UNIVERSITY OF KWAZULU-NATAL

THE COVID-19 PANDEMIC IMPACT ON PERFOMANCE RECOVERY WITHIN THE SCHOOL OF CHEMISTRY AND PHYSICS AT THE UNIVERSITY OF KWAZULU-NATAL

by

Nkosenhle N.B. Ndlovu

203507443

A dissertation submitted in fulfilment of the requirements for the degree of Masters in Business Administration (MBA)

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College of Law and Management Studies

Supervisor: Dr. Tony Ngwenya

2022

DECLARATION

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UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

College of Law and Management Studies

Supervisors Permission to Submit Dissertation for Examination

Name: Nkosenhle NB Ndlovu	No: 203507443	
Title: The COVID-19 Pandemic Impact on Performance Recovery within the School of Chemistry and Physics at the University of KwaZulu-Natal		
Qualification: Masters in Business Administration (MBA)	School: Graduate School of Business and Leadership	
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Supervisors Signature: [redacted]		
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Co- Supervisors Name: N/A		
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ABSTRACT

The COVID-19 pandemic was first announced in China and it was spread throughout the world by travellers. The first incident of the COVID-19 pandemic in South Africa was brought to public on 5 March 2020. Preventative measures were implemented by government by declaring a national state of disaster and national lockdown on 15 March 2020 and lockdown was initiated on the 27th of March 2020. The idea behind was to minimize/curb the spread of this pandemic while health facilities were adjusting to this new normal. The national lockdown impacted negatively to the educational sector of the country which led to temporary suspension of all academic activities including research. This brought a huge challenge to the leaders and management of higher institutions of learning.

School of Chemistry and Physics was also severely impacted by the COVID-19 pandemic as all activities were moved to online platform and that brought challenges to the school as it is science-based school it requires contact sessions and laboratories.

This study was intended to investigate the COVID-19 pandemic Impact on Performance Recovery within the School of Chemistry and Physics at the University of KwaZulu-Natal. This was achieved by purposively selecting twelve (12) participants in senior leadership and management positions within the school to share their knowledge and understanding on resource scenarios and leadership experience required during and post-COVID-19 pandemic to enhance performance of the school. The study was qualitatively conducted on online platform due to the COVID-19 pandemic restrictions and social distancing. Thematic analysis was undertaken to extrapolate the richness of data considering the study objectives.

The responses from the research participants were analysed using thematic analysis by using themes, coding and categorising. The responses from the research participants indicated that online learning and teaching should continue post-COVID-19 pandemic. Research participants also raised a concern of poor communication and poor consultative decision making. The researcher then recommended that the school must involve all staff and students on decision making as this pandemic affected all of them.

Key words: COVID-19, Leadership, Management, Performance and Resources.

GLOSSARY OF ACRONYMS

SCP	School of Chemistry and Physics
UKZN	University of KwaZulu-Natal
DBN	Durban
PMB	Pietermaritzburg
MIW	Mechanical Instrument Workshop
EC	Electronic Centre

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CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

Corona virus commonly recognized as the COVID-19 pandemic is a disease that is a consequence of SARS-CoV-2 that can result to what health care providers refers to as respiratory tract contagion (Usher, Durkin, and Bhullar, 2020). It usually the source of mutilation to the upper respiratory-tract which is pharynx or to the lower respiratory-tract which is trachea (Usher, Durkin and Bhullar, 2020). The COVID-19 pandemic is easily passed on or channelled from an individual to the next through interaction and contagion rate diverges from minor to lethal liable on the health status of an infected individual. The usual symptoms of an infected individual are malaise, dry cough, exhaustion, loss of smell and taste. It shows similar symptoms of ordinary flue apart from that its transience rate is tremendously high.

The COVID-19 pandemic was first announced in China and it was binge world-wide by travellers. The opening occurrence of the COVID-19 pandemic in South Africa was announced to public on 5 March 2020 (Giandhari, Pillay, Wilkinson, Tegally, Sinayskiy, Schuld, Lourenco, Chimukangara, Lessells, Moosa and Gazy, 2020). Pre-emptive procedures were employed by the government by affirming a countrywide state of disaster and countrywide lockdown on 15 March 2020 and lockdown was introduced on the 27th of March 2020 (Giandhari, Pillay, Wilkinson, Tegally, Sinayskiy, Schuld, Lourenco, Chimukangara, Lessells, Moosa and Gazy, 2020). The intention was to curb the blow-out of this pandemic while medical institutions were adapting to this new normal. The countrywide lockdown impacted negatively to the education sector of the republic which resulted to temporary suspension of all academic activities including research. This brought a huge challenge to the leaders and management of higher institutions of learning.

1.2 Background

The School of Chemistry and Physics was established out of a university reconfiguration process which was implemented in 2012. This College reconfiguration resulted in a merger between the disciplines of Chemistry and Physics, also incorporating the Mechanical Instrument Workshop (MIW), the Electronics Centre (EC) and the Glass Blowing Workshop (GBW) to establish the new school. The new School has a Council approved establishment of 68 academic, 62 technical and 13 administrative staff over three campuses (SCP, 2020). The School spans three campuses with teaching and research being conducted on the Pietermaritzburg and Westville campuses whilst service teaching to engineering and health sciences students takes place on the Howard College campus.

The School of Chemistry and Physics is governed by the School Board in accordance with the Constitution (SCP, 2020). A number of sub-committees were constituted, namely, the School Management Committee, Research and Higher Degrees Committee, Teaching and Learning Committee and the Examinations Board. Each of these sub-committees and School Board are governed by the relevant charters (SCP, 2020). Communication between these governance structures and the School at large, is achieved through the cluster representatives that sit on the various committees, or at School Board which sits every quarter.

The School is headed by the Dean and Head of School and the academic sector has been divided up into five clusters based on the various disciplines or sub-disciplines, each with an Academic Leader within the School namely: Chemistry; Analytical and Physical (Westville), Chemistry; Synthetic (Westville), Chemistry (Pietermaritzburg), Physics (Westville) and Physics (Pietermaritzburg) (SCP, 2020).

The School also has two additional Academic Leaders, one looking after research and higher degrees while the other is responsible for teaching and learning. Operational support for the School is managed by the school manager and three technical managers, one based in Pietermaritzburg, the other in Westville, as well as a technical manager for the MIW and EC. The School has a publicity liaison officer who works closely with the College Public Relations Officer. Between them, they co-ordinate these activities for the School. In addition, there is a close collaboration with the Science and Technology Education Centre at UKZN and its coordinator. The School is very active in marketing and outreach and recently compiled a research brochure capturing many of the research activities. This has been circulated widely to Schools, industry and NGOs. Moreover, the School is working with the college PRO to update the content of its website.

Health and Safety is pivotal in a laboratory and research centred School such as Chemistry and Physics, and as such is a key element of corporate governance within the School, necessitating regular Health and Safety (H and S) meetings. The School has also been working hard towards improving its H and S procedures, processes and preparedness. The manifestation of the COVID-19 pandemic in South Africa which led to countrywide lockdown impacted negatively to the higher education of the country which led to academic institutions temporary suspending all academic activities. This also affected School of Chemistry and Physics for both Durban and Pietermaritzburg Centre to also temporary suspend all activities and work remotely. Faced with the uncertainty and growing intensity of the COVID-19 pandemic School Leadership and Management came to a decision to transit to online or virtual learning.

This has brought number of challenges to the school leadership and management as all modules for undergraduate requires practical sessions which needs to be performed in a laboratory space and also research for postgraduates. Although the country keeps adjusting lockdown level due to economic factors but the pandemic is still at its peak and that prevents staff with comorbidities and above 60 years of age to conduct contact practical and supervise postgraduates with their research. This pandemic has impacted to the organizational culture of the school and the manner at which leadership and management makes decisions.

This study is intended to examine the COVID-19 pandemic Impact on Performance Recovery within School of Chemistry and Physics at the University of KwaZulu-Natal. This will be achieved by examining resources that necessitate organizational performance, leadership styles and leadership theories, theoretical framework that underpins the study and other impacts caused by pandemic on global health, economic and social realities. These topics will be dealt with in Chapter two.

1.3 Problem statement

The problem statement carries the issues and framework that gave rise to the study (McGaghie, et al., 2001). According to Nasution and Aulia (2019), problem statement is a sequence of words that are organised systematically in the flow of perceptive which explains the aim for the significance of a research. In 26 March 2020 national lockdown was implemented which resulted in temporary suspension of all academic activities in the universities including UKZN School of Chemistry and Physics. This brought many challenges to leadership and management of UKZN School of Chemistry and Physics in terms of maintaining performance standards of the school. It affected organizational culture of the school which led to school leadership and management transiting to online/virtual learning, running school remotely. Another problem that the school was facing was to conducting practical sessions for undergraduate and research for postgraduates as this pandemic was at its peak. The running of practical sessions and research requires laboratory space and supervision by academic staff but because of the COVID-19 pandemic staff with comorbidities and who are 60 years old and above were not allowed to come on campus which left school leadership and management with staffing issues as there were less staff available for one on one meeting or supervision of undergraduate practical sessions and research activities.

1.4 Research objectives

The research objectives describe the purpose of conducting a research or what a researcher plans to achieve by conducting study (Hitesh, 2020; Sekaran and Bougie, 2016).

This study is intended to examine the COVID-19 pandemic Impact on Performance Recovery within School of Chemistry and Physics at the University of KwaZulu-Natal. The study intends to achieve the following:

- To examine the resources scenario provision to be post-COVID-19 pandemic aligned.
- To determine existing institutional recovery plan and implementation of best practices post-COVID-19 Pandemic impact.
- To investigate the leadership and management strategic response to the COVID-19 pandemic influence.
- To assess the organizational performance on attainment of the triple bottom line (Social, economic and environment) post-COVID-19 pandemic.

1.5 Research question

Research question is the interpretation of the problem of the organization into an exact need for information (Sekaran and Bougie, 2016). According to Formplus (2022), a research question is an actionable inquiry into a precise concern. It basically specifies what a researcher wants to accomplish about the topic.

The principal research question of the study is to determine how lockdown restrictions due to the spread of the COVID-19 pandemic impacted on performance of the school and what is the current recovery plan in place and post-COVID-19 pandemic.

- What are the resource scenario provision that are suitable for post-COVID-19 pandemic alignment?
- To what extent does the existing institutional recovery plan and implementation have best practices for post-COVID-19 pandemic impact?
- What is the degree of leadership and management in terms of the strategic response, which is commensurate with the COVID-19 pandemic influence?
- What is the organizational performance on attainment of the triple bottom line (Social, economic and environment) post-COVID-19 pandemic?

1.6 Significance of study

This research will provide an insight on how the COVID-19 pandemic has impacted on performance of the School of Chemistry and Physics and recovery plan in place post-COVID-19 pandemic. It will also provide a clear view on the research opportunities and a review on teaching methods that are presented by this pandemic as the School's main focus is research.

1.7 Justification of study

This study will not only point out challenges that resulted due to the COVID-19 pandemic and provide recommendations, but it will also indicate possible future research topics and it will give an opportunity to leadership and management to self-reflect on their leadership styles and skills during crisis.

1.8 Research methodology

1.8.1 Research design

The research design is based on a descriptive and explanatory research.

1.8.2 Research approach

Research approach refers to a strategy and the method for research that span the stages from broad assumptions to comprehensive procedure of data collection, interpretation and analysis (Solanki, 2022). Qualitative research will give an insight to the research on how participants feel through engaging on a one on one in depth interview using online platforms. The researcher finds qualitative research as method that will add holistically, which will provide vivid numerical data and more in-depth explanation linked to the topic at hand (Mugenda and Mugenda, 2003). Qualitative methods concentration on how to explore a theme more broadly, which cannot be attained through quantitative approaches. In this study, researcher will carry out qualitative research approach through data collect by in depth interviews of participants.

1.8.3 Sample site

The research site will be UKZN School of Chemistry and Physics. The School of Chemistry and Physics spans three campuses with teaching and research being conducted on the Pietermaritzburg and Westville campuses whilst service teaching to engineering and health sciences students takes place on the Howard College campus. Westville and Howard College are regarded as one centre (Durban Centre) so the school comprises of two centres DBN and PMB and that is where research will be conducted.

1.8.4 Target population

The target population denotes a total group of individuals from which the sample can be selected (Zhao, et al., 2013). A sample refers to a group of people who participate in a study. The targeted population is School Management committee which comprises of Dean and Head of School, Operations Manager, Technical managers, Academic Leaders and in addition module coordinators and senior Professional service staff. The targeted population was chosen because of their leadership positions and service experience within the school and because they can provide in-depth information regarding the study.

1.8.5 Sample strategy

Non-probability sampling was used, with this method participants are selected based on the judgement of the researcher. The researcher chose judgement sampling because limited number of UKZN School of Chemistry and Physics staff have the information that is required. Non-probability sampling refers to a sampling method where by individuals in population do not have pre-established or fixed chance of being selected as sample population (Sekaran and Bougie, 2016).

1.8.6 Sample size

The participants for this study were selected using judgement sampling. According to Sekaran and Bougie (2016), judgement sampling is a purposive non-probability sampling strategy in which participants are chosen based on their knowledge and capabilities to provide specific information that is needed by the researcher. A total of twelve (12) participants that will be selected by researcher are from School of Chemistry and Physics DBN and PMB centre. The researcher will select Dean and the head of School, Operations Manager, Technical managers, academic leaders and module coordinators and senior Professional service staff.

1.8.7 Sample

Sampling will occur on school leadership and management (MANCO) which is made of thirteen (13) members, module coordinators forty-one (41) members and twenty (20) members of senior Professional service staff of the school of chemistry and physics.

1.8.8 Data collection

The researcher will use primary data collection technic by conducting online interviews with participants. Primary research refers to a novel data source that is gathered first hand by researcher for a particular research reason (Hennink, et al., 2020).

1.8.9 Data quality control

Data quality control is the efforts and measures that a researcher put in place to guarantee the quality and precision of data being gathered using the procedures chosen for a specific study (Hennink, et al., 2020). The research will be guided by the scope questions that are populated on this study to avoid participants from giving responses that will deviate from what this study is hoping to achieve.

1.8.10 Data analysis

Data analysis denotes a process where a researcher goes from a raw data to meaningful insight (Vogt, et al., 2014). Data analysis in a qualitative research is referred as a process of analytically searching and sorting the interview records, reflection notes, or other non-textual materials that the researcher gathers to expand clarity of the topic (Wong, 2008). Data collected throughout the study will be compiled and analysed by the researcher by thematic analysis.

1.8.11 Ethical considerations

Ethics is a situation that compels a person or institution to distinguish what is deemed to be right or what is deemed to be wrong (Sekaran and Bougie, 2016). To obtain ethical clearance for the study, a researcher will need to obtain gatekeeper approval to conduct a study at UKZN School of Chemistry and Physics DBN and PMB centre which is issued by the Registrar's Office of UKZN and complete ethical application form to obtain ethical approval from the ethical committee of UKZN. The researcher will need informed consents from participants for them to voluntarily participate or not with the study. The researcher needs to inform participants about nature and purpose of the study and assure privacy, anonymity and confidentiality. No names of the participants are to be used on data analysis. The research needs to ensure that all data collected is kept safe and it only accessible by the researcher and supervisor for a given period before it gets destroyed completely.

1.8.12 Limitations to the study

Since this is a qualitative research it requires one-on-one for primary data collection (interviews) and because of the COVID-19 pandemic, social distance and lockdown restrictions it is not possible to possible conduct a face to face interview. The interviews will be conducted on online platforms which will be very difficult to read body language as participants answers questions. School of Chemistry and Physics has two centres Durban and Pietermaritzburg centre so geographical constraints as some participants will be a bit sceptical in participating in the study.

Setting up for qualitative study its time consuming and during interview discussions participants often deviates from the main issue to be studied. The study will only focus on Leadership and Management it will not include general employees and students while they are also affected by

changes brought by this pandemic. The findings of this research will be limited to only School of Chemistry and Physics at UKZN it cannot be used by other schools as operations may defer with schools.

1.9 Explanation and Definition of terms constructs and phenomenon in the study

This part of the study explains the key terms constructs to facilitate understanding and simplify alignment of the study. These terms will be discussed and explained more in depth in chapter two.

1.9.1 Leadership

Balbuena, et al. (2020)**,** described leadership as a process of guiding and manipulating the task-related functions of an institution. Leadership is the ability to direct, control and to lead a group or the entire organization.

1.9.2 Management

Management refers to attainment of institutional objectives in an effective and well-organized method through structuring, planning, directing, staffing, organizing and controlling institutional resources (Daft, 2016).

1.9.3 Resources

Other scholars view organizations as a package of creative resources where resources are classified as contributions into the organization's operations so as to generate goods and services (Mcgee, 2014). Resources transform institutions in accordance with competitiveness and existence as it gives an edge over another (Mathews, 2019). Ferreira, et al. (2021), resources are processes, components of method analysis, can be either equipment, expertise, patents, logo/brands, among others.

1.9.4 Performance

Stephen, et al. (2017), proclaim performance as a complex construct contemplating quality, time, flexibility, financial efficiency, customer fulfilment and human resource as main components of performance. Grygoryev and Karapetrovic (2005), proclaim that a HEIs academic performance is pronounced to be elevated if the students being taught at the institution are well equipped to become fruitful residents of the future

1.9.5 Coronavirus

A family of connected viruses. Many of them cause breathing sicknesses. Coronaviruses cause the COVID-19, SARS, MERS, and some strains of influenza, or flu. The coronavirus that causes

the COVID-19 is formally called SARS-CoV-2, which stands for severe acute respiratory syndrome coronavirus 2 (Ajab, et al., 2021).

1.9.6 The COVID-19

It the name of the illness caused by the coronavirus SARS-CoV-2. The COVID-19 stands for coronavirus disease 2019 (Ajab, et al., 2021).

1.9.7 Online learning

A permanent disconnection (of place) of a student and lecturer during planned learning events where teaching occurs in real time such that learners can communicate with other learners and the lecturer through text-, audio-, and/or video-based communication of two-way media that facilitated dialogue and interaction.

1.9.8 VUCA

The term VUCA has grew currency in the military during late 1990s to define a situation of volatility, uncertainty, complexity, and ambiguity. It reflects a shift from traditional cold war military battles to irregular combat with agile, dispersed rivals fighting under different rules for unclear cause (Kaivo and Lauraeus, 2018).

1.9.9 Resilience

The term resilience emerged from the Latin verb *resilire* and *resilio*, meaning flexible, leap back, elastic or bounce/jump back (Fletcher and Sarkar, 2013; Kim, 2020). Resilience or resiliency is an ability that mirrors a competence for people to grip tension and enhance operations in the face of harsh conditions (Wooten and James, 2008).

1.9.10 Efficiency

Efficiency is described as getting the optimum performance from a specified expenditure of resources.

1.9.11 Sustainability

Sustainability in this study can be viewed as the ability of the school to continue its operation, including the idea of accomplishing the education goals using funds available, expansion of its resource base and creating positive relationships with its environment (Langwenya-Myeni, 2017).

1.10 Structure of dissertation

This study is made of five chapters and the outline is shown below.

1.10.1 Chapter 1

Chapter one gives an introduction and background to the study and insight into the research idea. Resulting segments deal with the focus of the study, the problem statement, research questions and the significance of the study. The chapter ends with the summary definitions of key terms and then the overview of the subsequent Chapters.

1.10.2 Chapter 2

Chapter two, the literature review tried to comprehend and explain the leadership role and resource scenarios in recovering and sustaining performance as a result of the COVID-19 pandemic.

