gaps and to determine future required skills of the workforce within an institution. The South African Public Service remains challenged and faces challenges in identifying the current skills, skills gaps and future required skills of the workforce to deliver on their respective mandates. The NDHS is not exempt from this, which is further compounded by the incessant Fourth Industrial Revolution (4IR) and the future skills requirements thereof.

The researcher made use of the qualitative method through a structured approach. Qualitative data was obtained by conducting semi-structured interviews and questionnaires with Chief Directors in the NDHS.

During the research study, the researcher discovered that there are sufficient statutory, legislative and regulatory frameworks within the NDHS to implement its mandate. Moreover, there are legislation and regulations which support the implementation of skills development. What is lacking is legislation that governs the implementation of the necessitated skills development to implement the requirements of the 4IR. There is no accurate and reliable information about job descriptions for employees, hence the workforce is not equipped with the required current and future skill sets to implement their specific functions aligned to the mandate of the NDHS.

The study contributes to the requirements demanded by the 4IR in the public service. The Skills Audit Framework would contribute in i) identifying the new skill requirements as demanded by the 4IR in the NSHS; ii) developing a skills audit framework for the institution which can be followed by the implementation of a skills audit process; iii) developing an integrated HR approach in the NDHS to assist in attracting, developing and retaining a skilled workforce; and iv) developing an institutional repository containing intellectual knowledge and experiences which could inform future policies and programmes.

KEYWORDS

Fourth Industrial Revolution, National Department of Human Settlements, skills audit.

LIST OF ABBREVIATIONS

4IR	Fourth Industrial Revolution
ACT	American College Testing
AI	Artificial Intelligence
AU	African Union
CDs	Chief Directors
DCOGTA	Department of Cooperative Governance and Traditional Affairs
DGPF	Digital Government Policy Framework
DHET	Department of Higher Education and Training
DPSA	Department of Public Service and Administration
EPMDS	Employee Performance Management and Development System
HC	Human Capital
HCT	Human Capital Theory
HR	Human Resources
HRD	Human Resource Development
HRDC	Human Resource Development Council
HRM	Human Resource Management
HRU & D	Human Resources Utilisation and Development
ICT	Information and Communication Technology
IoT	Internet of Things
IT	Information Technology
NDHS	National Department of Human Settlements
NDP	National Development Plan
NSG	National School of Government
NWU	North-West University (Abbreviation)
OECD	Organisation for Economic Cooperation and Development
PDP	Personal Development Plan
PFMA	Public Finance Management Act

PS_SAMF	Public Service Skills Audit Methodology Framework
PSA	Public Service Act
PSC	Public Service Commission
PSETA	Public Service Education and Training Authority
PSR	Public Service Regulations
PSTE	People Society Technology and Environment
RBV	Resource-Based View
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
SDA	Skills Development Act
SDLA	Skills Development Levies Act
SHRM	Strategic Human Resource Management
SITA	State Information Technology Agency
SMS	Senior Management Service
SONA	State of the Nation Address
SPLUMA	Spatial Planning and Land Use Management Act
TD	Technological Determinism
TDT	Technological Determinism Theory
UNDRR	United Nations Office for Disaster Risk Reduction
UN	United Nations
US	United States
WEF	World Economic Forum
WPPSTE	White Paper on Public Service Training and Education
WPTPS	White Paper on Transformation of the Public Service
WSP	Workplace Skills Plan

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CHAPTER 1 INTRODUCTION

1.1 CONTEXT/BACKGROUND TO THE STUDY

Hattingh (2014:3) defines skills as the capacity to perform a combination of technical, cognitive and consent actions to execute an activity or tasks in a way that achieves the required result. Workplace skills assist an employee to perform their daily tasks in support of the institution at where they are employed (Indeed, 2020). Watson (2004:1) states that a skills audit is essentially a process for measuring and recording the skills of an individual or a group. The main purpose for conducting a skills audit in an institution is to determine the skills and knowledge that the institution currently has (Murphy, 2001:5). Van der Walddt, Fourie, Jordaan, and Chitiga-Mabugu (2018:1) argue that skills audits are generally undertaken to determine and record the skills base of individuals or groups within an institution. Additionally, Van der Walddt *et al.* (2018:1) contend that the general aim of such skills audits is to pinpoint potential gaps between the skills and knowledge that an institution requires to successfully operationalise its strategic objectives compared to the level of skills and knowledge that the institution currently possesses. Van der Walddt *et al.* (2018:1) contend that the result of a skills audit is usually a skills gap analysis, which helps to obtain a comprehensive skills profile of the required skills in an institution. Vermeulen (2016:176) asserts that “a skills audit implies an investigation to determine the requirements of the institution”. Hattingh (2014:1) maintains that the purpose of a skills audit is: i) to obtain accurate and reliable information in terms of the job families that are extant in the institution; ii) the functions and tasks performed in each of the job families; iii) the competencies required by occupants in the different jobs families within a public organisation that are deemed necessary to fulfil such an institution’s constitutional mandate; and iv) to determine the state of skills in the institution.

Observed in the context of the National Department of Human Settlements (NDHS), this study firstly explored an initial understanding of skills required in the NDHS, when considered against the context of the Fourth Industrial Revolution (hereafter referred to as 4IR); Secondly, the study considered an investigation which presented a Skills Audit Framework that guides the skills audit process in the NDHS, since there currently is no Skills Audit Framework. The aforementioned would ensure that accurate information for the difference job families within Core-Function job families within the NDHS are recorded and the workforce is equipped with the required skill sets to assist in implementing the core functions to implement the mandate of the NDHS.

In his 2018 State of the Nation (SONA) address, the South African President emphasised that the “prosperity of South Africa is dependent on the ability of South Africans to take full advantage of rapid technological change” (South African Government, 2018:10). As such, the President

emphasised that the “drive towards the digital industrial revolution will be underpinned by the availability of efficient networks” (South African Government, 2018:10).

In the context of the 4IR, the disruption brought about by the COVID-19 pandemic thrust the world into chaos and drastically disrupted the world as it was known by mankind, over a period of hours, days, months and years. The manner in which human beings organised themselves prior to the COVID-19 pandemic has become a distant memory. Schwab's (2017:1) caution that 4IR “will change how we live and how we work, how the economy works, and how we are governed”, echoed in the minds of every employer and employee. Prior to Schwab's (2017) forewarning, a Joint Report published by Citi and Oxford University (2016:7) predicted that on average 57% of jobs are susceptible to automation” across the Organisation for Economic Co-operation and Development (OECD); the Financial Times (2016) estimated that between 2000 and 2010, of all the jobs lost in the United States of America (USA), over 85% were lost due to new technologies; the Bank of England (2016) projected that within the next 20 years, two-thirds of all jobs are capable of being automated. Even though the data's focus is on developed countries, an indisputable fact is that the 4IR has arrived, even for developing nations, and the current workforce, whether public or private, and on an individual level and as a collective, the effects thereof are deeply experienced.

The disruption that was presented by the pandemic forced individuals and institutions, both public and private, to accelerate the implementation of elements of 4IR, such as higher dependence on e-connectivity, employees working remotely, data privacy, amongst many other factors, positive and/or negative. Similarly, the 4IR required institutions to revisit their institutional strategies, and to investigate their current skills requirements, so that it is aligned to future skill requirements.

According to Schwab (2017:1), the 4IR is a technical revolution, which ultimately influences the way people live, work and interact with each other. The 4IR generates fear in humans, due to the unfamiliar territory that work-relationships and interactions between human beings and machines or Artificial Intelligence (hereafter referred to as AI) present. The latter, as purported by Schäfer (2018:6), initiates situations where AI will make more decisions than humans, and as such, requires limited interventions by human beings. Leurent and Shook (2019:6) contend that the 4IR is disrupting business models, based on the demand for customised services and products, mismatched skills, and digitisation of value chains, which ultimately leads to an upheaval of production, at record speeds. Deloitte (2018:16) contends that the 4IR complicates the challenge of the supply and demand of skills. The supply and demand landscape are made more complex by the tangible implications of the 4IR, which hold significant promise for institutions as it relates to the rapid expansion in the use of robots and process automation, as well as big data to create smarter supply chains and AI for decision making. Deloitte (2018:16) contends that these innovations have helped redefine the work week and will ultimately reshape when and where work

is done, which blur the traditional definitions of formal and informal employment (Deloitte, 2018:16).

Considering what Schwab (2017:1), Schäfer (2018:6), Deloitte (2018:16), as well as Leurent and Shook (2019:6) have contributed towards an understanding of the 4IR as a phenomenon, the onset of the COVID-19 pandemic, the fast pace of technological transformation, the rapid developments in AI, and the demands on service delivery, the South African Government, government departments and public sector Human Resource Management (HRM) practitioners can no longer ignore or avoid the critical need for planning and conducting scientifically based skills audits. In this regard the NDHS is no exception to this rule. As a point of departure, South African public institutions have to embrace the disruption caused by the 4IR, to explore avenues that will: i) illuminate the skills requirements that are required by South African public servants in the naissance of the 4IR; ii) ensure that South Africa remains on par with the rest of the world; and iii) contribute to positive growth of the South African economy. As a public institution, the NDHS needs to establish the following: i) which current skills exist; and ii) which future skills will be required from the workforce in the implementation of the NDHS' constitutional mandate.

This study therefore considered a conceptual understanding of the different skills-set requirements in the context of the 4IR, which would necessitate the development of a skills audit framework as it is based on the contributions of Schwab (2019), Schäfer (2018:6), Leurent and Shook (2019:6), Murphy (2001:5), Watson (2004:1), Hattingh (2014:1), Vermeulen (2016:176), Van der Waldt *et al.* (2018:1), as well as McLaughlin and McAree (2020), and the “constructs (concepts), and propositions (relationships between these constructs), that collectively present a logical, systematic and coherent explanation of [the] phenomenon of interest within some assumptions and boundary conditions” (Bacharach, 1989) of Human Capital, Resource-Based View, and Technological Determinism Theories, with a specific focus on the case of the NDHS.

Observed in the context of the NDHS, this study firstly explored an initial understanding of skills required in the NDHS, when considered against the context of the 4IR; secondly, the study considered an implementation process of a skills audit framework that includes the following: i) determining, measuring and recording the NDHS' skills base, and as such, the knowledge of NDHS employees or groups of employees; ii) accurate and reliable information in terms of the NDHS' job families; iii) functions and tasks performed by NDHS employees in each of the job families; iv) the state of skills and knowledge that the NDHS requires in the context of anticipated needs; v) potential gaps between the skills and knowledge that the NDHS requires to operationalise its strategic objectives successfully, compared to the level of skills and knowledge that the NDHS currently possesses; vi) a skills gap analysis, which helps to obtain a comprehensive skills profile of the NDHS; and v) the competencies required by NDHS employees in the different jobs within job families, to support future NDHS institutional appointments.

The most basic structure of national departments in the South African Government includes what is referred to as both core-function and support-function job families. Core-function job families' specific aim is to give effect to a department's mandate as stipulated in: i) the South African Constitution, 1996, Section 26 (RSA, 1996:11); ii) the Bill of Rights (RSA, 1996:11); iii) the National Development Plan (NDP), 2011 (RSA, 2011); iv) and the Medium-Term Strategic Framework (MTSF) (2019 – 2024:23, 25). In contrast, the support-function job families' specific aim is to enable line-function job families to achieve an institution's mandate successfully (Nasrudin, 2022:1, 2). Effective, efficient, and economic institutional structures in the public sector matter to the nation, the government, public sector institutions and the individuals employed in these institutions (RSA, 2010:35). Public sector institutions exist ultimately to provide value to its stakeholders, namely the citizens and residents of the country (RSA, 2010:35). The NDHS is an infrastructure department, that is primarily directed by a constitutional mandate (NDHS, 2020:71). Therefore, the organisational structure of the NDHS should be aligned to the core responsibilities of the institution towards the efficient, effective and economic enactment of human settlements (National School of Government [NSG, 2024:1). The 2012 organisational structure was reviewed and aligned to address a mandate which is reflected in the revised 2021 organisational structure (NDHS, 2023:111).

As part of the Executive Branch of Government, the Public Service is constitutionally obliged to implement its strategic priorities with the primary aim of bringing about socio-economic progress (RSA, 2008:36). Therefore, a government department or institution needs an effective institutional structure, supported by the correct skills repository to deliver on its mandate and strategic priorities. An institutional structure is the vehicle through which services are delivered (RSA, 2010:37). An effective, efficient and economic (RSA, 1996:103) institutional structure fosters and assists optimal utilisation of resources, and as such, influences how human and financial resources are allocated and used (RSA, 2008:37). Each department's activities must be founded in legislative mandates for which the department is directly responsible in terms of implementing, managing and overseeing. It is important to note that strategic plans give effect to departmental or agencies' statutory responsibilities. Strategic plans should also reflect the broad strategic outcomes of government (RSA, 2010:9).

Human settlements constitute the framework within which satisfaction is given to the needs and aspirations of people in respect of the principles of human dignity (Vancouver Declaration on Human Settlements (1976:16). It stipulates that the provision of shelter should be recognised as only one element to be provided for in the context of citizens living in a community. The concept shelter should therefore be seen as embracing the planning and construction of a wider context, which is something much broader than just building a house; it fundamentally underpins planning for sustained life in a community (The Vancouver Declaration on Human Settlements, 1976:16).

Ehrlick, Balk and Sliuza (2019:2-8) state that the places where people live and work are rapidly evolving. Some of the processes that drive physical change in human settlements are population and economic growth and, rural-urban migration. According to Živković (2019:1), human settlements are places where people live, and as such, refer to the totality of a human community with all the social, material, organisational, spiritual, and cultural elements that sustain it. Any form of human dwelling, from the smallest house to the largest city, where groups reside in pursuit of their life goals, can be understood as human settlements (Živković 2019:1). Leman (1998:27) states human settlements as spatial/operational arrangements that are made by humans within certain scales, in order to support life and to pursue their aspirations, goals and targets. The term spatial/operational aims must include fully all the aspects pertaining to human settlements in an interlocking and integrative way, because it denotes the practical, non-static, continuously changing aspects of spatial arrangements (Živković, 2019:1). In the context therefore of the scholarly contributions made by The Vancouver Declaration on Human Settlements (1976:16), Daniele *et al.* (2019:2-8), Živković (2019:1), and Leman (1998:27), this study recognises that human settlements constitute a spatial/operational arrangement that includes a practical and dynamic community of citizens, where satisfaction, with an emphasis on human dignity, is given to the needs and aspirations of such citizens who are in pursuit of their life goals and ambitions. Herein, the social, material, organisational, spiritual, cultural, and physical change elements (i.e. population, economic growth and, rural-urban migration) that sustain such a community of citizens are fundamentally appreciated.

The South African Constitution, 1996, Section 26, (RSA, 1996:11), the Vancouver Declaration on Human Settlements (1976:16), Živković (2019:1) and Leman (1998:27) further agree that human settlements include concepts of housing and/or shelter that are aligned to principals of human dignity, the environment and community, and could be interpreted as places where humans live. In view of what is written by authors Živković (2019:1) and Leman (1998:27), and mandated by the South African Constitution, 1996 (RSA, 1996:11), the NDHS must fulfil its constitutional mandate by ensuring that human settlement programmes are implemented throughout the country, to the benefit of all South African citizens, thus requiring the workforce within the NDHS to be equipped with the necessary skills and competence to do so, within the context of a 4IR altered environment.

The NDHS derives its mandate from Chapter 2 of the South African Constitution, 1996, Section 26, (RSA, 1996:11), as contained in the Bill of Rights (RSA, 1996:11). Both the Constitution, 1996, Section 26 (RSA, 1996:11) and the Bill of Rights (RSA, 1996:11) stipulate that: “everyone has the right to have access to adequate housing” (NDHS, 2020:14). The NDHS is committed to facilitating and supporting the creation of sustainable and integrated human settlements across the Republic of South Africa, which is in response to both the NDP: Vision for 2030 (RSA, 2011)

and the (MTSF) 2019-2024, whereby the NDHS is committed to address the MSTF (2019 – 2024) five-year outcomes on:

- i) “Spatial transformation through multi programme integration in priority development areas;
- ii) “Adequate housing and improved quality living environments; and
- iii) “Security of tenure” (Department of Human Settlements, 2020:32)”.

In conclusion, the NDHS is entrusted to fulfil its Constitutional mandate not only by the building of houses but through implementation of sustainable human settlements policy which contribute to the needs of citizens by placing emphasis of human dignity and providing a home instead of a house within statutory and legislative confines.

1.2 PROBLEM STATEMENT

According to findings published in 2011 by the Public Service Commission (PSC) on the Assessment of Human Resource Development practices in the Public Service, it was found that, out of the sampled departments, only 56% indicated that they have conducted skills audits (RSA, 2011:10). Of these departments, only 13% had proof of a skills audit being done, and 43% of the sampled departments admitted that they have never conducted a skills audit (RSA, 2011:10). It can therefore be deduced that the Public Service is challenged with uncertainty in terms of their work force’s current skills that are required to deliver on their respective constitutional mandates.

The problem that this study investigated was to present a Skills Audit Framework that guides the skills audit process in the NDHS, since there currently is no Skills Audit Framework. The aforementioned would ensure that accurate information for the different job families within Core-Function job families within the NDHS are recorded and the workforce are equipped with the required skill sets to assist in implementing core functions to implement the mandate of the NDHS. The latter was necessary to develop a Skills Audit Framework for the NDHS, which was underpinned by a theoretical framework, and an alignment to a statutory legislative and regulatory framework that informed skills audit frameworks in the context of 4IR in the South African Public Service. The study also aimed to provide mitigation factors to address possible future findings as those outlined by the PSC in the report on the Assessment of Human Resource Development practices in the Public Service.

1.3 RESEARCH QUESTIONS

Bryman and Bell (2014:88) contend that research questions are crucial because they guide and give structure to: i) the researcher’s approach to an investigation of the relevant literature; ii) the decisions that the researcher made when selecting the kind of research design that would be

employed during the research; iii) decisions about which data to collect; iv) from whom; v) analysis of data; vi) documenting data; and vii) content that fell within the scope of the study. Andrews (2003:2) contends that viii) research questions are not like ordinary questions; ix) a research question must have the potential to be answered in the research undertaken; and x) the scale of each question was crucial to the design of the rest of the study.

1.3.1 General research questions

General research questions narrow the focus of the study but leave open the questioning. Miles and Huberman (1994:130) recommend that researchers write no more than a dozen qualitative questions in total. Furthermore, Miles and Huberman (1994:130) state that sub-questions or secondary questions can become specific questions used during interviews.

The general research question in this study was: What are the requirements of a skills framework that has the capacity to direct a skills audit in the naissance of the 4IR in the NDHS, with the specific aim of enabling the NDHS to achieve its constitutional mandate successfully, despite the incessant disruptions that 4IR presents?

1.3.2 Specific research questions

According to Miles and Huberman (2003:129), specific research questions narrow the focus of the study, which are answers or predictions based on the hypothesis to be tested. According to Bryman and Bell (2014:91), a hypothesis is a specific type of research question which is informed speculation, which is set up to be tested about the possible relationship between two or more variables. Hypotheses are not common in quantitative research as is sometimes supposed and in qualitative research are typically avoided.

1.3.2.1 What was the literature and theoretical framework that underpinned an NDHS skills audit framework in the naissance of 4IR?

1.3.2.2 What was the statutory, legislative and regulatory framework that informed an NDHS skills audit framework in the context of 4IR?

1.3.2.3 What were the current perceptions and status of NDHS public servants in terms of a skills audits in the context of 4IR in the NDHS?

1.3.2.4 What did a triangulation between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS present?

1.3.2.5 What are the elements of a Skills Audit Framework?

1.3.2.6 What were the findings and recommendations presented by a developed skills audit framework in the context of the 4IR within the NDHS?

1.4 RESEARCH OBJECTIVES

According to Walwyn and Chan (2019:14), research objectives assist in developing the initial understanding of underlying reasons and motivations, to provide insights, generating ideas and/or hypotheses for later qualitative research. Walwyn and Chan (2019:14) argue that in quantitative research, the research objective would be to quantify data and generalise results from a sample of the population of interest, to measure the incidence of various views and opinions in a chosen sample.

1.4.1 General research objectives

The general research objective of this study was to present the substance of a framework that had the capacity to direct a skills audit at the naissence of the 4IR in the NDHS, with the specific aim of enabling the NDHS to achieve its constitutional mandate successfully, despite the incessant disruptions that the 4IR presents.

1.4.2 Specific research objectives

OpenLearn Create (2022) stipulates that specific research objectives break down the general objective into smaller logically connected parts that systematically address the various aspects of the problem. Specific research objectives specify exactly what will be addressed in each phase of the research study, how, where, when, and for what purpose.

1.4.2.1 To investigate the literature and theoretical frameworks that underpin an NDHS skills audit framework in the naissence of 4IR.

1.4.2.2 To assess the statutory, legislative and regulatory framework that informs an NDHS skills audit framework in the context of 4IR.

1.4.2.3 To provide a detailed narrative on the current perceptions and status of NDHS public servants in terms of a skills audit in the context of the 4IR in the NDHS.

1.4.2.4 To present a triangulation between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS.

1.4.2.5 To introduce the elements of a Skills Audit Framework?

1.4.2.6 To provide the findings and recommendations by a developed skills audit framework in the context of the 4IR within the NDHS.

1.5 CENTRAL THEORETICAL STATEMENTS

The study was theoretically grounded in Human Capital Theory (hereafter referred to as HCT), Resource-Based View (hereafter referred to as RBV) and Technological Determinism Theory (hereafter referred to as TDT). Olaniyan and Okemakinde (2008:479) contend that HCT rests on the assumption that formal education is highly instrumental and even necessary to improve the production capacity of a population. Armstrong and Taylor (2014:41) argue that HCT is concerned with how people in an organisation contribute their knowledge, skills, and abilities to enhance the organisation's capacity and the significance of that contribution. Furthermore, Armstrong and Taylor (2014:70) contend that HCT provides guidance on future HR strategies and institutional strategies and practices that are designed to improve the effectiveness and efficiency of people management in the organisation. Moreover, Armstrong and Taylor (2014:70) contend that the theory suggests that processes of identifying measures, as well as collecting and analysing information relating to the workforce, will focus the attention of the organisation on what needs to be done to keep, develop and make the most of human capital.

The use of HCT in this study assisted in: i) aligning HR strategies to people management strategies within the NDHS; and ii) the analysis of information contained in strategic documentation that would contribute to the identification of the skills requirements of the workforce, versus the skills required by the NDHS, which would contribute to the development of the skills audit framework for the NDHS. The use of HCT in the study guided a scientific investigation to establish the current and future required skill sets of the workforce within the NDHS as required in the naissance of the 4IR. The HCT furthermore guided the development of an institutional skills framework that had the capacity to direct a skills audit in the NDHS, which would ultimately contribute to an institutional skills repository.

Acemoglu and Pischke (1999) argue that Becker subdivided skills into general and specific skills; however, many skills tend to be industry-specific, which boosts productivity of the institutions but not outside the industry. The researcher considered the criticism on the HCT as a contribution to this study because the skills audit framework for the NDHS would determine, measure and record the skills base of the workforce in NDHS job families; the aforementioned skills and job families were specific only to the NDHS.

Criticism on the HCT did not impact this study negatively because in developing a skills audit framework for the NDHS, the researcher's analyses of institutional documentation and information on the strategy, the organisational structure, and job descriptions of the NDHS, which provided

information on both the supply and demand information on human settlement delivery. Furthermore, the study looked at the different job families within the NDHS, the positions, gender and geographic location which contributes to increasing the measurement of the HCT. Lastly, by analysing the aforementioned information, the researcher identified the current skills gaps and future required skills within the NDHS. The use of HCT assisted the NDHS to identify core skills required to perform functions wherein projections were made on the implementation of human settlements by equipping geographical information analysts and technical project managers with the necessary skills required for the sector.

Understanding the organisational culture of the NDHS served as an advantage in developing the skills audit framework by providing an overview of the organisational culture within the NDHS through assessing the values, practices, systems and policies which could affect the broader HR in view of staff morale, retention of skills and staff turnover.

Utami and Alamanos (2023:1) purport that the RBV theory provides a framework which outlines the fundamentals of organisation performance and competitive advantage. Keränen and Jalkala (2023:3) state that RBV builds upon two groups of assets: tangible assets refer to all assets, which include economic gains and visible business contributions, and intangible assets comprising all assets possessed by a company related to the access of capabilities and knowledge, as well as organisational, strategic, and social benefits.

The application of the RBV in this study implied that the internal resources, such as the workforce of the NDHS, are considered assets in the institution due to their skills and knowledge, which contribute to the strategy of the NDHS to achieve its constitutional mandate. The application of both HCT and RBV allowed for the enhancement and integration of HR processes and practices; recruiting the right people with relevant skills in the context of the 4IR to ensure that the constitutional mandate of the NDHS is implemented, ensuring that skill gaps of the workforce are addressed in relation to the requirements of the 4IR, and coaching and mentoring programmes are implemented which would reduce the vacancy rate and stabilise retention of a capable workforce.

Makina and Oundo (2020) contend that RBV ignores the impact of other factors affecting performance of an organisation, for instance organisational culture. Levitas and Ndofofor (2006) argue that “intangible resource assessment and construct validation are often enacted as a mechanical, empirical, and unidisciplinary and unilevel process rather than as a conceptual, multidisciplinary, multilevel, and theoretical process”. To operationalise a key resource from others effectively, researchers must identify all factors that play a role in this key resource and establish the interconnections among them.

Based on the scholarly contributions from Levitas and Ndofo (2006) and Makina and Oundo (2020) relating to criticism of RBV, it is derived that when key resources are identified, all factors which influence the key resource should be considered. The criticism on RBV did not impact this study negatively for the reason that when a skills audit is conducted, consideration must be given to the organisational culture of an institution wherein a diverse number of factors which influence the key resource is considered.

According to Marwala (2020:1), the Presidential Commission on the 4IR advised that South Africa invest in human capital, considering South Africa's rising unemployment rate, coupled with the brain drain of the past few years. Moreover, Marwala (2020:1) argues that this investment is not only to foster growth to propel a stagnant economy, but also a coherent strategy from stakeholders in business, labour, government and civil society, focusing on lowering the unemployment rate and initiating the current workforce into changes of the 4IR. Technological Determinism (TD) is a theory that proposes technological advancements as drivers of societal change through which public servants and public institutions can function and interact.

Hutchins (2023) argues that the TD theory could lead to a scenario where technology is seen as an unstoppable force, beyond our control or regulation. Smith (1994) contends that the theory, can be considered as the belief in technology as a key governing force in society. Novicevic (2009) contends that technology is more deterministic within the context of the institution. Chandler (2000) purports that many technological determinists have a reductionist interpretation, meaning that they only see technology as the main factor of change being the only cause. Societal change is multicausal rather than monocausal, meaning society's progression is driven by multiple causes like economics, politics and education.

Despite the criticism by Hallström (2022), Hutchins (2023), Smith (1994), Novicevic (2009) and Chandler (2000) on the TD theory, technology remains an integral part of an institution, institutions implement regulatory compliance in view of institutional policies which set out the boundaries which limit technological implementation. In view of this study, the institutional policies which regulate the implementation of Information Technology (hereafter referred to as IT) systems within the NDHS will not be contravened, as it served as a baseline on which IT systems could be utilised in this study.

In the context of a skills audit, this theory helped to explain the need for incorporating 4IR-related skills assessment and development into the NDHS' workforce planning and capacity-building efforts. As technology advances, skills and competencies of the workforce need to be improved to ensure that the institution remains relevant and maintains a competitive advantage against competitors. The NDHS is a public service institution that implements and delivers services to citizens in South African. The NDHS is defined as an infrastructure institution due to its mandate,

therefore priority should be given to the technological skill requirements of the workforce responsible for the implementation of human settlements. Technology is an integral part of an institution; therefore, regulations are implemented to govern the boundaries of such technologies, which include how and what technologies can do. Technological processes are not implemented by unlimited aspects as they operate within controlled boundaries.

All three theories supported the triangulation of literature, theories and statutory frameworks that underpin the development of a skills audit framework in the NDHS that had the capacity to identify current and future skill-set requirements brought about by the incessant disruptions that the 4IR presented. HCT and RBV supported the means of data collection and analyses of information that would contribute to the development of a comprehensive, descriptive skills audit framework.

1.6 RESEARCH METHODOLOGY

According to Igwenagu (2016:5), research methodology is a set of systematic techniques that are used in research, and which serves as a guide to research and how it is conducted. Walwyn and Chan (2019:22) contend that research methodology describes the research design and the methodology followed in the study, including methods used for data collection and analysis. Kumar (2011:20) contends that research methodology assists in the selection of methods, tools, techniques, and procedures to use for building a knowledge base for purposes of research for both quantitative and qualitative studies.

According to Creswell (2013:69-70), qualitative research is conducted because of a problem or issue that needs to be explored and a detailed understanding of the problem or issue is required. Furthermore, Creswell (2013:70) states that qualitative research is used to develop theories when partial or inadequate theories exist which do not adequately capture the complexity of the problem that is being examined.

The research methodology of this study outlined the strategies used to conduct the study, which included the research methods used in terms of qualitative research through a structured approach. The section included the literature review, databases consulted, research methods, sampling, instrumentation and data collection and analysis. Field research assisted with obtaining raw data on the skill requirements of the workforce in the NDHS. A qualitative approach was used for this study to obtain information through interviews, whilst secondary data was obtained from the review of policies, statutory frameworks and archival records to analyse the problem statement in this study.

1.6.1 Literature review

Badenhorst (2008:155) argues that all research is based on previous research. According to Hofstee (2006:91), the 'secondary literature' is the body of works published by other scholars. Hofstee (2006:91) purports that a good literature review indicates that the researcher is aware of what is happening in the field where research is conducted, the researcher was aware of what was going on in the field in which the study was conducted, there was theory for the research and the research was lead to new knowledge within the respective field (Hofstee, 2006:91). O'Neil (2010:1) states that writing the literature review will help to: i) situate a study in the existing body of knowledge through the identification of a gap in the knowledge and to make sure that the researcher was not merely duplicating another study; ii) set up a theoretical framework for the study; iii) defined, explained and explored the concepts related to the study; and iv) set up and explained the methodological perspective that informed the study.

The research proved an extensive review of existing literature on subjects pertaining to skills audits, the 4IR and the NDHS, and identify possible gaps in literature where the researcher would recommend possible solutions and recommendations which would contribute positively to the body of knowledge in academia and illustrate the findings and solutions which would be unique for topics on skills audits, the 4IR and the NDHS. The gaps found by the researcher during analysis of information for this study included i) interlinkages between theory and practice; theory is based on scholarly contributions and scientific evidence, and there are few contributions from scholars on implementation of theory, ii) interchangeable terminology was used to describe key concepts, and iii) research should not be based on using one theory as this limits the research; the use of two or more theories broadens the research and theories can be used to build on to or create new theories applicable to the respective title of the research.

1.6.1.1 Databases consulted

The following databases were consulted to ascertain the availability of material for the purpose of this study:

- a NEXUS Data Base
- b EBSCOhost Online Research Database
- c EconBiz
- d Index to South African Periodicals
- e Other useful information related to the topic from the Internet publications.

1.6.2 Empirical investigation

According to Dan (2017:1), empirical research is a positivistic approach, whereby the social world is perceived as governed by laws or law-like principles that make it predictable. Creswell (2013:58-59) purports that qualitative research finds itself within a post-positivism period which is in the interpretive framework with ontological beliefs associated to social science theories. Qualitative research is a situated activity that locates the observer in the world which involves an interpretative, naturalistic view of the world and is studied in the natural setting through an attempt to make sense of or interpret phenomena in the meaning it brings to people (Denzin & Lincoln, 2003:3). Qualitative research is embedded within the interpretive frameworks and is associated with social science theories (Creswell, 2013:22-23). Qualitative research is considered empirical to the extent that scholars provide sufficient information that allows the reproduction of their findings (e.g. sampling strategy, data collection and analysis) (Dan, 2017:1).

According to Creswell (2013:69-70), qualitative research is conducted because of a problem or issue that needs to be explored, and a detailed understanding of the problem or issue is required. Qualitative research is used to develop theories when partial or inadequate theories exist which do not adequately capture the complexity of the problem that is being examined (Creswell, 2013:70).

This study made use of qualitative research through a structured approach. According to Bryman and Bell (2014:31), qualitative research approaches predominantly emphasise an inductive approach to the relationship between theory and research, in which the emphasis is placed on generating rather than proving theories. Qualitative research involves in-depth study of small groups or individuals sharing certain characteristics (Bryman & Bell, 2014:45).

Field and desk research was utilised for this study. The research needed to benefit from previous research on skills audits, the 4IR and the public service. Field research helped to obtain raw data on skills audits, the 4IR and its applicability to the public service. The bulk of the qualitative data for this study was drawn from a live case study, based on semi-structured interviews and questionnaires with Chief Directors (CDs) in the NDHS.

1.6.3 Research design

According to Igwenagu (2016:5), research methodology is a set of systematic techniques that is used in research, and which serves as a guide to research and how it is conducted. Walwyn and Chan (2019:22) state that research methodology describes the research design and the methodology followed in the study, including methods used for data collection and analysis.

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Field and desk research was utilised for this study. The research needed to benefit from previous research on skills audits, the 4IR and the public service. Field research helped obtain raw data on skills audits, the 4IR and its applicability to the public service. The qualitative data for the study was gathered from the NDHS as a case study, based on semi-structured interviews amongst Chief Directors (CDs) as part of the NDHS executive team.

1.6.3.1 Sampling

Nieuwenhuis (2010:79) defines sampling as the process used to select a portion of the population for study. Baran and Jones (2017:7) state that research is aimed at the discovery and interpretation of facts, revision of accepted theories or laws. A sample will quickly provide needed information about the population. Bryman and Bell (2014:178) state that non-probability sampling covers a wide range of types of sampling strategies.

Nikolopoulou (2022) describes non-probability sampling is a sampling method that uses non-random criteria like the availability, geographical proximity, or expert knowledge of the individuals you want to research in order to answer a research question. The population of this study pivoted on non-probability sampling. In the context of this study, the targeted population of this study included CDs in the NDHS divided into two virtual sections, where the researcher would focus on two CDs in Support Function Branches and two CDs in Line Function Branches. Each branch is headed by a DDG. CDs are targeted because they are responsible for the performance targets of their respective Branches. They are knowledgeable and know the skill sets and competencies are required in the Branch to ensure that targets are achieved, they are able to provide reliable information of the various job families within the respective Branches.

For the purpose of this study, the researcher adopted a non-probability sampling with a sub-set of purposive sampling. Bryman and Bell (2014:186) assert that purposive sampling is a non-

probability form of sampling so that the researcher cannot generalise to a population. The goal of purposive sampling is to sample cases/participants in a strategic way, so that those sampled are relevant to the research questions (Bryman & Bell, 2014:186).

The researcher selected CDs to participate in the research study based on the specific strategic knowledge that they carry within the NDHS and as such the specific contribution that they would make to the study. The researcher is an employee of the NDHS, therefore the researcher would be able to access the sample following the necessary NDHS processes. CDs were interviewed to obtain their views on considering the 4IR and the attributes that it presents for inclusion into a skills audit framework, and whether the 4IR has the capacity to further enable the NDHS to achieve its constitutional mandate successfully. The total targeted sample is 6 Chief Directors (CDs) which was 42% Chief Directors 13 as per filled positions on the Organisational Structure of the NDHS.

1.6.3.2 Data collection methods

According to Bryman and Bell (2014:110), case study designs involve the detailed and intensive analysis of one or more cases which the researcher aims to study-in depth. Bryman and Bell (2014:100) contend that exponents of the case study design often favour qualitative methods, such as participant observation and semi-structured interviewing, because these methods help to generate an intensive, detailed examination of a case.

For the purposes of this study, semi-structured interviews were conducted with a targeted population; furthermore, the researcher collected data through examining documents and designing questionnaires specifically to obtain the required information for this research. Permission to conduct academic research within the NDHS was sought from the Director-General (DG) of the NDHS.

1.6.3.2.1 Interviews

Kielman, Cataldo and Seeley (2012:24) contend that interviews is one of the main methods through which data is collected for qualitative research. According to Mathers, Fox and Hunn (2002:1), there is a range of approaches to interview, from completely unstructured interviews, in which the participant is allowed to talk freely about whatever they wish, to highly structured, in which the participant responses are limited to answering direct questions. Mathers *et al.* (2002:1) contend that the quality of the data collected in an interview will depend on both the interview design and on the skill of the interviewer.

This study took the form of a qualitative approach where semi-structured interviews were conducted with the six CDs in the NDHS, which allowed for richer data collection aligned to qualitative research.

The interview process allowed the researcher to obtain first-hand information from CDs on their understanding, opinions and knowledge on skills required by the workforce in the NDHS in relation to the 4IR. During the interview process with CDs, the semi-structured interviews assisted in establishing the knowledge, understanding and interpretation of CDs on the skill requirements of the workforce within the NDHS, provided reliable information on job families within respective Branches in view of the 4IR and how future required skills could assist the NDHS to improve on service delivery in fulfilment of its mandate.

1.6.3.3 Data collection and analysis

According to Creswell (2013:145), data collection involves gaining permission, conducting good qualitative sampling strategy, developing a means for recording information both digitally and on paper, storing and anticipating ethical issues that may arise. Permission to carry out research in the NDHS is of the utmost importance. Relevant documents will be sourced from the North-West University and permission sought from the Director-General of the NDHS to conduct research in the Department.

The researcher is employed in the NDHS and the primary data collector, once ethical approval was obtained from NMU, the researcher requested approval to conduct research within the NDHS from the Director-General (DG), following all NDHS protocols and procedures. Thereafter, the researcher was better placed to request participants to partake in the research. The researcher recruited participants through electronic e-mails which contained letters addressed to CDs, the letters provided an overview of the study and CDs were required to provide consent or decline permission to partake in the study as participation was voluntary, and participants were not paid, should they agree to partake in the study they would be required to sign consent forms. The letter stated that even though participants agreed to partake in the study, they were still free to withdraw at any time and without providing reasons, and that non-participation would not affect the working relationship with the researcher. Before the commencement of the interviews, the researcher must sought approval from participants to record the interviews to ensure that all information was captured correctly to avoid misinterpretation, and a comprehensive analysis was made based on the semi-structured interviews to validate findings. Selected participants responded to the researcher within five days after receipt of e-mail.

Face to face, semi-structured interviews were conducted with CDs in the NDHS in the event that CDs were unable to commit to face-to-face interviews, virtual interviews were conducted. The

researcher utilised various tools for data analysis, including thematic analysis which enabled the researcher to identify, analyse and report patterns with data regarding the subject under study. The researcher recorded data, transcribed and grouped such data accordingly. The researcher extracted important aspects of relevant data in relation to research questions of the study.

Collected data would be submitted through electronic e-mail to the University Statistical Consultation Service of the NWU to be analysed. The data received from the University Statistical Consultation Service of the NWU was analysed by the researcher to develop a narrative analysis obtained from collected data. There was no conflict of interest as the study was not invasive, as it did not involve personal and confidential information from the participants. There was no potential hazards or risks that arose from participating in this location. Collected data was submitted to the North-West University via electronic questionnaire survey. The North-West University Statistician accessed data electronically and provided the researcher with analysed information. The analysed information was utilised to start the Narrative or Analysis on the findings as part of Chapter 4. Collected data was submitted to the University Statistical Consultation Service of the NWU by electronic e-mail to be analysed. Findings will be shared with the NDHS through the Library to be accessed by participants and submitted to the NWU for publishing respectively. All data collected for the purpose of the research was stored safely in electronic format with code names format for a period of five years after which it will be destroyed.

The primary investigator ensured data that both hard-(printed) and soft copy (electronic) were safely locked away and password-protected, respectively. Only approved people in my research team had access to my raw data where the need arose. At the analysis stage, as was the case throughout, the use of coding would reinforce participants' non-identification, hence upholding the assurance of confidentiality and anonymity. Interviews were convened in the offices of respective CDs at the NDHS, Justice Mohamed Street, Sunnyside Pretoria. Interviews was conducted in the offices of the participants which would ensure privacy and that participants felt comfortable in answering freely. There were no risks associated at the location. The location was private, which allowed for confidentiality and de-identification. If the participants did not feel comfortable with the provided location, a location of their choice would be considered.

1.6.3.4 Limitations and delimitations

Miles (2019:3) defines limitations as constraints to your study based on the research methodology of your study design. Miles (2019:3) stipulates that "limitations are constraints you cannot control in your study". Simon and Goes (2013:1) contend that "limitations are matters and occurrences that arise in a study which are out of the researcher's control".

The collection of data was limited to CDs from the NDHS and not the entire public service, therefore findings of the study was limited to the NDHS and not the Public Service. The sampling method adopted in the study included only CDs and not all employees would be included, which could influence the findings of the study negatively.

1.7 ETHICAL CONSIDERATIONS

Ethical approval for this study was obtained from the Basic and Social Sciences Research Ethics Committee (BaSSREC) of the North-West University and the Director-General of the NDHS. The researcher communicated an introductory and consent letter to all respondents and participants of the study. This ensured that respondents' participation was voluntary, suggesting that no force or any unscrupulous method was be used to compel individuals to participate in the study. The researcher adhered to confidentiality, and identities of interviewees and discussants was not revealed. Furthermore, the researcher respected intellectual property through strict adherence of acknowledging the sources from which the data has been gathered.

The researcher adhered to the terms of section 43(2) of the Promotion of Access to Information Act (PAIA) of 2000, which stipulates that the researcher will protect confidential information shared and not disclose any of the NDHS information without the applicable consent and the researcher. The researcher did not influence data obtained nor force participants to participate. Participants were allocated code names, there was only an indication of participants ranks. The NDHS would not allow the researcher to involve external participants, nor allow information of participants to be provided to an external person.

1.8 SIGNIFICANCE OF THE STUDY

In addressing the governance components, the study would feed into the debate on skill requirements demanded by the 4IR and skill audit reforms in the NDHS, which entwine with the 4IR and the disruption that is characteristic of the latter. The study could contribute to the body of knowledge in the NDHS through:

- (i) Identifying the new skill requirements as demanded by the 4IR in the NDHS;
- (ii) Developing a skills audit framework for the Institution which can be followed by the implementation of a skills audit process;
- (iii) The development of an integrated HR approach in the NDHS to assist in attracting, developing and retaining a skilled workforce; and
- (iv) Developing an institutional repository containing intellectual knowledge and experiences which could inform future policies and programmes.

The findings of this study were presented to the Executive Management Team (EMT) of the NDHS for implementation. An article would be written for publishing and a paper on the study would be presented at the next South African Association of Public Administration and Management (SAPAAM) conference. A copy of the study will be submitted to the Departmental NDHS Library which can be accessed by staff within the Department.

1.9 CHAPTER LAYOUT

The chapter layout for the research is outlined below:

Chapter 1: Introduction

This was the introductory chapter of this study. It gave an outline of the orientation and problem statement, central theoretical statement, significance of the study, research questions and objectives and the research methodology which the study utilised.

Chapter 2: The Theoretical Framework that Supports a Skills Audit Framework

This chapter provided a detailed presentation on the theoretical underpinning of skills audits, the 4IR and human settlements as it is understood in the NDHS in relation to the research question and research objective.

Research question: What is the literature and theoretical framework that underpins a NDHS skills audit framework in the naissance of the 4IR?

Research objective: To present the literature and theoretical frameworks that underpin an NDHS skills audit framework in the naissance of the 4IR.

Chapter 3: Statutory, Legislative, Regulatory and Institutional Frameworks that Govern Skills Audits in the Context of 4IR in the NDHS

This chapter focuses on the statutory, legislative, regulatory and institutional frameworks that govern skills audit within the South African Public Service and the NDHS.

Research question: What is the statutory, legislative and regulatory framework that informs an NDHS skills audit framework in the context of 4IR?

Research objective: To present an assessment of the statutory, legislative and regulatory framework that informs an NDHS skills audit framework in the context of 4IR.

Chapter 4: Research Methodology, Data Analysis Findings on Skills Audits within the NDHS in the Naissance of 4IR

This chapter sets out the methodology and methods used for data collection and analysis, why the methods were chosen, their effectiveness and shortcomings experienced. Data obtained was analysed and the main findings emerging from the empirical investigation are outlined.

Research question: What are the current perceptions and status of NDHS public servants in terms of 4IR in the NDHS?

Research objective: To present a detailed narrative on the current perceptions and status of NDHS public servants in terms of a skills audit in the context of 4IR in the NDHS.

Chapter 5: A Digital Skills Audit Framework

Outlined the gaps identified in statutory, legislative, and regulatory frameworks on skills audits and how it is done in the NDHS. Furthermore, it identified the gaps and inadequate information in relation to theory applicable to skill audits entwined with the 4IR within the public service and provided the researcher the opportunity to either build on existing theory related to the study or develop a diagram which builds on to the hypothesis of literature in terms of planning and conducting skills audits during the 4IR in the South African public service.

Research question: What does a triangulation between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS present?

Research objective: To present a triangulation between i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS.

Chapter 6: Findings, Recommendations and Conclusion

Outlined the gaps identified in statutory, legislative, and regulatory frameworks on skills audits and how it is done in the NDHS. Furthermore, it identified the gaps and inadequate information in relation to theory applicable to skill audits entwined with the 4IR within the public service and provided the researcher the opportunity to either build on existing theory related to the study or develop a diagram which builds on to the hypothesis of literature in terms of planning and conducting skills audits during the 4IR in the South African public service.

Research question: What does a triangulation between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS present?

Research objective: To present a triangulation between i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS.

1.10 CONCLUSION

The workforce within the NDHS should be equipped with the required and necessary skills in the context of the 4IR to enable preparedness of the NDHS to implement its constitutional mandate effectively, efficiently and economically. The study indicates that there was no evidence to serve as proof that a skills audit has been conducted in the past five years, hence there was no accurate skills profile of the NDHS workforce.

The study set out to build on existing literature and theory, which underpin public service skills audit frameworks in the naissance of 4IR, and provided plausible recommendations to present the substance of a comprehensive, descriptive skills audit framework that had the capacity to direct a well-planned skills audit entwined with 4IR for the NDHS, and possible use in the public service, with the aim of fulfilling a constitutional mandate within the public service. Chapter 2 provided an overview of literature on skills audits and the 4IR, including the theoretical framework which informed this research.

CHAPTER 2: A THEORETICAL FRAMEWORK THAT SUPPORTS A SKILLS AUDIT FRAMEWORK

2.1 INTRODUCTION

According to Van der Waldt (2020:42-43), skills audits typically aim to identify skills gaps, guide job placement and promotion decisions, and design appropriate interventions for skills development. The draft Skills Audit Methodology (Public Sector Education and Training Authority [PSETA], 2019:7) stipulates that a skills audit is a process for measuring and recording the skills of employees in an organisation. The draft Skills Audit Methodology (PSETA, 2019:7) contends that the purpose of conducting a skills audit is to identify the current skills and knowledge that an organisation has and determine where gaps exist with the skills and knowledge the organisation requires to fulfil its strategic mandate and business objectives. Van der Waldt (2020:43) argues that the nature, scope and methodology for the design of skills audits should consider the following variables: the particular organisational setting, nature of the occupation, and the type of skills to be audited. The draft Skills Audit Methodology Framework (PSETA, 2019:12) denotes that skills within the Public Service can be identified and quantified accurately and that Departmental Skills Audits provide data and information on the jobs performed within the organisational structure which can be used to identify gaps between job families and those required to achieve departments' service delivery objectives and goals.

According to Van der Walt (2020:45), there is a link between skills, competence and capacity, therefore, to improve the capacity of an organisation, all employees must increase their overall competencies, which consist of specific job-related skills for collective improvement in the organisation's general performance and its ability to operationalise its strategic objectives successfully. The PSETA (2019:12) contends that the results of skills audits determine the personnel's skills gaps required to meet its strategic objectives. It stipulates that Competency Frameworks are developed based on the accurate job profiles and consist of a set of technical strategic and generic competencies that communicate what is expected of employees.

There is consensus between Van der Waldt (2020) and the PSETA (2019) that a skills audit is a process which identifies skills of the workforce in an institution and that the skills gap can be identified by the nature of the occupation and the job performed as per the organisational structure of the institution and the job occupation which ultimately contributes to the fulfilment of institutional objectives.

The Human Resource Development Council (HRDC) (2013:3-4) stipulates that the South African labour market is characterised by low levels of education and skills, and the potential workforce

entering the labour market is viewed by employers as not being adequately prepared for the world of work. The Public Service is labour-intensive which is dependent on the quality, skills and performance of its employees (PSC, 2011:2). Due to the demands on the Public Service for efficient and effective service delivery, there is a need for departments to adopt appropriate Human Resource Development (HRD) practices which would ultimately improve performance (PSC, 2011:13).

Chapter 1 provided a preview to the problems this study investigated which were to: i) determine, measure and record the skills base of the workforce in the NDHS, ii) document the accurate and reliable information of the different job families in the NDHS, iii) establish the functions and tasks performed by the workforce in the NDHS within the different job families, iv) identify the gaps between the skills and knowledge the NDHS requires, v) identify the gaps between the skills and knowledge the NDHS requires to operationalise its strategic objectives, and vi) determine the competencies required by the workforce in the NDHS in different job families to support institutional appointments.

One of the requirements with which departments must comply as per skills development legislation and HRD Strategies is to conduct a skills gap analysis, to determine skills development priorities and to align the department's skills profile with its strategic objectives (PSC, 2011:12). As a result, the recommendations of the PSC on the Assessment of HRD practices in the Public Service (PSC, 2011:xi) stipulate that all departments must, as a matter of urgency, conduct skills audits to ensure that they are aware of their current skills as well as the skills gap that needs to be addressed by targeted recruitment and/or training interventions.

This chapter responds to the second research question by reviewing the literature and theories that underpin Public Service skills audits in the naissance of the 4IR which supports the second research objective by providing a comprehensive literature review on the analysis of literature and theories that underpin public skills in the naissance of the 4IR.

2.2 CONCEPTS OF A SKILLS AUDIT FRAMEWORK

According to Watson (2004:1), a skills audit is essentially a process for measuring and recording skills of an individual or group. The main purpose for conducting a skills audit in an organisation is to identify the skills and knowledge that the organisation requires, as well as the skills and knowledge that the organisation currently has (Watson, 2004:1). Van der Westhuizen and Wessels (2011:332) define a skills audit as “an investigation that is undertaken to determine the current workforce's actual skills and the reason being to define the skills gap and real skill requirements of the organisation”. Hayton and Loveder (1992:3) reason that a skills audit is a systematic process which identifies the skills or competencies held by an individual or group; a

skills audit generally should identify all relevant vocational skills, both those skills currently used in the job, and those not currently used by the individual or a group. Van der Waladt (2020:42-43) contends that audits typically aim to identify skills gaps, guide job placement and promotion decisions, and design appropriate interventions for skills development. Kunene (2017:21) purports that skill audits help to establish the actual skills which exist in the organisation, compared with the organisational skill requirements as determined through workforce planning and job analyses processes and the skill development priorities that must be addressed.

It can be reasoned that a skills audit is a process undertaken in an institution to establish the current skills and competencies of the workforce in view of actual skills and competencies required by the institution with the aim to identify skills gaps, guide job placement and to plan skills development interventions aligned to institutional skill requirements.

Interchangeable words in terms of competency, framework, and skills audit:

Whilst conducting research, it was discovered that authors used interchangeable words to describe processes, frameworks, or models to conduct skills audits which is tabulated below:

Table 2.1: Description of key concepts

Reference	Interchangeable words	Description
Competency Framework for career Development in Practitioners in South Africa. Department of Higher Education and Training (DHET) (2016).	Competency Framework	Describe the knowledge and skills needed by all levels of a broad field of career which can foster a professional identity for those working in the field as well as provide structure for qualifications, training standardisation and professionalism.
Department of Public Service and Administration (DPSA) Circular 25 of: Public Service Skills Methodology (2023:3).	Skills Audit Methodology Framework	The framework outlines the strategic purpose of undertaking a skills audit process in an organisation in the context of the public service. It identifies the key steps involved, the principles guiding the process, and the roles and responsibilities expected in undertaking a process of skills audits.
DPSA, (2023:3): Guide to Compilation of an Organisational Competency Framework.	Competency Framework	A competency framework supports departments in defining the knowledge, skills, behaviours, and attributes that are required by employees to achieve departmental strategic objectives and delivers on an organisation's mandate. In addition, it serves to inform all activities across the Talent Management Value Chain, including skills assessments, recruitment, job profiling, training and development, succession planning and retention.

PSETA (2019:3): Guidelines to developing an Organisational Competency Framework.	Competency Framework	A competency Framework defines each competency required, now and in the future, to enable employees to deliver on the departmental and organisational strategic mandate.
Hayton and Loveder, (1992:3): How to do a skills analysis and skills audit.	Skills analysis	A systematic process which identifies skills or competencies required for a particular job which can be used for a skills audit.
Hattingh (2014:2): Skills planning for improved performance.	Organisational Skills Audit	To obtain accurate and reliable information on job families, the functions and tasks performed, and the competencies required by occupants in different jobs in the organisation and the state of skills in the organisation.
American College Testing (ACT, 2011:6): A better measure of skills gaps.	Competency modelling	Consists of competency mapping, competency gap analysis, competency development and competency monitoring to indicate whether present employees have the necessary skills and competencies for their jobs, if not where do they need development.