1.10.3 Chapter 3

Chapter three, the research methodology for this research was a qualitative study using school leadership, module coordinates and senior members of professional services as samples. Data was collected through semi-structured interviews and questionnaires from the respective participants. Interviews were conducted online through Zoom and Ms Team platforms to comply with the COVID-19 pandemic rules and regulation as well as lockdown restriction of keeping social distancing. A total of twelve (12) research participants were targeted and 100 % participated. Thematic analysis was done where data was analysed through coding or indexing methods encompassing broad categories that described themes and patterns emerging from the participants in the study.

1.10.4 Chapter 4

This Chapter presents and discusses findings from the data generated in this study. The data that was generated was then discussed using thematic analysis.

1.10.5 Chapter 5

Chapter five presents the conclusions drawn from the findings and makes recommendations drawn from these conclusions.

1.11 Chapter summary

The COVID-19 pandemic is a worldwide crisis event that forced universities and school leadership to face difficulty while supporting their management teams to deliver on their school ‘s mission to continue educating students in a complex and uncertain times. This Chapter was alignment to the study and provided the background and other important components of the study as outlined in the layout of the study above. The next Chapter will provide a review of literature on resources, leadership styles, theories and theoretical framework underpinning this study.

2 CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This literature review is projected to gain an understanding into the impact of the COVID-19 pandemic on performance recovery within the SCP at the UKZN. This is meant to be achieved by visiting/reviewing different scholars' school of thought on the following topics: resources, theories like resource dependence theory, resource-based view theory, institutional theory, leadership theories and leadership styles, critical success factors, and impacts and barriers to performance recovery.

2.2 The significance of resources in an organisational context

Other scholars view organizations as a package of creative resources where resources are classified as contributions into the organization's operations so as to generate goods and services (Mcgee, 2014). Resources transform institutions in accordance with competitiveness and existence as it gives an edge over another (Mathews, 2019). Ferreira, et al. (2021), resources are processes, components of method analysis, can be either equipment, expertise, patents, logo/brands, among others. According to Gibson and Gibson (2021); Mathews (2019), resources signify both physical and non-physical assets, competences, procedures, features, information and expertise that are available to the institution and that can be utilized to articulate and instrument competitive strategies. Thus, competences with reference to resources, means an institution's ability to employ resources mostly blended, using firm's procedures to effect an anticipated end. Resources that are utilized by organizations or institutions are classified as internal and external resources as well as monetary, non-monetary and human capital.

Internal resources could be described as those within the organization or an institution and which are in direct control of management for effectiveness in terms of optimization and application so that competitive advantage can be attained. Symmetrically the external resources are those over which the organization's decision makers have an indirect control but have to be managed efficiently and resourcefully (Nemati, et al., 2010). The inexhaustive list of internal resources incorporates financial resources, human capital, technology, equipment, internal processes, systems and innovative aptitudes (Nemati, et al., 2010). External resources incorporate external links of the institution and organizational behaviour, this includes external funding from government, like National Research Fund (NRF), Council for Scientific and Industrial Research (CSIR) and other source of funding from private/local companies or international funders for research purposes and for buying research equipment (French, 2003).

However, institution needs to strike a balance between resources as they play a vital role in strategic decision making or in making a resourceful decision. This is achieved by assessing the strength and weaknesses presented by the internal environment; and threats and opportunities that are presented by external environment, thus, decisions are taken based on the outcomes.

Figure 2.1 shows non-intellectual and intellectual resources of a firm, which are basically tangible and intangible resources. Intellectual resources are classified as structural resources and human resources. Thus, human resources have three categories: organizational and managerial capital, human capital and psychological capital.

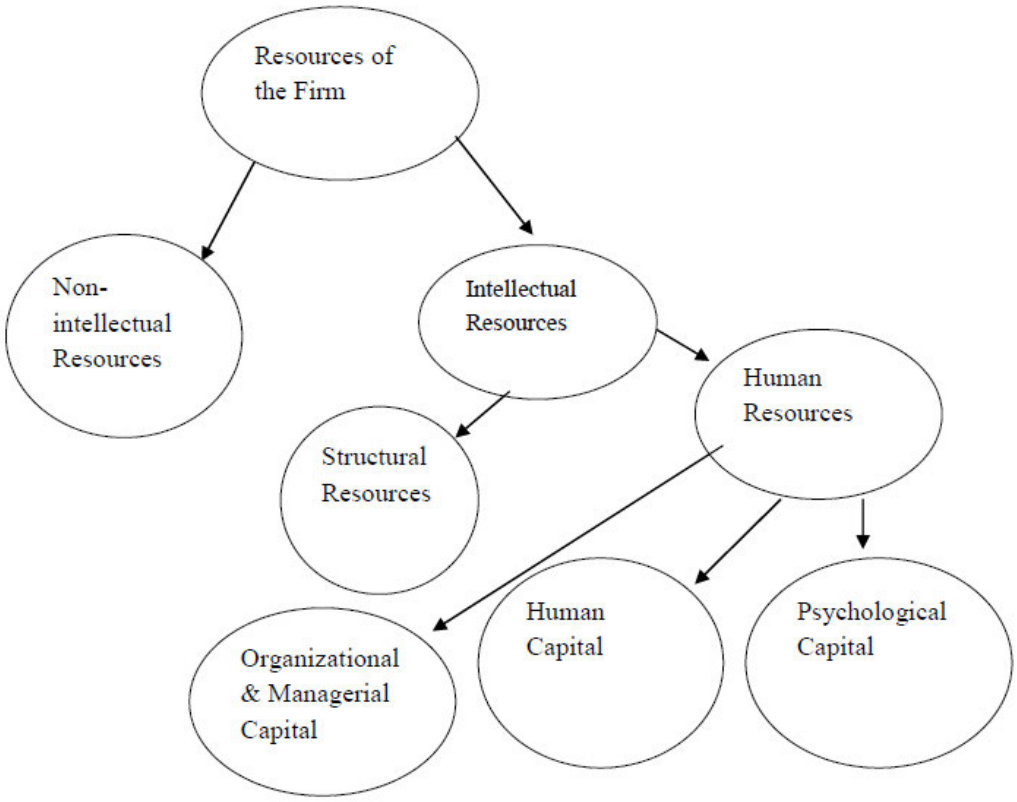

Figure 2.1: Non-intellectual and intellectual resources, (Mathews, 2019, p. 5)

2.3 The significance of organizational resource optimization during turbulent times

Turbulent times or crises simple refers to sudden, unpredicted and pressing situations that trigger a threat to resources like economic and reputational threat that calls for significant action (Coombs, 2007; Smith and Riley, 2012). Crises can lead to physical, emotional and economic harm with effects being harmful if not addressed properly (Coombs, 2007). Boin, et al., (2020), explain crises as progressive processes where main causes arise slowly, rise over period of time, turn out to be acute, and leave an aftermath with no indistinct end. Crisis management strategy indicates, the better the resources and communication absorbed on response, learning and development programs available throughout the crisis, the more likely that institution and their teams will progress towards a common vision of recovery and overcome the disorder or toxic effects of adversity (Bowers, et al., 2017).

It is vital important for institutions to optimize their resources during turbulent times (impact of the COVID-19 pandemic). The process of resource optimization incorporates methods and processes used to balance assets with the institutional requirements in order to fulfil its objectives. This includes academic support for students, staff development and training. The increase of university resources can improve the capability of the higher educational institution to circumvent risks (Lin, 2015). Optimization of resources relies on academic resources before mobilization expansion, the essentials of perpetual school scope, school positioning and academic objectives of the institution, as well as social needs to the upliftment of the institution and the policy alignment of government for further enhancement of higher education (Zhang and Shiming, 2013; Lin, 2015; Xu, 2020).

It is vital for an institution to study how to take a full advantage of educational resources during the optimization stage, to snatch the social need for institutional development, and the implication of the social influence of the institution to the overall social utility. The institution must establish what resources are required, and how much of those resources are used to support graduates and deliver social services, and systematic study under the usual social standing and under unfavourable policy constraints simultaneously (Zhang and Shiming, 2013; Lin, 2015).

This process will establish the best method to obtain the educational goals of the existing turbulent times and for the future. Thus, optimized institutional resources are beneficial for the universities to fulfil their function. The precise function of institutional resources on staff training are shown in the development of knowledge and advancement of employee's value and capacity. The improved and optimized educational resources enhance social quality of students and their

potential on academic activities. Thus, improving and optimizing educational resources creates a good environment for student growth.

Universities are cross-institutional academic organization meaning they should focus on supporting the disciplinary structures to improve the total strength and competitiveness of the departments through increasing inner and outer environments, thus, joining of resources in accordance with the demand (Lin, 2015). This can be achieved by considering the situation of each discipline and campus settings based on it landscape, technology, application and foundation (Lin, 2015).

Optimization of higher education resource allocation during turbulent times can assist in enhancing the efficiency of the institution. L and M structures of the institution from the level schools, colleges and up to executive management allow for the adoption of certain ways and procedures to determine, plan and strategize education events in order to devise school's educational objective (Lin, 2015). The efficiency and competence of an institution is judged by its ability to use educational resources and obtain the desired results especially during turbulent times. Thus, the outcome of optimization of educational resources is a significant demonstration of the efficiency of the institution.

2.4 Types of resources in sustaining operational efficiency

Resources in sustaining operational efficiency in an educational sector are equipment or materials, facilities, productive factors, and aids used by a school or department for effective and efficient operation in order to accomplish the intended goals (Langwenya-Myeni, 2017). Hence, they enable learning and support retention in the learners to accomplish the specified objectives. According to Uko, et al. (2015), the main resources in sustaining operational efficiency for educational sector are financial, human, material, time, physical and information resources. In simple terms, resources are tools required for effective job performance in an institution. Downes (2007, p. 30), "explicates resources according to their role: resource for learning purpose made of courseware, learning objects, modules, content, learner-support, assessment tools, and learning communities."

Resources to aid academics are equipment and support materials to allow them to train, adapt and produce teaching materials that guarantees the quality of educational practices in the institution. According to Oluremi (2014); Onuaha-Chidiebere (2011) as cited in Langwenya-Myeni (2017), resources in sustaining operational efficiency in education are total inputs that go into the school

system which includes financials, technology, human, non-human/material, and physical resources. Facilities includes classrooms, buildings, libraries, laboratories, furniture, recreational equipment and other instructional materials (Langwenya-Myeni, 2017). Human resources are academic and professional staff that provide different services in the academic processes, thus, non-human or material resources are financials and other services that assist in achieving educational objectives (Agabi, 2010).

According to Usman (2016), resources in sustaining educational efficiency consists of students, academics, and support staff, and all stakeholders, who have direct or indirect interest in the organization. Financial resources are vital for any institution in sustaining operational efficiency because with money institution can obtain buildings, pay employees' salaries, purchase equipment, electronics, communication apparatus, maintenance of instruments and pay operational expenses (Langwenya-Myeni, 2017; Usman, 2016). Thus, financial/monetary resources are necessary to obtain other resources.

Usman (2016) proclaimed that human resources play a significant role in any institution's effectiveness. Their main responsibility is to coordinate, plan, control, organize, manipulate and maintain other forms of resources for efficient and effective institutional administration (Usman, 2016). Time as a resource is unique and cannot be bought back or be recovered once it lost (Usman, 2016). Time needs to be properly managed and allocated to different activities. Usman (2016) describes information resources as a varied set of technological instruments and resources used for creating, communicating, distributing, loading and managing information.

Thus, technological instruments are computers, the internet, radio, television and mobile phones. These resources are vital in any organization typically for planning, decision making, policymaking and communication both within and externally (Mbatha, 2021). The availability of these resources without proper and well-organized utilization cannot encourage effectiveness and efficiency. For sustainable and efficient operations all the above-mentioned resources need proper management from school leadership.

2.5 Working from home

During the COVID-19 pandemic, working from home was the only alternative to curb the spread of coronavirus (Vyas and Butakhieo, 2021). Working from home is not a new concept it has been previously discussed in many schools of thoughts for many years and is well known as telecommuting or telework (Messenger and Gschwind, 2016). Different terms have been

employed to refer to working from home, terms like remote working, telework, flexible workplace, e-working and telecommuting (Vyas and Butakhieo, 2021).

About 37 % of the jobs in U.S.A., such as financial work, professional and scientific services, and business management were able to be completed from home, but some jobs like hospitality, healthcare, research and development, and farming were not possible to be done at home (Dingel and Nieman, 2020). Working from home have advantages that includes using less office space, no office politics, increased motivation, less or no absentees, no traveling time, saves bus fair, job satisfaction and better throughput (Mbatha, 2021).

It also presents some challenges such as balancing family time and work commitments, distractions at home, electricity bills, internet costs and poor internet coverage in certain areas (Purwanto, et al., 2020). It also presents challenges in that there is isolation between colleagues, and workers from managers, with a possibility of less efficiency due to failures of balancing work and family time especially parenting duties (Mbatha, 2021). Working from home present challenges where employees require training in the use of IT equipment and support as well as institutional communication (Baker, et al., 2007).

2.6 Remote learning

Remote learning turns out to be a salvation for education during the pandemics, but the opportunities that digital technologies offers goes well beyond a substitute resolution during the COVID-19 pandemic. Schleicher (2020); Eze, et al. (2018), proclaimed that e-learning is a symbol of distance learning. Hence, digital technology presents completely new solutions to the question of what individuals learn, and how, where and when they learn (Oyediran, et al., 2020). Schleicher (2020), continued to state that technology allows academics and students to gain admission to particular information well beyond textbooks, in numerous presentations and in ways that saves time and space. Eduard and Lucian (2020), also claimed that e-learning is an innovative stage for conveying knowledge and skills to the students, it is economical, saves time, has a broader exposure as well encouraging team learning and teamwork. Technology offers deep knowledge and permits schools to respond better to various needs of students.

Online learning was the most popular learning platform during the COVID-19 pandemic making use of platforms like Zoom, MS Teams and Google Drive (Schleicher, 2020). According to Chaka (2020), during the COVID-19 pandemic lockdown, out of 21 universities in South Africa 17 moved to online learning including UKZN, and in United State of America 63 out of 64 universities migrated to online platforms. In South Africa, during the COVID-19 pandemic the

focus was to continue with learning without bridging the COVID-19 pandemic regulations, but research was neglected (Hedding, et al., 2020). These bearings consist of those on supervising postgraduate students, meeting research output targets, submitting new grants to secure the next cycle of research, and meeting research funding and project deliverables (Hedding, et al., 2020). What the bearing will be on the country's overall research output remains to be seen.

From a practical outlook, many research projects were affected by lockdown and social distancing regulations. The restrictions impacted badly on postgraduate students from the honours level to PhD who did not have access to laboratories to perform experiments for their research to meet standards of funded research (Hedding, et al., 2020). Most science fields, like social sciences, were affected by the restricted access to field study sites and laboratories during the various phases of lockdown, and many social scientists were affected far longer as social distancing strategies persisted. Social science research often depends on face-to-face interviews, focus groups, and survey questionnaires. Hence, these scholars faced the risk of exposing themselves and the respondents to the virus (Hedding, et al., 2020).

On a lighter note, the COVID-19 pandemic may have offered prospects for research, particularly for chemistry and social scientists (Hedding, et al., 2020). Hence, the creation of the COVID-19 pandemic correlated research being dispersed through edition confirms to this opportunity (Lees, 2020). This raises a need for, postgraduate students and academics from all disciplines to be innovative in terms of conducting experiments, collecting data, and restructuring of research projects to accommodate the new normal.

The main point is that university circles, including all scientists, administrators, and related bodies such as the South African National Research Foundation (NRF), should be mindful of the impact and aftermath of the COVID-19 pandemic on every university community research field and formulate strategies to enable the research of all who were impacted (Hedding, et al., 2020). Hence, field and laboratory experiments were compromised which will lead to delays in the submission of journal articles for review and the submission of funding applications (Hedding, et al., 2020). NRF and the universities should relax period limits that they can fund researchers and degree completion period limits, and extend period for funding and support to allow academics to use roll-over funding for the following academic year. An alternative option is to extend deadlines for funding proposals or no deadlines (Hedding, et al., 2020). In simple terms academia requires flexibility in a time of crisis.

The pandemic has taught particular schools in universities to be innovative in the way they perform science and facilitate learning. Schools have set up groups for communication (e.g. Zoom, MS Teams, WhatsApp, Google Group) to keep on connected, to strategize research, and

to uphold team self-confidence and a research culture while working from home (Hedding, et al., 2020).

2.6.1 Institutional recovery resilience

The term resilience emerged from the Latin verb *resilire* and *resilio*, meaning flexible, leap back, elastic or bounce/jump back (Fletcher and Sarkar, 2013; Kim, 2020). Resilience or resiliency is an ability that mirrors a competence for people to grip tension and enhance operations in the face of harsh conditions (Wooten and James, 2008). According to Crane (2017), resilience is a competence a group of people may hold irrespective of the existing challenge. Weick and Sutcliffe (2015), proclaim resilience as an amalgamation of minimizing mistakes while maintaining operations and adapting to change. Team/group resilience theory assist in understanding factors that add to the rising of a shared state of resilience as a consequence of eye to eye, and eye to status quo, connections that are generated by adverse events (Gucciardi, et al., 2018). They further describe team/group resilience as a result that develops over time via dynamic eye–situation engagement, rather than a characteristic, competence, or process.

The hostile situation that school leadership experienced during the COVID-19 pandemic catastrophe interrupted their processes but also presented opportunities that led to networks of alliances, a chance to review education, reimagining of the affected schooling and amendment of operations (Azorin, 2020; Beauchamp, et al. 2021; Zhao, 2020). Gucciardi, et al. (2018, p. 734) postulated, "it only within the framework of harsh conditions that groups can show their resilience with leadership being the drivers of welcoming change, resilience and how they enhance group resilience to arise in the face of the COVID-19 pandemic unfavourable conditions, complexity and uncertainty". Resilience can also be described as a capacity of a team or a group to resist and get the better of stressors such that it qualifies constant performance (Botbyl, 2022).

Botbyl (2022) further claim resilience as a multi-dimensional field that advances itself well to an educational process where groups or teams can grow greater team resilience competence over time. This type of learning directs an institution to adjust from harsh conditions and strengthens its ability to conquer future challenges (Teo, et al., 2017). The COVID-19 pandemic period has been a trial that school leadership, academics, professional staff and students have collectively experienced. How school leaders from different schools engaged within their community and infused team resilience may provide understanding into how best to adjust from turbulent times. Thus, resilience keeps teams against gigantic disturbances that may lead to unnecessary changes (Hartwig, et al., 2020).

A number of factors guard individuals from the undesirable effect of adverse events. Morgan, et al. (2013); Gucciardi, et al. (2018); Alliger, et al. (2015), mentioned four resources that are most important to the growth of work-team resilience. These are team potency, team psychological safety, a team's capacity to improvise, and mental models of teamwork. Team potency is the team's confidence that they can be operative. Team mental models of teamwork are the communal considerations, consent building, and methods to manage with the adversity. The team's capacity to improvise is referred as the aptitude to adapt under stressors and be a pioneer. Team psychological safety denotes confidence in individuals to positively take on stimulating tasks effectively (Kim, 2020).

Resilient work teams reduce adversity because of the resources that they hold, control adversity with more efficiency and evolution to a darning phase of recovery, education and adaptation (Alliger et al., 2015).

2.7 Performance recovery plan and its barriers

The blowout of the COVID-19 pandemic has been a disaster and such an incident has widespread extending impacts on a several zones in society, including higher education (Blankerberger and Williams, 2020; Amemado, 2020; Worley and Jules, 2020; Masri and Sabazalieva, 2020). In his classic Reflections on Public Administration, Gaus (1947) as cited in Blankenberger and Williams (2020), conceded the role that disaster plays in reforming public administration and policy systems. He further anticipated an ecological method to the research of public administration. He contended that to be most successful, management should be seen as a portrayal of an ecological system, where creatures are present in connection with their surroundings.