Sources: Researcher's own compilation: DHET (2016), DPSA (2023:3), PSETA (2019:3), Hayton and Loveder (2019:3), Hattingh (2014:2), and Act (2011:6)

According to the scholarly contributions of Hayton and Loveder (1992), a skills audit framework is a methodical process that identifies skills and competencies for a specific job. Hattingh (2014) concedes that a skills audit framework is used to obtain precise and accurate information on the skills and competencies of an occupation within an institution. The DPSA (2023), PSETA (2019), and ACT (2011) concur with the aforementioned scholars that a skills audit framework defines and outline the knowledge, skills, competencies and behaviours of the workforce in fulfilment of an institution's mandate.

According to the DPSA (2024:3), there are various definitions that are used to define a competency; even though the terminology and concepts in use do vary somewhat, there is general consensus that competency refers to the set of behaviours patterns an individual needs to display in order to perform effectively and efficiently in their position. The DPSA Competency Framework defines a competence as the blend of knowledge, skills, behaviour, and aptitude that a person can apply in the work environment, which indicates a person's ability to meet the requirements of a specific post (DPSA, 2024:3).

A Competency Framework defines the competencies that are crucial for the department to be successful and ensure that officials have the requisite competencies and associated proficiency levels to succeed at the strategic level (DPSA, 2024:3). A Competency Framework is the foundation for and a key driver of effective HRM. It describes the activities and behaviours of employees using a common set of terms and scales, thus creating a common language across HR processes. Having the knowledge, skills, behaviours, and attitudes in one place in a

competency model is a helpful tool that allows both the individual and the organisation to know what knowledge and skills are needed to be effective in a given role (DPSA, 2024:3). The DPSA (2024:3) contends that a skills audit is a process for measuring and recording the skills of employees in an organisation. The purpose of conducting a skills audit is to identify the current skills and knowledge that an organisation has, and the skills and knowledge that it needs (DPSA, 2024:3). The Skills Audit Methodology Framework prescribed by the DPSA will be used across the public service to ensure a uniform approach to conducting skills audits and determining the skills base, skills requirements, and development priorities (DPSA, 2024:3).

The purpose of this study was to develop a Skills Audit Framework in the naissance of the 4IR in the NDHS which is aligned to the Skills Audit Methodology Framework prescribed by the DPSA. It will be customised to suit the requirements of the NDHS. This chapter responds to the second research question by reviewing literature and theories that underpin Public Service skills audits in the naissance of the 4IR to strengthen and support the second research objective by providing a comprehensive literature review on the analysis of literature in view of skills, the NDHS, the 4IR and HCT and RBV theories.

2.3 HUMAN CAPITAL THEORY (HCT)

The OECD (2001:18) defines human capital as the knowledge, skills, competencies, abilities, and other attributes embodied in individuals that facilitate the creation of personal, social and economic well-being. Juhdi, Pa' Wan, Moksini and Othman (2010:1) stipulate that HCT proposes that investment in employee training and education would lead to higher internal mobility and reduce external mobility; they imply that when employees participate in training and development programmes, they would be able to learn new skills and perform multiple tasks, and in addition, employees tend to be more committed to the current employer and thus lower the turnover rate. Ngcwangu (2014:152) maintains that HCT proponents associate skills with neoclassical ideas of the HCT which seek to extend economic theory to explain the entirety of human behaviour.

Stiles and Kulvisaechna (2003:3, as cited in Wilson, 2005:440) stipulate that there is a large and growing body of evidence that demonstrates a positive linkage between the development of HC and organisational performance. The emphasis on human capital in organisations reflects the view that the market value depends less on tangible resources, but rather on intangible ones, particularly HR. Recruiting and retaining the best employees, however, is only part of the equation. The organisation must also leverage the skills and capabilities of its employees by encouraging individual and organisational learning, creating a supportive environment in which knowledge can be created, shared, and applied. Wright, Dunford and Snell (2001:716, cited in Wilson, 2005:441) stipulate that intellectual capital is embedded in both people and systems; the stock of human capital consists of human (knowledge, skills, and abilities of people), social

(valuable relationships among people) and organisational (the procedures and routines within a institution).

Harbison and Myers (1964) in the context of HC, believe that HRD was important for national development. Becker (1964) contends that HCT emphasises the potential relationship between the quality and skills of the workforce and organisational performance. Mubarik, Chandran and Devadason (2017:5) contend that the HR indicators approach, which focuses on indicators like employees' competence, motivation, skills, professional knowledge and creativity, is the most popular approach for measuring HC. This approach collects indicators related to corporate performance and quantifies them with the help of various techniques. Schultz (1961) and Nelson and Phelps (1966) view HC as the capacity to adapt in changing environments. Schultz (1961) and Nelson and Phelps (1966) argue that HC is especially useful in dealing with 'disequilibrium' situations, or more generally, with situations in which there is a changing environment, and workers have to adapt to this.

HC Capital is not without its critics. Acemoglu and Pischke (1999:13, cited in Houghton, 2017), contend that Becker (1964) subdivides skills into general and specific skills; however, many skills tend to be industry-specific, which boosts productivity of the institution but not outside the industry. Oliveira and Holland (2007) and Oliveira and Da Costa (2014) argue that Becker (1964:13) places emphasis only on formal education or training and the latter is obtained through financial expenses. These authors argue that informal training is obtained through doing and thus obtaining experience.

Table 2.2: Notable authors on Human Capital (HCT)

Author	Year	Definition	Applicability of HCT to a skills audit framework
Schultz	1961	Organisations received economic value from their employees' knowledge, skills, competencies and experience. HC can be increased by training and education. (Schultz, 1961:8-12).	The skills, competencies and knowledge possessed by the workforce within the NDHS contribute to service delivery. The application on HCT in a skills audit process would identify specific skill-sets requirements of the workforce to be addressed by applicable skills development interventions, which would increase service delivery and economic value.
Schultz	1961	Organisations received economic value from their employees' knowledge, skills, competencies and experience. HC can be increased by training	The skills, competencies and knowledge possessed by the workforce within the NDHS contribute to service delivery. The application on HCT in a skills audit process would

		and education. (Schultz, 1961:8-12).	identify specific skill-sets requirements of the workforce to be addressed by applicable skills development interventions, which would increase service delivery and economic value.
		Postulates that HC amounts to investment in education and training which can be undertaken by an individual or group of individual workers of any institution or organisation.	HCT would enable a skills audit exercise to identify the available skills within respective business units in the NDHS inclusive of the number of staff members requiring the skills.
Davenport	1998	HC is innate abilities, behaviours, personal energy possessed by people and these elements make up the HC which they bring to the workplace. (Davenport, 1998:11-30).	The workforce is diverse, each attribute of diversity contributes to an organisational culture which individuals bring to the workplace
Scarborough and Elias	2002	HC is most usefully viewed as a bridging concept-it defines the link between HR practices and business performance in terms of assets rather than business processes. (Scarborough & Elias 2002:49-50).	Allow HR to form strategic partnerships with Branches within the NDHS to support with recruitment and selection of people with the required skills to be placed in the correct/required positions to perform the required functions.
Criticism on HCT			
Strober	1990	HCT is basically a supply-side theory and, as might be expected, demand-side forces are also operative in labour markets and need to be taken in to account. Moreover, there are feedback effects in a complex environment, and supply and demand factors are not as independent of each other as we would like to pretend. Thus, the HC approach to economic growth exhibits the weaknesses of HCT in a particularly straightforward manner, primarily focused on the many factors that contribute to growth. Because economic growth is driven by many factors besides education, a balanced and integrated approach at the government level is essential. The task of HC and HRD researchers is thus to determine the precise contribution of investment in HR. (Strober, 1990:218&232)	Even if the prime factor of HCT is supply focused, the mandate of the NDHS is to implement human settlements throughout South Africa. There is a backlog in terms of providing housing and the demand increases annually, which impacts service delivery negatively. The implementation of a skills audit would provide guidance on the type of skills, knowledge and competencies that are currently in the institution, if the workforce is correctly placed to apply skills optimally in respective areas of operation and direct HR in obtaining the skills required by the core function business units.

Becker	1979	Organisations failed in adapting to HCT because of the lack of accuracy and uncertainty of measurement, (Becker, 1979:13).	This study was aimed at developing a skills audit framework for the NDHS. This process includes analysing not only JC, but also analysing the type of jobs, positions, gender, location and job families which would contribute to increasing the measurement of HCT.
Guest	1997	HCT fails in linking and aligning between HC and performance. (Guest, 1997:263-276)	This study utilises HCT and Resource-Based View (RBV) theory. RBV theory was used to analyse the NDHS strategy, strategic objectives, job descriptions and organisational structure to identify gaps in relation to organisational performance.

Sources: Researcher's own compilation: Schultz (1961:8-12), Sullivan (1990:12), Davenport (1998:11-30), Scarborough and Elias (2002:49-50), Strober (1990:218 & 232), Becker (1979:13) and Guest (1997:263-276)

Scholarly contributions by Schultz (1961), Sullivan (1990) and Mayo (2012) purport that HC is the skills, knowledge, competencies, behaviours and experience of the workforce which are contributed to achieve the strategic objectives of an institution. Scarborough and Elias (2002) compare HC to a bridging process which links HR practices with institutional performance, and Armstrong and Taylor (2014) imply that HC is how the workforce contributes their knowledge and skills to enhance institutional performance.

According to Schultz (1961) and Sullivan (1990), HC addresses the skills, knowledge, competencies and experience of the workforce in an institution. Marshal (1998) argues that HC is the investment in education and training undertaken by a group or individual in the workplace, whilst Davenport (1998) contends that HC is the inherent abilities of humans which they contribute to the workplace. Scarborough and Elias (2002) state that HC is the linkage of HR practices and institutional performance of assets rather than processes. In view of what scholars have stated on HCT, the researcher viewed HCT as relevant for a skills audit framework, to determine, measure and record the skills base of the workforce in the NDHS.

The use of HCT allows for the collection of data on skills, competencies, knowledge and experience of the workforce in the NDHS that are required in addressing underperformance of the institution affecting the mandate of the NDHS set out in the Constitution. The HCT was applicable to this study as the theory contends that HC contributes to the attainment of institutional performance. Characteristics of the HCT were used as a guide to identify and understand the available skills, the skills gaps, and areas where there is an influx of skills which are not required or utilised.

2.4 RESOURCE BASED VIEW (RBV)

Papagiannidis (2022:94) argues that Resource-Based (RBV) Theory provides a framework to highlight and predict the fundamentals of organisation performance and competitive advantage. Kozlenkova, Samaha and Palmatier (2014, cited in Papagiannidis, 2022:95) contend that RBT addresses an internally driven approach by focusing on internal organisation resources, as opposed to externally driven approaches to understanding the accomplishment or failure of leveraging organisational activities. Kor and Leblebici (2005) employ the RBV to test a theory of how institutions can deploy and develop their strategic human assets/resources successfully while managing the trade-offs in their service and geographical diversification strategies. The RBV argues that institutions possess resources, a subset of which enables them to achieve competitive advantage, and a further subset which leads to superior long-term performance (Barney 1991 Grant 1991; Penrose 1959; Wernerfelt 1984).

McGee (2014:2) purports that RBV focuses on the resources and capabilities of the institution, asserting that it is the distinctiveness of these that enables sustainable positional advantages to be constructed. Furthermore, the “capabilities” described here are institution-specific. They are developed internally against the specific needs and ambitions of each company. Furthermore, McGee (2014:2) states that capabilities often depend on tacit knowledge, are path dependent in that they emerge and develop over time and are not in the form of assets that can be traded.

Barney *et al.* (2001: 625) argue that sustained competitive advantage derives from the resources and capabilities an institution controls that are valuable, rare, imperfectly imitable, and not substitutable. Moreover, Barney *et al.* (2001:625) contend that these resources and capabilities can be viewed as bundles of tangible and intangible assets, including an institution’s management skills, its organisational processes and routines, and the information and knowledge it controls. In the intervening decade, the diffusion of the RBV in strategic management and related disciplines has been both dramatic and controversial and has involved considerable theoretical development and empirical testing.

Castanias and Helfat (2001:626-627) present an expanded classification of managerial resources and explain how they relate to (1) other classifications of managerial abilities such as those dealing with leadership qualities or functional area experience, and (2) the fundamental resource-based characteristics of scarcity, immobility, and inimitability. The implications of this model for institution performance, appropriability of rents from managerial resources, and incentives for managers to generate rents are then analysed. The authors argue that managerial resources, which cannot be imitated quickly, or which may have imperfect substitutes, do not by definition generate rents, especially if effort and motivation are lacking or misdirected. They also suggest

that the nature of managerial resources may need to change with the life cycle of the institution and the industry for rents to be generated.

According to Wright, Dunford and Snell (2001:628), within the field of HRM, the RBV has made important contributions in the rapidly growing area of strategic human resource management (SHRM). Wright *et al.* (2001:628) contend that the emphasis on people as strategically important to a institution's success has contributed to the interaction and convergence of strategy and HRM issues. Individual HRM practices may be imitable, but HRM systems and routines, which develop over time, may be unique to a particular institution and contribute to the creation of specific HC skills.

Wright *et al.* (2001:708) point out that as yet, research has failed to test empirically whether HRM practices are path dependent, causally ambiguous, or imitable. Similarly, there is a lack of evidence that HRM practices impact the skills and behaviour of the workforce, or that these factors are linked to performance. Wright *et al.* (2001:628) provide a preliminary framework that suggests that core competence, dynamic capabilities, and knowledge serve as a bridge between the emphasis in the strategy literature on who provides sources of competitive advantage and the focus in the HRM literature on the process of attraction, development, motivation, and retention of people.

One of the key challenges RBV theorists have faced is to define what is meant by a resource. Researchers and practitioners interested in the RBV have used a variety of different terms to talk about a institution's resources, including competencies (Prahalad & Hamel, 1990), skills (Grant 1991), strategic assets (Amit & Schoemaker, 1993), assets (Ross, Beath & Goodhue, 1996), and stocks (Capron & Hulland, 1999). This proliferation of definitions and classifications has been problematic for research using the RBV, as it is often unclear what researchers mean by key terminology (Priem & Butler 2001).

Table 2.3: Resource-Based View (RBV)

Author	Year	Definition	Applicability of HCT to a skills audit framework
Ramanjam and Varadarajan	1989	Resource-based theory is concerned with the rate and direction and performance implications diversification strategy, areas of considerable focus in the strategy field. (Ramanjam & Varadarajan, 1989:5-5).	The skills audit framework considers the considers the strategy, strategic objectives, organisational structure, job descriptions and job families within the NDHS to establish the current available and required skills, knowledge and competencies of the workforce.
Wright, Dunford and Snell	2001	Within the field of HRM, the RBV has made important contributions in the rapidly growing area of SHRM. The	HR must be a strategic partner to all business units with the NDHS, to ensure that the right people with the

		emphasis on people as strategically important to institution's success has contributed to the interaction and convergence of strategy and HRM issues, (Wright <i>et al.</i> , 2001:702&703).	correct skill-set are placed in functions where there are critical and scarce skills shortage.
Aharoni, <i>et al.</i>	1990	The resource-based approach focuses on key success factors of individual institution behaviour to achieve institution-specific advantages via a portfolio of core skills, coherence across skills and unique proprietary know how, (Aharoni, <i>et al.</i> , 1990:17)	A skills audit for the NDHS will identify the core skill gaps required within the core function business units which must be addressed.
Makina and Oundo	2020	RBV ignores the impact of other factors affecting performance of an organisation, for instance organisational culture, (Makina & Oundo,2020:223).	The development of a skills audit framework includes broader factors to determine the skill requirements. This study would not be affected by this criticism as aspects such as organisational culture, gender, geographical locations will all form part of the framework.
Criticism on RBV			
Levitas and Ndofor	2006	To effectively operationalise a key resource from others, researchers must identify all factors that play a role in this key resource and establish the interconnections among them.	This study incorporates various factors applicable to the NDHS for the skills audit framework. Hence this study was conducted from an HR perspective, HR is a support function which interlinks with all strategic stakeholders throughout the institution.
Makina and Oundo	2020	RVB ignores the impact of other factors affecting performance of an organisation, for instance organisational culture.	The development of a skills audit framework includes broader factors to establish the skill requirements of an institution.

Sources: Author's own compilation, based on: Ramanjam and Varadarajan (1989:5-5), Wright *et al.*, (2001:702&703), Aharoni,*et al.*, (1990:17), Makina and Oundo (2020:223), and Levitas and Ndofor (2006)

Based on the scholarly contributions of Ramanjam and Varadajan (1989), RBV focuses factors which contribute to institutional performance. Aharoni *et al.* (1990) contend that RBV places emphasis on factors such as core skills of individuals for an institution to be successful, and Wright *et al.*, (2001) argue that the workforce is a strategic aspect of an institution, hence HR should be strategically placed in institutions. Criticism on RBV, as purported by Makina and Oundo (2020) and Levitas and Ndofor (2006), reason that resources other than HC also contribute to institutional performance. Furthermore, RVB theory focuses on an institution's behaviour, which serves as an advantage through a selection of core skills, consistency across skills, and unique branding Barney (1991) and McGee (2014) agree that the knowledge and capabilities which exist must be unique to the institution. Barney (2001), Grant (1991), Penrose (1959) and Wernefelt (1994) agree that institution resources enable institutions to achieve a competitive advantage.

RBV emphasises that institutions make use of internal resources which are unique to the institution as an advantage. RBV contends that human skills and resources contribute to an organisation's strategic capacity and creates a competitive edge. The fundamentals to the development of a skills audit framework are embedded in the RBV, which is designed to identify and develop competencies of the workforce which would contribute to institutional achievement. The NDHS is unique due to its mandate as outlined in section 26 of the Constitution; it is the only institution authorised to draft and implement the legislation applicable to human settlements and the entire construction sector is dependent on the legislative provisions which guide the establishment and implementation of human settlements within the boundaries of South Africa.

2.5 TECHNOLOGICAL DETERMINISM THEORY (TDT)

The table below captures contributions of scholars pertaining to their view on TDT:

Table 2.4: TDT

Author	Year	Definition	Applicability of HCT to a skills audit framework
Smith	1994	Technological Determinism can be considered as the belief in technology as a key governing force in society, (Smith, 1994:2).	The enhancement of technology requires enhancing of skills for the workforce which would contribute to improvement of service delivery. Technology could be considered one of the driving forces in the NDHS by identifying the required skills-set to enhance service delivery to be determined through a skills audit process.
Agbanu	2013	Technological Determinism states that technology shapes how individuals in a society think, feel, act and how a society behaves as it moves from one technological age to the other, (Agbanu, 2013:179).	As technology advances, skills and competencies of the workforce require to be improved to ensure that the institution remains relevant and maintains a competitive advantage against competitors. The NDHS is a public service institution that implements and delivers services to citizens in South African. The NDHS is defined as an infrastructure institution due to its mandate, therefore priority should be given to the technological skill requirements of the workforce responsible for the implementation of human settlements.
Hallström	2022	Technology is inherent to work processes, (Hallström, 2022:26)	Technology is an integral part of an institution; therefore, regulations are implemented to govern the boundaries of such technologies, which include how and what technologies can do. Technological processes are not implemented by unlimited aspects as they operate in controlled boundaries.

Criticism on TDT			
Hutchins	2023	Potential pitfalls of technological determinism, as it could lead to a scenario where technology is seen as an unstoppable force, beyond our control or regulation, (Hutchins, 2023:1)	TDT is applicable to this research, technology is not considered unstoppable because implementation of technology is regulated by the DPSA and the State Information Technology Agency (SITA) by means of the technology policies. The technological systems for this research were conducted in compliance with institutional policies of the NDHS.
Chandler	2000	Technology does contribute to societal change, it is not the only factor causing the change. Many technological determinists have a reductionist interpretation, meaning that they only see technology as the main factor of change, being the only cause. Societal change is multicausal rather than monocausal, meaning society's progression is driven by multiple causes like economics, politics and education, (Chandler, 2000:152-167).	The workforce of the NDHS is diverse, due to factors such as culture, religion, skills, education and abilities which contribute to the NDHS organisational culture. Technology would not be the sole contributor to change. The skills audit framework would outline factors inclusive of job descriptions, skills levels, job placement and competency sets. Therefore, the criticism on TDT was not sustainable for this research.
Harrison	2013	Technological determinism puts technology above society, which makes people feel hopeless to change society by themselves, thus causing a 'self-fulfilling prophecy", (Harrison, 2013:245-262).	Technological advancements are invented and implemented by humans. The implementation of an invention is made possible by humans. Therefore, technology is not above society, the lack of knowledge, skills and understanding of the intervention leads to the feeling of hopelessness due to its disruptive nature, which is the same principle that applies to the 4IR.

Sources: Author's own compilation, based on: Smith (1994:2), Agbanu (2013:179), Hallström (2022:26), Hutchins (2023:1), Chandler (2000:152-167), and Harrison (2013:245-262)

Based on the scholarly contributions of Smith (1994) and Agbanu (2013), these scholars contend that technology is the key governing force in society which influences the way society acts and behaves. Hallström (2022) and Hutchins (2023) argue that technology is innate to work processes, it can be understood that technology is an integral part of an institution based on the way work is performed through the use of technological systems, where moving from a paper-based environment to an environment where information is uploaded on automated systems which are signed off electronically, and where physical meeting are replaced with virtual or hybrid meetings have become the norm. Criticism on TDT by Hutchins (2023) that technology can be unstoppable and beyond regulation, Chandler (2000) that technology is the single force of societal change, and Harrison (2013) that TDT makes people feel hopeless, could be reasoned that technology is implemented within the confines of regulations which should not infringe on human rights, dignity and ethics. Humans are the inventors of technology, which is also enhanced by them, therefore it can be argued that technology would not become unstoppable because humans

influence what can be done and not done through technology. The argument that humans feel hopeless can be contended that the less a human being understands something, the more negative their attitude towards it will become. The more knowledgeable humans become and understand the positive side of 4IR, the more they will become at ease.

2.6 THE FOURTH INDUSTRIAL REVOLUTION AND TDT

Schwab (2017:1) defines the Fourth Industrial Revolution (hereafter referred to as 4IR as a revolution that is fundamentally changing the way we live, work, and relate to one another. Schwab (2017:1) contends that the 4IR is unlike anything humankind has experienced before due to its scale, scope, and complexity. Schwab (2017:3) underpins three reasons why the 4IR is underway and why the 4IR is a distinct revolution.

- (i) The velocity of the 4IR is unlike previous industrial revolutions; this one is evolving at an exponential rather than a linear pace. This is the result of the multifaceted, deeply interconnected world we live in and the fact that new technology begets newer and ever more capable technology.
- (ii) Breadth and Depth: it builds on the digital revolution and combines multiple technologies that are leading to unprecedented paradigm shifts in the economy, business, society, and individually. It is not only changing the “what” and the “how” of doing things, but also “who” we are.

Systems impact involves the transformation of entire systems, across (and within) countries, companies, industries, and society as a whole.

Schwab (2017:3) proposes three main goals which provide a primer on the 4IR with the intention to assist in using opportunities of the revolution to improve the world, which include:

- (i) To increase awareness of the comprehensiveness and speed of the technological revolution and its multifaceted impact (Schwab, 2017:3).
- (ii) To create a framework for thinking about the technological revolution that outlines the core issues and highlights possible responses (Schwab, 2017:4); and
- (iii) To provide a platform from which to inspire public-private cooperation and partnerships on issues related to the technological revolution.

Schwab (2017:9) explains that the scale and scope of the change explain why the disruption and innovation feel so acute because the speed of innovation in terms of both its development and diffusion is faster than ever, and today's disruptors were relatively unknown just a few years ago.

Disruptive technology is making rapid progress, and remote knowledge workers are becoming more highly valued than ever before. This shift to distributed work is already changing how and where talent is recruited, as well as where the workforce will perform their functions (Charas & Lupushor, 2022:2). Disruptive technologies, like AI, have the potential to transform governments. The World Bank contends that if used correctly and used with human management and decision-making, governments can use AI to address development challenges. The World Bank (2019:4) emphasises that the more decision making becomes automated using machine learning and models, the more we can expect this to change the demand for workers, with that increasing the demand for high-skilled workers and decreasing the need for lower-skilled workers.

Charas and Lupushor (2022:7) assert that the workforce is changing at the same time as advances in technology are revolutionizing and redefining what work looks like and how it needs to be accomplished. Disruptions impacting the workplace include: demographics: which include a multigenerational workforce, aging population, greater diversity in backgrounds and thinking; digitization: intelligent automation, virtual/augmented/ mixed reality, artificial intelligence and the Internet of Things (IoT); datafication: harvesting and analysis of data about interactions between humans, devices, sensors, bots and tools; and disintermediation: removing the middle person from the value chain (Charas & Lupushor, 2022:7-8). The entire business world is evolving at a frenetic rate in response to disruptions to supply chain issues, manufacturing shortages, and shifts in marketing powers (Charas & Lupushor, 2022:9).

Layton-Matthews and Landsberg (2022:56) argue that whilst technology can enhance service delivery in its innovative platforms, it also presents many challenges in its implementation. This is especially evident in the public sector environment, with its intricate bureaucracy and its complex structures. According to the World Economic Forum (WEF, 2018:14), to enhance readiness and prepare for the future, decision makers need to assess their current capabilities, identify new capabilities required to benefit from and succeed in a new production paradigm, and develop collaborative and customised solutions to facilitate transformation. Ntshavheni (2022:8) states that governments are responsible for using technology as a catalyst for change in the world that should advance public services, inclusive of growth and sustainable development.

Maharaj (2018:18) contends that in South Africa, the 4IR brings about the potential for job losses; however, it also brings about the opportunity for people to reskill themselves for different types of work. Furthermore, it will become essential for industry and government to embark on lifelong learning and reskilling on a continuous basis as the traditional role of many jobs and positions will be radically disrupted (Maharaj, 2018:18). Schwab and Davis (2018:225-226) contend that the ongoing and potential disruptions of the 4IR require leadership on governance from two perspectives: the first requires leaders to rethink “what we govern, and why”, and the second perspective is to move beyond the “what” of governance and rethink the “how”. Schwab and

Davies (2018:233) advise that businesses need a viable appreciation of new technologies to see the bigger picture and opportunities that may lie at the periphery. Schwab and Davies (2018:234) contend that making the most of experimenting with new technologies, companies must value those who hold institutional knowledge and can leverage it for new ventures and invest in developing the skills of their existing employees.

Schwab (2017), Charas and Lupshor (2022), Maharaj (2018) and Schwab and Davies (2018) agree that the 4IR is disruptive. Schwab and Davis (2018) argue that institutional knowledge can contribute to new venture and the development of skills for the existing workforce. The workforce of the NDHS is multifaceted, yet there is no institutional knowledge of where the skills exist and how it can be optimally utilised, and this puts the NDHS at a disadvantage which must be leveraged.

The 4IR is at its cusp in the NDHS. During the COVID-19 pandemic, the workforce was submerged into a new reality of work which has never been encountered before. Remote working arrangements and rotation of the workforce, which seemed futuristic, became a reality. Technological systems for the implementation of and finance functions did not allow the aforementioned functions to be implemented remotely, and the workforce was required to be on the institutional premises for these transactions. This demonstrates the urgency of implementing suitable technological systems required by the 4IR and suitable to the NDHS.

2.7 AN ANALYSIS OF LITERATURE THAT SUPPORTS THE DEVELOPMENT OF A SKILLS AUDIT FRAMEWORK IN THE NAISSANCE OF THE 4IR IN THE NDHS

It was discovered during research that interchangeable words are used to describe processes, frameworks, and models to conduct skills audits; furthermore, the words skills and competencies are also used interchangeably. Therefore, there was a need to define the words applicable to this study, which include the words framework, skill, and competency for the purposes of this study: i) A framework describes the strong part of something that gives it shape (Oxford Dictionary, 2010:243); ii) A skill is defined as the learned and applied abilities that use one's knowledge effectively in execution or performance (Torres, 2022:1), and iii) A competency is knowledge, behaviours, attitudes and even skills that lead to the ability to do something successfully or efficiently (Torres, 2022:1). For the purpose of this study, the terminology used was skills audit framework.

Both HCT and RBV theory are applicable to this study, where HCT focuses on the skills, knowledge and competencies of the workforce contributed to the institution, while RBV signifies that HC is the intangible resources of an institution. The skills and requirements of the resources are unique, which enables the institution to achieve its strategy. Both theories support the notion

that HR must be strategically positioned to support strategic HR decisions to achieve institutional strategy, and both support continuous skills development, and future technological developments aligned to the 4IR.

2.8 CONCLUSION

Chapter 2 reviewed the literature and theoretical framework that underpin an NDHS skills audit framework in the naissance of the 4IR. The theoretical framework which underpinned this study are HCT, RBV and TDT theories. All three theories support the triangulation of literature, the development of frameworks and support the notion that HR are positioned strategically to contribute to HR decisions to achieve the institutional strategy. The three theories also support continuous skills development, and future technological advancements aligned with the strategy of the institution. It could be proposed that the theories be combined to strengthen its theoretical positioning, which would provide researchers with the opportunity to use one theory containing all three aspects of HCT, RBV and TDT theories.

CHAPTER 3. OVERVIEW OF STATUTORY, LEGISLATIVE, REGULATORY AND INSTITUTIONAL FRAMEWORKS THAT GOVERN SKILLS AUDITS IN THE CONTEXT OF THE 4IR IN THE NDHS

3.1 INTRODUCTION

Govik (2022:1) argues that the South African government is the single largest employer with more than 1 million employees, Mahlaka (2024:1) concurs with the statement that the public service remains the largest employer in the country, with a number of 1,2 million persons employed in the public service. The public service, as the largest employer, is faced with immense challenges such as the alarming skills shortages to deliver services to the public (DPSA, 2022:18). Embedded in Section 195 (1) of the Constitution of the Republic of South Africa (1996) are the foundations of the basic values and principles that guide public administration.

Ballies (2008:30) asserts that training and development or the acquisition of productive skills by employees are fundamentally important, adding value to them as individuals, as well as enhancing their work to the public institution. It is for this reason that the workforce, especially in public service institutions, is compelled to improve their skills and competencies, which would ensure that the institution delivers on its constitutional mandate. According to Chelechele (2009:48), the shortage of skills in the South African public service has the potential of causing serious problems in South Africa, especially considering that South Africa is a developmental state. Chelechele (2009:48) reasons that the South African government prioritises training and education as a means towards cultivating a competent and skilful public service.

Chapter 2 provided the perspective of the theoretical framework that supports the development of a skills audit framework within the NDHS. This chapter provides insight on the existing institutional statutory and legislative frameworks which regulate the implementation of human settlements. Furthermore, this chapter provides insight on the legislative and regulatory frameworks within the South African Public Service which form the basis of policy development within the NDHS, which supports the development a skills audit framework in the context of the NDHS in view of the 4IR. Chapter 3 is aligned to the third research question and objective, as stipulated in Chapter 1 (Chapter 1, Section 1.3).

3.1.1 Constitution of the Republic of South Africa

Section 2 of the Constitution (1996) stipulates that the “Constitution” is the supreme law of the Republic. Law or conduct inconsistent with it is invalid, and the obligations imposed by it must be

fulfilled (Constitution of South Africa, 1996:3). This means that no person, not even the President, can go against it (Parliament, 2008:1). Chapter 10, section 195 (1) of the Constitution of South Africa promotes cultivation of good HR management and career development practices, to maximise human potential (RSA, 1996:103). This includes skills audits in the public sector.

Thornhill (2013:120) concurs that the Constitution of South Africa provides the basic values and principles governing public administration, therefore this includes HRD and skills development in the Public Service. Van der Waldt (2020:49) purports that a skills audit means establishing the status of skills and HR competencies and capacities; furthermore, a skills gap analysis can reveal the discrepancies between the skill base available and those that are required to operate constitutional obligations. In hindsight, the Constitution is the basis of all statutory, legislative, regulatory and institutional frameworks in the South African Public Service in relation to skill audits. The challenge for national institutions remains the implementation thereof.

The NDHS derives its mandate from section 26 of the Constitution (1996:11), which expresses: i) the right to adequate housing, ii) the State must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of this right, and iii) no one may be evicted from their home, or have their home demolished, without an order of the court made after considering all relevant circumstances.

3.1.2 Institutional, Legislative Mandate and Policy of the NDHS

The Housing Act of 1994, as amended, is the principal legislation which outlines the roles and responsibilities of the three spheres of government, whereby the NDHS sets the broad national housing deliverables and facilitate the setting of provincial and local housing delivery goals (Department of Human Settlements, 2020:11).

Table 3.1: Legislative frameworks of the NDHS

Legislation Frameworks	Purpose
Housing Act of 1997 as amended	To recognise the Constitutional right to housing and further define the roles and responsibilities of national, provincial and local government in relation to housing, (NDHS, 1999:1).
Restitution of Land Rights Act of 1994 as amended	To provide for restitution of rights in land to persons or communities that disposed of their rights in land and establish a Commission on Restitution of Land Rights, (Department of Agriculture, Land Reform & Rural Development, 1994:4).
Social Housing Act, 2008	To promote an enabling environment for social housing to flourish, (NDHS, 2008:2a)

Housing Development Agency Act of 2008	To provide for the establishment of an agency that will facilitate land and landed property, (NDHS, 2008:12).
Spatial Land Use Management Act (SPLUMA) of 2013	Provides a framework for spatial planning and land use management within the RSA, (Department of Cooperative Governance and Traditional Affairs [COGTA], 2013:2).
Rental Amendment Act, 2014	Amends the Rental Act of 1999; provides norms and standards related to rental housing; introduces various changes that impact the relationship between the tenant and the landlord; requires all municipalities to have a rental office; expands the powers of the Rental Tribunal Act (NDHS, 2014:2).
Housing Consumer Protection Act of 1998	These Acts protect and regulate housing-related transactions which interface with consumers directly (NDHS, 1998:9, 2011:2, 2019:2 & 2000:1).
Community Schemes Ombudsman Act of 2011	
Property Practitioners Act of 2019	
Home Loan & Mortgage Disclosure Act of 2000	

Sources: Author's own compilation, based on: NDHS (1999:1), Department of Agriculture, Land Reform & Rural Development (1994:4), NDHS (2008a:2), COGTA (2013:2), NDHS (2008b:12), NDHS (2014:2), and DHS (1998:9, 2011:2, 2019:2 & 2000:1)

Table 3.2: Policy frameworks of the NDHS tabulated below

Policy and Strategy Frameworks	Purpose
White Paper on Housing 1994	To provide a macro policy that creates an enabling environment for housing delivery, (NDHS, 1994:2).
Housing Code Version 2009	To provide prescripts to enable the delivery of housing, (NDHS, 2009:7).
Comprehensive Plan for the creation of Sustainable Human Settlements of 2004	To outline a plan for the development of sustainable human settlements over 5 years, (NDHS, 2004:3).
Social Housing Policy 2005	To promote an enabling environment for social housing to flourish, (NDHS, 2005:5).
NDP, 2012	The plan aims to provide a long-term perspective and defines the desired destination and identifies the role of different sectors in eliminating poverty and reducing inequality by 2030, (NDP, 2012:2).
Youth Policy 2015-2020	Provides a framework for strengthening and capacity of key youth development institutions; consolidation and integration of the youth development into the mainstream of government, (Department of Women, Youth & Persons with Disabilities, 2015:6).
White Paper on the rights of persons with disabilities, 2016	Framework for mainstreaming trajectory for realising the rights of persons with disabilities through the development of targeted interventions, that remove barriers and application of the universal designs

	integrating the obligation in the United Nations Covenant on Rights of Persons with Disabilities and other related matters, (Department of Women, Youth & Persons with Disabilities, 2016:8).
Integrated Urban Development Framework, 2016	A framework to enable spatial transformation – by steering urban growth towards sustainable growth model of compact, connected and coordinated cities and towns, (COGTA, 2016:4).

Sources: Author's own compilation, based on: NDHS (1994:2), NDHS (2009:7), NDHS (2004:3), NDHS (2005:5), NDP (2012:2), Department of Women, Youth & Persons with Disabilities (2015:6), Department of Women, Youth and Persons with Disabilities (2016:8), and COGTA (2016:4)

Table 3.3 provides the international policy frameworks which the NDHS is aligned to for the implementation of human settlements.

Table 3.3: International Policy frameworks with which the NDHS is affiliated

International Policy Frameworks	Purpose
Sustainable Development Goals	Framework for a universal call to action to end poverty, protect the plan and to ensure that all people enjoy peace and prosperity by 2030, (UN Habitat,2020:7).
Sendai Framework	Provides the roadmap to make communities safer and more resilient to disasters and protecting communities from losses associated with disaster (United Nations Office for Disaster Risk Reduction (UNDRR, 2015:13).
Agenda 2063	Blueprint and master plan for transforming the African continent, (African Union:1)
New Urban Agenda, 2016	Global agreement providing principle and practice promoting sustainable urban development, (Habitat, 2016:1).

Sources: Author's own compilation, based on: UN Habitat (2020:7), United Nations Office for Disaster Risk Reduction (2015:13), African Union (1), and Habitat (2016:1)

From the afore-mentioned, it can be stated that the necessary statutory, legislative and institutional frameworks are in place to ensure that the NDHS implements its mandate.

3.1.3 Public Service Act of 103 of 1994, as amended

The Public Service Act 103 of 1994 regulates the conditions of employment within the public service. Chapter 3, Section 7(b) of the Act stipulates that heads of departments shall be responsible for the efficient management and administration of their department, including effective utilisation and training of staff, the maintenance of discipline and sound labour relations and the proper use and care of State property. This ensures that public sector institutions are

responsible to ensure that their workforces are equipped with the required skills and competencies to implement the respective mandates of such institutions.

3.1.4 Skills Development Act, 97 of 1998

The aim of the Skills Development Act 97 of 1998 (SDA) is to provide an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of the South African workforce.

The SDA is multifaceted and aims to strengthen the skills of the workforce in private and public institutions by:

Developing the skills of the South African workforce by:

- i) Improving the quality of life of workers, their prospects of work and labour mobility;
- ii) Improving productivity in the workplace and the competitiveness of employers;
- iii) Promoting self-employment and
- iv) Improving the delivery of social services.

Increasing the level of investment:

Encouraging employers to:

- i) Use the workplace as an active learning environment;
- ii) Provide employees with the opportunities to acquire new skills;
- iii) Provide opportunities for new entrants to the labour market to gain work experience; and
- iv) Employ persons who find it difficult to be employed.
- v) Encouraging workers to participate in leadership and other training programmes.
- vi) Improve the employment prospects of persons previously disadvantaged by unfair discrimination and redress those disadvantages through training and education.

Ensuring the quality of education and training in and for the workplace, to assist:

- i) Work-seekers to find work;
- ii) Retrenched workers to re-enter the labour market; and

- iii) Employers to find qualified employees.

Provide and regulate employment services.

Furthermore, the objectives of the SDA are to increase the levels of investment in education and training in the labour market and to improve the return on that investment by encouraging employers to: i) use the workforce as an active learning environment; ii) provide employees with the opportunities to acquire new skills; iii) provide opportunities for new entrants to the labour market to gain work experience; and iv) employ persons who find it difficult to be employed.

3.1.5 Skills Development Levies Act, 1999

The purpose of the Skills Development Levies Act 97 of 1998 (SDLA) is to impose that all employment institutions pay a skills development levy (Meyer *et al.* 2004:12). Hence the DPSA issued the Directive on the Utilisation of the 1% Personnel Budget for Training and Development in the Public Service, which compels departments to set aside 1% of the budget for redress and reskilling of public servants because of the changing and ever-increasing demands for quality service delivery (DPSA, 2012:4).

The Directive on the Utilisation of the 1% Personnel Budget for Training and Development in the Public Service serves as a clear indication that the budgeting and utilisation of funds set aside for training and development within the public service did not yield fruitful results to address scarce, critical and priority skills. As indicated in Chapter 1 of this study, the WSP of the NDHS is populated with training requirements obtained from PDPs contained in annual Performance Agreements which address mostly generic skills gaps.

The SDL and SDLA ensure that funds are made available by institutions to equip the workforce with the skills required in areas of operation. In Chapter 1, it was stated that the skill requirements of the workforce in the NDHS are obtained from Annual Performance Agreements. These skills requirements are generic in nature and do not address the technical skill requirements of the workforce, therefore the budget allocated for the implementation of training and development interventions should be strategically aligned to address such discrepancies.

3.1.6 White Paper on Public Service Training and Education (WPPSTE), 1998

The aim of the White Paper on Public Service Training and Education (WPPSTE) was to establish a clear vision and policy framework to guide the introduction and implementation of new policies, procedures and legislation aimed at transforming public service training and education into a dynamic needs-based and pro-active instrument, capable of playing an integral and strategic part

in the processes of building a new public service for a new and democratic society in South Africa, (DPSA, 1998:9).

The problem the WPPSTE sought to address comprised three elements:

- i) To address the fragmented and uncoordinated approach to training and education across the public service resulting in the absence of resources and accountability for ensuring that public servants are empowered and developed to take on the challenges they face;
- ii) The lack of a strategic, need-based, outcomes-based and competency-based approach to Public Service Training and Education (PSTE) directly related to the developmental needs of the public service as outlined in the Reconstruction and Development Programme (RDP), the White Paper on the Transformation of the Public Service (WTPS) and other related policy documents; and
- iii) The inappropriate nature of training and education that is provided by many in-service and external providers (DPSA, 1998:10).

Chapter 5 of the WPPSTE outlined the national norms and standards which would inform and guide public service training policy wherein departments both at national level and provincial level were required to secure an optimal fit or balance between individual and institutional needs within budgetary constraints in relation to training priorities (DPSA, 1998:31) through needs assessments. To ensure a needs-based approach to training and education, PDPs were introduced for all staff members which would identify the needs of staff and measures to achieve them, within the context of the individual's overall career progression, as well as in the context of the organisational objectives and priorities of the department or province concerned (DPSA, 1998:44).

Furthermore, the WPPSTE's focus was to address the training and education needs of the three defined levels of personnel, which included senior management and senior professional staff, middle management, skilled supervisor and professional staff and front-line staff (WPPSTE, 1998:19).

3.1.7 Public Service Regulations, 2016

Part 6 of the Public Service Regulations (PSR) of 2016 permits an executive authority to determine training for various occupational categories or specific employees in their department (DPSA, 2016:84). For purposes of enhancing the performance of the work department, a head of department may grant financial or other assistance for study, training, or research whereby:

- i) an employee undertakes the study, training or research on the initiative of the department;
or
- ii) the employee has requested any such assistance, and the study, training or research is related to the employer's skills requirements (DPSA, 2016:85).

Section 90(1) provides for the Minister to oversee the development of programmes and assist executive authorities in equipping members of the senior management service (SMS) for their responsibilities based on the competencies required by members of the SMS in terms of their current and future responsibilities (DPSA, 2016:94).

Section 90 (2a-c) allows the Minister to (a) identify the generic managerial and leadership training needs of members of the SMS, (b) arrange those standard courses and programmes be developed on the basis of those training needs, and (c) continuously evaluate those courses and programmes with due regard to their relevance and value for money. It is important to note that the PSR of 2016 encompasses the provision of training and development for the workforce within respective departments to try and establish a capable developmental workforce equipped with the necessary skills to implement mandates of their respective departments.

3.1.8 Senior Management Service Handbook, 2016

Chapter 5 of the Senior Management Service (SMS) Handbook outlines the competencies that are important for the Public Service to be successful and ensures that Senior Management has the requisite competencies and associated proficiency levels to succeed at strategic level (DPSA, 2016:158-159). The PSR defines a "competency" as the combination of knowledge, skills, behaviour and aptitude that a person can apply in the work environment, which indicates a person's ability to meet the requirements of a specific post (DPSA, 2016:10).

Competencies for members of the SMS remain generic in nature and do not address the technical aspects required in the NDHS which are required in areas such as technical project management, disaster management, information technology architecture and innovation.

3.1.9 Directive on Compulsory Capacity Development, Mandatory Training Days and Minimum Entry Requirements for Members of the Senior Management Services (SMS)

Requires that Core and Process competencies must be incorporated into the Performance Agreement and PDP for purposes of training and development in respect to the Performance Management and Development System (PMDS) for SMS (DPSA, 2017:7). Furthermore, SMS members are expected to be subjected to continuous development in order to remain up to date

with developments in their relevant fields. All SMS members must undergo relevant training to close the identified development gaps as determined by a competency and/or performance assessment at a specific performer level. Such training must be in a generic management competencies and/or technical skill (DPSA, 2017:7).

3.1.10 The Human Resource Development Strategic Framework for the Public Service Vision 2015

The Human Resource Development Strategic Framework for the Public Service, Vision 2015 requires that the provision of interventions related to capacity development of employees should add the highest value in overall performance of the department. The aim of the strategy is to create a coordinated framework for ensuring the provision of appropriate and adequate public service training and education that will meet the current and future needs of the public service.

3.1.11 Public Service Skills Audit Methodology Framework and Toolkit, 2023

The DPSA (2023:1) introduced the Public Service Audit Methodology Framework (PS_SAMF) which seeks to bring about a uniform approach to conducting skills audits and determining the skills base, skills requirements, and development priorities (DPSA, 2023:3).

The benefits of the PS_SAMF include:

- i) Identifying the current and future skills requirements;
- ii) Succession and career planning and more informed performance discussions;
- iii) Alignment of training and development for employee needs;
- iv) Alignment of candidates to positions, as recruitment needs will be more defined; and
- v) Increased productivity and employee morale (DPSA, 2023:3).

3.2 THE HUMAN RESOURCE DEVELOPMENT (HRD) POLICY OF THE NDHS

The DPSA is responsible for the provision of frameworks which guide the public service when developing policies; furthermore, the DPSA provides guidance to National Departments when developing their policies on HRD.

In the NDHS, the Directorate: Human Resources Utilisation and Development (HRU & D) is the custodian of HRD. In 2023 the Directorate amended the HRD policy in consultation with organised labour and it was subsequently approved by the then Director-General and implemented from 26 October 2023. The HRD policy was developed based on various legislative mandates, including

the Constitution of the Republic of South Africa (1996), the Public Service Act 103 of 1994, as amended, the Public Service Regulations of 2016, the Skills Development Act of 1998, the Skills Development Levies Act of 1999, the National Qualifications Framework Act of 2008, the Public Finance Management Act of 1999, the South African Qualifications Authority Act 58 of 1995, the White Paper on Public Service Training and Education of 1997, and the White Paper on Human Resource Management of 1997. The inclusion of legislation denotes that the NDHS Policy on HRD is compliant with regulatory frameworks which govern the implementation of HRD at all levels of the public service.

Sections 7.1.1 and 7.1.2 of the NDHS HRD Policy (2023) outline the HRD processes on skills audits follows:

- i) The Directorate: HRU and D is responsible for facilitating the conducting of a Departmental skills audit at least once every three years in consultation with all stakeholders to identify skills and training gaps between the available skills and required skills for all occupational categories within the Department.
- ii) The results of the skills audit will also be used to develop the HRD Strategy Implementation Plan and the WSP for the Department.

Based on the HRD processes on skills audits, the NDHS is committed to ensure that the workforce is equipped with the required skills in view of the institutional mandate. The statement is supported by President Ramaphosa, who entrusted the NSG to lead the initiative to assess the critical skills which currently exist, those that are required and the training needs of employees in targeted departments which focus predominantly on infrastructure and front-line service delivery (NSG, 2024:1). In addition, all departments must, as a matter of urgency, conduct skills audits to ensure that they are aware of the current skills as well as the skills gap that needs to be addressed by targeted recruitment and/or training interventions (PSC, 2011:xi). Departments should ensure that skills audits form the basis of the WSP and not an individual's PDP (PSC, 2011:xi).

3.3 CONCLUSION

Recognition must be given that the current skills development system has failed in adequately addressing the skills needs of South Africa. The model used for the national skills development system requires redesigning which should be more flexible, responsive and inclusive (HRDC, 2013:2, 9). The overall responsibility of skills development in the public service is difficult to locate due to the overlap of accountability between public service institutions (HRDC, 2013:22).

In addressing the skills gaps and shortages in the country, it is observed that there are ample statutory, legislative, regulatory and institutional frameworks which have been ratified to address

skills shortages of the workforce in the country. Problems occurring are due to the different interpretation methods and methods of implementation. Moreover, the lack of understanding and knowledge of the current and future required skills necessitate a uniform approach for the implementation of skills audits in public sector institutions.

The NDHS is pressurised to implement its mandate on sustainable human settlements for South African citizens. While the NDHS has been implementing training and development interventions, these interventions are generic in nature and do not address technical skill requirements. Furthermore, the NDHS does not have a skills audit framework in place which can be used as a basis to assess the existing and required skills and acquire accurate information of job families to address the skills gaps in relation to technical skills. The NDHS needs to develop a skills audit framework aligned to the DPSA Skills Audit Methodology Toolkit that is customised to the requirements of the NDHS and which will address the inefficiencies identified in this chapter.

Chapter 4 sets out the methodology and methods used for data collection and provides an analysis why these methods were chosen, their effectiveness and shortcomings experienced. In addition, Chapter 4 presents the transcribed responses of six CDs to a questionnaire that comprised questions that were constructed, based on the literature review framework (Chapter 2), and a statutory and legislative framework (Chapter 3), against a developed questionnaire (**See Annexure A**).

CHAPTER 4 RESEARCH METHODOLOGY, DATA ANALYSIS FINDINGS ON SKILLS AUDITS WITHIN THE NDHS IN THE NAISSANCE OF 4IR

4.1 INTRODUCTION

The purpose of Chapter 3 was to provide the reader with the overview of the existing statutory, legislative, regulatory and institutional frameworks that govern skills audits in the context of the 4IR in the NDHS contained in Chapter 1 aligned to the third research question and objective. Moreover, Chapter 3 takes into consideration the application for developing a skills audit framework within the NDHS that is aligned to existing legislative, regulatory and institutional frameworks from the perspective of the theoretical frameworks as contained in the literature review of this study outlined/contained in Chapter 1 and 2.

The purpose of Chapter 4 is to provide the reader with the interview transcripts and research findings, based on data analysis and the interpretation thereof. This chapter commences with a summary of the research methodology used in the study, which highlights the research design, sampling, data collection techniques and analysis that are aligned with the research objectives contained in Chapter 1. The analysis of findings will allow the researcher to make recommendations on the development of a digital skills audit framework for implementation in the NDHS in Chapter 6.

4.2 RESEARCH METHODOLOGY

As per Section 1.6.3 of Chapter 1, the researcher followed a qualitative research method design. The use of this method placed emphasis on an inductive approach pertaining to the relationship between theory and research. Field and desk research was utilised for this study to obtain data for the research. Field and desk research assisted the researcher to obtain raw data on skills audits, the 4IR and the public service. The bulk of the qualitative data was obtained from semi-structured interviews and questionnaires with CDs in the NDHS.

For the sampling of this study as outlined in Chapter 1, the researcher adopted the non-probability sampling technique with a targeted population of CDs in the NDHS. The researcher followed this method because she is an employee of the NDHS and research was conducted in the NDHS, therefore participants were accessible for requesting permission from CDs to participate in the study.

For this study, the data collection instrument used was semi-structured interviews conducted with the targeted population, furthermore, the researcher collected data through examining documents

and designed questionnaires specifically to obtain the required information for this research (**Annexure D**). Before interviews were conducted, the researcher was granted approval by the Director-General of the NDHS to conduct academic research (**Annexure B: permission to conduct research**). The targeted population of this study included CDs in the NDHS focusing on two CDs in Support Function Branches and two CDs in Line Function Branches (Chapter 1, section 1.6.4).

Table 4.1: Population and sampling for this study

Population and Sampling	
Information of Population	Number of Participants Sampled
Population for this study as per the NDHS Organisational Structure	13
Number of participants	6
% of sample	46%

Source: Researcher's own construct

As depicted in Table 4.1, the researcher managed to get 46% participation from CDs in the NDHS, which is equal/aligned to the percentage of 46% of the target group stipulated in section 1.6.4 of Chapter 1.

To enable the analysis of data collected for this study, the researcher developed questions based on themes grouped as per section 1.3.2 of the research questions. A questionnaire guide was prepared for semi-structured interviews, in the event that CDs were unavailable to commit to face-to-face interviews for virtual interviews to be conducted. The researcher, in consultation with Dr CH de Wet, agreed to using a Microsoft Word interview questionnaire captured in a Google Electronic format.

The researcher e-mailed a link to the participants to sign informed consent (voluntarily) to provide consent to partake in recorded interviews for the purposes of this research.

The researcher further consulted various sources of information to obtain secondary information within the NDHS, including books on skills audits, the 4IR, previously conducted theses and dissertations on similar topics, articles and journals obtained from the NWU and NDHS library and the internet. The researcher studied statutory, legislative and regulatory frameworks that informs a skills audit framework in the context of 4IR.

All interviews were conducted in person with identified CDs. The researcher utilised an e-mail template to recruit participants for this research, voluntary participation was emphasised by the researcher. Moreover, the researcher attended the prescribed NWU Ethics training on 22 April 2022 and 15 September 2023 which ensured the ethical conduct of the researcher whilst

conducting research whilst keeping responses anonymous and preserving confidentiality during the analysis of data.