Thus, disastrous episodes are a change medium and when presented into an ecological system, they will respond to attain a new equilibrium. Hence, those in administration are required to be conscious and strategise on how to respond, by considering that this is a possible catalyst for transformation of traditional policies and institutions (Blankenberger and Williams, 2020). The influence of these variations will be experienced in an array of policy zones; thus, higher education is among the zones that have been affected by the COVID-19 pandemic. Legislators and those in higher education need to strategize for the likely implications of this disastrous event. Numerous areas of higher education policy are impacted by the COVID-19 pandemic distractions. The most stimulating areas of possible impacts includes research, budget, assessment, enrolment and recruiting, course delivery, and accountability (Blankenberger and Williams, 2020).

The COVID-19 pandemic bearings on higher education financial resources: As resources shift, people will turn to make the most of their resources and that will have bearings on other essentials of the system. This is exaggerated with the financial consequences on gigantic cuts on budget/financial resources that resulted due to the COVID-19 pandemic on higher education systems (Blankenberger and Williams, 2020). The economic instability that arose because of the COVID-19 pandemic has already impaired the financial state of tertiary institutions, and with a possible decline in tax returns which will only degenerate the system (Di Pietro, et al., 2020; Friga, 2020; Blankenberger and Williams, 2020).

According to Ferguson and Roofe (2020) and Blankenberger and Williams (2020), the National Association of Student Financial Aid Administrators from April 2020, a number of tertiary institutions had already either announced or were envisaging large for huge cuts to their community tertiary education programs. This new catastrophe emanates while tertiary institution funding is under distressed. Decreasing budgets have led tertiary institutions to cut expenditure, intensifying tuition, and recruiting undergraduates more rigorously, and trialing with new distribution modalities (Blankenberger and Williams, 2020). Tertiary institutions are important contributors to community equity by providing a channel for social mobility; thus, budget shortfalls increase costs, decrease academic support plus reduce scholarships and this has a serious impact on social equity (Hazelkom and Gibson, 2019; Marginson, 2018; Blankenberger and Williams, 2020).

Institutions need to be prepared to advance in online education, a move in both tangible and social technologies. This mean changes to public technologies altering or developing new functional measures for admissions, counselling, financial aid, advertising, accounts, and processes and online education offices (Blankenberger and Williams, 2020). Depending on the complexity of the new enrolment trends, this may perhaps mean renovation of infrastructure, equipment and facilities. Moreover, as institutions advance from contact delivery standards, they need to portray evenness of student learning results across modalities.

However, activities like practicals will have to remain in contact regardless of the situation. At this juncture again, institutional honesty and liability, along with thoughts of equity, will be key aspects to an effective the COVID-19 pandemic response. Tertiary institutions will also need to consider advancing or improving tangible and social technologies to make substitute paths for practical experiments (Blankenberger and Williams, 2020).

For research institutions construction of knowledge for both student learning and research is vital. However, determining these productions and results is very difficult.

Further to the analysis of each case by nation Said and Ghada (2021), postulated that the study emphasised on major themes that have frequently ascended in these republics from the disruption of teaching during the COVID-19 pandemic, namely:

- The inequality and the numerical divide which has been made worse during the pandemic.
- The necessity for substitute evaluation and assessment approaches and the desired shift to formative assessments through both synchronous and asynchronous means.
- The application of online invigilating as a way to regulate for cheating and academic deceit.

Hjelsvold, et al. (2020); Said and Ghada (2021), claimed that the short time and deficiency of equipped resources were significant barriers to unexpected change to online learning. From leaders and administrators' perspective, online learning is an appropriate communication platform for students particularly with exam guidelines and requests in formulating new educational approaches to education as well as learning new instruments, providing a more connected method to the synchronisation of activities and alliance between educators (Said and Ghada, 2021).

2.8 Organizational performance and change management

2.8.1 Performance

When the economy is suffering, communities are concerned about job security, while human resource management are concerned whether or not employees are adding value to the institutional goals and objectives and how to conduct recruitment and selection processes, training, development, and employee's engagement due to challenges caused by the COVID-19 pandemic (Ahmed, et al., 2020). The physical workplace is transformed into an online workplace and HR management is forecasting on how to engage the employees resourcefully.

Stephen, et al. (2017), proclaimed performance as a complex construct contemplating quality, time, flexibility, financial efficiency, customer fulfilment, and human resource as main components of performance. According to Stephen, et al. (2017), the Ministry of Education in Malaysia view performance as characterized by quality of service, effectiveness, students' academic achievement, student discipline, efficiency, student involvement in sports and additional curricula activities. Thus, it is not easy to quantify the quality and efficiency of services in an industry similar to teaching and learning due to the imperceptibility of the results. Grygoryev and Karapetrovic (2005) proclaim that a HEIs academic performance is pronounced to be elevated if the students being taught at the institution are well equipped to become fruitful residents of the

future. This means alumnae from institutions must have been well prepared to carry out tasks that their potential employers will require them to complete or be able to achieve tasks required in their enterprise, if self-employed.

2.8.2 Organizational performance

Markos and Sridevi (2010) claimed that engagement is a double feature to give and take information among employees and managers to identify weaknesses in workforces that need commitment. Leaders and financial personnel focus on financial aspects to yield the outcome of an institution profits and upheld earnings by calculating the financial rewards of the project operations (Akter, 2011). Employee's involvement is an important element of an organization's assurance to performance. Employee's behaviour is the main component of the competition and to indorse organizational profitability (Ahmed, et al., 2020).

According to Hromei (2014) as cited in Ahmed, et al., (2020), human issues are being neglected and it is now evident that employees' satisfaction results in better performance, innovation, creativity, and an institution's commitment to goals. Thus, organizations end up with the difficulty of enhancing the performance of the organization by absence of understanding and ability to think about non-financial issues of human capital, which brings the balance of work environment, and institutional productivity (Ahmed, et al., 2020). Staff engagement is another factor connected to an organization's performance. Thus, happy and dedicated employees yield significant gain to the organization and bring about a noticeable competitive advantage. Furthermore, it reduces the rate of absenteeism, and increases retention time. This inspiration and determination eventually result in a high-level of organizational performance. Employees who are suffering from absorption are occupied in their work and cannot separate themselves from the job (Hamideh, 2015). This is due to organizations that tend to focus on financial factors of their workers to achieve their goals instead of consider both financial and non-financial features for their performance. Non-financial aspects can be advantageous to the organizational performance regardless of its type or size.

2.8.3 Change management

Every institution always concentrates on implementing changes and advancing their current system to survive in the work environment (Junnaid, et al., 2020). Change is usually driven by external and internal organizational factors (Junnaid, et al., 2020). External factors include climate change, enlarged competition, new regulations, modern technologies, labour unions, etc., while internal factors include execution of new technologies, service/product specifications, and management policies among others. Nevertheless, change is a complex process and most of the times it yields fatalistic results because of unforeseen resistance from a number of different sources.

L and M are the key players in implementing of change in an organization, while Pawar and Eastman (1997), claimed that organizational leaders faced a heightened burden in organizational change preparation and implementation. An organizational change is portrayed as a strong area of study that mainly focuses on strategic change (Junnaid, et al., 2020).

Organizational change has always been accompanied by planned strategies, allied with the organizational goal. Change management is described as the adaptation of the individual, group, and institution from present to precise future states so the that vision and strategies can be implemented (Junnaid, et al., 2020). In change management, the transformational leadership style has gained high attention among scholars and in academia (Herold, et al., 2008). During the COVID-19 pandemic it is vital to understand the importance of leadership and change management for organizational sustainability (Junnaid, et al., 2020).

2.9 Global health scenarios economic impact and social realities

2.9.1 Global health scenarios

The Corona virus also known as the COVID-19 pandemic is an illness that arises from the SARS-CoV-2 virus that can cause what health professionals refer to as a breathing tract contagion (Usher, et al., 2020). It normally causes damage to the upper airway which is the pharynx, or the lower airway, which is the trachea (Usher, et al., 2020). The COVID-19 virus is easily transmitted from one person to the next through contact, and infection varies from mild to deadly depending on the health condition of the person infected. The most common symptoms of an infected person are fever, dry cough, loss of smell, loss of taste and exhaustion.

It presents similar symptoms of normal flu except that its mortality rate is extremely high. This contagion has a direct effect on health systems with health care workers being overwhelmed in terms of the total capacity required to care for patients, the deficiency of vital diagnostic, therapeutic tools, materials, and insufficient proper protective equipment to keep health staff safe (Humphries, 2020; Singhal, et al., 2020). According to Roser, et al., (2020), more than 4.5 million people were infected with more than 300 000 deaths as of 15 May 2020.

Thus, many countries went under restricted lockdowns with exceptions to frontline/essential works and services (Hopkins, 2020). Due to these lockdown restrictions, a number of educational activities were suspended by universities worldwide affecting even health professions educational institutions (HPEIs) and possibly suspending or even postponing the entry of a new frontline workforce like health professionals (Arandjelovic, et al., 2020). With the virus actively changing quickly across different settings, together with developing an understanding of the virus, it not

easy to predict if the COVID-19 pandemic will ever disappear, or if it will be part of our lives (Rabe, et al., 2020). Thus, it is significant to comprehend how Health Professions Education (HPEd) is being affected and what measures have been put in place for now and the long-term (Rabe, et al., 2020).

2.9.2 National Disaster Act

The COVID-19 pandemic was declared a pandemic and a global disaster by the World Health Organization (WHO), and South Africa also declared the COVID-19 pandemic as a national disaster (Mbandlwa, 2022). South Africa then introduced regulations to validate the National Disaster Act that offered measures to curb the spread of the virus (Mbandlwa, 2022). These measures were instantaneous and South Africa, like all other countries, was not ready to stabilize the economy and curb the spread of the virus at the same time (Shareef, et al., 2021). Some countries like Sweden did not implement lockdown restrictions but were able to control the spread of the virus (Mbandlwa, 2022). Thus, Sweden was able to curb the spread of the pandemic and was also able to protect the economy. South Korea did not implement lockdown regulations at all which caused a rise in the infection rate plus a spread was later controlled (Mbandlwa, 2022). Although Sweden and South Korea did not implement lockdown regulations other measures were introduced to control the spread of virus measures like social distancing, sanitizing, contact tracing and wearing of mask. Thus, curbing the spread of the virus relies on effective leadership and community engagement.

2.9.3 Access to vaccine

According to Dzinamarira, et al., (2021) South Africa became the first country in Africa to obtain the COVID-19 vaccine. Vaccine roll-out started on 17 February 2021, and took place in three phases according to priority assessment (Maverick, 2021; Dzinamarira, et al., 2021; Government, 2022). The roll-out of phase 1 focussed on front line health workers, phase 2 was concentrated on essential workers (police and security staff), senior citizens over 60 years and those over 18 years with comorbidities, and finally, phase 3 was dedicated to all persons over 18 years (Government, 2022). Sourcing and distribution of the vaccine was controlled by the government and its officials. Thus, the government was the sole distributor and purchaser of the COVID-19 vaccine (Government, 2022).

2.9.4 Economic impact of lockdown restrictions

Although some people were able to work from home, many were not due to the nature of their job, especially those in public-facing roles in service industries, and they suffered loss of income due to lockdown regulations, hence, some lost their jobs (Douglas, et al., 2020). Others were affected by shutting down of industries, restricting or suspension of imports and exports caused

by government orders, an infected colleague, or loss of business (Douglas, et al., 2020). Some had to quit their jobs to provide childcare as schools were also closed, due to health and safety concerns. The lockdown regulation effect left people with a risk of losing their homes, mortgage arrears, and some ended homeless with no savings (Douglas, et al., 2020).

2.9.5 Social realities

Encouraging people to self-isolate at home causes serious social and mental harm (Douglas, et al., 2020). Quarantine of individuals exposed to a transferrable disease is allied with adverse psychological effects like post-traumatic stress symptoms that may stay for a long period or even permanently (Brooks, et al., 2020). The effects are worsened by extended isolation, distress of the infection, financial loss, boredom, insufficient supplies, information, frustration, and stigma (Douglas, et al., 2020). The majority of senior citizens are technophobic, putting them at risk of social isolation during social distancing (Douglas, et al., 2020). Khazem (2018) defines social isolation as a pervasive absence of social connection or communication, involvement in social activities, or a friend. Thus, prolonged social isolation and social distancing can result in a high mortality rate due to anxiety. Most people who are likely to suffer are people with socioeconomically disadvantaged or mental health problems (Teuton, 2018).

2.10 SWOT analysis

The COVID-19 pandemic presented many fast changes to teaching in a short space of time, some which have not been thought of or experienced by the world's population (Samarasekera, et al., 2020). Academics and students, including parents normally rely on school leadership for direction. Thus, in the absence of guidance or rules school leaders were confronted with a number of challenges and very few solutions (Samarasekera, et al., 2020). SWOT define analysis is a technique that is used in a strategic planning framework to examine internal factors (strengths and weaknesses) and external factors (opportunities and threats) of the organization (Abdel-Basset, et al., 2018). According to Gurel (2017), SWOT is a method used to explore the organization and its environment. It broadly, methodically, and precisely describes the situation in which the topic is located (Wang and Wang, 2020). This assist in articulating the conforming strategies, plans, and countermeasures, which are grounded on the outcomes of the valuation (Jasiulewicz-Kaczmarek, 2016). This technique can be used to categorise constructive and hostile factors and conditions, solve current problems in a targeted manner, recognize the challenges and obstacles faced, and formulate strategic plans to guide scientific decisions for performance recovery.

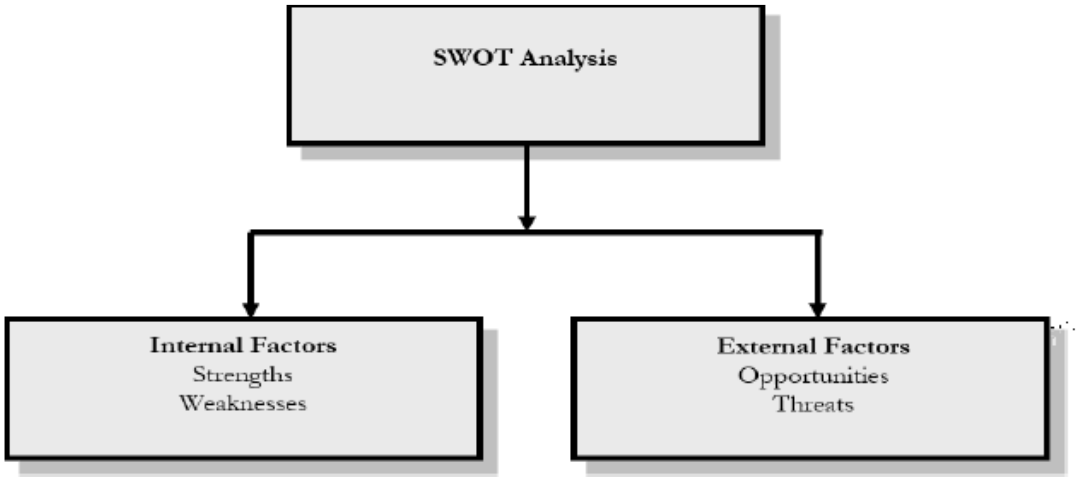

Figure 2.2: SWOT analysis components (Gurel, 2017, p. 995).

Table 2.1: Components of SWOT analysis (Gurel, 2017, p. 996).

Organizational Strengths	Characteristics that give advantage over others in the industry.
Organizational Weaknesses	Characteristics that place at a disadvantage relative to others.
Environmental Opportunities	External elements in the environment that provide benefits for the organization.
Environmental Threats	External elements in the environment that could cause trouble for the organization.

2.10.1 Strengths

Strength is created on the basis of work ethic and assists in building trust from the people they manage (9Lenses, 2020). Management have an ability to organise teams to proficiently get work done. Leaders have the ability to inspire followers and are brainstormers. Real leaders tend to be passionate about their ideas (9Lenses, 2020). This passion typically helps bring other people onboard and motivates people to follow. Leaders implement new strategies to old ideas; they think outside the box. During the COVID-19 pandemic academic sectors were able to move all teaching and learning to online platforms (Saikat, Dhillon, Wan Ahmad and Jamaluddin, 2021). Further to this research and development (R and D) used this catastrophe to develop new research topic which broadens the field of science and technology.

2.10.2 Weaknesses

Management can repeatedly become trapped in the specifics and they fail to see the bigger picture (9Lenses, 2020). Management is usually resistant to change once they are comfortable with a structure; thus, they tend to fight any change to the system. Their fear of the unknow prevents organizational growth. Leaders have a tendency of implementing before planning with delays to the start of any project, and in some cases, they are too attached to a project which blinds their sight of judgement. The spread of the COVID-19 pandemic which led to institutions shutting down and diverting to online learning, exposed many gaps in terms of infrastructure, IT systems, poor soft skills in academics and students in the use of Zoom and MS team platforms. It also impacted badly on research, in particular, for science which requires laboratory work.

2.10.3 Opportunities

The sudden transition to online teaching and learning introduced vital opportunities to offer more relaxed learning possibilities, explore combined or cross learning, and a combination of synchronous teaching with asynchronous teaching (Marinoni, et al., 2020). The COVID-19 pandemic opened doors to develop old-style professional information and skills enhancement in IT programmes (Sepulveda-Escobar and Morrison, 2020). The COVID-19 pandemic has lubricated the wheels for technology to be embraced into higher education so that instruction can be communicated as conveniently as before (Khan, 2021). Online teaching forced academics to professional growth opportunities provided to them by their organizations (Donitsa-Schidt and Ramot, 2020). According to Samarasekara, et al., (2020), the pandemic has assisted with critical reflection on the curriculum, course content and academic approach.

2.10.4 Threats

According to Regehr and Goel (2020), universities and their leadership often come across challenging actions that disturb operations and the well-being of their staff. Most of the times universities are prepared for such events however, the universal distraction resulting from to the COVID-19 pandemic is unique (Regehr and Goel, 2020). Online learning that was introduced due to the caused by COVID-19 Pandemic crisis had some challenges from technological complexities and because all stakeholders were not ready for these drastic changes (Sepulveda-Escobar and Morrison, 2020; Regehr and Goel, 2020). According to Marinoni, et al. (2020), the transition from contact to virtual teaching brought some difficulties like lack of access to technical infrastructure, skills for remote learning, and the proper requirements for other fields of study.

The problem of leading in times of uncertainty includes the courage to act when the longer-term way ahead is unknown (Young, 2020 as cited in Lemoine and Richardson, 2020). The worldwide pandemic has shown that the education system, in general, is improvised and is exposed to

external threats (Lemoine and Richardson, 2020). Closure of institutions did not only negatively impact on the university community, it also had extensive financial and societal significances (Elfirdoussi, et al., 2020). Besides, it has focussed the light on many social and financial issues, counting student liability, online learning, food uncertainty, and displaced peoples access to day-care, healthcare, shelters, technology, and disability services. Thus, tertiary education is a critical determinant of the economic future of the country and higher education sector has significantly affected by the pandemic as well. Due to the global closure of the institutes and universities, it was expected that it will reduce the demand for the international higher education (Tarkar, 2020).

2.11 Leadership and definitions

In a world of uncertainty, it is vitally important for managers to direct all their energy and the activities of their employees towards achieving the institutional goals and objectives. This process is empowered through L and M as effective leadership can limit the success or failure of the institution. L and M at all levels of an institution needs to comprehend that institutional performance is a direct result of leadership. Hence, their engagement with, and the conduct of their workforces, eventually impacts on their workforces' performance. Kerfoot (2008); Rampersadh (2015) confer a study executed by Cranwell-Ward, et al., (2002) which involved the study of leadership and learning from politicians, with a compelling record of retention of staff and performance of the organization. This study showed that L and M of those institutions were happy with the performance of the organisation because they strongly believed it was due to their employees' involvement.