4.3 EMPIRICAL STUDY

This section presents the results of the data obtained from six CDs in the NDHS. The analysed data is based on the responses as contained in the theoretical (Chapter 2) and statutory and legislative frameworks (Chapter 3) that support a skills audit framework contained in Chapter 2, the analysis of statutory, legislative, regulatory and institutional framework that govern skills audits in the context of the 4IR in the NDHS contained in Chapter 2 which aligns with the objectives of this study contained in Chapter 1.

4.3.1 Section 1: Biographical data

Six (6) Chief Directors out of a total of thirteen (13) participated in this study. This constitutes a response rate of 46%, as depicted in Section 4.3.1 (Participants profile). In terms of gender, 67% of the participants were females and 33% were males. In terms of age, 17% of the participants were aged 36-55, 50% at the ages of 46-55 and 33% above the age of 55. In terms of work experience in the NDHS, 17% less than 5 years of experience, 33% had 6-10 years of experience and 50% had between 16-20 years of experience.

4.3.1.1 Biographical Information

Gender of participants

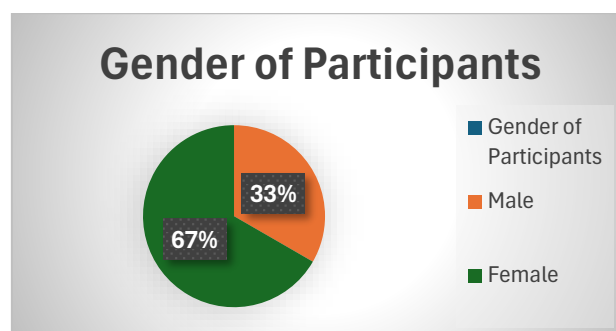


Figure 4.1: Gender

Age group of participants

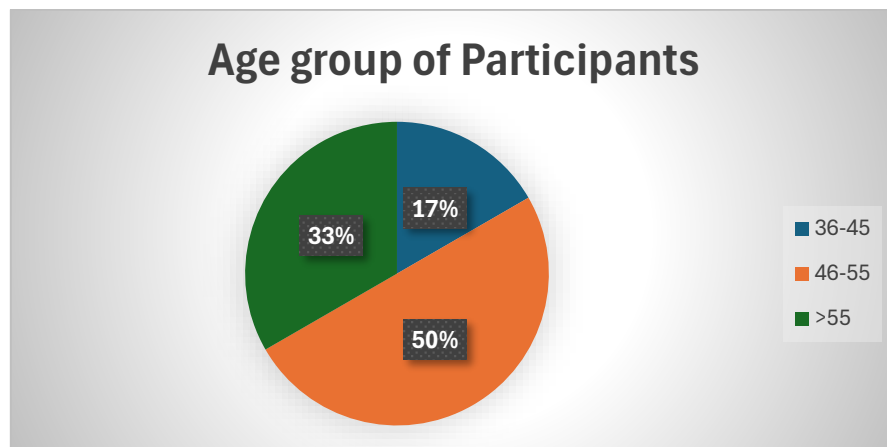


Figure 4.2: Age group of participants

Level of employment of participants

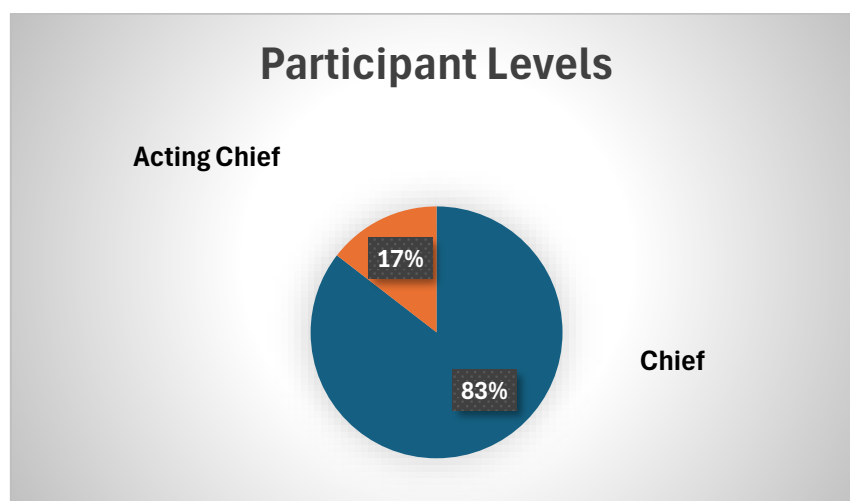


Figure 4.3: Employment level of participants

Number of years working in the NDHS

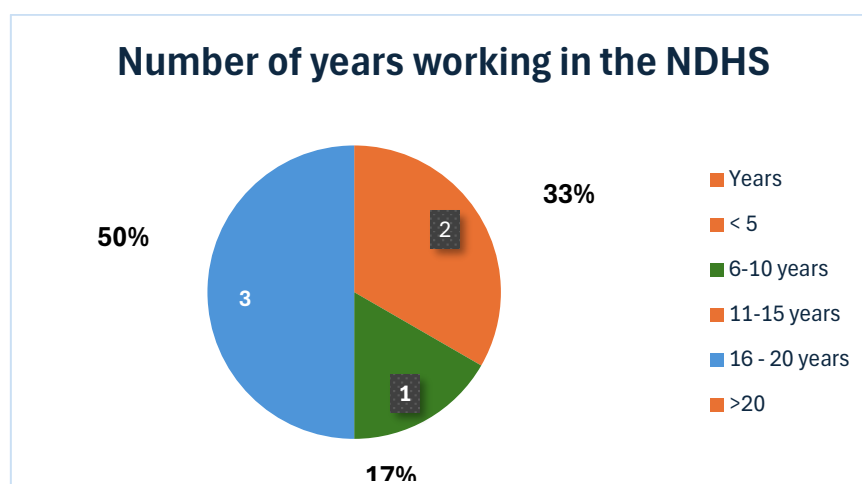


Figure 4.4: Number of years working at the NDHS

4.3.2 Responses and analysis obtained from participants

This section provides the data analysis and data interpretation obtained from CDs during the conducted interviews which will result in the findings.

Below are the responses and analyses based on the research objectives categorised according to themes:

THEME 1: TO PRESENT THE LITERATURE AND THEORETICAL FRAMEWORKS THAT UNDERPIN AN NDHS SKILLS AUDIT FRAMEWORK IN THE NAISSANCE OF THE 4IR

1.1 Do you understand the concept of a skills audit framework?

In view of the responses obtained from participants, one participant indicated that they were not sure of the concept of a skills audit, one participant indicated that they have the “*academic knowledge and kind of an idea of what it looks like and what it’s meant to do*”, and four participants indicated that they understood the concept of a skills audit framework. Van der Westhuizen and Wessels (2011:332) define a skills audit as “an investigation that is undertaken to determine the current workforce’s actual skills and the reason being to define the skills gap and real skill requirements of the organisation”. Hayton and Loveder (1992:3) reason that a skills audit is a systematic process which identifies the skills or competencies held by an individual or group; a skills audit generally should identify all relevant vocational skills, both those skills currently used in the job, and those not currently used by the individual or a group (Chapter 2, section 2.2).

Scarborough and Elias (2002:49-50) contend that HCT is most usefully viewed as a bridging concept- as it defines the link between HR practices and business performance in terms of assets rather than business processes, refer to (Chapter 2, section 2.3). Aharoni, *et al.*, (1990) contend that RBV places emphasis on factors such as core skills of individuals for an institution to be successful, and Wright *et al.* (2001) argue that the workforce is a strategic aspect of an institution, hence HR should be strategically placed in institutions, (Chapter 2, section 2.4). Smith (1994:2) is of the view that Technological Determinism can be considered as the belief in technology as a key governing force in society, whilst Hallström (2022:26) states that technology is inherent to work processes (Chapter 2, section 2.6). In view of the 4IR, Charas and Lupushor (2022:2) purport that the shift to distributed work is already changing how and where talent is recruited, as well as where the workforce will perform their functions (Chapter 2, section 2.7).

Based on the data collected during research, information obtained from theories on HCT, TBV and TDT and the scholarly contributions on the 4IR obtained during aforementioned information contained in theories and scholarly contributions on HCT, RBV, TDT and the 4IR, the Executive Management Team of NDHS is advised to consider implementing the developed Skills Audit Framework for the NDHS, which would enable the NDHS to: i) identify the new skill requirements as demanded by the 4IR in the NSHS; ii) develop a skills audit framework for the institution which can be followed by the implementation of a skills audit process; iii) develop an integrated HR approach in the NDHS to assist in attracting, developing and retaining a skilled workforce; and; develop an institutional repository containing intellectual knowledge and experiences which could inform future policies and programmes.

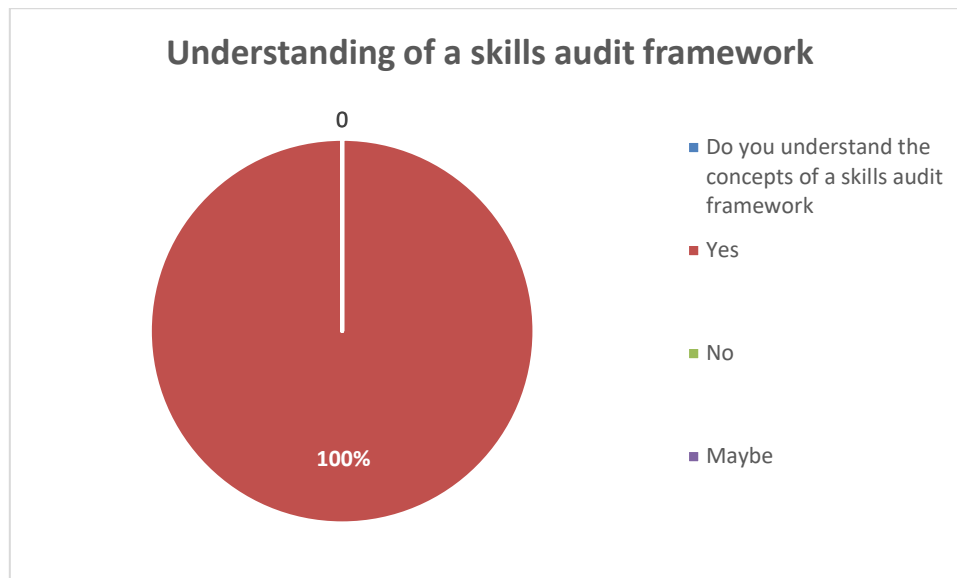


Figure 4.5: Understanding of the concept of a skill audit framework

As depicted in Figure 4.5, 100% of participants indicated that they understood the concept of a skills audit framework., while 0% indicated that they may not understand.

1.2 *Please explain your understanding of the concept skills audit framework.*

Participants explained that a skills audit framework is a systematic process which guides how a skills assessment should be conducted to enable business to meet its strategic objectives. Moreover, the framework assesses the current and future required skill sets of an institution in view of its objectives to address the priorities, the vision and the goals of an institution in the long run.

From the responses and explanations obtained from participants, the researcher was able conclude that participants understood the concept of a skills audit framework. Considering research question one and research objective one aligned to Chapter 2 of this study which is: To present the literature and theoretical framework that underpin an NDHS Skills Audit Framework in the naissance of the 4IR, the researcher was able to establish that information obtained from participants can be used in the recommendations in this study. The explanations used in understanding on the concept of a skills audit framework was based on their interpretation of theory and literature about skills audits and the 4IR which allowed them to convert the knowledge into practical examples related to their specific functions in the NDHS in explain how the lack of a skills audit framework within the NDHS impacts their work.

The information provided by participants was validated by the researcher by cross checking information captured on the submitted electronic Google interview questionnaire to the voice recordings obtained during interviews. The researcher found that participants used terminology

contained in literature and theory to explain their understanding of a skills audit framework by using terminology such as “*systematic processes, various steps, assessing current and future required skills aligned to strategic objectives.*” One participant compared a skills audit framework to that of ICT processes wherein “*you align the goals or the requirements of business with the ICT requirements as well, so that if the business objectives are this, ICT must be able to enable business to meet its strategic objectives. The skills must be able to address the priorities, the vision and the goals of the department in the long run*”. Other participants stated that “*the framework is something that guides the department on the type of skillsets the department needs for it to achieve its mandate what are the principles and values we ascribe*”. The researcher found that the understanding of participants on the concepts of a skills audit framework, would contribute to plausible findings and recommendations would be made in this study. Besides establishing that participants had understood the concept of a skills audit framework, the researcher was able to establish that participants eagerly responded to questions and the idea of implementing a skills audit framework within the NDHS would be welcomed, because it would contribute to the development of a skills repository which would contain institutional knowledge of the NDHS which could be accessed by various Branches to obtain information of the institution.

1.3 What is your understanding of the requirements of the 4IR in the public service?

The 4IR in the public service is a modern trend of technology that is taking over the place of work, which requires public servants to be innovative to harness technology efficiently to do better work. Public servants must be digitally literate, and the IT environment must be responsive to the rapid changes happening in the technological space. One participant responded by stating that the public service is at the beginning of the 4IR as there is no legislation in place, which regulates the implementation of the 4IR in the public service. Participants indicated that the 4IR requires public servants to have multiple skills, which includes emotional intelligence, creativity and problem-solving skills.

From the explanations provided by participants the researcher could perceive that participants understand the requirements of the 4IR in the public service. The information obtained from participants indicates even though there is understanding on the requirements of the 4IR in the public service, it was detected from the information provided that the NDHS is nowhere near implementing innovations set forth by the 4IR, therefore the word *naissance* used in the title of this study encapsulates exactly, not only where the NDHS finds itself in implementing the requirements of the 4IR but the constraints apply to the entire public service.

The researcher validated information by reinstituting what was said by participants to constitution if the researcher understood what the participant had stated and if the information was captured correctly. The finding for this question was that: the understanding on the requirements of the 4IR

in the public service was found to be well understood by participants. During the onset of the COVID pandemic, the NDHS was one of the first departments within the public service to introduce Microsoft MS teams. The NDHS have automated some processes like on-line leave applications, on-line bursary applications, on-line training, automating the Employee Performance Management and Development System (EPMDS), and automation of writing submissions to an automated e-submission system. Another participant stated that the NDHS is in the processes of finalising the tender process to appoint a travel agent which has system in place to allow for bookings for travel and accommodation to be done through an automated system. This has created small pockets of digitisation and automation processes in the NDHS. In some areas of operation, the NDHS has started moving away from a paper-based systems to automated systems.

Concerns identified from an Information Communication and Technology (ICT) perspective, is that currently there is no legislation on the requirements and implementation which governs the 4IR within the public service. Even though there are automated systems implemented in the HR environment, the NDHS still has repeated audit findings on leave management because the automated system which is implemented does interlink with government systems such as PERSAL to consolidate information. The ITC environment must be responsive to the requirements of the NDHS and rapid changes in the technological space to achieve, does the NDHS have the required ICT infrastructure to implement these requirements.

1.4 Do you think the requirements of the 4IR will impact the future required skills of the workforce in the NDHS? If yes, how do you foresee it impacting the future required skills of the workforce in the NDHS?

All participants indicated that the requirements of the 4IR will impact the future required skills of the workforce. One participant indicated that Artificial Intelligence (AI) works with big data, all data is captured into a system, the system learns everything that has been captured which is referred to as machine learning. Participants stated that AI can provide brilliant solutions, it can improve decision making by simplifying tasks which normally took weeks to complete, can now be completed in 1 to 2 days. One participant stated that there are already small pockets of digitisation or automation in the NDHS. From an ICT perspective the NDHS is already moving workloads to cloud, during the inception of COVID, the NDHS was among the first departments to introduce Microsoft team. Emergency housing and disaster areas have come to the fore during 2024, the NDHS is trying to introduce drone technology in areas affected by disasters before sending out foot soldiers to analyse the damage.

One participant compared the 4IR to understanding the English language as a recognised way of communication in the business environment across the world, by stating that “*you can come to*

this job without understanding English. That is how the 4IR is beginning to impact the work that we do.” The participant also stated that *“we are still fast asleep in the sector. We are still focussing on working in primitive ways. We don’t work in futuristic ways that say what exactly is sustainable human settlements in relation to the 4IR and how to we enable human settlements through the 4IR.”*

Information obtained from participants was validated against the work of Schwab whereby Schwab (2017:43) states that *“we can reasonably assume that demand will increase for skills that enable workers to design, build and work alongside technological systems, or in areas that fill the gaps left by these technological innovations”*.

According to the responses obtained from the data analysis, the 4IR will impact the future required skills on the NDS. The current skills programmes implemented is mostly generic in nature and not driven by the technical requirements of the workforce in core-function Branches. There are limited collaborations between HR and Branches in the NDHS, hence HR does not have insight to the specific training requirements of core function Branches.

The information extracted from the data analysis will feed into the debate on the skill requirements demanded by the 4IR and skills audit reforms in the NDHS which would contribute to the body of knowledge in the NDHS through i) identifying the new skill requirements as demanded by the 4IR; and ii) developing a skills audit framework for the NDHS which can be followed by the implementation of a skills audit process (Chapter 2, section 1.8). Even though the 4IR should be embraced and provides endless opportunities for the business the one aspect which should remain at the forefront is Ubuntu which should always remind of our humanity.

1.5 Is the workforce in the NDHS equipped with the required skills to implement its mandate? Please justify your answer.

Most of the participants stated that the NDHS is not equipped with the required skills to implement its mandate. One participant indicated that in some areas the workforce is equipped with the required skills but in areas such as monitoring and evaluation the skills are limited. Another participant identified technological competencies lacking as the workforce wait for IT to introduce a new technology, instead of empowering themselves by exploring the technological advancements available which could improve productivity and quality of work.

Based on the data analysis, the impact of not having the required skills in the NDHS is huge. On participant stated that *“in light of the 4IR, urgent and targeted actions need to be undertaken to secure advanced technologies and thereafter establish a workforce equipped with the skills to cater for the changing economic dynamics”*. The validation of the information was cross checked in view of Chapter 1, section 1.5.

The findings of this study have brought to light that the workforce have no idea of the many tools the 4IR has introduced which would enable them to do their work, work is still done manually. The fact that the workforce is not equipped with the required skills to implement the mandate of the NDHS, will result in repeated underperformance, audit findings and non-alignment skill required, aligned to the strategy, mandate, organisational structure and inaccurate information contained in job description.

THEME 2: TO PRESENT AN ASSESSMENT OF THE STATUTORY, LEGISLATIVE AND REGULATORY FRAMEWORK THAT INFORMS AN NDHS SKILLS AUDIT FRAMEWORK IN THE CONTEXT OF THE 4IR

The statutory, legislative and regulatory framework that informs an NDHS Skills Audit Framework in the context of the 4IR, is contained in Chapter 3 of this study. Chapter 3, section 3.1 provides insight on the existing institutional statutory and legislative frameworks which regulation the implementation of human settlement. This chapter includes insight on the legislative and regulatory framework in the South African Public Service which form the basis of policy development within the NDHS which supports the development of a skills audit framework in view of the 4IR.

2.1 *What are the statutory, legislative and regulatory frameworks which regulate the implementation of human settlements?*

All participants responded by identifying the different statutory, legislative and regulatory frameworks which regulate the implementation of human settlements which include: the Constitution (1996), the Housing Act (107 of 1999), the housing code (2009), Public Finance Management Act (1999), Preferential Procurement Policy Framework Act (2000), Division of Revenue Act (2 of 2013), the Black Communities Development Act (4 of 1984), Upgrading of Land Tenure Rights Act (6 of 2021), Interim Protection of Informal Land Rights Act (31 of 1996), Breaking New Ground (2004), the Social Housing Act (16 of 2008), the Draft White Paper for Human Settlements (2023), Rural Housing Policy (107 of 1997), and the National Development Plan (2013). Participants agreed that the NDHS has the required frameworks in place which regulated implementation of human settlements.

The interpretation of data revealed that South Africa has a plethora of statutory, legislative and regulatory frameworks which form the basis of policy development within the NDHS. This, was echoed by one participant by reinstating the sentiment that “*we’ve got the most wonderful policies and some of the best policies in South Africa.*” Participants demonstrated their knowledge and understanding of the statutory and legislative frameworks which give effect for implementation of the mandate of the NDHS. This information was validated with information contained in the

Strategic Plan (2020) of the NDHS. It can be stated that the necessary statutory and legislative frameworks are in place to ensure that the NDHS implements its mandate.

2.2 What are the legislative and regulatory frameworks within the South African Public Service which form the basis of policy development which supports the development of a skills audit framework in the NDHS?

Participants responded and it was stated that prescripts, regulatory requirements and directives are in the administration and like all public service departments the NDHS is expected to comply with such. These included, the Skills Development Act, Skills Levies Act, the Public Service Act, Public Service Regulations, the Skills Audit Methodology Framework.

It is confirmed that legislative and regulatory frameworks that informs the development of a skills audit framework in the context of the 4IR is in place. Obtained from the data analysis in Theme 1, question 1.1, one participant stated that *at the beginning of the interview, “I did explain in the beginning that the public sector does not even have legislation. There is a conference tomorrow to discuss how the public sector is going to then put in and govern the AI within the public sector”,* this is in reference to research question 2.

The findings indicate that sufficient legislation is available to support skills development in the public service, the problem however is due to the lack of implementation plans, the fragmented and uncoordinated approach to training and education across the public service resulting in the absence of resource and accountability for ensuring that public servants are empowered and developed to take on the challenges they face, (DPSA, 1998:9) (see chapter 3, section 3.1.6).

2.3 Does the NDHS have a policy to address Human Resource Development for the workforce?

This was a closed ended question. All participants confirmed that the NDHS has a HRD policy.

2.4 *Does the Human Resource Development Policy make provision to identify the current and future required skills of the workforce?*

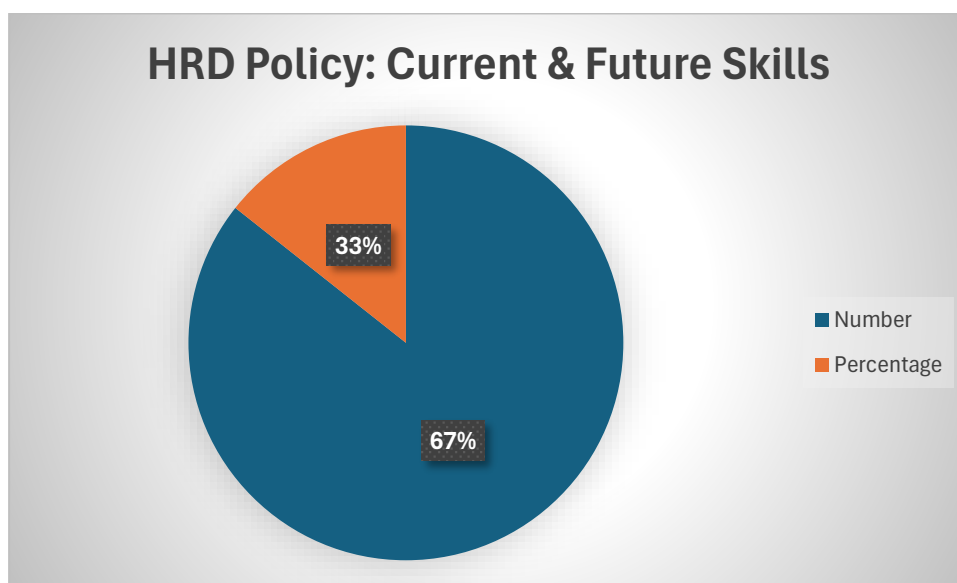


Figure 4.6: Participants' Response to the HRD policy making provision to identify current and future required skills of the workforce

2.5 *Does the HRD policy ensure that the skill requirements of the workforce are aligned with skill requirements of the workforce in the NDHS to implement its mandate? Substantiate your answer.*

The question was intended to establish if participants agree or disagree that the HRD policy ensures that the skill requirements of the workforce are aligned with the skill requirements of the workforce in NDHS to implement its mandate. Figure 4.6 depicts those four (67%) participants indicated that the policy makes provision to identify current and future skills requirements of the workforce, and two (33%) participants disagreed that the HRD policy does not make provision to identify the current and future required skills of the workforce.

Majority of the participants indicated that they agree that the HRD policy makes provision to identify current and future required skills of the workforce. Another participant stated that *"Its difficult to say because for me as I'm doing my work, I'm really finding it challenging to get the right skills."* From the data extracted, it can be deduced that majority of participants who agreed with the question work in support function Branches, and the remaining participants work in core function Branches, therefore the skill requirements of the workforce in support function Branches becomes easier to implement because the functions in support are more generic in nature and core function skill requirements become harder to implement because the requirement of core job functions are specific in nature and aligned to the mandate of a specific department, (refer to Chapter 1, section1.1). Based on the responses obtained it can be assumed that the problem in

addressing this question does not arise from policy issues but can be attributed to the willingness of the NDHS as institution to implement the required skills. Collaborative efforts between Chief Directorates and HR could assist in addressing these challenges aligned to research question 3

2.6 Does the HRD policy make provision to address the skill requirements of the workforce to address the required skills to implement the NDHS mandate?

The question was intended to understand the perception of participants on whether the HRD policy addresses the skill requirements to implement the NDHS mandate. The results obtained indicates that, one (17%) participant not sure, two (33%) participants indicated that the policy does not address the skill requirements of the workforce to address the skills to implement the NDHS mandate, and three participants (50%) indicated that the policy does address the skill requirements of the workforce to address the skills to implement the NDHS mandate.

2.7 Provide reasons for your answer above.

Participants provided reasons which indicated that the policy does make provision to implement the required skills to implement the mandate of the NDHS with reasoning that implementation of such skills must be a collaborative approach with HR and CDs, the policy would guide the process because it is aligned to the prescript and directives required by the DPSA, conducting a skills audit must be done to intentionally get to this stage. One participant stated that the policy mandates the NDHS to undergo a skills audit every three years, the Workplace Skills Plan considers the strategic objectives of the NDHS to identify specific training interventions, HR Planning ensures that the PDPs contained in performance agreements address individual skills gaps and the policy encourages continuous learning and development.

The HRD policy makes sufficient provision to address the skill requirements of the workforce to address the required skills to implement the NDHS mandate, which is contained in section 6.1.2: under Human Resource Development Principles and Processes and section 11.1 under Performance Training and Development.

One participant stated that *“there is a skills audit process underway which clearly shows that there is still need to align the skills with the mandate implementation requirements.”* Participants were of the view of that collaboration between Chief Directorates and HR could be used to align the skills required in a CD to the strategic objectives of the NDHS which are to be incorporated into HR skills development plans for implementation. Furthermore, it was established that the NDHS has committed to ensure that the skills audit is undertaken facilitated by the NSG to assess the critical skills which currently exist, those that are required and the training needs of employees in targeted departments which are identified as infrastructure departments (Chapter 3, section 3.2).