Leadership can be explained as the skill to communicate issues, inspire, and motivate others to notice their potential towards delivery of the institutional goals (Muftahu, 2019). In academia, leadership has been portrayed as leading and handling an educational institution towards attaining the specified goals of an organization and the creation of the atmosphere that is an aiding type to grow the skills of the stakeholders, mainly the students (Muftahu, 2019). It is a discipline that is endlessly changing and developing. According to Daft (2016), leadership is a bond between leaders and supporters that emphasises on transporting a real transformation and results that mirror their shared purpose.

While managers are busy with forecasting, organizing and regulating in their institutions, leader play a vital role in a manager's day to day duties. Leaders concentrate on inspiring, transforming, motivating and influencing followers. Leaders form an idea of what the institution can turn out to be in the future, and encourage followers to team up around a shared vision. Govender (2013)

postulated leadership is a method by which an individual influences judgement and behaviours of others. Balbuena, et al., (2020) described leadership as a process of guiding and manipulating the task-related functions of an institution. Balbuena, et al., (2020) further elucidated leadership styles as a behavioural pattern or a tactic to provide paths or inspiration to their supporters in order to achieve institutional goals.

Thus, leadership theory simplifies, determine, and govern the prospects of a leader (Balbuena, et al., 2020). Scholars define leadership differently depending on their perceptions and interests. Some scholars believe that leaders are born which leads to trait theories (Rampersadh, 2015), while other scholars believe that your actions and behaviour determine the efficiency of your leadership leading to behavioural theories, and yet others believe that the circumstances produce a leader, leading to situational theories.

Leadership is a method of manipulating decisions and guiding a group of people or an organization. It involves efforts to safeguard team enthusiasm, dedication, and a positive interpersonal environment within the framework of transformation and ambiguity (Klein, et al., 2001; Kozlowski, et al., 1996, 2004 as cited in Taylor and Machado, 2006). Strategic leadership is perceived as the leader's skill to create a strategic idea and simplify it, for university staff to develop a strategic modification and strive to assemble all accessible resources to take part in attaining the vision in order to guarantee a maintainable competitive advantage for the institution (Alayoubi, et al., 2020).

2.12 Effective leadership, agility and adaptation: lenses of higher learning space

In the framework of education, leadership is determined by universal, societal tendencies and pressures (Fidelia, 2020). Leadership schools of thought have tried to study leadership from a university to school outlook. As a big institution, a university is administered by various structures and management framework, from Chancellor, Vice-Chancellor, Deputy Vice Chancellor, Deans to academic councils, Executive directors, College directors, and administrative boards, among others (Dumulescu and Mutiu, 2021). Due to these bodies, academic leadership denotes different administrative roles and titles, developing from strategic management, administrative roles to transformational and visionary roles (Settles, et al., 2019). Even before the new normal, managing all those stakeholders for a shared goal, can be very challenging (Dumulescu and Mutiu, 2021).

Many scholars studying leadership at a university level anticipated different representations to conceptualize the magnitudes of academic leadership. The model projected by Ramsden (1998) explains the density and diversity of roles that leaders in universities have. In addition, the pattern

shows the unlike levels of leadership in a higher institution of learning. A pragmatic leader should motivate his colleagues to feel enthusiastic about education and to make good pronouncements about educational progression. Secondly, academic leaders of research of a university must highlight the importance of producing appropriate knowledge implicit to universities.

Furthermore, a pragmatic leader needs to articulate a clear sight for how to attain that goal, which will deliver a set of prospects as well as essential enthusiasm for colleagues. On top of that, this vision requires to be supported expressively to the rest of the institution in order to obtain the resources required to implement it. At the same time a good leader is required to be able to principal both from the forward-facing (by example) as well as from the posterior (by recognition and support).

At a school level, leaders are in positions to perform a vital role in a complex setting that expect them to be highly prepared with suitable information and skills (Yan and Ehrich, 2009). Fidelia (2020) affirms that school leaders are expected to direct, inspire and guide all stakeholders to have clear understanding of institutional goals and to ensure they are informed of the resources available to achieve those goals. Likewise, Leithwood and Riehl (2003) emphasise that the foundation of school leadership focusses on formulating the pace, emerging stakeholders and the school. Fidelia (2020) school leadership is not about individuals leading but it is a group of people that direct and have some influence within the school. Thus, it basically individuals with a shared vision in different levels and divisions of the school. Simply is not only the Head of School that runs, influence and controls towards a set vision.

In most cases, school leaders do not have all the critical skills necessary for growing and governing a completely successful school without any support ((Lumby, et al., 2008). Duties of school leadership are vital; hence, the universal prospect of a school leader is rising and becoming more complex due continuous transformations of educational systems (Fidelia, 2020). According to Miller (2018), school leadership is attained through a concerted, considered process and a sequence of discussions pertaining to policy development, interpretation, administration, partnership, inspiration, employees and resource management.

School leadership is the second most important constituent to address growth concerns for student learning and second only to operative teaching space (Leithwood & Day, 2008). In times of disaster, each characteristic of the school leadership is exaggerated and just as easily inspected (Direen, 2017). However, a school leader surrounded by a crisis is still entitled to make cautious decisions on how to best serve his/her people, stimulate trust and allocate control and activity. Hence, crises like the COVID-19 pandemic requires leaders like the Head of School to take initiative and act as a reliable, sincere voice for their public (Netolicky, 2020).

According to Bailey and Schurz (2020), about 24% of school leaders and 18% of instructional personnel across the nations are at risk with an age range (over the age of 55) and statistically more prone to complications due to the COVID-19 pandemic. However, school leaders conveyed sureness in their readiness to principal instruction, and to support all the communities they lead during remote instruction (e-leadership) as a result of the COVID-19 pandemic regarding school closures. According to a study conducted by Varela and Fedynich (2020), they found that 80% of school leaders participants agreed that they were ready to principal high-quality teaching carried virtually. Chua and Chua (2017, p. 109), stated "E-leadership is defined as a social inspiration process facilitated by evidence and communication technology to yield change in behaviour and performance within individuals and clusters in an organization".

2.13 Role and responsibility of a leader

Leadership is basically an instrument to achieve optimal institutional performance. Managers of the present day require practical understanding and leadership skills. Thus, managers need to have good leadership skills in order to lead employees with tacit knowledge for better organisation (Rampersadh, 2015). School leaders and campus-level administrators as well as authorities have a responsibility to balance the academic, emotional, social and physical requirements of their students with an obligation to employees, parents, the public, and other education stakeholders (Samarasekera, et al., 2020).

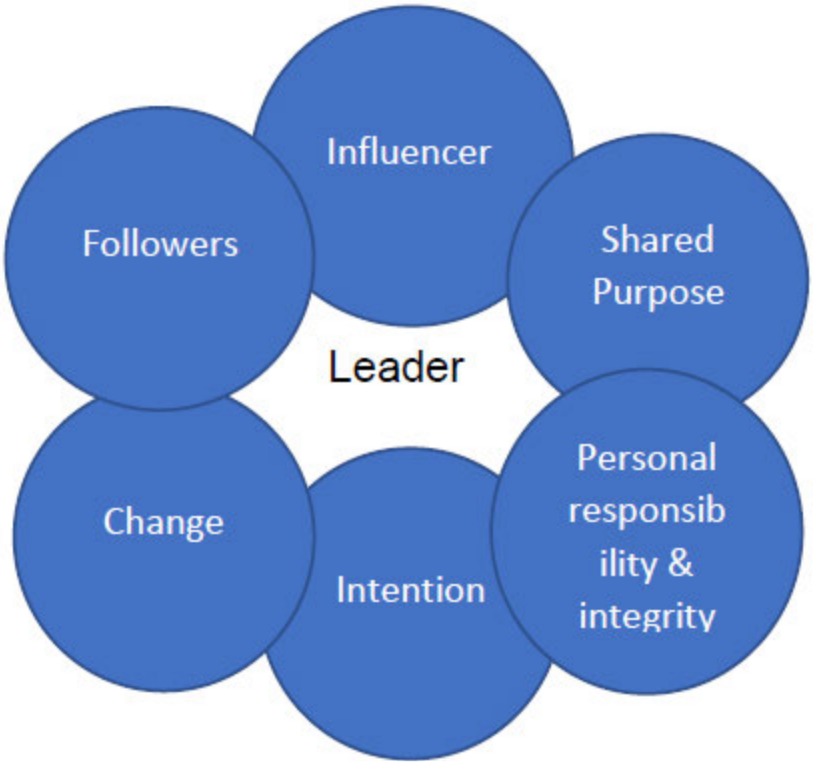

Figure 2.3: Characteristics of a leader (Daft, 2016, p. 5)

Figure 2.3, above demonstrates the characteristics of a leader. To be classified as a leader you need to have followers, be an influencer, have a common vision with your followers, embrace change or be a change agent, and be responsible and ethical (Daft, 2016). According to Nathanial and Van der Heyden (2020), by the model proposed for crisis management applied to the COVID-19 pandemic catastrophe, every leader should be aware of certain steps in order to effectively manage during a crisis like the COVID-19 pandemic. Firstly, it is vital to categorize the crisis precisely and to communicate as soon as possible the directions and procedures that need to be followed to control the crisis, while exploring of the problem in conjunction with different specialists and developing a clear strategy with well-defined indicators.

All decisions taken should be communicated and the chosen scenarios before committing to action that will be constantly monitored. Lastly, assessing, learning and adjusting work in accordance to response is crucial. Koehn (2020) suggested four main abilities for a pragmatic leader: demonstrating a meaningful character, concentrating on learning experiences, sensitive agility and accepting fear. According to Schwantes (2020), the main four competencies required to deal with the challenges related to the COVID-19 pandemic catastrophe are flexibility, sensitivity, openness to suggestions and engagement. Dirani, et al., (2020) claimed sense maker, emotional

stability, technology enhancer, employee well-being and innovative communicator as important leadership traits during crises for the purpose of maintaining financial stability of the institution.

Higher institutions of learning consist of many colleges and schools, so a leader acting alone cannot prosper during the COVID-19 pandemic crisis. The leader should be the one implementing the strategy and the institutional priorities while giving their team the independence to accept the accountability of their own decisions in accordance to the specifications of their colleges or schools. The academic choices of collective leadership assist universities to find answers to the crisis and to make choices profitable from greater institutional agility, innovation, teamwork, and joint support (Fernandez and Shaw, 2020). Moreover, shared leadership implies making connections between stakeholders at all levels of the institution that are facing the challenges of a crisis, like the COVID-19 pandemic and permit transformation to be meaningful for everyone and encourages psychological security in the institution.

Hence, the role of leaders is critical in controlling the organization through obtaining the most suitable answers for empowering, emerging a culture of trust and positioning towards resolutions that direct to effective outcomes (Kezar, et al., 2018). Unsettling institutional norms, presenting courageous decisions and appealing in practical adaptation, assisted the shift from contact activities to online and remote learning. Academic leaders that view a crisis as a strategic opportunity for innovation and apply new technologies and methods bring the best outcomes and practices. According to Fernandez and Shaw (2020), effective leadership during a crisis implies risk taking, flexibility, courage, alignment toward goals and resolutions, strategic vision and applying an innovative style intended to gain competitive advantage.

Thus, leaders with these traits are effective decision makers and have an ability to move through uncertainty and learn through direct practice (Ancona, et al., 2007). A leader's personality and traits are very important during the COVID-19 pandemic crisis which brings the VUCA world to the institution. Thus, taking effective decisions during a crisis implies building institutional resilience. A resilient institution is one that adapts and advances its awareness to challenges through captivating hardships, moving forward and transforming them into opportunities (Dirani, et al., 2020).

Figure 2.4 shows the paradigm shift of leadership traits of old the model versus leadership traits for the 21st century.

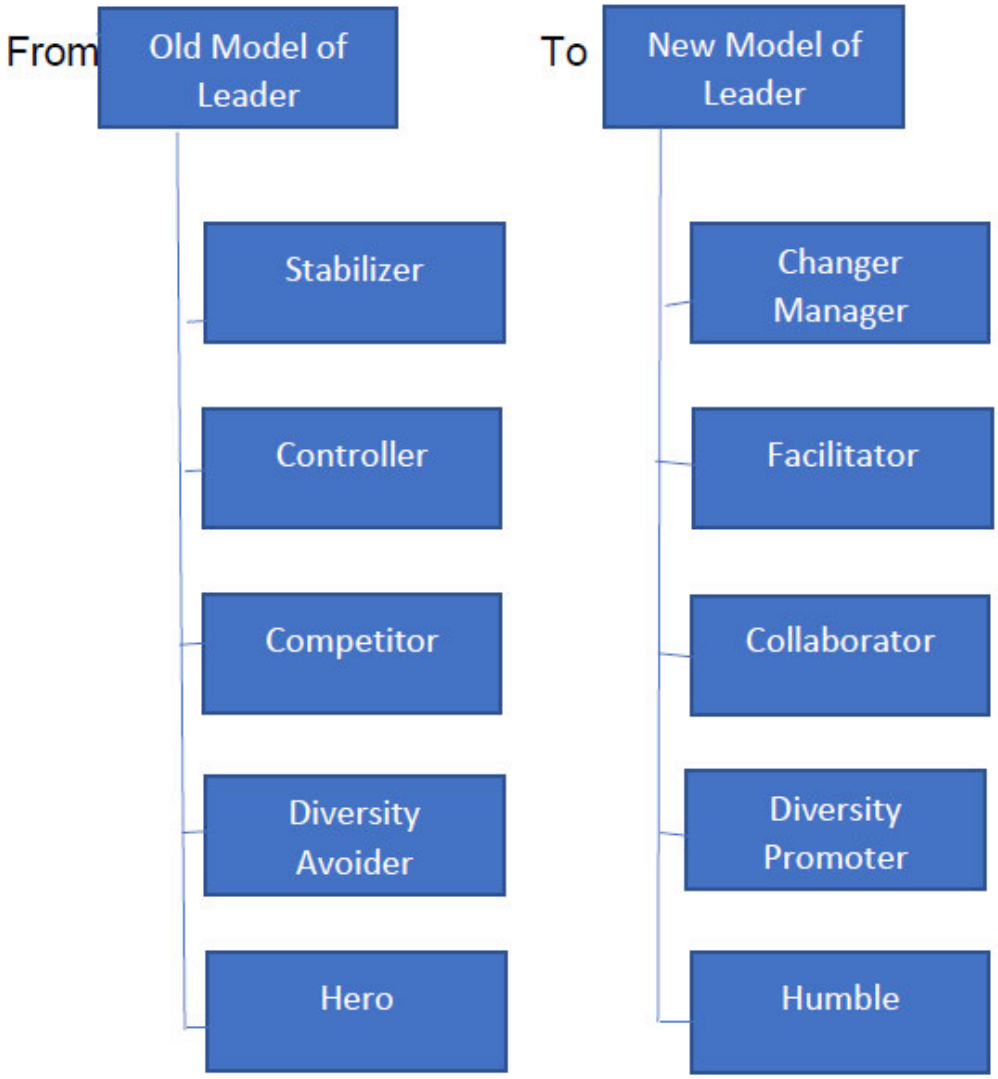

Figure 2.4: The new Reality for Leader (Daft, 2016, p. 8)

2.14 Leadership versus management

Leadership and management are not too far different from each other as they both involve providing direction to the organisation. By definition, management refers to attainment of institutional objectives in an effective and well-organized method through structuring, planning, directing, staffing, organising and controlling institutional resources (Daft, 2016). Educational management and educational leadership are vital concepts in the understanding setting in

educational establishments but their interpretation, the contrast between them, and their worth in educational settings remains the subject of discussion (Connolly, et al., 2019). Educational management involves carrying the duty for the appropriate functioning of a structure in an educational establishment in which others partake. In divergence, educational leadership is the measure of manipulating others in an educational organization to achieve objectives and requires efforts of some kind (Connolly, et al., 2019). Thus, when a delegated responsibility is carried out relative to that duty, they inspire, influence and are, consequently, leading.

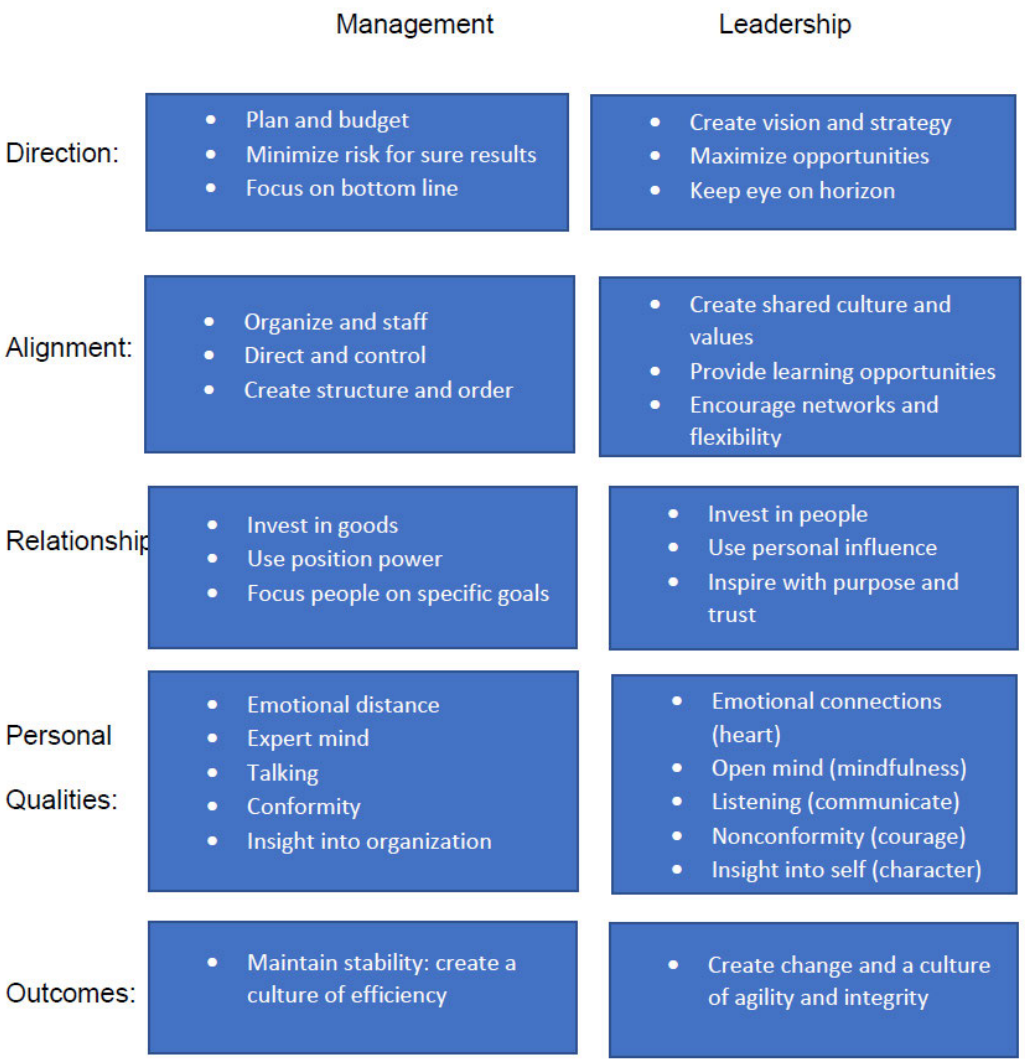

Figure 2.5: Relating leadership to management (Daft, 2016, p. 15)

2.15 Leadership styles

According to Wong and Lee (2012), style can be referred to as an individual attitude and typical behaviour toward a given task. Sabri (2012) affirms that leadership styles are behavioural forms used by leaders to govern and influence followers. Amanchukwu, et al., (2015) proclaimed that leadership styles are merely approaches employed by a leader to encourage followers. The effectiveness of the approach or style of leadership depends on the situation upon which is applied, thus, no size fits all. However, it should be chosen and improved to fit the institutions, situations, teams, and individuals.