2.8 Does the policy make provision for addressing the specific line function skills gap in the NDHS?

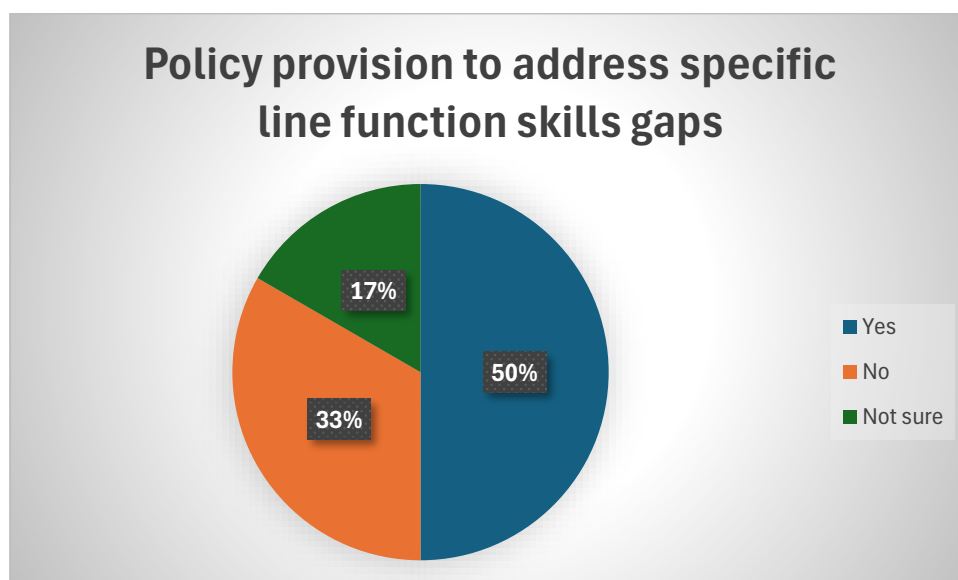


Figure 4.7: Policy provision to address specific line function skill gaps in the NDHS

As indicated above, Figure 4.7, half of the participants indicated that the policy address specific line function skills gaps, 33% of participants indicated that policy does not address specific line function skills gaps and 17% of participants were not sure of the policy provisions.

Close ended question.

2.9 Provide reasons for the above.

Reasons provided for the question 2.8 was a skills audit was underway which indicates that there is still a need to align the skills with the mandate implementation requirements. Through collaboration the skills required in order to align with strategic objectives and departmental priorities can be identified and be included in hr skills development plans. The focus should be on the core functions of the department with the skills there is. Another participant reasoned that the policy explicitly mentions performance-based training interventions which are designed to address specific needs and skill gaps within an individual employee occupation. Branch specific plans, the policy tasks Branch managers with integrating the departments strategic plan into the human resource development initiatives for their programmes. Continuous development, the policy encourages employees to participate in various continuous development activities, such as workshops, seminars and online courses.

The researcher discovered that similar responses were submitted to address this question and question 2.7, which is attributed to questions being similar in nature, hence arriving at the same responses and conclusions.

The HRD policy makes sufficient provision to address the skill requirements of the workforce to address the required skills to implement the NDHS mandate, which is contained in section 6.1.2: under Human Resource Development Principles and Processes and section 11.1 under Performance Training and Development.

One participant stated that *“there is a skills audit process underway which clearly shows that there is still need to align the skills with the mandate implementation requirements.”* Participants were of the view that collaboration between Chief Directorates and HR could be used to align the skills required in a CD to the strategic objectives of the NDHS which are to be incorporated into HR skills development plans for implementation. Furthermore, it was established that the NDHS has committed to ensure that a skills audit is undertaken facilitated by the NSG to assess the critical skills which currently exist, those that are required and the training needs of employees in targeted departments which are identified as infrastructure departments (Chapter 3, section 3.2).

2.10 What are your recommendations to improve the NDHS' HRD Policy?

Participants made the following recommendations for consideration to improve the NDHS HRD policy, provide a baseline in recruiting efforts when current employees do not possess the required skills, measuring the gaps between the skills required by the NDHS and the skills of the workforce, the development of succession planning, improvement of the induction programme, engagements between CDs and HR. Effectively accommodate the demands of the 4IR, the policy must explicitly identify and prioritise skills such as data analysis, AI, coding, cybersecurity and digital literacy. The policy promotes agility and adaptability, emphasise the importance of reskilling and upskilling to keep up with the pace of rapid technological advancements. Emphasis on data-driven decision making, integrate 4IR awareness and readiness into leadership development, ethical implications of the 4IR technology such as AI and data privacy. Incorporate improvements which can equip the NDHS workforce with the necessary skills and knowledge to navigate the challenges and opportunities of the 4IR and effectively implement the department mandate in a rapidly evolving digital landscape. One participant stated that there is good policy within the NDHS however the policies lacked implementation plans, therefore it recommended the skills audit section in HRD policy include an implementation plan which outlines short, medium and long term strategies which should include steps which would be implemented when a skills audit is implemented in the NDHS. Another participant recommended that HR collaborate with Branches in the NDHS, to source critical current and future skill requirements of the workforce, thereafter the liaison with the Policy Branch within the NDHS to obtain information on the five year priority

areas identified by the NDHS which would provide insight on the skill requirements of the NDHS workforce, the skill requirements of the workforce should be incorporated into the Workplace Skills Plan and mandatory training and development interventions should be implemented based on the requirements of each Branch.

All participants provided recommendations for improvements of the HRD policy. The responses provided by participants address research question 3. One participant responded by stating *“Identification of skills that are lacking in meeting the strategic objectives of the NDHS, measuring the gaps between the skills required by the NDHS and skills of the workforce, noting the possible training and development needs of the current workforce in the NDHS, and providing a baseline in recruiting efforts when current employees do not possess the required skills.”*, which responds to Chapters 2, 3 and 5, which contributes to the body of knowledge for developing a skills audit framework. It can be deduced that a skills audit process can not be undertaken without understanding the strategic objectives of the NDHS.

It was proposed that the skills audit framework have an implementation plan which outlines specific timeframes on what should be conducted, by whom and by when.

From the responses obtained from participants, even though the NDHS has a HRD policy not all aspects in the policy is implemented, which specifically relates to conducting a skills audit and implementation of the Departmental Induction Programme. Monitoring and evaluation of skills development interventions should be developed and incorporated into the policy to ensure that the interventions implemented are assessed quarterly to measure whether the NDHS received value for money by implementing the intervention which would positively contribute to employee performance which would ultimately respond in implementing the mandate of the NDHS.

THEME 3: TO PRESENT A DETAILED NARRATIVE ON THE CURRENT PERCEPTIONS AND STATUS OF NDHS PUBLIC SERVANTS IN TERMS OF A SKILLS AUDIT IN THE CONTEXT OF THE 4IR IN THE NDHS.

3.1 *Does the NDHS have strategic planning sessions?*

All participants responded that strategic planning sessions were facilitated in the NDHS.

3.2 *If yes, how often are strategic planning sessions held?*

Participants responded that strategic planning sessions are held on an annual basis.

3.3 *During strategic planning sessions, is Human Resource considered a strategic partner to different Branches?*

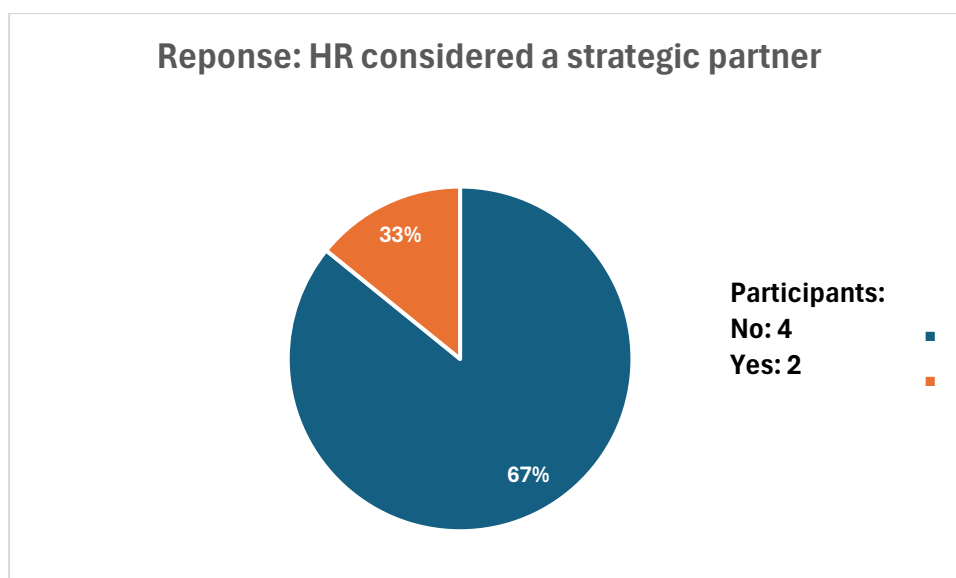


Figure 4.8: Response to Human Resources considered a strategic partner to different Branches

The question was meant to establish if HR is considered a strategic partner to different Branches during strategic planning sessions. As depicted in Figure 4.8, 33% of participants agreed that HR is considered a strategic partner during strategic planning sessions and 67% participants responded in stating that HR was not considered a strategic partner during strategic planning sessions. Chapter 2, table 2.3: RBV, whereby Wright *et al.* [2001:628], states that within the field of HRM, RBV has made important contributions in the rapidly growing area of SHRM whereby emphasis on people as strategically important to an institution's success has contributed to interaction and convergence of strategy and HRM issues). This question responds to research question 3.

3.4 *Please provide reason/s for your answer above.*

Participants who indicated that HR is not considered a strategic partner to Branches during strategic planning provided reasons that target setting is done without taking stock of the capacity that is available to deliver on their activities, HR is not called upon to present HR priorities during strategic planning sessions. In addition, Branches only state their capacity requirements in terms of numbers than a strategic partner, HR is also guilty as they do not reach out to Branches.

According to the responses received from participants and especially the confirmation from one participant stating that in the last 20 years, not once was the head of HR called upon to present at strategic planning session. It can be deduced that even though literature purports that HR should be a strategic partner to business. In the case of the NDHS, HR is not considered a strategic partner to other Branches. It therefore be assumed that the HR function in the NDHS is only viewed as a partner to address capacity requirements and constraints and not a strategic

partner to Branches, this is in contradiction of section 1.4 of the Skills Audit Methodology Framework, that stipulates, that skills audits are conducted to identify the skills base within an organisation. The results of skills audits determine the personnel's skills gap gaps required to meet its strategic objectives (DPSA, 2019:12). Should the NDHS, continue with the identified trend, the NDHS would be unable to fulfil its mandate.

3.5 Does the NDHS have a skills audit framework which serves as a baseline to measure and record the skills base of the workforce?

Two of the six participants indicated that there is a skills audit framework in the department which serves as a baseline to measure and record skills. The remaining four participants indicated that there is no skills audit framework which serves as a baseline to measure and record skills base of the workforce.

3.6 Please provide reasons for your answer.

The two participants that indicated that there is a skills audit framework in the NDHS, provided reasons why there should be one and what it is required to do instead of providing reasons why they agreed that there was a skills audit framework. The remaining four participants that indicated that there is no skills audit framework provided reasons that there are still no accurate job descriptions for the workforce in core Branches. This question is validated in Chapter 1, section 1.1, which states that the study presents the initial understanding of skills required in the NDHS when considered against the context of the 4IR and secondly the study considered the development of a Skills Audit Framework that guides the skills audit process in the NDHS, since there currently is no Skills Audit Framework. The aforementioned would ensure that accurate information for the different job families within Core-Function job families within the NDHS are recorded and the workforce are equipped with the required skill sets to assist in implementing core functions to implement the mandate of the NDHS. The latter was necessary to develop a Skills Audit Framework for the NDHS, which was underpinned by a theoretical framework, and an alignment to a statutory legislative and regulatory framework that informed skills audit frameworks in the context of 4IR in the South African Public Service.

3.7 Does the NDHS have accurate and reliable information of the different job families in the NDHS?

All participants responded by stating that the NDHS does not have accurate and reliable information of the different job families. To substantiate this one participant stated that *"no, the way the current organisational structure is configured makes it difficult for HR to implement HR processes because the Macro (SMS levels) organisational structure of the NDHS was approved in 2021 however the Micro (levels 2-12) organisational structure was left behind during the*

configuration process whereby this structure is still at the 2012 structure therefore there is no alignment between the Macro and Micro organisational structures.” This statement is validated as HR is currently busy with the review of the organisational structure on both Macro and Micro level, this question is aligned to Chapter 3 of this study.

3.8 *In your view, do the reasons listed below contribute to the challenges with the implementation of the NDHS mandate?*

Table 4.2: Challenges with implementation of the NDHS mandate

Cross tabulation on challenges with implementation of the NDHS mandate				
Challenges	Responses and Percentages			
	YES	%	NO	%
Lack of records on the skills base of the NDHS	6	100%	0	0%
No accurate or reliable information of the different job families in the NDHS	6	100%	0	0%
Limited understanding of the skills requirements of the 4IR	4	67%	2	33%
HR is not considered a strategic partner in the NDHS	4	67%	2	33%
Limited alignment of statutory, legislative and regulatory frameworks in the public service aligned to requirements of the 4IR	5	83%	1	17%

Source; Researcher’s own construct

In Table 4.2, more than 50% of participants agreed with the questions tabulated which serves as verification on information contained in Chapter 1, section 1.2, Chapter 2, sections, 2.3, 2.7 and 2.8.

The responses to the questions contained in Table 4.2, directly linked to section 1.1 of Chapter 1, which proposes the implementation process of a skills audit framework. The responses obtained from participants imply the non-existence of a skills repository within the NDHS, the non-alignment of the organisational structure to the strategy of the NDHS has caused a rippling effect which resulted in the inaccurate or unreliable information of the different job families which ultimately resulted in limited understanding of the skill requirements of the NDHS in the 4IR. HR not seen as a strategic partner and the limited alignment of statutory, legislative and regulatory framework in the public service aligned to requirements of the 4IR has contributed to underperformance of the NDHS to implement its mandate.

THEME 4: TO PRESENT A TRIANGULATION BETWEEN: I) A THEORETHICAL FRAMEWORK, II) A STATUTORY AND REGULATORY FRAMEWORK AS WELL AS III) A CURRENT STATE OF PUBLIC SERVICE SKILLS AUDIT IN THE CONTEXT OF THE 4IR IN THE NDHS.

4.1 Do the HR policies within the NDHS make sufficient provision for the implementation of skills required by the workforce in the NDHS?

Two participants responded that HR policies do not provide sufficient provisions for implementation of skills by the workforce whilst the remaining four participants responded that HR policies do make sufficient provision for the implementation of skills required by the workforce in the NDHS.

4..2 Reasons provided.

Questions in theme 4 are aligned to research question 4 of this study. Participants were of the view that HR policies make sufficient provision for the implementation of skills required by the workforce in the NDHS with reasons that Performance Training and Development: the policy explicitly mentioned performance-based training interventions, which address the specific needs and skills gaps within employee occupations. One participant stated *“there is a skills audit process underway, meaning that there are gaps in the HR policies”*. The provision in the policy aims to ensure that skills gaps within specific line functions are identified and addressed through appropriate training and development interventions ultimately contributing to the effective implements of the NDHS mandate.

4.3 Do HR policies make provision for the implementation of skills required by the 4IR?

Majority of the participants indicated that the policy does not make provision for the implementation of skills required by the 4IR, one participant was not specific in responding with either a yes or no answer and one participant responded by indicating that HR policies do make provision for the implementation of skills required by the 4IR. One participant provided insight why the response was no, whereby its was indicated the policy does not explicitly integrate 4IR skills into the policy, the policy should promote agility and adaptability through continues learning initiatives, foster digital collaboration and data-driven decision-making, incorporate the 4IR into leadership development programmes, address the ethical considerations of 4IR technologies. The participant indicated that improving HR policies to better accommodate the 4IR could ensure that the NDHS ensure that its workforce has the necessary skills to effectively implement its mandate in the rapidly evolving digital landscape.

THEME 5: TO PRESENT THE FINDINGS AND RECOMMENDATIONS BY A DEVELOPED SKILLS AUDIT FRAMEWORK IN THE CONTEXT OF THE 4IR WITHIN THE NDHS.

5.1 Do you think that developing a digital skills audit framework would be beneficial to the workforce and the NDHS?

All participants agreed that a digital skills audit framework would benefit the NDHS.

5.2 What are your recommendations in aligning the skill requirements of the workforce to the requirements of the 4IR which would assist the NDHS to implement its Constitutional mandate.

All participants responded positively and indicated that a developing a digital skills audit framework would be beneficial to the workforce of the NDHS. The questions contained in theme 5 are aligned to research question 5. Participants were of the view a digital skills audit framework would encourage participation however the template should not be heavy with many questions as this could discourage participation, the template should be user friendly. A digitised skills audit framework would contribute to improving most HR process as results would be readily available by the click of a button. Due to the fast pace of the 4IR, a digitised framework would ensure that information is updated in actual time, and this would ensure that the NDHS keep abreast of the type of skills required as necessitated by its mandate.

One participant stated that because the technology landscape evolves rapidly, there should be a collaborative and continuous engagements with HRD. Another participant recommended that the workforce be skilled on requirements of the 4IR which could provide them with an opportunity to reconsider their careers. Analyse current talent strategies and implement best practices to attract, recruit, develop and retain talent to promote inclusivity and innovation. Develop a knowledge base of all studies conducted including assignments, develop a recognition programme to improve the culture of learning and development. The department has people with lots of institutional knowledge which can be incorporated into a digitised programme, and the 4IR provides opportunities to reskill the workforce.

5.3 Provide 2 recommendations to improve HR processes required within your Branch.

This question contributes to the existing body of knowledge which could be utilised within the public service. Recommendations provided includes developing succession plans to minimise disruptions by identifying critical roles and employees who have the skills to immediately assume these positions if an employee leaves. Conducting a gap analysis to identify what resources are available and what will be needed in the future. HR to contribute articles to the departmental newsletter to create awareness on trends in skills and development for employees to consider

reskilling themselves. Develop a departmental guideline to ensure that money spent in the department is spent where it is needed. The department develop and implement a skills audit framework. Skills audits to be conducted every three years and incorporate focused skills audits in Branches. Considering the dynamic nature of affordable housing what are the 4IR technologies that could impact Branch operations. Incorporate and promote continuous learning, encourage innovation and foster a culture of agility and adaptability in the NDHS. Digitise all HR processes, performance management and leave processes have been digitised but improvements are still required so that a digitised system can integrate with systems of government to interphase with PERSAL to ensure that reliable and accurate information is obtained during leave audits. Instead of sending out circulars when HR policies are approved, HR should drive to educate officials by incorporating 4IR technologies which will create a more innovative and creative environment.

5.4 Do you have additional recommendations or comments which you feel were not covered in this interview?

No additional recommendations or comments were provided by participants.

4.4 ETHICAL CONSIDERATIONS

Ethical approval for this study was obtained from the Basic and Social Sciences Research Ethics Committee (BaSSREC) of the North-West University and the Director-General of the NDHS (**Annexure A**). The researcher communicated an introductory and consent letter to all respondents and participants of the study (**Annexure C**). This ensured that respondents' participation was voluntary, suggesting that no force or any unscrupulous method was used to compel individuals to participate in the study. The researcher adhered to confidentiality, and identities of interviewees and discussants was not revealed. Furthermore, the researcher respected intellectual property through strict adherence of acknowledging the sources from which the data has been gathered.

The researcher adhered to the terms of section 43(2) of the Promotion of Access to Information Act (PAIA) of 2000, which stipulates that the researcher will protect confidential information shared and not disclose any of the NDHS information without the applicable consent and the researcher. The researcher did not influence data obtained nor force participants to participate. Participants were allocated code names, there was only an indication of participants ranks. The NDHS would not allow the researcher to involve external participants, nor allow information of participants to be provided to an external person.

4.5 CONCLUSION

The focus of this chapter was to establish the perceptions and understanding of CDs in the NDHS on the literature and theoretical frameworks which underpins an NDHS skills audit framework, the statutory, legislator and regulatory frameworks that informs an NDHS skills audit framework in the context of the 4IR, and the current perceptions and status of NDHS public servants in terms of skills audits in the context of the 4IR in the NDHS.

Participants provided their understanding as per the, their concerns on skills audits and provided recommendations in addressing concerns raised on the current status of skills audits in the NDHS. Chapter 5 will focus on a triangulation between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS present and the elements of a Skills Audit Framework.

CHAPTER 5 A DIGITAL SKILLS AUDIT FRAMEWORK

5.1 INTRODUCTION

Chapter 4 provided the participants understanding as per the problem that this study investigated was to present a Skills Audit Framework that guides the skills audit process in the NDHS, since there currently is no Skills Audit Framework. The aforementioned would ensure that accurate information for the different job families within Core-Function job families within the NDHS are recorded and the workforce are equipped with

Participants provided there understanding as per the, their concerns on skills audits and provided recommendations in addressing concerns raised on the current status of skills audits in the NDHS. Chapter 5 will focus on a triangulation between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS present and the elements of a Skills Audit Framework.

The problem that this study investigated was to present a Skills Audit Framework that guides the skills audit process in the NDHS, since there currently is no Skills Audit Framework. The aforementioned would ensure that accurate information for the different job families within Core-Function job families within the NDHS are recorded and the workforce are equipped with the required skill sets to assist in implementing core functions to implement the mandate of the NDHS. The latter was necessary to develop a Skills Audit Framework for the NDHS, which was underpinned by a theoretical framework, and an alignment to a statutory legislative and regulatory framework that informed skills audit frameworks in the context of 4IR in the South African Public Service. The study also aimed to provide mitigation factors to address possible future findings as those outlined by the PSC in the report on the Assessment of Human Resource Development practices in the Public Service.

For purposes of this study, the researcher outlined the requirements for developing a digital skills audit framework based on the requirements as contained in the Public Service Skills Audit Methodology, DPSA (2019), and scholarly articles by Van der Waldt *et al.* (2018:1) and Hattingh (2014:1), which provide the aim and purpose of conducting skills audits inclusive of the information on 4IR provided by Schwab (2017:1), and the use of technology as a catalyst for change to advance the public service, as argued by Ntshavheni (2022:8).

The DPSA contends that the main purpose of conducting skills audits is for the State to deliver on its service delivery mandate, it is imperative that the supply and demand for skills within the public service can be accurately identified and measured (DPSA, 2019:11). The DPSA states that departmental skills audits provide the data and information on the jobs to be performed within an

organisational structure and can be used to identify gaps between existing job families and those required to achieve the Departments' service delivery objectives and goals (DPSA, 2019:11). Based on the aforementioned, DPSA introduced the Skills Audit Methodology Framework, to capacitate Departments to conduct skills audits on a regular basis in order to be responsive to the various drivers that trigger the supply and demand for skills in the Public Service in order to empower the State to meet the challenges it faces and respond proactively to the changing world of work (PSETA, 2019:12).

Figure 5.1 is the DPSA flow diagram, (DPSA, 2019:12) proposed for optimising the Skills Audit Methodology which illustrates the skills audit process for the public service proposed for provincial and national departments. This study focuses on developing a skills audit framework for the NDHS thus focusing on the Departmental Strategy, Departmental Structure, Job Profiles /Job Descriptions which would ultimately lead to the development of a NDHS Skills Audit Framework.



Figure 5.1: The ultimate Skills Audit Methodology (DPSA, 2019)

The Public Service Skills Audit Methodology Framework requires Public Service institutions to conduct a Skills Audit Maturity Assessment to determine and describe the level of maturity a department has in managing the skills audit process as well as to provide recommendations on how to move to the next level of skills audit maturity (DPSA, 2019:15). The assessment seeks to improve the delivery of skills audit practices in the public service (DPSA, 2019:15).

Figure 5.1 outlines the processes followed in the NDHS when the Skills Audit Maturity Assessment was conducted which revealed that the NDHS skills maturity level was at Rudimentary maturity level. This meant that the NDHS has limited experience, knowledge, and capacity in conducting skills audits, and the NDHS cannot quantify its skills base (DPSA, 2019:17). The maturity assessment is sub-divided into strategy, strategy, structure, process, people and technology.

5.2 FINDINGS OF THE SKILLS AUDIT METHODOLOGY CONDUCTED IN THE NDHS

The findings on the Skills Audit Maturity Assessment for the NDHS revealed that the NDHS was at Rudimentary level and depicted that the NDHS:

- i) Seldom conducted skills audits when strategic changes were implemented, where the DPSA recommends that skills audits need to occur on an annual basis;
- ii) Skills audits were conducted in isolation/unaligned with other HRM and HRD frameworks; and
- iii) No clear alignment between the NDHS strategic objectives and the skills required to achieve them.

5.2.1 Findings on the organisational structure for the NDHS implied that:

- i) There is minimal alignment between the strategy and the organisational structure;
- ii) The organisational structure was not aligned with the post establishment loaded on PERSAL;
- iii) Job profiles were outdated, inaccurate and/or not aligned with the organisational structure; and
- iv) There is was no consistency with naming job conventions for jobs of a similar nature.

5.2.2 Findings for processes

Finding for processes revealed that no processes exist for determining the target audience for the skills audit in the NDHS, wherein:

- i) No competency framework existed.
- ii) Skills matrix and proficiency levels were not development.
- iii) Skills audits used only the 90-degree (self-assessment) method and psychometric testing for SMS level

- iv) Skills audit data collection, analysis and reporting was manual (paper-based surveys and Excel spreadsheets).
- v) No/minimal alignment between skills audit results and talent management value chain.
- vi) Accurate data was not available for completion of workplace skills plan; and
- vii) Accurate data was not available for personal development.

5.2.3 Findings for people

Findings for people revealed that:

- i) There were insufficient resources, (people/technology) to conduct skills audits.
- ii) HRD practitioners were unfamiliar with the skills audit methodology.
- iii) No communication initiative to ensure employees buy-in and participate in the skills audit process was for compliance purposes only.
- iv) Line managers were uninformed on the purpose and importance of conducting skills audits and their role in the process.
- v) Line managers had limited knowledge of competency frameworks and proficiency/completion of the Workplace Skills Plan (WSP).
- vi) The benefits of skills audits and their developmental purpose was not effectively communicated/understood.
- vii) No/minimal alignment with HRD interventions and skills audit gaps identified; and
- viii) No/minimal alignment between HRD initiatives and PMDS proficiency ratings allocated.

5.3 RECOMMENDATIONS

The development of the Digital Skills Audit framework for the NDHS incorporates the following systematic processes:

5.3.1 Recommendations on the strategy of the NDHS

Structure follows strategy, unpacking the strategy of the NDHS serves as the starting point in identifying the current skill requirements that enables the NDHS to implement its mandate. The strategy of the NDHS allows for implementation of sustainable and integrated human settlements across the Republic of South Africa. The Digital Skills Audit Framework was developed to

establish the knowledge of groups of employees and constitution accurate and reliable information of job families and functions of job families in the NDHS, and to identify the currents and future required skills of employees in these job families.

5.3.2 Recommendations on the organisational structure of the NDHS

Goold and Campell (2022) contend that the structure of an institution should enable the strategy by ensuring that critical work activities have enough management attention (Goold & Campbell, 2002). The organisational structure of the NDHS must be aligned to the strategy of the NDHS framework allows the organisational structure to be aligned to the strategy of the NDHS, which allows for the identification of roles required to achieve goals in the long and short term. Should there be a change in the strategy of the NDHS, the structure would be required to change based on the new objectives. Job descriptions were updated to include qualifications, experience and skill requirements including responsibilities and performance indicators were included in the updated job descriptions. Jobs which were similar in nature were clustered together in similar job families which allowed that accurate and reliable information are contained for job families in the NDHS.

5.3.3 Recommendations for a Digital skills audit framework

Schwab (2017:1) states that the 4IR is a revolution that fundamentally changes the way we live, work and relate to one another. Charas and Lupushor (2022:2) contend that the shift to distributed work is already changing how and where talent is recruited as well as where the workforce will perform their functions. Ntshavheni (2022:8) states that governments are responsible for using technology as a catalyst for change in the world that should advance the public service. According to the Digital Government Maturity Report (DPSA, 2024:8), the current state of readiness of the public service in terms of ICT, business process is still carried out manually, processes are not mapped, timed (measured) and without process owners to ensure accountability. Information Technology Cybersecurity (ICT) systems are dated and underlaying hardware is obsolete to system unavailability and service outages. There are inadequate tools of trade leading to ineffective execution of work by public servants and they are seldom not fit for purpose (DPSA, 2024:8).

The recommendation for the skills audit framework for the NDHS, it that a digitised skills audit framework should be developed for implementation. Consultations between HR, ICT and NDHS stakeholders were undertaken which indicated that ICT systems must have the capacity to store big data; these processes would be entwined with other HR processes such as Employee Performance Management and Development Systems (PMDS), Training and Development and Recruitment and Selection to streamline all HR processes and move away from the silo approach.

ITC security measures must be in place to eliminate cybersecurity threats which could jeopardise personal information of the workforce being accessed for malicious intent. ICT would be required to establish platforms to accommodate large datasets on NDHS ICT systems within the confines of ICT statutory, regulatory and policy requirements to ensure that confidential information of the NDHS was not accessed.

5.3.4 Skills Audit Methodology Framework and Institutional Competency Framework

The table below provides the phases for the development of a Skills Audit Framework for the NDHS aligned to the DPSA Skills Audit Methodology Framework introduced for the public service.

Table 5.1: Phases for the development of a Skills Audit Framework for the NDHS aligned to the DPSA Skills Audit Methodology Framework

Skills Audit Methodology Framework			
ID	Phase Name	Description	Application to the NDHS Context
Pillar 1:	Structural alignment:	“In order to enable structural alignment, a departmental structure must be designed that to the requirements of the departmental strategy. This clarify the roles and competencies required across the department, which will inform job descriptions that will be critical to the development of the department’s competency framework. The departmental strategy must be unpacked to understand the current and future required skills requirements of the organisation. This is a critical activity in the skills audit process, as the lack of alignment will impact all other activities. It is also important to identify technological shifts and market change when deciding on the optimal structure for attaining strategic objectives.” DPSA (2024).	Unpack the strategy of the NDHS; the mandate of the NDHS, to establish the current skill requirements and future skill requirements. The mandate of the Department emanates from Section 26 of the Constitution, which provides that everyone has the right to have access to adequate housing DHS (2020). The programmes in the department are aligned to the Medium-Term Strategic Framework (MTSF), mentioned below: Programme 1: Administration: is aligned to MTSF priority 1: A capable, ethical and developmental state. Programme 2: Integrated Human Settlements Planning and Development: is aligned to MTSF priority 1: A capable, ethical and developmental state and priority 5: Spatial Integration, human settlements and local government. Programme 3: Informal Settlements Programme: is aligned to MTSF priority 5: Spatial Integration, human settlements and local government.

Skills Audit Methodology Framework			
ID	Phase Name	Description	Application to the NDHS Context
			Programme 4: Rental and Social Housing Programme is aligned to MTSF priority 1: A capable, ethical and developmental state and MTSF priority 5: Spatial Integration, human settlements and local government. Programme 5: Affordable Housing Programme aligned to MTSF priority 1: A capable, ethical and developmental state and MTSF priority 5: Spatial Integration, human settlements and local government. In comparing the programmes of NDHS with the organisational structure of the NDHS it confirms that all programmes are accommodated in the organisational structure, at Branch level. Two Branches contribute to the support functions (Corporate Services & the Chief Financial Officer). The remain four Branches contribute to the core functions (Research, Policy, Strategy & Planning; Informal Settlements Upgrading & Emergency Housing; Affordable, Rental & Social Housing; & Entities Oversight, IGR, Monitoring & Evaluation). The Micro (levels 2-12) structure of the NDHS must be aligned to the Macro structure of the NDHS to align jobs and the job descriptions.
Pillar 2	Job description	“Once the structural alignment is complete, the job profiles will need to be aligned to the revised structure. A job description is an internal document which serves as a guideline to the key requirements and responsibilities for the role indicated. These profiles must include all skills and competencies to move the department forward and form a critical input into the competency framework.”	HR must have an electronic repository where all templates and information will be stored for evidence-based reporting. Use the job description template to update the job profiles and create new jobs profiles. Identify the skills and competencies to be included in the job profile. Identify the skills for the future world of work. What are the

Skills Audit Methodology Framework			
ID	Phase Name	Description	Application to the NDHS Context
			specific skills required by the NDHS. Determine proficiency levels for each skill. The system should have a functionally verifies and confirm tasks are really required to perform the job, which would be signed off by Branch managers of respective Branches so that they can account for the job profiles as they oversee these functions. The consult key stakeholder's system must be able to identify the various stakeholders that work closely. Consider the top ten skills for the future world of work.
Pillar 3	Competency or skills framework/matrix	Competency frameworks are to be developed based on updated job descriptions. The frameworks must include future skills, leadership, managerial and technical skills requirements per job category across the department. Each competency must be defined across each level of the proficiency scale – i.e. basic to expert. Once complete, the proficiency levels for each competency and each role across the organisation will need to be identified. This will form the basis of the competency/skills matrix for the department. Proficiency levels are the levels which competencies are measured against.	The Senior Management Service (SMS) and Middle Management Service (MMS) competencies have been developed by the DPSA, therefore they must be included when developing management competencies. The Competency Development Toolkit has been developed by the DPSA to serve as a baseline to develop institutional specific frameworks. Technical competencies must be considered as they department specific and have to be developed by each department to ensure that technical skills requirement for each role across the institution are defined and mapped, hence a lot of engagement will take place to obtain the technical specific inputs of the various roles across the institution. What are the skills required for a specific job in the NDHS.
The development of a Skills Audit Framework is categorised in 4 pillars as tabulated below:			
	Sub-pillar 1	Alignment to the Organisational Vision and Strategy	Envisage the future workforce of the NDHS and define key outcomes

Skills Audit Methodology Framework			
ID	Phase Name	Description	Application to the NDHS Context
	Sub-pillar 2	Exploration and Assessment of the NDHS's context	Assess, research and collaborate to navigate the most suitable path for the NDHS.
	Sub-pillar 4	Implementation of the Skills Audit Framework	Implementation of the NDHS Competency Framework.
Pillar 4	Implementation of Competency Framework	Implement the Competency Framework across the department by communicating the use of competencies to employees and how this will positively impact their role. To ensure successful implementation of the Competency Framework it is necessary to ensure all data is integrated into the Talent Management Lifecycle which serves as a structured approach to attract, develop and retain relevant skills within the department and the organisation as a whole.	Depending on the Maturity Assessment outcome of the NDHS, the template will be customised. This would allow for data to be integrated in to the Talent Management Lifecycle to the NDHS which could be incorporated into the HR processes of the NDHS listed below: • Skills Assessments • Strategic Workforce Planning • Recruitment and Selection • Upskilling and development • Performance Management • Career development.
Pillar 5	Sustainability of the Competency Framework	The fifth phase of the framework focuses on sustaining the Competency Framework, which drives processes of reviewing, reflecting and updating to ensure relevance, fit for purpose and continued sustainability of the Competency Framework.	The Framework must be updated annually which would prove HR within the NDHS to review, reflect and ensure relevance for the NDHS.
Pillar 6	Skills audit assessments	The next step is the design of skills surveys based on the competency framework. These surveys can be done online or manually and can take the form of a 90 degree, 180 degree, 270 degree or 360 degree assessment, depending on employee level. Typically it is leading practice to conduct 180 degree and above assessments types, as 90 degree assessments are often subjective in nature.	After the Skills Audit Framework of the NDHS has been implemented then the NDHS can embark on a electronic scientific skills audit.
Pillar 7	Data analysis and reporting	The data received from the skills audit will need to be analysed and will be used to collate various reports. It is advised that analytical tools such as Microsoft 360 and Power BI etc. be used to consolidate data to ensure accuracy and efficiency. Should the department not have access to analytical tools, software packages such as MS Excel can be used.	Skills audit data obtained will be analysed as conducted by HR for all staff within the NDHS.

Skills Audit Methodology Framework			
ID	Phase Name	Description	Application to the NDHS Context
Pillar 8	Talent initiatives	The talent management framework provides a structured approach to attracting and developing employee potential and retaining talent within the public sector. The data obtained from the skills audit should be used to inform talent management initiatives such as recruitment, training, and personal development plans. By using the Skills Audit Methodology Framework, current challenges will be eliminated and the focus will be placed on skills development.	The data obtained from the skills audit exercise will be incorporated into PDPs of staff to address critical development areas of the NDHS. Incorporated in future policies in the NDHS which include succession planning. The Workplace Skills Plan of the NDHS will be informed with information extracted from the skills analysis. The Training and Development policy and Recruitment and Selection Policies of the NDHS would be updated with reliable and accurate information received from skills audit data.

Sources: DPSA (2024); NDHS Strategic Plan (2019)

5.4 CONCLUSION

The triangulation of between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework, as well as iii) a current state of public service skills audit in the context of the 4IR in the NDHS was achieved through the analysis conducted by the researcher in terms of scholarly contributions by Van der Walddt *et al.* (2018:1) and Hattingh (2014:1) on skills audits, the requirements set out by the DPSA on the Skills Audit Methodology Framework for national and provincial departments, the disruption of the 4IR, as articulated by Schwab (2017:1), and how technology can be used to advance the public service as outlined by Ntshavheni (2022:8). The objective of this chapter was achieved through triangulation of all aforementioned concepts which included the findings for the NDHS and the recommendations provided by the researcher. The findings of the Skills Audit Maturity Assessment were addressed by the recommendations made by the researcher for each finding, the implementation of the recommendations would ensure that the NDHS improve on its maturity level from a Rudimentary Level outcome to a Developing Level, then to a Developing Maturity Level, Advanced Maturity Level which would culminate into a Leading Maturity Level. The ultimate leading maturity level would enable the NDHS to produce live data of the skills profile of the workforce which support the strategy of the NDHS. The skill requirements of the NDHS would be utilised to inform the development of institutional structures. The workforce would be matched and placed according to their skills profile which allows for reskilling to ensure the workforce are equipped with future required skills. Both Support and Line function are equipped with skills and competencies to implement the mandate of the NDHS to improve institutional performance. The processes of structural alignment, job profiles and competency frameworks are automated, which include a skills repository for the NDHS, accurate

and reliable information is available for functions and tasks performed in different job families, HR processes are regularly updated with correct information and profiles used during recruitment and selection processes and HR processes on performance management, talent management and structural alignment are interlinked.

CHAPTER 6 FINDINGS, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

Chapter 5 of this study outlined the findings of the skills audit maturity assessment including the recommendations which must be implemented to address the findings. This Chapter provides a summary of each chapter in view of achievement of the objectives outlined for each chapter of this study, the developed Digital Skills Audit Framework for the NDSH and the conclusion of the research and study conducted.

6.2 SUMMARY OF EACH CHAPTER

A brief summary of chapters of the study is outlined below

Chapter 1: Introduction: provided the reader with the introduction of the study. It outlined the orientation and problem statement, central theoretical statement, significance of the study, research questions and objectives and research methodology which was utilised in the study. Chapter 1 outlined the context of the study on which lay the foundation for the study and the research. The theories researched for this study was outlined and the research methodology used in Chapter 4 was outlined in detail.

Chapter 2: The theoretical framework that supports a skills audit framework: the research question aligned to this chapter was: What is the literature and theoretical framework that underpins a NDHS skills audit framework in the naissance of the 4IR? The research objective was: To present the literature and theoretical frameworks that underpin a NDHS skills audit framework in the naissance of the 4IR. This chapter provided a detailed presentation on the theoretical underpinning of skills audits. The literature and the theories used outlined in this chapter laid the foundation for this study as it deciphered the literature and theory into practice to create an understanding of skills audit frameworks, the NDHS and the 4IR contained in the study. The theoretical framework which underpinned this study was HCT, RBV and TDT theories. The researcher proposes that the three theories be combined to strengthen its theoretical positioning, which would provide researchers with the opportunity to use one theory containing all three aspects of HCT, RBV and TDT theories.

Chapter 3: Statutory, legislative, regulatory and institutional frameworks that govern skills audits in the context of the 4IR in the NDHS: this chapter outlined the statutory, legislative, regulatory and institutional frameworks that inform a NDHS skills audit framework in the context of the South African Public Service and the NDHS. The research question aligned to this chapter was: What is the statutory, legislative, and regulatory framework that informs an NDHS skills audit

framework in the context of the 4IR? The research objective of this study was: to present an assessment of the statutory, legislative and regulatory framework that informs an NDHS skills audit framework in the context of the 4IR. This chapter provides the narrative to support and develop a NDHS skills audit framework compliant to statutory, legislative and regulatory frameworks aligned to the mandate and statutory, regulatory and institutional frameworks affiliated to the NDHS. This chapter revealed that there are ample statutory, legislative, regulatory and institutional frameworks available in the South African Public Service which allows the NDHS to implement its mandate and address skills shortages of the workforce, what was lacking was legislation which regulates and supports the implementation requirements of the 4IR. Moreover, the implementation of skills audits in the public service are conducted non-standardised manner hence the DPSA introduced the Skills Audit Skills Methodology Framework to regularise and standardise the way skills audits are conducted across national and provincial department.

Chapter 4, set out the methodology and methods used for data collection and analysis, why these methods were chosen, their effectiveness and the shortcomings experienced. Data obtained was analysed and the main findings emerged from the empirical investigation outlined. The research conducted and data collected addresses the question on: What are the perceptions and status of NDHS public servants in terms of a skill audit in the context of the 4IR? The question is substantiated by the research objective on the current perceptions and status of NDHS public servants in terms of a skills audit in the context of the 4IR in the NDHS.

Chapter 5: A digital skills audit: the research question for this chapter was: What does the triangulation between: i) a theoretical framework, ii) a statutory, legislative and regulatory framework, as well as iii) a current state of public service skills audit in the context of the 4IR in the NDHS present? This chapter provided a triangulation between: i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skill audit in the context of the 4IR in the NDHS. The research objective for this chapter was: to present a triangulation between i) a theoretical framework, ii) a statutory, legislative and regulatory, as well as iii) a current state of public service skills audit in the context of the 4IR in the NDHS. This chapter, analysed the literature contained in scholarly articles on skills audits argued by Vander Waladt *et al.* (2018:1), and Hattingh (2014:1), the requirements set out by the DPSA on the Skills Audit Methodology Framework for national and provincial departments, the disruption of the 4IR as articulated by Schwab (2017:1) and how technology can be used to advance the public service as outlined by Ntshavheni (2022:8). The objective of this chapter was achieved through triangulation of all concepts which included the Chapter 4 for the NDHS, and the recommendations provided by the researcher contained in chapter 6.

Chapter 6 outlined the findings, the recommendations and conclusion of this study. Moreover, the researcher projects the developed Digital Skills Audit Framework for the NDHS for

implementation within the NDHS and lastly provides the narrative whether the research questions and objectives of this study has been achieved.

6.3 ACHIEVEMENT OF RESEARCH QUESTIONS AND OBJECTIVES

This study attempted to Develop a Skills Audit Framework in the naissance of the 4IR for the NDHS and to achieve the objectives as outlined in Chapter 1. The section of chapter 6 establishes whether the research questions were answered, and the research objectives achieved and to recommend the developed Digital Skills Audit Framework for the NDHS for implementation in the NDHS. The below mentioned are the research questions and research objectives:

6.3.1 Research Objectives:

The General Research Objective:

The general research objective of this study was to present the substance of a framework that has the capacity to direct a skills audit in the naissance of the 4IR in the NDHS, with the specific aim of enabling the NDHS to achieve its constitutional mandate successfully, despite the incessant disruptions that the 4IR presents.

Specific Research Objectives

- To present the literature and theoretical frameworks that underpin an NDHS skills audit framework in the naissance of the 4IR.
- To present an assessment of the statutory, legislative and regulatory framework that informs a NDHS skills audit framework in the context of the 4IR.
- To present a detailed narrative on the current perceptions and status of NDHS public servants in terms of a skills audit in the context of the 4IR in the NDHS.
- To present a triangulation between: i) a theoretical framework; ii) a statutory , legislative and regulatory framework, as well as; iii) a current state of public service skills audit in the context of the 4IR in the NDHS.
- To present the elements of a Skills Audit Framework?
- To present the findings and recommendations by a developed skills audit framework in the context of the 4IR within the NDHS.

Based on the results of the study the above-mentioned objectives have been achieved as indicated below:

Objective no. 1: To present the literature and theoretical frameworks that underpin an NDHS skills audit framework in the naissance of the 4IR.

This research objective was achieved in Chapters 1, 2, 4 and 5 of this study. Chapter 1, outlined the theories which were to form the foundation of this study. Chapter 2, provided insight on the work of various scholars on key issues contained in this study which include, skills audits, the 4IR and the NDHS and theories of Human Capital, Resource-Based View and Technological Determinism.

Based on the findings in Chapter 2 and 4, this objective will be dealt with in this chapter 6. A Developed Digital Skills Audit Framework for the NDHS, recommended for implementation in the NDHS.

Objective no. 2: To present an assessment of the statutory, legislative and regulatory framework that informs a NDHS skills audit framework in the context of the 4IR.

This objective was addressed in Chapters 3, 4 and 5. The statutory, legislative and regulatory frameworks which underpin the development of a skills audit framework in the NDHS was analysed in chapter 3. Chapter 4 dealt with the current perceptions and status of NDHS public servants in terms of a skills audit in the context of the 4IR in the NDHS was analysed. Chapter 5 addressed the triangulation between i) a theoretical framework; ii) a statutory, legislative and regulatory framework as well as iii) a current state of public service skills audit in the context of the 4IR in the NDHS.

Objective no. 3: To present a detailed narrative on the current perceptions and status of NDHS public servants in terms of a skills audit in the context of the 4IR in the NDHS.

This objective was achieved in Chapter 4 of the study. The investigation was conducted with the aim of obtaining the current perceptions and status of NDHS public servants in terms of a skills audit in the context of the 4IR in the NDHS.

Objective no. 4.1: To present a triangulation between: i) a theoretical framework; ii) a statutory , legislative and regulatory framework, as well as; iii) a current state of public service skills audit in the context of the 4IR in the NDHS.

This objective was achieved in chapter 5 and 6 of the study. In chapter 5, the investigation revealed the findings associated with implementing skills audits in the NDHS. The researcher also provided the recommendations which could be implemented in addressing the findings.

Objective no. 4.2 To present the elements of a Skills Audit Framework

This objective was achieved in chapters 5 and 6 of the study. Chapter 6 provides the developed Skills Audit Framework which enables the NDHS to obtain, ii) accurate and reliable information in terms of the NDHS job families, ii) the functions and tasks performed by NDHS employees in

each of the job families, iii) the state of skills and knowledge that the NDHS requires in the context of anticipated needs; iv) potential gaps between the skills and knowledge that the NDHS requires to operationalise its strategic objectives successfully, compared to the level of skills and knowledge that the NDHS currently possesses, vi) a skills gaps analysis, which helps to obtain a comprehensive skills profile of the NDHS and v) the competencies required by NDHS employees in the different jobs within job families, to support future NDHS institutional appointments.

Objective no. 5: To present the findings and recommendations by a developed skills audit framework in the context of the 4IR within the NDHS.

This objective was achieved in chapters 5 and 6. Chapter 5 provided the findings on findings of the DPSA Skills Audit Maturity Level of the NDHS and the recommendations to address the findings. Chapter 4 provides the framework of a developed Digital Skills Audit framework which can be implemented in the NDHS.

6.4 A DIGITAL SKILLS AUDIT FRAMEWORK FOR THE NDHS

Hattingh (2014:1) maintains that the purpose of a skills audit is: i) to obtain accurate and reliable information in terms of the job families that are extant in the institution; ii) the functions and tasks performed in each of the job families; iii) the competencies required by occupants in the different jobs families within a public organisation that are deemed necessary to fulfil such an institution's constitutional mandate; and iv) to determine the state of skills in the institution.

In the context of the NDHS, this study firstly explored an initial understanding of skills required in the NDHS, when considered against the context of the Fourth Industrial Revolution (hereafter referred to as 4IR); Secondly, the study considered an implementation process of a skills audit framework that includes the following: i) determining, measuring and recording the NDHS' skills base, and as such, the knowledge of NDHS employees or groups of employees; ii) accurate and reliable information in terms of the NDHS' job families; iii) functions and tasks performed by NDHS employees in each of the job families; iv) the state of skills and knowledge that the NDHS requires in the context of anticipated needs; v) potential gaps between the skills and knowledge that the NDHS requires to operationalise its strategic objectives successfully, compared to the level of skills and knowledge that the NDHS currently possesses; vi) a skills gap analysis, which helps to obtain a comprehensive skills profile of the NDHS; and v) the competencies required by NDHS employees in the different jobs within job families, to support future NDHS institutional appointments.

6.4.1 The Digital Skills Audit Framework for the NDHS

The development of the Digital Skills Audit framework for the NDHS comprises of three phases incorporated into a systematic process which incorporate the below systematic processes:

Phase 1: The strategy of the NDHS: Strategic Alignment

The first stage in developing the framework focuses on understanding the organisational vision and strategy which translates into practical business objectives throughout the NDHS. This allows management to know and understand the future workforce and allows for plans to be developed to shape the workforce for fit for purpose.

Structure follows strategy, unpacking the strategy of the NDHS serves as the starting point in developing the digital skills audit framework for the NDHS, this is achieved by understanding the landscape of the NDHS, understanding the strategic priorities, reviewing strategic documents and consulting with stakeholders, which would increase performance through implementation of sustainable integrated human settlements. Analyse strategic decisions which will provide an indication how these objectives impact the workforce, discuss the competencies and skill requirements at a strategic level and define the outcomes to be achieved by a developed skills framework. A project plan should be developed which includes all stakeholders across HR and allocate responsibilities and timeframes to project leaders.

Phase 2: Exploration and assessment of NDHS Context: Exploration of current environment

This phase includes understanding how to translate the NDHS strategic objectives into the NDHS plans inclusive of the Annual Performance Plan, the Operational Plan and Implementation Plan. Understand the identified priority areas, review NDHS strategic documentation. Reviewing Skills Assessments to understand skill gaps and the Workplace Skills Plan to understand the training and development requirements of the workforce. Conduct a maturity assessment of the NDHS and ensure stakeholders are involved to provide input for the assessment. Establish the competencies required to feed into HR processes

The organisational structure of the NDHS

Goold and Campell (2022) contend that the structure of an institution should enable the strategy by ensuring that critical work activities have enough management attention (Goold & Campbell, 2002). The organisational structure of the NDHS must aligned to the strategy of the NDHS framework allows the organisational structure to be aligned to the strategy of the NDHS, which allows for the identification of roles required to achieve goals in the long and short term. Should there be a change in the strategy of the NDHS, the structure would be required to change based

on the new objectives. Job descriptions were updated to include qualifications, experience and skill requirements including responsibilities and performance indicators were included in the updated job descriptions. Jobs which were similar in nature were clustered together in similar job families which allowed that accurate and reliable information are contained for job families in the NDHS.

Phase 3: A designed and development Digital Skills Audit Framework for the NDHS: Skills Architecture to be fit for purpose

The final phase of the framework focuses on the practical design and development based on the outcomes of the Maturity Assessment to design a fit for purpose skills audit framework which considers:

Outlining the design principles, ensuring that the framework is digitally enabled, hr process are incorporated and supported, the framework includes behavioural competencies but are not limited to Behavioural competencies, the job family is identified and contains accurate and reliable information for technical competencies, describes how knowledge is applied and outlines the skill required to effectively do the job, Leadership and management competencies are defined the role involving managers and supervising others depending on the organisational structure and competency architecture to be fit for purpose.

Schwab (2017:1) states that the 4IR is a revolution that fundamentally changes the way we live, work and relate to one another, and Charas and Lupushor (2022:2) contend that the shift to distributed work is already changing how and where talent is recruited as well as where the workforce will perform their functions. Ntshavheni (2022:8) states that governments are responsible for using technology as a catalyst for change in the world that should advance the public service. According to the Digital Government Maturity Report (DPSA, 2024:8), the current state of readiness of the public service in terms of ICT, business process is still carried out manually, processes are not mapped, timed (measured) and without process owners to ensure accountability. Information Technology Cybersecurity (ICT) systems are dated and underlaying hardware is obsolete to system unavailability and service outages. There are inadequate tools of trade leading to ineffective execution of work by public servants and they are seldom not fit for purpose (DPSA, 2024:8).

The skills audit framework of the NDHS was a digitised skills audit framework, consultation between HR, ICT and NDHS stakeholders were undertaken which allowed that ICT systems have the capacity to store big data, which interlined with other HR processes such Employee Performance Management and Development Systems (PMDS) which included cybersecurity measures are put in place to ensure that personal information of employees are not accessible outside of the NDHS.. Measures were put in place by the ICT business unit to ensure large

datasets are accommodated on NDHS systems within the confines of ICT policy requirements to ensure that there is no security breaches were encountered and confidential information of the NDHS was not accessed.

Competency Frameworks were developed based on accurate job profiles which consisted of technical, strategi, and generic competencies which outlined what is expected from the workforce. A skills matrix was developed which contained the competency and proficiency levels required by the workforce in clustered job families. Before the commencing with the development of the digital skills audit stakeholder consultations were undertaken with stakeholders in the NDHS including organised labour. The ICT division of the NDHS ensured that the digitised system allowed easy access, information of employees was accessed by staff member using PERSAL numbers and all requirements of the digitised system were developed within the perimeters of the NDHS ICT policy requirements.