The contingency of leadership concentrates on a specific variable associated with the situation that might predict the best leadership style best suited for a specific work situation, circumstances or conditions (Amanchukwu, et al., 2015). Thus, it suggests that no single style of leadership is one size fits all; different styles can be applied depending on the situation at hand (Fidelia, 2020). Accomplishment rests on a number of variables which includes leadership style, abilities of cohorts and situational features (Amanchukwu, et al., 2015).

Contingency theory affirms that operative leadership is subject to a leader's abilities, leadership style and which is required by a precise situation (Gosnell-Lamb, et al., 2013; Amanchukwu, et al., 2015). Thus, in a condition where a leader is anticipated to be the most well-informed and qualified participant of a group, a controlling style of leadership is most like to be adopted. Hence, vice-versa where group participants are more skilled than a leader and democratic style is more appropriate. Thus, it is important for leadership style chosen within a changing environment to be effective in order to achieve organisational goal productively as it has a measure impact on employees' performance and productivity (Nanjundeswaraswamy and Swamy, 2014).

2.15.1 Autocratic leadership style

Nwankwo (2001); Enoch (1999) as cited in Akor (2014), defined an autocratic leadership style as an approach in which the output is stressed at the cost of human capital, and resolutions are taken solely by the leader. Thus, the leader believes the followers are incapable of taking decisions and must be engaged, impelled and mandated to do work (Akor, 2014).

Autocratic leadership is an utmost form of transactional leadership; thus, leaders have absolute power over followers. Staff and group members have little or no chance to make proposals even though the suggestions will benefit the group or the institution at large (Chukwasa, 2018). That being mentioned, this leadership style is very efficient when a decision is needed immediately especially in crisis situations.

2.15.2 Bureaucratic leadership style

Bureaucratic leadership is where the supervisor or manager does things by the book; every single task or activity must be performed according to the rules, policy or if they are no procedures it is referred to the more senior manager for step-by-step processes (Cherry, 2006). Hence, management tend to police employees rather than leading. Bureaucratic leaders play by the rules and guarantees that employees also follow and obey procedures exactly. This style of leadership is more appropriate for work that includes serious safety risks like working in a laboratory with toxic and flammable chemicals, using machinery, or at unsafe elevations, or in the finance sector (Amanchukwu, et al., 2015). This leadership style promotes routine tasks and becomes ineffective in group work that requires creativity, innovation and flexibility.

2.15.3 Charismatic/transformational leadership style

Charismatic leadership explains the expectations from both leaders and groups. It is a leadership style that is recognizable but may be recognised with less perceptibility compared with other leadership styles (Bell, 2013). It is normally referred to as transformational leadership style; leaders encourage enthusiasm in their groups and are active in inspiring employees to progress**.** The challenge with this leadership style is that it relies mostly on a leader which leads to more challenges when the leader leaves the institution. The transformational leader allows self-development by allowing the followers to work without restrictions, applies an open-door policy to give advice, and adheres to support and acknowledgement (Abubakar and Ahmed, 2021). Transformational leaders are inspirational, adaptive, allow change, and are self-managed and risk takers.

Transformational leadership concentrates on the link created between leaders and followers (Amanchukwu, et al., 2015). It involves engagement of all employees at all levels (leadership to subordinates) and this engagement creates a bond that stimulates morality and motivates both parties (leaders and followers). This style is mostly associated with charismatic leadership where leaders with specific talents, such as self-confidence and evidently specified standards are portrayed as best suited to encourage followers (Lamb, 2013 as cited in Amanchukwu, et al., 2015). Hence, these leaders motivate and encourage followers by assisting group members to see the relevance and higher benefit of the task at hand. These leaders are characterized by high moral, ethical standards, they concentrate on the performance of the group members, and also on an individual to perform to his or her potential.

Transformational leadership is recognized by most school of thoughts as the most suitable to use in educational institutions of higher learning, since it concentrates on the disunion of leadership

between teachers with diverse skills to collaborate in a variety of duties needed in different contexts (Antonopoulou, et al., 2021; Koirala, 2019; Masry-Herzallh and Stavissky, 2021).

According to Koirala (2019), academic transformational leaders appear to be capable of managing a higher institution of learning in a more successful way, channelling the institution to optimize its performance.

Certainly, different scholars show that the transformational leadership style connects firmly with vibrant, open, clear and with communication in both directions and the institution's climate that encourages academics to innovative (Balkar, 2015; Bawuro, et al., 2018; Masry-Herzallh and Stavissky, 2021; Mumford, et al., 2000).

2.15.4 Democratic/participative leadership style

A democratic leader takes decisions in consultation with employees although the leader has the final say. They promote creativity, engagement, and innovation, and group members are more involved in ventures and decisions (Amanchukwu, et al., 2015). This style of leadership keeps employees motivated, highly satisfied, skilled and productive due to the level of involvement in decision making. With this leadership style employees feel they are an asset to the institution rather than just being consumers. The challenge with this leadership style is that during a crisis when an immediate decision is needed, teams will waste time brain-storming. Also, some in-experienced employees feel entitled to contribute to decision making and consume time.

2.15.5 Laissez-faire leadership style

Laissez-faire leadership can be the greatest or the nastiest of leadership styles (Amanchukwu, et al., 2015). Laissez-faire is the French expression for "let it be," thus, when it is used in relation to leadership, defines leaders who permit followers to work without guidance or supervision. Laissez-faire leaders abandon duties and evade taking decisions, they allow employees a complete independence to perform their task, take decisions and set their due dates. They only offer groups with resources and guidance if required otherwise they are not involved.

2.15.6 Transactional leadership style

This leadership style affirms that employees agree to submit to their leader when they sign the contract to accept a job. It includes the institution/leader rewarding employees for their determination and obedience and also punishing employees if their efforts do not meet a suitable standard (Amanchukwu, et al., 2015). Transactional leadership style consists of leaders stressing compliance on cohorts with the use of both rewards and punishment (Brown, et al., 2019). These leaders use authority and supremacy in the institution and they are known for monitoring work ethics, standards and also for arranging task projects (Brown, et al., 2019). However, the vast

majority of universities prefer transactional leadership style as opposed to a transformational leadership style due to promotion processes, reward systems (performance management, PM), vagueness in goals, and decentralised structures (Brown, et al., 2019).

2.15.7 Servant leadership style

According to Greenleaf (1998), servant leadership prioritizes the interests of the followers rather than the leader's own interests. Leadership styles that focus on the benefits and well-being of employees, focus on relationships with employees, and show admiration, indebtedness, and support to them when it needed are valuable in today's global business environment (Setiawan and Irawanto, 2020). It is a leadership model that inspires caring about people and involves employees in decision-making. Overbey and Gordon (2017) confirm that decision-making can be most effective if the decision-making favours everyone in the organization. Employee mindfulness and participation in decision-making can shape subordinates' personal development so that they can be more actively involved in the organization. Moreover, employees who feel that their leaders care are more inclined to have attitudes and behaviours that give support to the organization. In this way, servant leadership is able to grow existing organizational commitment in subordinates and also improve their work performance.

2.16 Critical success factor

Critical success factors refer to the characteristics of the institution that are important for it to achieve it mission. These factors play a major role in advancing stakeholder satisfaction and improving institutional performance. According to Bayraktar, et al. (2008); Asif, et al., (2013), for critical success factors to enhance institutional performance they must include a vision of the institution, leadership, student focus, process design and resources, other stakeholders focus, measurement and evaluation, employee engagement, recognition, reward, education, training, and quality system improvement. According to Zakuan, et al. (2012); Ahmad, et al. (2021), in the sphere of higher education excellence assurance, critical success factors are deliberated conferring to three main styles:

- **Concentrating on customers**: as the aim of student assistance is reinforced by training and developing staff, for improving the student selection method and attaining self-management.
- **Concentrating on staff and stakeholders**: to evaluate the input of all working group members to the efficiency and improvement of the institution's operations. Hence, this

comprises of setting guidelines and priorities within the institutional structure, affirming procedures, duties and work groups.

- **Concentrating on safeguarding that standard**: are practiced within a definite context and determine standards within the educational procedure and assessing the responsibilities of employees within a precise time-frame.

The fundamental supposition of critical success factors is to emphasize on crucial factors from three to six aspects that are of high significance to the organisation, and the organisation must reply to these aspects in order to attain accomplishment. By applying these aspects in identifying its information requirements, in order for the institution to acknowledge the vital information set. Hence, the significance of critical success factors in the field of educational institution administration may be seen by concentrating these factors on vital features. Ahmad, et al. (2021), further postulated that the most significant aspects are:

- **Strategic planning**: by reviewing a college for its key functions on a systematic basis and working to attain goals, on one hand, and its performance of critical success factors on the other hand.
- **Measurement**: the capacity to determine factors critical for evaluating and assessing the college's position.
- **Accountability**: by giving anticipated and adequate outcomes of the efficiency of the educational method for the college that can be shown to stakeholders.

Processes that are connected and have a significant factor in emerging a better educational system, which usually entails strategic planning, admission, examination, curriculum establishment, teaching and learning activity, and alumni relations (Alencia and Suryasari, 2020). The overall process acknowledged above contrive into numerous activities that have a part as the critical success factor indicators for an educational institution to determine knowledge management.

2.17 Theoretical underpinnings integrated with literature review

2.17.1 Resource dependence theory

Resource Dependence Theory (RDT) focusses on external resources; it basically analyses the impact the external environment poses to the institution and its performance (Fraczkiewicz-Wronka and Szymaniec, 2012; Hillman, et al., 2009; Nienhuser, 2008). According to Pfeffer and Salancik (1978) as cited in Zehir, et al., (2019) RDT affirms that institutions need resources in

order to sustain themselves in the long-term, and it is also affirms that they are only able to attain these resources from their own settings, and that other institutions also want to have similar resources in their settings. Thus, it also stresses that the strategy of change set by the institutions in the direction of acquiring resources elevate their level of dependence on the surroundings as affirmed by Zehir, et al. (2019). However, it is necessary to control the connection of dependence on power precisely. Power refers to the capacity of an actor to obtain control over the resources required by others within the framework of RDT (Harris and Holden, 2001; Zehir, et al., 2019).

The inconsistent power which arises due to the relationships based on resources generates pressure on an institution which is reliant on the resource and brings with it the obligation to accept demands. The scarcity of resources is the most fundamental environmental challenge faced by institutions (Zehir, et al., 2019). RDT emphasises that all institutions are severely committed to other institutions to offer them important resources, and this reliance is often mutual (Ilhan, 2020). Ilhan (2020) further postulated that the survival of an institution relies on their potential to provide resources from the external environment that are vital to their survival.

2.17.2 Resource-based view theory

Beamish and Chakravarty (2021); Lose (2021), postulated that the resource-based view tries to understand the sources of an institutional level of sustained competitive advantage (SCA). It clarifies heterogeneity and immobility or value rarity, immobility (VRI) in organization-specific resources and abilities central to SCA. Thus, an organisation needs to be well-established to exploit the full potential of such resources and the ability for competitive advantage. The resource-based view (RBV) is an administrative context that is pragmatic to determine strategic resources that an institution can exploit to gain a competitive advantage (Freeman, et al., 2021). According to Beamish and Chakravarty (2021); Freeman, et al. (2021) and Govan and Damnjanovic (2016), RBV is a concept of sustained/continued competitive advantage. RBV is aligned with internal analysis of the institution is propositions to human resource strategic management and is pivotal in the determination of behaviours in which an institution attempts to harness its human resource components for continual competitive advantage (Nemati, et al., 2010).

2.17.3 Institutional theory

Institutional theory scrutinises institutional systems, and procedures, and explicates the motives for having standardised characteristics or procedures in an institution which are within a matching institutional field (Fernando and Lawrence, 2014). Institutional theory is a projecting perspective in modern institutional research (AlNuaimi, et al., 2022). It incorporates a large frame of theoretical and empirical work highlighting the importance of cultural considerations and shared expectations (David and Bitektine, 2009). Neo-institutional theory state that an institution will try

to achieve the external expectations to survive (Kam, et al., 2013). These prospects are essential for institutional elements like amenability to information safekeeping regulations is one of the external prospects for the higher education (Kam, et al., 2013). Institutions incorporates three external expectations that control and confine institutional action: regulative expectation, normative expectation and cognitive expectation (Kam, et al., 2013).

New institutional theory also clarifies how institutions relate with their environments to subsist and flourish amidst rivalry and challenges (AlNuaimi, et al., 2022). Institutions are portrayed as a result of common understandings and shared explanations of adequate norms of shared activity, such as policies, job titles and practices (Meyer and Rowan, 1977). New institutional theory highlights three basic forces that form an institution. The first is coercive or forced pressures which mostly arise from government-sponsored agencies that demand of the powerful or resource-controlling institutions (AlNuaimi, et al., 2022), followed by imitative pressures caused by decision makers depending on other institutions' behaviour to control their institutions.

Lastly, is normative pressure, like social expectations, created via professionals and other parties contained or explicit efforts about accepting specific policies and practices (Meyer and Rowan, 1977). It has mostly been used to understand the institutional transformation regarding employing advanced technology by examining external pressures or factors on institutions' practices and cultures (Adebanjo, et al., 2018; Dubey, et al., 2019). New institutional theory explains change and innovation in two approaches that dwell on sociocultural aspects of the institution: in view of relationship between stability and change focussing on continuity and consistency as well as change and diversification amongst institutions (Greenwood, et al., 2017). Secondly, remarking stability and change as a result of planning structure activities and actions at numerous levels of research counting the societal field, and institutional, and separate levels (Scott, 2013).

2.18 Leadership theories

Different scholars of leadership view leadership as a characteristic that separates leaders from non-leaders. While the majority of scholars today have moved from old-style traits or personality-based theories to a contingency/situation theory, which commands that the condition in which leadership is applied is resolute by the leadership attributes and features of the leader (Avolio, et al., 2019; Amanchukwu, et al., 2015). All modern theories can belong in one of the three outlooks: leadership as a progression or relationship, as an amalgamation of traits, as certain behaviours or more frequently stated to leadership skills (Amanchukwu, et al., 2015).

2.18.1 Management/transactional theory

Transactional theories, which are also referred to as management theories, concentrate on the role of management, planning, group performance, and the interaction between leaders and followers (Amanchukwu, et al., 2015). It focusses on a system of rewards and punishments (Charry, 2012; Amanchukwu, et al., 2015). Thus, transactional theories suggest that a leader is mandatory to formulate policies and procedures that clearly state or highlight all expectations of followers and the consequences (rewards and punishments) aligned with meeting or not meeting expectations (Lamb, 2013; Amanchukwu, et al., 2015). When workers are performing they are rewarded, and when they are incompetent they are reproached or punished (Charry, 2012; Amanchukwu, et al., 2015).

2.18.2 Skills theory

This theory affirms that educated acquaintance and attained skills/attributes are important aspects in the application of effective leadership (Amanchukwu, et al., 2015). Skills theory acknowledges the link between inherited traits and the magnitude to lead successfully, but contends that learned skills, an advanced style and learned information are the main factors to leadership performance. A strong trust in skills theory often stresses that extensive determination and resources be dedicated to leadership skilling and development (Wolinski, 2010; Amanchukwu, et al., 2015).

2.18.3 Synthesis of theories incorporated in the study

The theories used in this study attempt to clarify and summarise what the study is trying to achieve which is performance recovery for the SCP at UKZN that has been impacted by the COVID-19 pandemic. The study examines resource scenarios (internally and externally) and the leadership/management role required to enhance performance recovery. RDT focuses on external resources and the impact of the external environment to the institution and its performance. RBV tries to understand the sources of an institutional level of sustained competitive advantage, while institutional theory focusses on how the institution relates with its environment.

Management/transactional theory concentrates on the role played by management in sustaining institutional performance. Skills theory believes in encouraging skills development and training of leaders to enhance their performance. These leadership theories explain how school leaders can adapt and adjust their practices to respond to unfavourable conditions during turbulent times resulting from the COVID-19 pandemic.

Figure 2.6 demonstrates the visual presentation of an adopted model of the theories used in this study which illustrate the management of resources within the SCP to enhance performance during turbulent times caused by this pandemic. The institution comprises of component inputs, transformational processes, output, feedback and the environment. The environment refers to

external sources that inject resources into the School, like Government or the Department of Higher Education, the corporate world, and other stakeholders who have interest in the School.

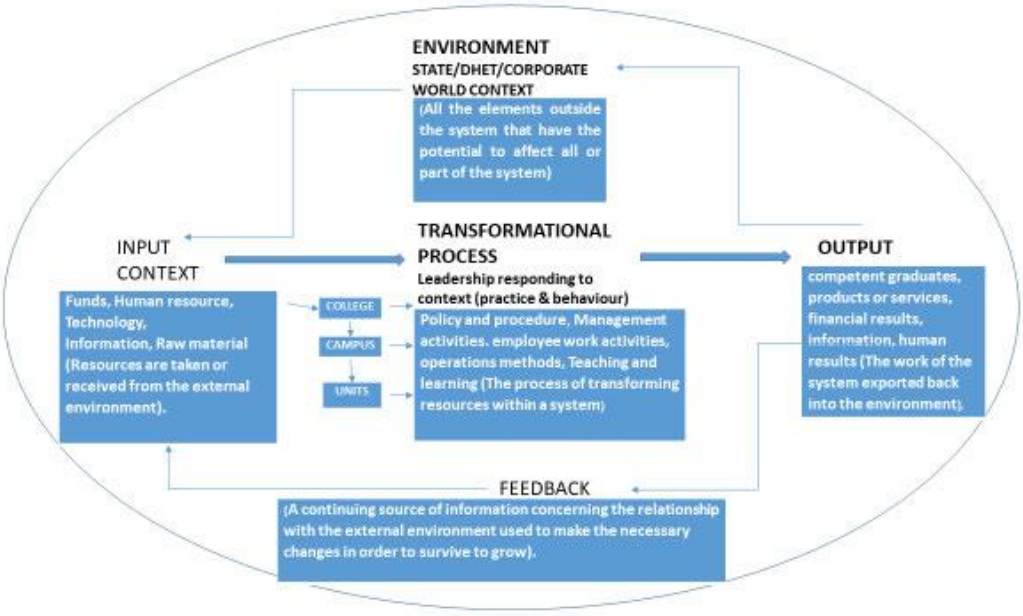

Figure 2.6: Adapted model which illustrates the relevance of theories incorporated in this study (Mbatha, 2021, p. 49)

The inputs from the environment are raw materials, human and non-human capital, information, technology and context (Mbatha, 2021). However, these inputs are filtered down from the university level to the College then to units (SCP). The inputs are then transformed to workforce activities, management activities, and operation methods as outputs. Thus, outputs are exported back into the environment as product, and services (graduates and alumni, information and financial results) which can also be inputs in the next cycle. The outputs provide a feedback to the system which can be utilised for review of operations of the institution. The context provided by the environment to the University/College as input is utilised by leadership during transformation.

2.19 Chapter summary

This Chapter has drawn the literature connected to the impact of the COVID-19 pandemic on performance recovery in an educational sector specifically within the SCP at the UKZN. The literature reviewed covered the scholastic analysis of learning environment resources, working from home (WFH), remote learning, resilience, recovery plan with cogent barriers, organisational performance with associated change management, global health scenarios, unpacking socio-economic realities, SWOT analysis and leadership styles. It also reviewed the theoretical

underpinnings that have been integrated in guiding and contextualizing the study. In the next chapter, the researcher presents and justifies the research design and methodology that is adopted for this study by focusing on the presentation and analysis of the results.

3 CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The previous Chapter provided an in-depth review of the literature relating to leadership and resources for higher institution. This Chapter concentrates on the research methodology that was used in this research. It is important to appreciate that any current research must have a research design with detailed plans and procedures for conducting research. This plan or design provides a roadmap to a particular field of study, which includes a number of decisions that should be considered when determining a particular topic.

3.2 Qualitative research

Qualitative research is the study that perceives people's experience and what is significant for people (Silverman, 2020). According to Silverman (2015, p. 4), "qualitative research encompasses verbal explanation of a real-life status quo". Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem (Creswell and Creswell, 2018).

Haven, et al. (2019) further claimed that in qualitative research the aim and research question focus on "how?" and "why?" rather than "what?" and "how many?" with the purpose of developing an integrated conceptual or theoretical understanding of an observed phenomenon. In general, the aim of qualitative research is to use such methods to investigate, document and describe the knowledge, experiences, behaviour, opinions, values, attitudes and/or feelings of the individual study subjects in relation to a phenomenon. This is most appropriate when the goal is description or when a phenomenon is new or unique (Creswell, 2009). Credible prospects regarding qualitative research is that it comprises of an open-ended question which allows the researcher to gain rich and in-depth raw data from a very limited sample. It allows participants to provide expressly explicit answers to the phenomenon under investigation. The process of research includes developing questions and a plan of action, data are typically gathered in the participants setting, data examination entails constructing from details to general themes, and the scholar makes interpretations of the meaning of the data (Creswell and Creswell, 2018). The final inscribed report has a flexible structure. This study has adopted qualitative research as its research methodology of choice within the auspices of the thematic oriented with its components of coding, themes, categories and pattern of meanings.

3.3 Quantitative research

Quantitative research encompasses a numerical study of the affiliation between variables (Silverman, 2015). In quantitative research, unbiassed theories can be verified by examining the associations between variables, which can be determined by the respective tools, thus enabling the investigation of numerical statistics through an arithmetical protocol (Govender, 2013). Quantitative research is a study that is concerned with enumerating or determining some phenomenon (Creswell and Creswell, 2018). It contributes to the positivist research model and objectivist pragmatic approach to knowledge acquisition by using hypothetico-deductive approach. It populates information through the application of large-scale survey research, using approaches such as questionnaires or structured interviews (Govender, 2013). This approach is used to test unbiassed concepts by investigating the connection among variables.

3.4 Mixed method research

This is an approach that involves gathering both quantitative and qualitative data, joining the two forms of information, and using different methods that may include theoretical assumptions and theoretical frameworks (Creswell, 2009). The fundamental assumption of this form of research is that the mixing of qualitative and quantitative information produces further understanding beyond the data provided by either the quantitative or qualitative data separately.

In this study, qualitative research was considered as an appropriate methodology because the research participants' feelings, experiences, views and ideas from UKZN (SCP) as the research site was important when the researcher analysed the data. However, due to the COVID-19 pandemic, social distancing and other the COVID-19 pandemic restrictions interviews were done online. The rationale in choosing the qualitative methodology was based on attempting to obtain a deeper and rich data provided by insight views expertise and opinion of the respondents (Creswell and Creswell, 2018).

3.5 Research approach and strategies

The scholar not only chooses a qualitative, quantitative, or mixed methods approach to conduct the investigation but also decides on the type of research within these three choices (Creswell and Creswell, 2018). Research designs are categories of analysis within qualitative, quantitative and mixed methods that deliver a precise direction or course of action in a research study. According to Denzin and Lincoln (2011), this method of inquiry is referred as strategies of inquiry.

Creswell (2009) proclaimed that the differences between qualitative and quantitative research are that qualitative approach focusses on using words and open-ended questions while the quantitative approach focuses on using numerical and close-ended questions. Thus, the mixed method is a combination of both qualitative and quantitative approaches. A clear-cut contrast between qualitative and quantitative approach is evident. This is demonstrated by the regular philosophical norms that scholars present in their study, the different research strategies used in the enquiry (like experiments for quantitative, and studies for qualitative case), and the approaches that the scholar would use for directing the identified approaches (e.g. quantitative data gathering on instruments versus qualitative data gathering through comment) (Govender, 2013). It is vitally important that scholars comprehend the link between research methods and research paradigms; subsequently, the advancement of paradigms determine the research questions and their relevance.

3.6 Research philosophies

Researchers must acknowledge that any specific research design captures a rounded worldview that represents principles, beliefs of the universe and their distinction, and also its populations (*ontology)*. Thus, the research design must also portray how the public see the universe and trusts ideas that are seen as important (*epistemology*), approaches or measures that can be applied to enable learning about the universe and public (*methodology*), and ethical values that should be obeyed when doing research (*axiology*) (Govender, 2013). Phenomenology is a research/enquiry tactic that is used to acquire insight about a phenomenon and its related denotation as defined by one or more participants. Interviews are often used as a method to acquire data and information of a certain phenomenon straight from people. Researchers then conclude from the interview based on the experience of the participants.

Chenail and Duffy (2009) proclaimed that research patterns and designs are linked with the theoretical concepts that can only be received or declined, but these cannot be validated or invalidated. Consequently, the public sight in relation to definite research styles can encompass methodological and theoretical principles that can contrast significantly from one another. It includes public opinions or patterns of well-structured people's insights of the world and their reactions towards it.

In qualitative research, the researcher is guided as to what critical issues should be investigated (e.g. empowerment) and who should be studied (e.g. women, disabled, homeless). Creswell and Creswell (2018) mentioned that around the 1980s, qualitative research experienced a

transformation and extended its scope of review to consider these theoretical lenses. These theoretical lenses also show the researcher's attitude in the real study, i.e. whether or not he is influenced or frank on personal, ancient and cultural matters, also the framework in which the final written statement should be portrayed, for example, individuals should not be criticized through collaboration with research participants.

There are numerous types of strategies of analysis that are allied with qualitative, quantitative and mixed method research, which are controllers and give direction for procedures linked to research design. The following strategies of analysis became protuberant in the 1990s and the 21st century:

- Ethnography is a study that is intended at discovering cultural groups and their behaviours, beliefs and assumptions (Govender, 2013). Morse and Richards (2002) as cited in Pratama and Firman (2010), stated that preferably researchers should not belong to any cultural group that is being examined. Researchers will have a problem sighting the core problems in a reviewed cultural group that he is part of and living with the respective group members. This can lead to discriminatory views and considerations by the researcher because of his internal knowledge of the cultural aspects of the group.

- Creswell and Creswell (2018) affirm that grounded theory is a style where the researcher applies the sights and opinions of the research participants as the basis for originating a general or intangible theory of an action, collaboration or a process. The researcher is worried about the procedure and transition concentrating on classifying phases or stages.

- A case study is a tactic where the researcher investigates an event, process, activity, programme, or one or more research participants in-depth. Data collection can consist of observations, document collections and interviews.

- Narrative research is a research style where the researcher attempts to examine the lives of individuals where one or more individuals can relay stories about their lives. The researcher then uses this evidence to tell these stories in a narrative format.

The research design for this research is a qualitative study. Qualitative research was used because the attitudes and behaviours of research participants can be explained in a much broader context, incorporating variables, hypotheses and constructs. In this study, qualitative research was considered as an appropriate methodology because the research participants' feelings, experiences, views and ideas from UKZN (SCP) as the research site are important when the researcher analysed the data. However, due to the COVID-19 pandemic, social distancing and other COVID-19 pandemic restrictions, interviews were undertaken online.

3.7 Population of the study

The target population refers to total the group of people from which the sample can be selected (Zhao, et al., 2013). A sample refers to a group of people who participate in a study. The targeted population is the School Management Committee which comprises thirteen (13) of members; the Dean and Head of School, Operations Manager, three Technical Managers, seven Academic Leaders, and in addition forty-one (41) module coordinators and twenty (20) Senior Professional Staff (Senior Technicians and Senior Admin Staff). The targeted population was chosen because of their leadership positions and service experience within the school and because they could provide in-depth information regarding the study. Thus, they were eligible for making decisions.

Researchers propose that there are countless factors that need to be regarded in selecting the sample size for the study. Ritchie, et al. (2003) affirm that the sample size for a qualitative study is mostly below 50. However, some scholars are of the view that sample size in such study is not important, what really matters is the information collected.

This study had a sample size of 12 research participants representing the UKZN School of Chemistry and Physics Durban and Pietermaritzburg centre.

3.8 Sampling

The sampling exercise involves setting the limitations for the study, gathering information through questionnaires, semi-structured interviews, management reports, and defining protocols for recording data/information (Govender, 2013). Ethical clearance for this research is attached in Appendix 4.

3.8.1 Non-probability sampling

Non-probability sampling, also known as non-random sampling, reveals that not the entire population size will contribute in the study. The results from the study of the selected sample cannot be comprehensive to the entire population.

Saunders, et al., (2012) claimed that the following are some advantages of non-probability sampling:

- Possibility to reflect on the descriptive comments about the sample.
- Cost-effectiveness and time-effectiveness compared to probability sampling.
- Effective when it is unfeasible or impractical to conduct probability sampling.

According to Saunders, et al. (2012), the following are some disadvantages of non-probability sampling:

- Unknown proportion of the entire population is not included in the sample group, i.e. lacks representation of the entire population.
- Lower level of generalization of research findings compared to probability sampling.
- Difficulties in estimating sampling variability and identifying possible bias.

Non-probability sampling has two sampling methods, namely, convenience sampling and purposive sampling (Sekaran and Bougie, 2016).

3.8.1.1 Convenience sampling

Saunders, et al. (2012) referred to convenience sampling as the type of sampling where assembling of data from population research participants is when they are conveniently available to participate in the study. This type of sampling prefers to use available primary data sources and does not require any additional data. Research participants for this type of sampling are found anywhere and wherever convenient.

Saunders, et al. (2012) detailed the following as advantages of convenience sampling:

- Simplicity of sampling and the ease of research.
- Helpful for pilot studies and for hypothesis generation.
- Data collection can be facilitated in a short duration of time.
- Cheaper to implement than alternative sampling methods.

Further, Saunders, et al. (2012) mentioned the following disadvantages of convenience sampling:

- Highly vulnerable to selection bias and influences beyond the control of the researcher.
- High level of sampling error.

Studies that use convenience sampling have little credibility due to the reasons enumerated above.

3.8.1.2 Purposive sampling

This research used purposive sampling. This type of sampling is also known as selective, judgemental or subjective sampling which is a form of non-probability sampling where a researcher uses their common sense when selecting participants in their study (Alchemer, 2021). Thus, it requires a researcher to have prior understanding about the aim of their studies so that they can properly select eligible research participants for the survey conducted. Purposive

sampling is mainly employed when a researcher wants to access a specific subclass of people, as all research participants are selected based on their profile that fit the study.

3.8.1.2.1 The profile of the participants

This Chapter commences with profiling the research participants.

Verbatim extracts from the transcripts are provided in Chapter 4 to display the participants' understandings and explicit lived experiences and to enhance the findings' trustworthiness. In line with the ethical considerations outlined in this Chapter, names of research participants were not disclosed instead they are referred as research participants 1 to research participants 12 (RP1 to RP12). This has allowed the researcher to collect information from the diverse experienced School of Chemistry and Physics personnel in leadership/management position without reviling their identity.

The site and research participants for this research were purposefully nominated at the UKZN SCP for a full understanding of the mounting problem within the school. The sample population varied between Head of School, Academic Leaders, School Managers, and Senior Professional staff (admin and technicians) in order to obtain different views, opinions and experiences in respect of the role of leadership in performance recovery within the school due to the impact of the COVID-19 pandemic. The sample population was limited to leadership and senior professional staff who have been with the school for at least a period of three years.

Creswell (2009) affirms that in a qualitative study the research participants or research sites are purposefully chosen which will help the researcher to comprehend the problems and the research question better. The following important aspects should not be ignored in respect of sites and participants when conducting research:

- The setting or research site.
- The respective actors in the research, i.e. research participants for interviews, observations, etc.
- The events related to the research.
- The process (continuously evolving events that actors undertake within the research setting).

There was also an assumption that research participants would be willing to participate in this research process since it affected their day-to-day operational activities, particularly academic service to students (both undergraduates and postgraduates) and the recommendations of this

research could be used for the benefit of all stakeholders in the organization including students that they serve. This specific study utilised a qualitative research methodology and purposive sampling in order to gather in-depth information from the 12 individuals selected as the sample size for the study out of 143 staff members (68 academics, 62 technical and 13 administrative staff).

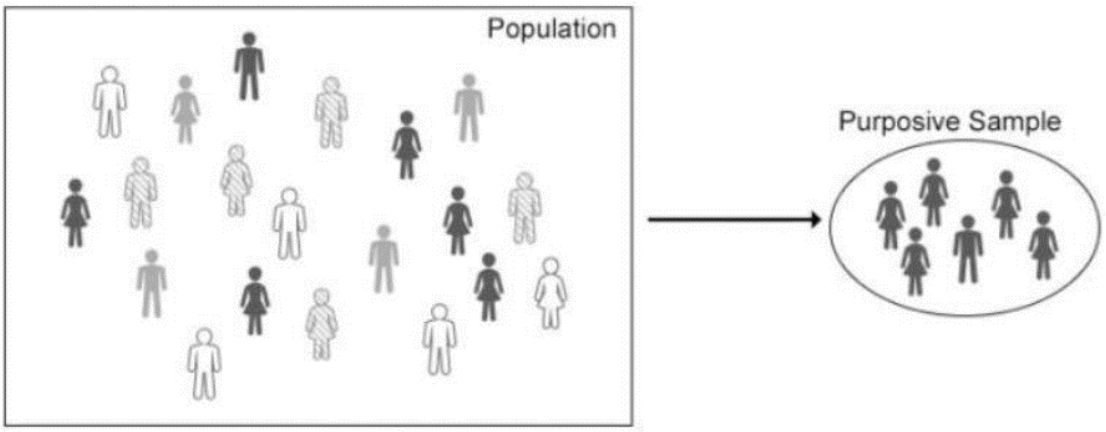

Figure 3.1: Purposive sampling (Saunders, et al., 2012, p. 17)

Figure 3.1 clearly illustrates purposive sampling where the entire population is shown with images of those individuals who provide expert knowledge on the subject matter.

According to Saunders, et al. (2012), there are six categories of purposive sampling, as listed in Table 3.1.

Table 3.1: Six categories of purposive sampling (Saunders, et al., 2012)

Type of case	Category
Typical case	Explain cases that are average and normal
Extreme or deviant case	Deriving samples from cases that are perceived as unusual or rare such as exploring the reasons for corporate failure by interviewing executives that have been fired by shareholders.
Critical case	Sampling focuses on specific cases that are dramatic or very important.
Heterogeneous or maximum variation sampling	Relies on researcher's judgement to select participants with diverse characteristics. This is done to ensure the presence of maximum variability within the primary data.
Homogeneous sampling	Focuses on "one particular subgroup in which all the sample members are similar, such as a particular occupation or level in an organisation's hierarchy"
Theoretical sampling	It a special case of purposive sampling that is based on an inductive method of grounded theory.

Saunders, et al. (2012) revealed these significant strengths for purposive sampling as being quite important to note:

- Purposive sampling is one of the most cost-effective and time-effective sampling methods available.
- Purposive sampling may be the only appropriate method available if there are only a limited number of primary data sources that can contribute to the study.
- This sampling technique can be effective in exploring anthropological situations where the discovery of meaning can benefit from an intuitive approach.

Saunders, et al. (2012) identified the following weaknesses of purposive sampling:

- Vulnerability to errors in judgment by researcher.
- Low level of reliability and high levels of bias.

- Inability to generalize research findings.

3.9 Type of data

In qualitative studies, researchers gather data from the natural setting in various forms. In this study information was collected though semi-structured interviews to collect in depth qualitative data clarity (Bertram and Christiansen, 2014; Kumar, 2018). Semi-structured interviews were considered as methods of data collection for this study because various views, opinions and perceptions of the research participants could be explored on the research topic. Semi-structured interviews utilise structured and open-ended questions which permit research participants to further elaborate on significant points or ideas (Bertram and Christiansen, 2014). This tool also gives a chance for the interviewer and the interviewee to realize important information which was not previously thought of, apart from the fact that semi-structured interviews are popular, flexible, accessible, and disclose even hidden facets of human and organisation a behaviour. They are a simple way of collecting information from leaders since it creates meaning and makes sense about their jobs and their environment (Qu and Dumay, 2011).

3.10 Interviews process

The researcher negotiated during the interview a date with each research participant with them the exact time, date and a preferred method online platform between Zoom and MS Teams. Research participants were informed about the duration of the interview, with an approximately one-hour duration depending on the responses of the research participants during the interview. The researcher drew attention to the full purpose of the research and how the interview data will be utilized. The process of interacting with research participants was done telephonically and an informed consent form was emailed to each research participant prior to the actual interview. The interviews were undertaken on Zoom and MS Team platforms to ensure social distancing as per the COVID-19 pandemic safety regulations.

Interviews were conducted at a time that was deemed suitable by the research participants and that had already been agreed. The ideal suitability for the execution of the interviews process was when both parties (researcher and research participant) would experience no interruptions and distractions. The researcher requested the research participants to be in places that were ergonomically comfortable and tenable and where they would not be interrupted nor distracted, more so, the place should have good WiFi connectivity.

The researcher also informed the research participants that there would be a recording of the interviews for accuracy purposes and data storage as the research participants had provided prior consent to be voice-recorded. Researcher was aware that semi-structured interviews are prone to bias and unfairness on the part of the interviewer. To mitigate these challenges, the researcher used research questions and the literature as a guide to formulate the interview schedule (refer to Appendix 3). To avoid ambiguity and to ensure some form of consistency, sequence, and phrasing of the main questions, the researcher developed a common interview guide for the interviews. Researcher ensured that the questions that appeared on the interview schedule were adequately addressed. The researcher did this by asking follow-up questions where he felt the research participant was holding information or had more to say. The researcher also used follow-up questions for clarity-seeking purposes and as member-checking technique.

3.11 Data analysis

Once the data had been generated, it was copied into a MS Word document and the initial analysis process began. Data analysis may be described as an endeavour to arrange, account for, and give explanations of data, so that some kind of sense may be made of it in terms of research participants' definitions of the situation, noting patterns, themes, categories and regularities (Cohen, et al., 2017). The process of analysing data gives sense to the data created. According to Schurink (2003), qualitative data analysis is not a once-off thing, but it is a process that starts from data creating to reporting. This process sometimes requires the researcher to go back to the field notes or the research participants to verify particular information before making findings (Cohen, et. al., 2017).

In this study, the researcher used inductive analysis to analyse the data. Inductive analysis is described as developing themes from the data (Cohen, et al., 2011). In the context of this study, the researcher started by transcribing the recorded data verbatim and transformed it into a MS Word document. The researcher read and re-read the data to understand it. The researcher then coded and classified it into categories and themes to facilitate understanding. Researcher used the data analysis framework as suggested by Braun and Clarke (2006) of the phases of thematic analysis as indicated in Table 3.2.

Table 3.2: Phases of thematic analysis (Braun and Clarke, 2006, p. 87)

Description of the process	Phase
Transcribing data (if necessary), reading and re-reading the data.	Familiarizing yourself with your data
Organizing interesting features of data.	Creating initial categories
Gathering all data relevant to each theme.	Searching for themes
Checking if the themes are appropriate.	Reviewing themes
On-going analysis to refine the specifics of each theme, generating clear definitions and names of each theme.	Defining and renaming of themes
Selection of vivid, compelling extract examples, analysis of selected extracts relating to the research question/s and literature, producing a scholarly report of the analysis.	Generating the report

3.12 Trustworthiness of the study

Trustworthiness in a qualitative study aims to justify the argument that the results are worth paying attention to (Lincoln and Guba, 1985). The researcher collected data from different sources to enhance trustworthiness of the findings; this process is referred as triangulation (Patton, 2002). The researcher collected data from different sources within a qualitative methodology approach and orientation that has components of credibility, confirmability, transferability and dependability in order to arrive at trustworthiness (Anney, 2014; Patton, 2002).