After the organisational structure is completed, the job descriptions for both Support and Line functions must be reviewed wherein skills and competencies are included allowing the proficiency levels of the skills and competencies to be determined for technical, generic and behavioural competencies. This will allow HR to measure and record the skills base of the workforce in the NDHS, furthermore determine the state of skills and knowledge that is required in the NDHS as per the anticipated needs and identify the potential skills and knowledge the NDHS requires to operationalise its strategic objectives successfully compared to the existing skills and knowledge which exists. A skills matrix will be developed for the NDHS to enable HR to conduct a scientifically based skills audit.

6.4 CONCLUSION AND RECOMMENDATION

The recommendation for this study was to present a Skills Audit Framework that guides the skills audit process in the NDHS, since there currently is no Skills Audit Framework. The South African Public Service is not limited in terms of statutory, legislative and regulatory frameworks, as per the response of one participant who stated, *“we’ve got the most wonderful policies and some of the best policies in South Africa, but our coordination and our implementation is off”*. Therefore, the implementation plans for frameworks should be developed, which can be applied uniformly but customised to the mandate and core function of departments. Legislation for the implementation of the 4IR should be ratified and implemented, it does not help the public service on developing the required skills demanded by the 4IR however there is not legislation in place, especially in view that government department have large data which need to be protected from possible cyber-attacks.

During the interview proceedings, one participant responded that: *“I mean for starters, I’ve been here for 20 years, yes, there has never been one instance in a strategic planning session where the head of HR is called upon to come in and maybe present in the strategic planning session, it has never happened. Okay, so I would not say that it is considered strategic, I know that in the EMT committee you sitting the DDG Corporate Services, but I think she sits there because she is a DDG, not specifically because she is responsible for human resources”*. The majority of the participants indicated that HR is not considered as a strategic partner to different Branches. HR should be strategically partnering with the respective Branches to ensure that each Branch is aware of HR prescript provision and HR is aware of the HR-specific requirements of each Branch.

HCT, RBV and TDT theories support continuous skills development, and future technological advancements aligned with the strategy of the institution. It could be proposed that the theories be combined to strengthen its theoretical positioning, which would provide researchers with the opportunity to use one theory containing all three aspects of HCT, RBV and TDT theories, which would contribute to the body of knowledge for theory development.

The development of a Skills Audit Framework is recommended for implementation ensure that HR processes within the NDHS, caters to the requirements of the mandate of the NDHS. The Micro (levels 2012) should be aligned to the Macro (SMS) structure to ensure that the skill sets of the workforce in Branches are aligned to the core function and addresses the skill requirements of the Branch in view of the 4IR requirements.

Never before has a study of this nature been undertaken. This study provides an in-depth view into the development of a skills audit framework and the workflow processes to be undertaken for its development. This study stretches beyond the NDHS, National and Provincial spheres of government and provides a practical guideline for the development of a skills audit framework in the public sector which could assist in mitigating challenges in relation to compliance and policy implementation, furthermore, this study contributes to strengthening the Public Administration discipline in academia.

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ANNEXURE A: NWU ETHICAL CLEARANCE



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Faculty of Humanities Ethics Office for Research,
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Tel: 018 285 2457

Email: hrsb@hdmarts@nwu.ac.za

Senate Committee for Research Ethics

Tel: 018 105 4446

Email: ccolwa@nwu.ac.za

15 November 2024

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the Basic and Social Sciences Research Ethics Committee (BaSSREC) on 14/11/2024, the Basic and Social Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Senate Committee for Research Ethics (NWU-SERC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Developing a Skills Audit Framework in the naissance of the Fourth Industrial Revolution: the case of the National Department of Human Settlements (NDHS)																														
Study Leader/Supervisor (Principal Investigator)/Researcher: Dr. C. De Wet																														
Student/Research Team: H. Winkler (29810388)																														
Ethics number:	<table border="1"> <tr> <td>N</td><td>W</td><td>U</td><td>-</td><td>0</td><td>1</td><td>0</td><td>5</td><td>4</td><td>-</td><td>2</td><td>4</td><td>-</td><td>A</td><td>7</td> </tr> <tr> <td colspan="3">Institution</td> <td colspan="5">Study Number</td> <td colspan="2">Year</td> <td colspan="4">Status</td> </tr> </table> <i>Status:</i> S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation	N	W	U	-	0	1	0	5	4	-	2	4	-	A	7	Institution			Study Number					Year		Status			
N	W	U	-	0	1	0	5	4	-	2	4	-	A	7																
Institution			Study Number					Year		Status																				
Application Type: Single study																														
Commencement date: 14/11/2024	Risk: Low risk																													
Expiry date: 14/11/2025																														
Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.																														

Special in process conditions of the research for approval (if applicable):

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- The study leader/supervisor (principal investigator)/researcher must report in the prescribed format to the BaSSREC:
 - annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and
 - without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.

- The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the BaSSREC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.
- Annually a number of studies may be randomly selected for an external audit.
- The date of approval indicates the first date that the study may be started.
- In the interest of ethical responsibility, the NWU-SCRE and BaSSREC reserves the right to:
 - request access to any information or data at any time during the course or after completion of the study;
 - to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;
 - withdraw or postpone approval if:
 - any unethical principles or practices of the study are revealed or suspected;
 - it becomes apparent that any relevant information was withheld from the BaSSREC or that information has been false or misrepresented;
 - submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or
 - new institutional rules, national legislation or international conventions deem it necessary.
- BaSSREC can be contacted for further information or any report templates via BaSSREC-Admin@nwu.ac.za.

The BaSSREC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the BaSSREC or the NWU-SCRE for any further enquiries or requests for assistance.

Yours sincerely



Prof. E. Idemudia

Chairperson NWU Basic and Social Sciences Research Ethics Committee

Original saved as: C:\Users\228516920\Desktop\ETHICS APPROVAL LETTER OF STUDY.docx
 8 November 2018
 File size: 91,54 KB

ANNEXURE B: NATIONAL DEPARTMENT OF HUMAN SETTLEMENTS APPROVAL



human settlements

Department:
Human Settlements
REPUBLIC OF SOUTH AFRICA

Private Bag 9564, PRETORIA, 001 | 240 Justice Mohamed Street, PRETORIA | Tel: (011) 471 1458
Private Bag 8208, CAPE TOWN, 8000 | 220 Palm Street, CAPE TOWN | Tel: (021) 465 3010
Website: dhs.gov.za Toll Free Line: 0800 140072

REFERENCE: 01757/2024/2

ENQUIRIES: P Peter

EXTENSION: (012) 444-9072

Ms Helga Winkler
29 Thumbran Avenue
Eersterust
Pretoria
0022

Dear Ms Helga Winkler

APPROVAL TO CONDUCT RESEARCH IN THE NATIONAL DEPARTMENT OF HUMAN SETTLEMENTS: H WINKLER

Your request to conduct research in the Department on the topic: *"Developing a Skills Audit Framework in the naissance of the Fourth Industrial Revolution: a case of the National Department of Human Settlements"*, has reference.

This letter serves to inform you that permission is hereby granted for you to conduct your academic research at the National Department of Human Settlements.

The Chief Directorate: Human Resource Management will identify relevant contact persons within the Department to assist you towards your research. The Departmental Chief Facilitator is Mr P Peter, contactable at (012) 444 9072 / Pumlani.Peter@dhs.gov.za.

As part of the approval process, you are requested to sign the Confidentiality Agreement attached hereto and send it back to Mr P Peter.

Kind Regards

DR A MOEMI
DIRECTOR-GENERAL: HUMAN SETTLEMENTS
DATE: 20 NOVEMBER 2024

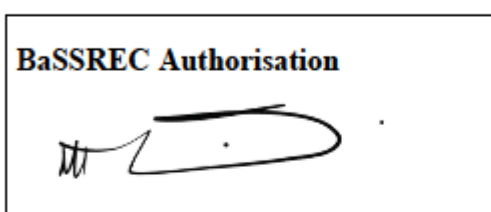


Changing people's lives

ANNEXURE C: PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM



DATE: 15 November 2024



PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

Title of the research project	Developing a Skills Audit Framework in the naissance of the Fourth Industrial Revolution: a case of the National Department of Human Settlements (NDHS)
Ethics number	NWU-01054-24-A7
Principal investigator	Ms H Winkler
Student number	29810388
Address	29 Thumbran Ave, Eersterust, Pretoria, 0022
Email address	helga.winkler@dhs.gov.za
Contact number	082 906 3269

You are being invited to take part in a research project that forms part of my research study. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part. Prior to publication of the study's results (or the point that publication is in process), you may also withdraw the data you generate.

This study has been approved by the Basic and Social Sciences Research Ethics Committee (BaSSREC) of the Faculty of Humanities of the North-West University (NWU.....) and will be conducted according to the ethical guidelines and principles of the international Singapore Statement on Research Integrity (2010) and the ethical guidelines of the National

Health Research Ethics Council. It might be necessary for the research ethics committee members or relevant authorities to inspect the research records to make sure that we (the researchers) are conducting research in an ethical manner.

What is this research study all about?

- This study is an investigation for developing a Skills Audit Framework in the naissance of the Fourth Industrial Revolution: a case of the National Department of Human Settlements (NDHS) and will involve the use of qualitative methodology.
- The researcher has been trained to use the methods mentioned in the previous sentence.
- Approximately 4 participants will be included in this study.
- The objectives of this research are:
 1. To present the literature and theoretical frameworks that underpin a NDHS skills audit framework in the naissance of 4IR.
 2. To present an assessment of the statutory, legislative and regulatory framework that informs an NDHS skills audit framework in the context of 4IR.
 3. To present a detailed narrative on the current perceptions and status of NDHS public servants in terms of a skills audit in the context of 4IR in the NDHS.
 4. To present a triangulation between i) a theoretical framework; ii) a statutory, legislative and regulatory framework; as well as iii) a current state of public service skills audit in the context of 4IR in the NDHS.
 5. To present the finds and recommendations by a developed skills audit framework in the context of the Fourth Industrial Revolution within the NDHS.

Why have you been invited to participate? Addresses

- You have been invited to participate because you are a Deputy Director-General (DDG) within the NDHS. As a DDG you have the required knowledge and understanding of the skill requirements of your respective Branch, furthermore, you will proved insight on the future required skills of the workforce within the Branch and the built environment.
- You have also complied with the following inclusion criteria: N/A.
- You will be excluded if N/A.

What will your responsibilities be?

- You will be invited to participate in the noted study by *interviews*.
- You will have 5 days to indicate whether you would be willing to participate.
- You will be requested to sign this Informed Consent Statement before the commencement of the study.

Will you benefit from taking part in this research?

- The direct benefits for you as a participant will probably be gaining knowledge regarding future required skills brought about by the Fourth Industrial Revolution and knowledge on how the these skill requirements can be integrated within the NDHS to enhance and broaden the skills of the workforce which could improve the performance of the institution.
- The indirect benefit will probably be ... (*e.g. contributing to knowledge generation*).

Are there risks involved in your taking part in this research and how will these be managed?

The possible risks in this study, and how these will be managed, are summarised in the table below:

Possible risk	Mitigation strategy
COVID 19 risk during face-to-face interviews.	Due to the potential of Covid-19 infection, the researcher will observe the following rules during in-person/face-to-face data collection: • If the current Covid-19 restriction levels do not allow for such in-person meetings, the interviews will not take place. • That all persons wear a three-ply mask throughout the interview. • That the researcher takes the temperature of the participants before the start of the interview and FGD. If this is too high, then you will not be allowed to participate. • That hand-sanitizer (with 70% alcohol-content) be used <i>before, during and after</i> the interview. • That social-distancing of 1.5-2 meters be observed between all persons <i>before, during and after</i> the interview. • If the participants do not have a three-ply mask or hand-sanitizer, this will be provided cost-free by the researcher.
Emotional distress of the participants.	E.g. The participants will not be exposed to any emotional distress.
Tiredness and discomfort.	Comfort breaks of 10 minutes.
Lack of privacy and comfort during interviews due to	This will be addressed by conducting the interviews in the offices of the DDGs which will allow that interviews be conducted in private.

- *However, we do believe that the benefits to you and to science (as noted in the previous section) outweigh the risks we have listed. If you disagree, then please feel free not to participate in this study. We will respect your decision.*
- *Should we learn, in the course of the research, that someone is harming you, or that you are intending to harm someone, then we must tell someone who can help you/warn the person you are intending to harm.*

Who will have access to the data?

The following procedures will be observed in line with the Protection of Personal Information Act (POPIA):

Principle	How will this be done?	When will this be done?
Anonymity	Anonymity will be ensured by choosing your own fictitious names/I (the principal investigator) will assign a fictitious name/code to you before the interview	Before the interview commence. After the interview has been conducted. Other (please explain).

	starts. Only this name will be used in the research process.	
Confidentiality	Confidentiality will include the use of pseudonyms/codes for participants, organisations and locations. It involves not disclosing any information gained from an interviewee deliberately or accidentally in ways that might identify an individual, organisation and location.	Before the interview commences. After the fieldwork has been completed During analysis and the write-up of findings. During the reporting of findings. During the publication of findings in the form of articles, books, conference proceedings, etc.
De-identification of data	All identifiable personal information will be de-identified to ensure that no information identifies any participants, organisations and locations.	After the fieldwork has been completed. After you, as participant, has signed-off on the interview transcripts/responses/any other relevant information sent to you to check. Before data analysis and the write-up of findings start.
Data storage	All data collected for the purpose of the research will be stored safely in electronic format/hardcopy format for a period of five years after which it will be destroyed. The primary investigator will ensure data that both hard-(printed) and soft copy (electronic) are safely locked away and password-protected, respectively. Only approved people in my research team (<i>if applicable</i>) will/may have access to my raw data where the need arises. At the analysis stage, as will be the case throughout, the use of coding will reinforce participants' non-identification, hence upholding the assurance of confidentiality and anonymity.	During the recruitment process. Before the fieldwork commences. During the fieldwork. After the fieldwork has been completed During analysis and the write-up of findings. During the reporting of findings. During the publication of findings in the form of articles, books, conference proceedings, etc.
Privacy	<i>Privacy</i> will be ensured by not probing unnecessarily if you do not wish to discuss particular matters.	During the recruitment process. Before the fieldwork commences. During the fieldwork. After the fieldwork has been completed. During analysis and the write-up of findings. During the reporting of findings.

		During the publication of findings in the form of articles, books, conference proceedings, etc.
Transcription/coding of data	I will/will not use a <i>transcriber</i> for the purpose of the transcripts after the interview. I will/will not use a <i>statistician/coder</i> for the purpose of the transcripts after the interview.	<i>If the primary investigator is responsible for transcribing/coding the data:</i> The primary investigator will be responsible for transcribing the data. Therefore, no other person will have access to the data. The primary investigator will be required to sign a NWU Confidentiality Agreement before the study commences. <i>If a subject expert (e.g. transcriber/language editor/coder/statistician) assists with/takes responsibility for transcribing/coding the data:</i> This/These persons /s will be responsible for transcribing the data. Therefore, no other person will have access to the data. This/These persons /s will be required to sign a NWU Confidentiality Agreement before the study commences.
Translation/interpreter services	I will/will not use a <i>translator/interpreter</i> for the purpose of the interviews/explaining the informed consent, etc.	This person will be required to sign a NWU Confidentiality Agreement and will not be permitted to share any information relating to the study with anyone else.

Collection of only relevant personal information:

Collection of only relevant personal information	I, the principal investigator and members of the research team (if applicable), will only collect personal biographical and opinion-related data about the topic I/we are studying.	Shortly list the <i>biographical</i> and <i>opinion-related</i> (main themes) information that will be collected for the purpose of the study.
--	---	--

What will happen to the data?

The data from this study will be reported in the following ways: i) NWU Masters Theses. In all of this reporting, you will not be personally identified. This means that the reporting will not include your name or details that will help others to know that you participated.

This is a once-off study, so the data will not be re-used / Data may be re-used in the form of articles.

Will you be paid/compensated to take part in this study and are there any costs involved?

No, you will not be paid/compensated to take part in the study, but pre-packaged refreshments will be provided before/during/after the study. If participating in the research means that you have to travel especially for the purpose of participating, then your travel costs will be paid. There will thus be no costs involved.

How will you know about the findings?

- The general findings of the research will be shared with you by the researcher.
- If you would like feedback on your personal results, then you are welcome to contact the researcher.

Is there anything else that you should know or do?

- You can contact H Winkler at 082 906 3269 (cell phone number) and helga.winkler@dhs.gov.za (email address) if you have any further queries or encounter any problems.
- You can contact the chair of the Basic and Social Sciences Research Ethics Committee (Prof Erhabor Idemudia) at 018 389 2899 or Erhabor.Idemudia@nwu.ac.za if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I _____ agree to take part in a research study entitled: "...". (*Apply to your study*)

I declare that:

- I provide *informed consent*.
 - Thus, I have read and understood this information and consent form and it is written in a language with which I am fluent and comfortable.
 - Thus, I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.
- I provide *voluntary consent*.
 - Thus, I understand that taking part in this study is voluntary and I have not been pressurised to take part.
 - Thus, I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
 - Thus, I am aware of the fact that I may request that the researcher does not continue with said recording if I request it.
- I provide *specific consent*.
 - Thus, I understand that what I contribute (what I report/say/write/draw/produce visually) could be reproduced publically and/or quoted, but without reference to my personal identity.
 - I provide *specific consent*. Thus, I consent to an audio and/or audio-visual recording of the ... (*Apply to your study*).

Signed at (*place*) _____ on (*date*) _____ 20 _____

Signature of participant _____

Signature of witness _____

- | | |
|--|--|
| • You may contact me again | ☐ Yes ☐ No |
| • I would like a summary of the findings of this research | ☐ Yes ☐ No |
| • I would like feedback on my functioning/wellbeing as reflected in the questionnaires I completed | ☐ Yes ☐ No |

The best way to reach me is:

Name & Surname: _____

Postal Address: _____

Email: _____

Phone Number: _____

Cell Phone Number: _____

In case the above details change, please contact the following person who knows me well and who does not live with me and who will help you to contact me:

Name & Surname: _____

Phone/ Cell Phone Number /Email: _____

Declaration by person obtaining consent (if not the researcher/primary investigator)

I (name) _____ declare that:

- I explained the information in this document to _____
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (place) _____ on (date) _____ 20 _____

Signature of person obtaining consent

Signature of witness

Declaration by researcher/primary investigator

I (name) _____ declare that:

- I explained the information in this document to _____
- I encouraged them to ask questions and took adequate time to answer them.
- I am satisfied that they adequately understand all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (place) _____ on (date) _____ 20 _____

Signature of researcher

Signature of witness

Declaration by researcher and participant

Personal face-to-face interviews during Covid-19 restrictions (if applicable)

Additional declaration by participant in those instances where the participant requests to participate in a personal face-to-face semi-structured interview:

By signing below, I _____, acknowledge the following information related to the required measures regarding Covid-19:

I declare that:

- It is my personal choice and preference to participate in a personal face-to-face semi-structured interview with the researcher.
- This requires that I consent to the following strict measures to safeguard the personal health and safety of myself and that of the researcher/interviewer/primary investigator:
 - I consent to the researcher taking my temperature before the interview using a thermometer. ☐ Yes ☐ No
 - I confirm that my temperature measured at _____ degrees. ☐ Yes ☐ No
 - I consent to use the three-ply mask provided by the researcher. ☐ Yes ☐ No
 - I consent to wear the three-ply mask for the full duration of the interview. ☐ Yes ☐ No
 - I consent to the researcher sanitising the interview context using a sanitiser with an 80% alcohol content before the commencement of the interview. ☐ Yes ☐ No
 - I consent to the researcher using a sanitiser with an 80% alcohol content before and during the interview if required. ☐ Yes ☐ No

Signed at (place) _____ on (date) _____ 20 _____

Signature of participant

Signature of researcher

ANNEXURE D: SURVEY QUESTIONNAIRE

INTERVIEW QUESTIONNAIRE FOR CHIEF DIRECTORS (LEVELS 14)

Interview Questionnaire: Deputy Directors-General OR Chief Directors. You are being invited to take part in a research project that forms part of my research study. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you could be involved. Also, your participation is entirely voluntary, and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part. Prior to publication of the study's results (or the point that publication is in process), you may also withdraw the data you generate.

INFORMED CONSENT:

- I understand the process and the nature of this study and I am participating voluntarily.
- I agree that the information that I provided will be used for research purposes.

- I agree
- I do not agree

INTERVIEW QUESTIONNAIRE FOR CHIEF DIRECTORS (LEVELS 14)

BIOGRAPHICAL INFORMATION

ITEM	MARK USING	X
Gender	Male	
	Female	
	Other	
Age Group	36-45	
	46-55	
	>55	
Level of Employment	Deputy Director-General (Level 15)	
	Acting Deputy Director-General (Level 14)	
	Chief Director (Level 14)	
Number of years working in the National Department of Human Settlements	<5	
	6-10	
	11-15	
	16-20	
	>20	

THEME 1: TO PRESENT THE LITERATURE AND THEORETICAL FRAMEWORK THAT UNDERPIN A NDHS SKILLS AUDIT FRAMEWORK.

1.1 Do you understand the concept skills audit framework?

Yes	No	Not sure
-----	----	----------

1.2 Please explain your understanding of the concept skills audit framework.

1.3 What is your understanding of the requirements of the 4IR in the public service?

1.4 Do you think the requirements of the 4IR will impact the future required skills of the workforce in the NDHS? If **yes**, how do you foresee it impacting the future required skills of the workforce in the NDHS?

1.5 Is the workforce of the NDHS equipped with the required skills to implement its mandate? **Please justify your answer.**

THEME 2: TO PRESENT AN ASSESSMENT OF THE STATUTORY, LEGISLATIVE AND REGULATORY FRAMEWORKS THAT INFORMS AN NDHS SKILLS AUDIT FRAMEWORK IN THE CONTEXT OF THE 4IR.

2.1 What are the statutory, legislative and regulatory frameworks which regulate the implementation of human settlements?

2.2 What are the legislative and regulatory frameworks within the South African Public Service which form the basis of policy development which supports the development of a skills audit framework in the NDHS?

2.3 Does the NDHS have a policy to address Human Resource (HRD) for the workforce?

- ☐ Yes
- ☐ No

2.4 Does the Human Resource Development Policy make provision to identify the current and future required skills of the workforce?

2.5 Does the HRD policy ensure that the skill requirements of the workforce are aligned with the skill requirements of the workforce in the NDHS to implement its mandate? **Substantiate your answer.**

2.6 Does the HRD policy make provision to address the skill requirements of the workforce to address the required skills to implement the NDHS mandate?

- ☐ Yes
- ☐ No

2.7 Provide reasons for the answer provided above.

2.8 Does the policy make provision for addressing the specific line function skill gaps in the NDHS?

2.9 Provide reasons for your answer above.

2.10 What are your recommendations to improve the NDHS' HRD Policy?

THEME 3: TO PRESENT A DETAILED NARRATIVE ON THE CURRENT PERCEPTIONS AND STATUS OF NDHS PUBLIC SERVANTS IN TERMS OF A SKILLS AUDIT FRAMEWORK IN THE CONTEXT OF THE 4IR

3.1 Does the NDHS have strategic planning sessions?

- ☐ Yes
- ☐ No

3.2 If yes, how often are strategic planning sessions held?

3.3 During strategic planning session, is Human Resources considered as a strategic partner to different Branches?

3.4 Please provide reason/s for your answer above.

3.5 Does the NDHS have a skills audit framework which serves as a baseline to measure and record the skills base of the workforce?

3.6 Please provide reasons for your answer.

3.7 Does the NDHS have accurate and reliable information of the different job families in the NDHS?

3.8 In your view, do the reasons listed below contribute to the challenges with the implementation of the NDHS mandate?

Cross tabulation on challenges with implementation of the NDHS mandate		
Questions	Responses	
	YES	No
Lack of records on the skills base of the NDHS		
No accurate or reliable information of the different job families in the NDHS		
Limited understanding of the skills requirements of the 4IR		
HR is not considered a strategic partner in the NDHS		
Limited alignment of statutory, legislative and regulatory frameworks in the public service aligned to requirements of the 4IR		

THEME 4: TO PRESENT A TRIANGULATION BETWEEN: I) A THEORETICAL FRAMEWORK, II) A STATUTORY, LEGISLATIVE AND REGULATORY FRAMEWORK, AS WELL AS III) A CURRENT STATE OF PUBLIC SERVICE SKILL AUDITS IN THE CONTEXT OF THE 4IR IN THE NDHS.

4.1 Do the HR policies within the NDHS make sufficient provision for the implementation of skills required by the workforce in the NDHS?

- ☐ Yes
- ☐ No

4.2 Please provide reasons for your answers above.

4.3 Do HR policies make provision for the implementation of skills required by the 4IR?

THEME 5: TO PRESENT THE FINDINGS AND RECOMMENDATIONS BY A DEVELOPED SKILLS AUDIT FRAMEWORK IN THE CONTEXT OF THE 4IR WITHIN THE NDHS.

5.1 Do you think that developing a digital skills audit framework would be beneficial to the workforce and the NDHS?

5.2 What are the recommendations in aligning, the skill requirements of the workforce to the requirements of the 4IR which would assist the NDHS to implement its Constitutional mandate?

5.3 Provide 2 recommendations to improve HR processes required within your Branch.

5.4 Do you have additional recommendations or comments which you feel were not covered in this interview?

End of Interview Survey

THANK YOU FOR PARTICIPATING IN THIS RESEARCH INTERVIEW.

ANNEXURE E: EDITOR'S DECLARATION



Monica Botha
T/a l'Avenir Consulting
Postnet Suite 043
Private Bag X9
QUEENSWOOD
0121

Cellular: 083 269 0757
E-mail: monicabo@lantic.net

TO WHOM IT MAY CONCERN

This serves to confirm that I have edited and proofread the dissertation entitled

Developing a Skill Audit Framework in the naissance of the Fourth Industrial Revolution: a case of the National Department of Human Settlements (NDHS)

prepared by Ms H Winkler, submitted in partial fulfilment of the requirements for the degree *Magister Curationis* in Public Administration at the North-West University, according to the specifications of the University, where available, and the latest standards for language editing and technical (computer-based) layout.

Editing was restricted to language usage and spelling, consistency, formatting and the style of referencing. No structural writing of any content was undertaken.

As an editor I am not responsible for detecting any content that may constitute plagiarism.

To the best of my knowledge, all references have been provided in the prescribed format.

I am not accountable for any changes made to this dissertation by the author or any other party after the date of my edit.

Electronically signed (actual signature withheld for security reasons)

MONICA BOTHA

27 November 2024

Sole Proprietor: Monica Botha

*Business Planning Corporate Systems Engineering Corporate Document Standards
Business and Academic Document Technical and Language Editing*