3.12.1 Credibility

Credibility deals with the enquiry of how the results from the study connect to reality (Creswell, 2009). Creswell (2009) discussed numerous ways through which credibility of qualitative research can be determined, as well as member check, insistent reflexion, peer debriefing, lengthy engagement, and dense description. In order to establish the trustworthiness of this study, the researcher ensured that he was immersed in the data generated before giving interpretations by

listening to the Zoom and MS Teams recorded interviews repeatedly as well reading through at least thrice the transcribed interviews. These steps enabled the researcher to provide a thick description of the findings.

3.12.2 Transferability

Transferability is the degree to which the results from the research can be used in other situations (Merriam, 1998). Nevertheless, there is a consideration that results from a qualitative study inquiry are restricted to specific people within a particular context. Thus, it not easy to generalise such results (Shenton, 2004).

3.12.3 Dependability

In order to discuss the trustworthiness in a qualitative study, the question of dependability should be clearly addressed. The methods tangled in directing the study must be clearly displayed so that an upcoming researcher will be able to repeat the study in such way that the results from the repeated study agree in detail with the earlier research (Schwandt, et al., 2007). Hence, in presenting this study, the researcher reported the research design and its implementation, the operational detail of data gathering, as well as the instruments used in data gathering.

3.12.4 Confirmability

Confirmability is the degree to which the researcher accepts his or her own biases Miles and Huberman, 1994). This highlights the researchers' concern for impartiality. Thus, triangulation is used as an instrument to minimise the effect of the researchers' predisposition (Patton, 2005). In this study, the researcher ensured that triangulated data from numerous sources. was compared with data from other research participants through the semi-structured interview.

3.13 Ethical considerations

Ethics are rules that guide and govern research practices and these rules are developed and are embraced by all scholars (Rule and John, 2011). On the other hand, Bertram and Christiansen (2014) view ethics in research as a very important principle that needs to be considered mostly when the study involves human beings. The researcher was ethically bound to make sure that the privacy, safety, anonymity and confidentiality of the research participants was protected and also that the views and responses of the research participants were accepted. For compliance purposes, researcher obtained in writing a clearance certificate and gatekeeper letter from the University of KwaZulu-Natal as the study was conducted at UKZN SCP.

The research participants were assured that the information they have provided for the study would be treated confidentially and would be used merely for the study. The research participants

were informed of their right to privacy and that their identity would be protected by assuring them that their names would not be published whatsoever, instead, pseudonyms would be used in the study. The research participants were also informed about the purpose of the study and it was explained to them, as well as, what would be done with the results. The researcher informed the research participants that their participation in the study was voluntary and that they could withdraw from participating in the study at any time and at any stage if they wanted to. The issue of payment was explained to the research participants that they would not be paid for participating in the study. The safety of the research participants was explained and they were assured that there would not be exposed to any harm since the study was conducted during lockdown because of the COVID-19 pandemic.

3.14 Limitations of the study

The limitation of the case study is that the findings cannot be generalised unless other readers find the application appropriate and transfer it (Bertram and Christiansen, 2014). The findings of this study are limited and restricted to the researcher and supervisor and would not be generalised. The focus of the study is on the impact of the COVID-19 pandemic on performance recovery within SCP at the UKZN. The findings are not generalisable and they were never intended for generalisation.

Since this is qualitative research it requires one-on-one interviews for primary data collection and because of the COVID-19 pandemic it was a challenge and it was very difficult to read body language as participants answered questions. The SCP has two centres, Durban and Pietermaritzburg, so geographical constraints were also a challenge while collecting data. Setting up for qualitative study it time-consuming and during interview discussions research participants often deviate from the main issue to be studied. The study only focussed on interviewing Leadership and Management, it did not include general employees and students who were also affected by changes brought about by this Pandemic.

3.15 Chapter summary

In this Chapter, researcher have presented a detailed discussion on the various research methods and the methodology underpinning the study. As part of that discussion, the researcher has made clear justification for various steps taken including the choice of the research paradigm, and the qualitative approach that was adopted. The data generation, and sampling methods were discussed, as well as, the issues of trustworthiness and issues of ethical consideration were

highlighted. In the next Chapter, the researcher discusses the presentation and discussion of results from the voluminous data generated through interviewing the SCP leadership and senior professional staff.

4 CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

The previous Chapter provided a comprehensive discussion about the research design and methodology within the qualitative methodology and the study adopted purposive sampling as a representation of the population. Twelve (12) research participants were earmarked for the study and all participants were permanent employees of the University of KwaZulu-Natal School of Chemistry and Physics (DBN and PMB centres) occupying different leadership positions within the school top management. In this Chapter, data derived from interviewing the School L and M will be analysed and presented. The study aimed to investigate the impact of the COVID-19 pandemic on performance recovery within the SCP at the UKZN by critically examining the leadership roles and resources required to enhance performance thereby mitigating the near catastrophic and devastating impact caused by the COVID-19 pandemic. The study gleaned the following key objectives to arrive at legitimate trustworthiness of the results:

- To examine the resources scenario provision to be post-COVID-19 pandemic aligned.
- To determine the existing institutional recovery plan and implementation of best practices post-COVID-19 pandemic impact.
- To investigate the leadership and management strategic response to the COVID-19 pandemic influence.
- To assess the organizational performance on attainment of the triple bottom line (social, economic and environment) post-COVID-19 pandemic.

The themes were derived to address the objectives listed above and the respective participants in this study responded to the questions linked to these objectives.

4.2 Identification, analysis and presentation of dominant themes

It is of greatest importance for the researcher to purposefully present the data collected from participants in a way that reflecting different views; agreements and disagreements; and any other useful points of information related to theories (Bazeley, 2009). According to the researcher, all data presented should be converted into themes, groups and patterns. Creswell (2014) coincided that qualitative research has examined data using themes to present opinions of the research participants. The dominant themes and emerging themes identified from the data are displayed in Table 4.1.

Table 4.1: Aggregate dominant and emerging themes derived from codes, extracts and chunks of data from research participants

Dominant theme: 1	Investment in contingencies to augment resources for post-COVID-19 pandemic alignment.
Emerging theme: 1.1	Overcoming barriers, hindrances and constraints in integrating and aligning the resources.
Dominant theme: 2	Resilience capacity, agility, influenced by legitimisation with normative, cognitive and regulatory institutional certainty.
Emerging theme: 2.1	Acceleration of recovery to pre-COVID-19 Pandemic era entailed by leadership and management.
Dominant theme:3	Consolidation and fortification of the strategic leadership that is both sustainable and transformational.
Emerging theme: 3.1	Important leadership and management traits during the COVID-19 pandemic era.
Emerging theme: 3.2	Leadership productivity/performance rating during COVID-19 pandemic.
Dominant theme: 4	Capacitation of human capital with both monetary and non-monetary aspects to the benefits of both internal processes and customer experience to augment organizational performance on attaining the triple bottom line
Emerging theme: 4.1	The significance of being a constant learning entity.
Emerging theme: 4.2	The continual workshops to the personnel articulating their inputs on performance improvement.

The discussions detailed in this Chapter are allied to the dominant and emerging themes detailed in Table 4.1. These were composed from responses gathered from the respective research participants.

4.3 Data presentation and discussion

This section presents and discusses the results of the data under dominant and emerging themes, that have been tabulated in Table 4.1. The author selected a salient thematic typology which is predicated on the data centrality, and the coding that has been applied right across all the study objectives represent an open-ended coding.

The literature review captured in Chapter 2 of this research study was linked with the presented data to determine whether they correlate or not, and to identify emerging themes. It is crucial to note that any blunders detected in the construction of sentences of the verbatim quotes were not modified from the respective participants.

4.3.1 Comprehensive analysis of results

Objective One (1): To examine the resources scenario provision to be post-COVID-19 pandemic aligned

This objective outline resources that are essential for the School of Chemistry and Physics to recover it performance post-COVID-19 pandemic. Theme 1 is cognate with Objective One (1) and addresses critical resources from the empirical data and concomitant scholastic literature in tandem with theoretical underpinnings.

4.3.1.1 Theme 1: Investment in contingencies to augment resources for post-COVID-19 pandemic alignment

Theme 1 was aligned with RQ One as referenced in Appendix 3. It assisted the researcher to establish the degree to which participants knew and understood what are the essential resources required by the School of Chemistry and Physics to recover it performance post-COVID-19 pandemic.

The research participants seemed to have a shared view of the appropriate resources under the COVID-19 pandemic context. Information technology (IT) as a resource was emphasized by the majority of the research participants as one of the resources required post-COVID-19 pandemic. According to the research participants, IT played a vital role in ensuring the operations continued in a seamless fashion during the COVID-19 pandemic since all the academic activities transitioned to online platforms (including meetings and teaching). They also felt that the online platform should be kept even post-COVID-19 pandemic as an easy means of teaching and learning.

"We can use IT to assist what we do in our practical examples to better prepare students on what they will be doing on a particular day, thereby to assist with assessments it won't replace the significance of practicals but it will improve experience and the real-time involvement that the students should benefit from." (RP1)

RP1 was aligned with Eduard and Lucian (2020), who supported that e-learning is an innovative stage for conveying knowledge and skills to students; it is economical, saves time, has a broader exposure and encourages teamwork learning.

"*Post-COVID-19 pandemic we need to get internet access to all staff and students, appropriate technology to staff that rely mostly to technology to perform their duties."* (RP2 and RP4)

"The COVID-19 pandemic has taught us that we need to change our old ways of doing things, I can teach in Howard College, Pietermaritzburg and Westville campus in one lecture for 500 students." (RP2)

"*Most critically, good strong and fast internet connectivity should be made available to all citizens to allow interconnectivity and this resource must be affordable as the COVID-19 pandemic brought a new way of connecting on business and social level."* (RP7 and RP8)

"*Digital infrastructure within the school need to be looked at seriously."* (RP10)

RP4 further stated," *IT is an important resource that staff and students need and they should be properly equipped with laptops to have access to online resources like e-journals, interlibrary loans."*

RP4 affirmed by Schleicher (2020), who opined that technology allows academics and students to gain admission to particular information well beyond a textbook.

The second resources provision that participants felt was necessary is funding/financial resources. They felt this resource enables the procurement of other assets, equipment, systems, and processes that facilitate efficient operability.

"*The most critical resource will be funding, the bottom line if you will go to online teaching you need finance with whatever we need going forward finance is the key*." (RP12)

RP12 concurred with RP3, "*We need financial (monetary and capital) resources for the acquisition of tools/instruments/equipment to keep going."*

Langwenya-Myeni (2017) and Usman (2016) concurred with RP3 and RP12 that financial resources are vital for any institution in sustaining operational efficiency because with money institution can obtain buildings, honour employees' salaries and wages, purchase equipment, electronics and communication apparatus, maintenance of instruments and remit operational expenses. Thus, financial resources are necessary to obtain other resources.

"Lot of students lost bursaries due to companies shutting down, therefore we need cash injection to the institution, as a school we depend on students to do research and we can't do our work when they are affected." (RP5)

RP5 confirmed that the economic instability resulted because of the COVID-19 pandemic has already impaired the financial state of tertiary institutions and with a possible decline in tax returns which will only degenerate the system (Di Pietro, et al., 2020; Friga, 2020; Blankenberger and Williams, 2020).

"*We need financial input as instruments are way over 10 years in their economic lifespan."* (RP10)

Human capital was also among the resources highlighted by the research participants that is still important post-COVID-19 pandemic.

"We still need human interaction for the same number of staffs to attend to students' enquiries, while for tutorials we need face to face or block classes." (RP2)

"We are also short staffed because people have comorbidities hence we have shortage in human capital." (RP3)

The assertion made by RP2 and RP3 were consistent with Usman (2016); human capital/resources play a significant role for an institutional effectiveness. Hence, the main responsibility is to coordinate, plan, control, organize, manipulate and maintain other forms of resources for efficient and effective institutional administration.

The resources mentioned above by the research participants agree and support the argument with the claims made by Uko et al. (2015), opining that fundamental and strategic resources in sustaining operational efficiency within the academic fraternity are financial, human, material, time, physical and IT resources. This is further corroborated by Zhang and Shiming (2013); Lin (2015) who concur that the institution must establish what resources are required and channel those resources to support graduates by delivering social services in the context of a systematic study under the usual social standing and unfavourable policy constraints simultaneously. This process will establish the best method to obtain the educational goals of the existing turbulent times and the systematic readiness for the future.

4.3.1.1.1 Emerging Theme 1.1: Overcoming barriers, hindrances and constraints in integrating and aligning the resources

This emerging theme was aligned with research RQ2 that was posed to the participants. This question was designed to assist the researcher in understanding the hinderances or the causations of delays in the resources required during the COVID-19 pandemic. The majority of participants indicated that the School of Chemistry and Physics is not isolated from the University of KwaZulu-Natal and during the COVID-19 pandemic most decisions and approvals had to come from the top management of the university and they was some communication breakdown.

"*The start of the COVID-19 pandemic, the biggest barrier was communication with the institution, but we were very fortunate in our school we have already introduced things like SharePoint and Ms Teams. Our school is not isolated from the rest of the university*

communicating with people from central finance, human resources and facility management became a real challenge. In the middle of the COVID-19 pandemic they were very little direction provided in terms of teaching and learning and the biggest challenge was assessments (copying and plagiarism).” RP1

RP1 further started, “At the start of the pandemic because we are practical base science we had to get our students back into our laboratories, while personal protective equipment (PPE) procurement which is done central was poorly coordinated between College and central office because of poor communication. Another barrier was the fact that we multi campus operations it was going to be easy if we were based on one campus we had to make sure that PPE is in all campuses.” (RP1)

The literature coincides with RP1: Crisis management strategy indicates that the better the resource contours and communications absorbed on responses, learning and development programs available throughout the crisis, the more likely that the institution and their teams will progress towards a common vision of recovery, and overcome the disorder or toxic effects of adversity (Bowers, et al., 2017).

RP2 had a different view he indicated two points as barriers in resource distribution: *“Firstly, main barrier is financial resource to obtain what we need to carry out our work, we need data, computers, electronic equipment which are linked to financial resources. The other barrier is the mind set and idiosyncrasy of staff and students thinking which pivot them to go back to old ways of doing things.*

RP3 and RP4 agreed with RP1*:” Barriers were with procurement it would take like a month to get order processed because people were not responding.”* (RP3)

“Lack of trust when buying equipment through procurement process and system which causes delays, sometimes due to supply chains disruptions and dislocations.” (RP4)

RP4 further agreed and concurred with RP2:” *If you do not have sufficient budgetary means especially in the faculty science with its innovation demands you can’t do efficacy-oriented research.”*

“Barrier was limited funding to purchase e-books and e-journals for students which we ended up compromising critical institutional information thus disadvantaging out intellectual property.” (RP6)

Also, during the COVID-19 pandemic we needed access to data and internet and this is a barrier to us to keep up with teaching and learning. Data was insufficient as everything is online. Another

barrier it the issue of load shedding since we have moved to online we lose connectivity due to load shedding." (RP6)

"The most significant barrier will be financial resources and negative political interference, both at institutional and government level. "(RP7)

"The university was not fully prepared for the COVID-19 pandemic, it had to set an emergency team to respond to this and we did not have contingency/disaster management plan. So, we had to suddenly think of what will be needed. Too many approvals before we can purchase things." (RP8)

RP9 resonate with RP1 on the point of communication: "*For me it lacks of timeously communication and transparency from the leadership that has affected the school operations because we are waiting for task team to tell us how to proceed. The other form of barrier is misalignment and poor assimilation supervisors who were not there when their students came back on campus to do research and associate practicals which burdened only the technical staff."*

"For digital platform the barrier is financial resource where we have budget cut." (RP10 and RP11)

RP11 further claimed that import and export as the barrier: *"The ban of import which delayed deliveries of equipment."*

RP12 felt that barrier is on getting people on board: *"buy in to have trust and transparency in the income and expenditure."*

4.3.2 Analysis of objective two results

Objective Two (2): To determine existing institutional recovery plan and implementation of best practices post-COVID-19 pandemic impact

This objective was aligned with RQ3 and RQ4 from the interview schedule, which was intended to established if methods and procedures that were followed during the COVID-19 pandemic to get operations going can still be effectively appropriate and efficacious for post-COVID-19 pandemic. Research participants had different views when it comes to the institutional recovery plan, some felt that being able to move lectures to e-platform/online was the best practice to keep institution operational, while others felt that the institution needs to get all staff and students back to campus post-COVID-19 pandemic and some had no idea if they were experiencing any recovery plan.

4.3.2.1 Theme 2: Resilience, capacity, agility influenced by legitimation with normative, cognitive and regulatory institutional certainty

In his classic Reflections on Public Administration, Gaus (1947) as cited in Blankenberger and Williams (2020), conceded the role that disaster plays in reforming public administration and policy systems. They further anticipated an ecological method to the research of public administration. They contended that to be most successful, management should be seen as a portrayal of an ecological system, and creature's presence in connection with their surroundings.

Thus, disastrous episodes are a change medium and when presented into an ecological system they will respond to attain a new equilibrium. Thus, those in administration are required to be conscious and strategize on how to respond, by considering that this is a possible catalyst for transformation of traditional policies and institutions (Blankenberger and Williams, 2020). The influence of these variations will be experienced in an array of policy zones, thus higher education is among the zones that have been affected by the COVID-19 pandemic. Blankenberger and Williams (2020) supported that legislators and higher education policy makers need to strategize for the likely implications of this disastrous event.

The COVID-19 pandemic was declared a pandemic and a global disaster by the World Health Organization (WHO) and South Africa also declared the COVID-19 pandemic as a national disaster (Mbandlwa, 2022). South Africa then introduced regulations to validate the National Disaster Act that offered effects to curb the spread of the virus (Mbandlwa, 2022). These measures were instantaneous and South Africa, like all other countries, was not ready to stabilize the economy and curb the spread of the virus at the same time (Shareef, et al., 2021).

"The recovery plan facilitates staff and students return to campus as we were pre-COVID-19 pandemic restrictions. For our perspective as laboratory-based science the longer this process takes the more stress is going to put on the system, not all staff are back on campus which means the other staff are picking areas where they are gaps." (RP1)

"*The best practices are there which is online teaching we just need guidelines of adopting blended and hybrid teaching and learning approach. UKZN and the department will have to craft and rules guidelines as most lecturers can teach from home, they just need a guideline what can be teach at home."* (RP2)

"I don't know of any plan we live day by day, we don't have a formal plan we don't have a written procedure we don't have a structure in place. We teach online but we don't have structure like before when you teach sixteen (16) credits module you know you have two tests, three-hour exam

and three-hour supplementary exam so some academics tend to do what they please for those modules some have five assessments and some have two assessments and that create a disadvantage for students." (RP3)

RP3 further stated*, "Where we have suffered the most is that our subjects are practical subjects we have not been able to deliver to students a right number of contacts practicals because of social distancing, access to the laboratories. In addition, that have a major impact, we get students at higher levels modules who do not know how to carry out certain procedures in the laboratory. You can show them videos but it not the same as when you do it practical. Only discussions during meetings with no implementation"*

Hedding, et al. (2020) supported RP3, from a practical outlook, many research projects were affected by lockdown and social distancing regulations. The restrictions had adversary impacts on postgraduate students from the Honours level to PhD, who did not have access to laboratories to perform experiments on their research to meet the standards of funded research (Hedding, et al., 2020).

Blankenberger and Williams (2020) supported that higher learning institutions will also need to consider advancing or improving tangible and social technologies to make substitute paths for practical experiments.

"We have learnt very fast that lectures and other means of teaching hence assessments can continue online since if we didn't move to this approach the university would have completely shut down. Science is a physical discipline requiring real-time active participation and practical or pragmatic skills to assure people have actually gained some skills. As a recovery plan we have blended Teaching & Learning mode." (RP4)

"We have never shut down completely we continued during COVID-19 pandemic, recovery plan will be to bring back staff and students and broader academic stakeholder community. There is a need to man up the laboratories facilities for staff with underlying conditions can be replaced temporary by teaching assistants." (RP5)

"We have done a lot during COVID-19 pandemic period we moved everything to online we have managed to continue with Teaching and Learning even though we were not on campus. The recovery plan in that sense was effective albeit wasn't perfect but functional, we can use what we learned to post-COVID-19 pandemic should we have a disaster that we cannot function on campus we can use online platform. But it not possible with practicals as they require in person active participation." (RP6)

"Unaware of an institutional recovery plan, perhaps this will be introduced in the following year when it is safe for all staff to return to work." (RP7)

"We don't have the best recovery plan they are still deciding whether staff will return, there is no proper planning and alignment." (RP8)

"I don't know that they are existing recovery plans yet. The recovery plan will be to get people back to work." (RP9)

"We got no recovery plan" (RP10)

"Rotation of staff which minimized exposure and also working remotely. The use of screening app limit exposed staff and students from coming to campus." (RP11)

Vyas and Butakhieo (2021) supported RP11, during COVID-19 pandemic working from home was the only alternative to curb the spread of coronavirus.

"I don't know about it." (RP12)

4.3.2.1.1 Emerging Theme 2.1: Acceleration of recovery to pre-COVID-19 pandemic era entailed by leadership and management

This emerging theme is aligned with RQ4, this question was trying to address the mechanisms that can be applied by leadership to return to normal pre-COVID-19 pandemic.

"Firstly, we have to have staff back on campus and once we've got staff back on campus, we need to rebuild relationships. Colleagues have been stressed for too long working in very difficult circumstances and have been burnt out. The rebound for me isn't about money, it isn't about budget, it about people and its people first at the centre of all things." (RP1)

"We won't be able to rebound to pre-COVID-19 pandemic era very easy and I say this because people have been operating in the electronic modes in the last two years, so we cannot accelerate that and I don't see us getting back to pre-COVID-19 pandemic like how it was. People have caught on how good it is and how possible it is to have environment where you can work/study online in the comfort of your own home where you can have resources available to you. Pre-COVID-19 pandemic, if I missed the lecture and I was never ever going to get that lecture back, in post-COVID-19 pandemic if I missed a lecture I could go now onto moodle click and watch the recording of the lecture, this never happened pre-COVID-19 pandemic. When we do get back, we're going to have to take best practices from pre-COVID-19 pandemic, take best practices from post-COVID-19 pandemic put them together in a hybrid molecule and operate another best practice model post-COVID-19 pandemic." (RP2)

RP2 resonates with Blankenberger and Williams (2020) by saying they will never rebound to pre-COVID-19 pandemic era, disastrous episodes are a change medium and when presented into an ecological system, they will respond to attain a new equilibrium. Thus, those in administration are required to be conscious and strategize on how to respond, by considering that this is a possible catalyst for transformation of traditional policies and institutions.

RP3 concur with RP1 with getting staff back on campus: *"I think it quite easy just tell the staff to come back to work full time, there are some limitations but we mostly been vaccinated. If we are all at work we could function more smoothly and I'm sure productivity would pick up. They're going to be some resource implications because our instruments through lock down were switching off and load shedding instruments have suffered drastically. But should we all be at work and have some financial resources, I think we can get back to pre-COVID-19 pandemic levels."*

RP4 also reflected to RP1 and RP3, *"They need to move rapidly back to effective contact teaching particularly assessments and practicals skills too."*

RP5 response also link to RP1, RP3 and RP4, *"Human resources and unions need to work around those people that are still reluctant to come on campus, how to convince them that to came back after the COVID-19 pandemic is declared as no longer a threat to public. Since May last year, we've been here running practicals as young staff and I think difficulty would be with those people who have never set foot on campus since outbreak of the pandemic."*

RP6 agrees with RP4 to bring back contact assessments: "*they need to bring back contact assessment that will make sure we get back to our standard of assessing before the COVID-19 pandemic."* RP6 further stated, *"people want to have some familiarity of what we used to do see people, meet face to face instead of sending e-mails. We should have contact lectures at least 50 %."*

RP7 coincides with RP2: "*following the COVID-19 pandemic, it will never be a business as usual or rebound to a pre-COVID-19 pandemic era. The institution's leadership and employees will need to find new ways to respond to the new normal. New opportunities to operate (remotely) and new cost saving measure have come about, which will benefit institutions.*

RP7 further shared the same sentiments with RP5: "*the biggest challenge will be the institution's employees, many of whom have not been on campus or undertaken any duties since March 2020 due to the nature of their work.*

RP8 was consistence with RP4 and RP6: "*it is important for us to re-emphasize the processes so staff need to be phased in, they need to be brought in and they need to be given time to quickly pick up and get to re-familiarize themselves with all the environment they have lost. They need to re-assure staff they are safe in their little spaces, better safety techniques and precautionary measures in the laboratories so that staff feel confident when they are working there.*

RP8 further shared the same sentiments with RP2; *"I don't think we can go back to total normality but we have to be more vigilant so great of vigilance needs to be carried on in years ahead."*

RP9 coincides with RP8, *"I would engage with my staff and make sure that they're comfortable, safe in their spaces and engage with them at ground level that is the only way I'm going to bring them back."*

RP9 further explained, *"Being supportive, understanding and continuously be in between what needs to be accomplished and very sensitive to each and everyone. Everybody has a different threshold to what they have experienced and what they have endured. To rebound, so it is just a proper management of staff with deeper engagement and greater support.*

RP10 agrees with RP2 and RP7, *"I honestly can't see us putting a mechanism in place to get back to pre-COVID-19 pandemic because the COVID-19 pandemic has taught us that there has to be a blended form. It has to be a blended form of an academic institute or even within the school. They are merits in having contact and online practicals but we need to really seriously look to this whole concept.*

RP11 felt the first point is getting university community to vaccinate, "*I could say one need to encourage not force their staff and students to get vaccinated because it the only way we can beat this virus."*

RP11 further claimed that this virus is here to stay so we just need to embrace it, by that statement RP11 supported RP2, RP7 and RP10 about the blended method, "*when the COVID-19 pandemic hit us we explored different ways of working and still met the operation and required outputs so staff can be encouraged to continue to work remotely.* RP11 felt this will be a cost-effective mechanism in terms of large telephone, water and electricity bills as there will be less staff and students on campus.

RP12 had a different view as opposed to other research participants, RP12 was of the opinion that since the school is cross-functional (DBN and PMB centre) each centre should be given a chance to brainstorm their challenges, not only management to decide, *"each centre has got their own unique set of challenges, people must be allowed to brainstorm their challenges. They must come*

up with solutions and they must move that up to the leadership and management of the school, we need to change our systems we can't have this top down approach."

RP12 coincided with Lin (2015); universities are cross institutional academic organizations meaning they should focus on supporting the disciplinary structures to improve the total strength and competitiveness of the departments through increasing inner and outer environments and join in resources in accordance with the demand. This can be achieved by considering the situation of each discipline and campus settings based on their landscape technology, application and foundation.

4.3.3 Analysis of objective three results

Objective Three (3): To investigate the leadership and management strategic response to the COVID-19 pandemic influence

Objective three was intended to look into the plan of action that was applied by leadership and management in responding to the COVID-19 pandemic impact.

4.3.3.1 Theme 3: Consolidation and fortification of the strategic leadership that is both sustainable and transformational.

Theme 3 was aligned to RQ5, which examines the action of reinforcements to strengthen the School of Chemistry and Physics against the COVID-19 pandemic influence.

RP1 indicated that the School of Chemistry and Physics is not working alone, it is interlinked to the whole university and the school deals with contact work mostly, *"in terms of strategic response I think we were really hampered as a school because of the general approach by the institution as a whole which is extremely cautions. For our perspective we needed to get post graduate and undergraduate students into laboratories and this general blanket of everything being so restrictive really made it very difficult for us as a school to manoeuvre within this environment."*

RP1 was consistent with Lin (2015), Universities including UKZN are cross-institutional academic organizations meaning they should focus on supporting the disciplinary structures to improve the total strength and competitiveness of the departments through increasing inner and outer environments and join in resources in accordance with the demand. This can be achieved by considering situation of each discipline and campus settings based on the landscape technology, application and foundation. University leaders surrounded by a crisis are still entitled to make cautious decisions on how best to serve his/her people, stimulate trust and allocate control

and activity, thus the nature of the crisis like the COVID-19 pandemic, requires leaders like the Head of School to take initiative and act as a reliable, sincere voice for their public (Netolicky, 2020).

RP1 further explained that despite the general approach that the university was adopting but the school had a strategic plan, "*I think for teaching and learning in particular there was regular communication which is very good although some of the decisions that were taken took so long to filter down that really played a havoc in particular laboratories, can we have a sat down assessment, can we come to campus?"*

RP1 also indicated that they invited the Vice Chancellor of the university to visit the laboratories so he can see mechanisms put in place in the labs for the COVID-19 pandemic so he can understand on how the school operates.

RP1 was supported by RP2, *"this is very important whether they are crisis and whenever people need to alter their way of life they always look to leadership and management for guidance and way forward. This is where regular communication come into play, communication between management, staff and students. I think we need more presence of leadership on the ground for easy communication to let them know exactly what is expected during this time, what is a strategic vision for the university going forward."*

RP3 felt the COVID-19 pandemic happened unexpectedly and so quickly which made it difficult for management to quickly respond to it, *"things have come upon us rather quickly and the management have tried to respond to things and tried to adapt. They too have had to a difficult time because things change and you don't know one day to next what is happening."*

RP4 coincide with RP2, "*we need high level of leadership and management as a requirement. We need to reflect and have some effective strategic meeting with all parties, subordinates or it's the students and all those that are involved need to be consulted. We should work as a collective in a very collegial way, we shouldn't be seeing that as a boss or this as a subordinate everyone should be involved in one way or the other in decision making."*

RP4 further highlighted that the COVID-19 pandemic affected all stakeholders and one should be very compassionate with the aftermath of the COVID-19 pandemic, people have gone through a lot of things so we should have that in mind.

RP5 felt the strategic response that the university/school applied was equal to the COVID-19 pandemic influence, when government was announcing change in restriction levels the university would equally respond to the procedures of that level.

RP6 expanded on the response made by RP5, *"I think we in some instances, have done a good job we have put policies and procedure in place in cases when student tested positive but at first we had some challenges."*

RP6 further articulated in support of RP1, *"we are very slow on implementation if you notice UKZN was the last university to go back to campus that is why our semesters overlapped. It because UKZN was very cautious in some instances over the edge too cautious. The school had policies like health and safety and we didn't know what to do when we have a COVID-19 pandemic case in the lab. The problem was with the university which was too slow in taking decisions."*

"The leadership at executive level insofar as leading the institution and its employees during the pandemic has been indecisive. Communication has also been poor when disseminated, communication is often too late and the message is often unclear, contradictory or incomplete. This creates confusion and anxiety amongst employees and leadership down the chain of command." (RP7)

RP8 shared same sentiments with RP5, *"I think in the School of Chemistry and Physics we were quite efficient and effective in our response so we were able to phase quickly when we were going to more risky phases we're quick to implement less contact. I think in that way we were quick to respond to the requirements of government."*

RP9 felt the best strategy will be for the school to do SWOT analysis for pre-COVID-19 pandemic, during the COVID-19 pandemic and post-COVID-19 Pandemic and this will assist in developing a strategy that will best respond to the COVID-19 pandemic influence.

RP11 agrees with RP5 and RP6, *"the university at large was proactive in drawing guidelines for example before we even reach level 1 restrictions, back in year 2020 the university had already had a response plan to level 1 regulations."*

RP11 was supported by a number of scholars, the COVID-19 pandemic was declared a pandemic and a global disaster by the World Health Organization (WHO) and South Africa also declared the COVID-19 pandemic as a national disaster (Mbandlwa, 2022). South Africa then introduced regulations to validate the national disaster act that offered measures to curb the spread of the virus (Mbandlwa, 2022). These measures were instantaneous and South Africa, like all other countries, was not ready to stabilize the economy and curb the spread of the virus at the same time (Shareef, et al., 2021).

4.3.3.1.1 Emerging theme 3.1: Important leadership and management traits during the COVID-19 pandemic era

Emerging theme 3.1 was aligned with RQ6, this question examines important leadership and management skills that School of Chemistry and Physics leaders needed during the COVID-19 pandemic period.

"For this period within the school they are two priorities the first one was communication and how do you communicate in the way that is effective and meaningful, how do you communicate and when do you communicate? Communicating with staff and students by email, WhatsApp just reach on them on how they were doing so communication was key during the COVID-19 pandemic." (RP1).

Furthermore: "The other part is empathy and I think we had a lot of staff over this period that found themselves in a very precarious positions for a number of reasons, be financial, be health, be mental wellness. The challenge was to identify who they are, people that needed assistance and what most appropriate assistance to give them." (RP1)

RP1 confirmed the statement made by Nathanial and Van der Heyden (2020), that proposed crisis management applied to the COVID-19 pandemic catastrophe, and that every leader should be aware of certain steps in order to effectively manage during crises like the COVID-19 pandemic. Firstly, it is vital to categorize the crisis precisely and to communicate as soon as possible the directions and procedures that need to be followed to control the crisis, while exploring the problem in conjunction with different specialists and developing a clear strategy with well-defined indicators. All decisions taken should be communicated and the chosen scenarios before committing to action that will be constantly monitored.

RP2 felt the key was to be available, be available to respond to emails, to answer questions and to sympathize with staff and students which is in accordance and commensurate with RP1, *"I'm very amenable to what staff need, you answer their questions you are able to sympathize with them. They are many cases where it's been very difficult and sometimes what staff needs is a leader is a leader to say I know what you are going through, I know it difficult let work together and get job done. So, we need leaders who are available and we need leaders who respond to all queries by all staff and students."*

"I think management need to be compassionate, they need to be insightful and they need to take into consideration everyone circumstances which are very different. Some people have been very ill, severely ill and others haven't. You've got to take all this into consideration, your expectations

of everybody cannot be the same. You have to put yourself in the other person's shoes parts of the time when making decisions." (RP3)

RP4 coincides with RP1 and RP2 where they both find communication as one of the most important elements, "*it's important and very crucial that we have effective communication I hear from the top the top is hearing from the bottom we are discussing we are coming to common understanding."*

RP4 further cited that being sensitive is an important attribute during the COVID-19 pandemic era, "*also being sensitive to issues and complications that employees have been exposed to*.

"I think leadership qualities, will be someone who is a decisive leader who can be able to make a decision quickly." (RP6)

RP6 further agreed with RP1, RP2 and RP4 by citing communication, "*good communication skills someone who will filter information to staff and students because everyone was affected by the COVID-19 pandemic. Someone who think long term."*

According to RP7, a decisive leader which was congruent with RP6 and further cited, timeliness, visibility, excellent communication like RP1, RP2, RP4 and RP6 cited, consistency and reliability.

"It was important that leadership have greater empathy and sympathy towards all that was happening, consider human capital greater than that of the processes." (RP8)

RP9 also highlighted communication as a key attribute in a linear platform.

RP10 also did not divert from other participant responses, "*I think they need to be little bit more compassion for staff that I actually coming to work every day and be visible on the ground during the COVID-19 pandemic period."*

RP11 felt leadership should also be available on the ground and communicate with staff not to make decisions without proper consultation with staff.

RP12 also was aligned with other participants and also cited communication and sensitivity as the main leadership traits during the COVID-19 pandemic era.

The majority of scholars agree with the research participants as Koehn (2020) suggested four main abilities for a pragmatic leader: demonstrating a meaningful character, concentrating on learning experiences, sensitive agility and accepting fear. Schwantes (2020) concurred that the main four competencies required to deal with the challenges related to the COVID-19 pandemic catastrophe are flexibility, sensitivity, openness to suggestions and engagement. Dirani et al.

(2020) also added that sense maker, emotional stability, technology enhancer, employee well-being and innovative communicator as important leadership traits during a crisis for the purpose of maintaining financial stability of the institution.

According to Fernandez and Shaw (2020), effective leadership during a crisis implies risk taking, flexibility, courage, alignment toward goals and resolutions, strategic vision and applying an innovative style intended to gain competitive advantage. Thus, leaders with these traits are effective decision makers and have an ability to move through uncertainty and learn through direct practice (Ancona, et al., 2007). A leader's personality and traits are very important during the COVID-19 pandemic crisis which brings the VUCA world to the institution. Thus, taking an effective decision in a crisis implies building institutional resilience.

4.3.3.1.2 Emerging theme 3.2: Leadership productivity/performance rating during the COVID-19 pandemic

Emerging theme 3.2 was aligned with RQ8, in this question research participants were expected to rate their performance during the impact of the COVID-19 pandemic.

RP1 felt he could not determine his effectiveness as an individual because he leads a team so he believes in team work, "*We were effectively and I think we were also reasonably effective if I look at how other schools responded, if you acknowledge that we have cross-sectional campuses, therefore it could be challenging since it is not the same as having one small manageable school on the contrary we have upward of hundred (100) personnel in the school a massive magnitude in reality."*

RP1 was supported by Fidelia (2020), who claimed that school leadership is not about individuals leading but it a group of people that direct and have some influence within the school. Thus, it basically individuals with a shared vision in different levels and divisions of the school. It simply means, it is not only the Head of School that runs, influence and controls towards a set vision.

"*So, if you ask me how effective I was during the COVID-19 pandemic, one thing I can tell you is that in the last two years I worked harder than I ever worked before and I think that's because it was very uncertain. People didn't know what we had in store, I think I have been very effective. I had weekly meetings with staff I manage, I worked 24/7 respond to email at any hour, check my emails before I go to sleep and respond."*. (RP2)

"*I'm working much harder than I've probably ever worked before, so I was very effective. My students are very happy that I respond quickly but at an expense of my well-being,"* (RP3)

"*Personally, I put extra energy in the last year."* (RP4)

"*Effective, we were able to meet targets and graduate students during these trying times."* (RP5)

"*Being a leader in this period was quite hectic we had to provide direction for teaching moving to online. We had to make sure everything is in order in terms of documentations."* (RP6)

"*Very good, available, reliable, supportive, present and responsive almost 24/7."* (RP8)

"Effective, I educated myself about this whole pandemic and I had a team that also educated themselves on everything surrounding this pandemic. We had to come up with standard operation procedures and also make sanitizers for the whole university." (RP8)

"*Effective, having a strong mental attitude allowed me to work in the lab with students."* (RP10)

According to Fernandez and Shaw (2020), effective leadership during crisis implies risk taking, flexibility, courage, alignment toward goals and resolutions, strategic vision and applying an innovative style intended to gain competitive advantage which coincides with research participants responses.

4.3.4 Analysis of objective four results

Objective Four (4): To assess the organizational performance on attainment of the triple bottom line (social, economic and environment) post-COVID-19 pandemic

The triple bottom line is just another concept that conveys the environmental agenda's development along economic and social lines. It is a practice for measuring organizational performance and organizational accomplishment across economic, social, and environmental dimensions. In application, the term has been discussed as the sustainability framework.

4.3.4.1 Theme 4: Capacitation of human capital with both monetary and non-monetary aspects to the benefits of both internal process and customer experience to augment organizational performance on attaining triple bottom line

Theme 4 was aligned with RQ9; in this question the researcher was trying to understand the important resources in attainment of the triple bottom line post-COVID-19 pandemic.

"For social perspective we've got to regroup and find the commonality behind us and to develop this new drive. Our financials sustainability is linked to student recruitment and student throughput which relates to you getting students. For environment perspective, our university it's about meeting people from different cultures and learning different things, it not about watching a video or coming to an online lecture, working at a bench in a laboratory and there's a person

maybe from Kenya or Ghana standing opposite you and learn a little bit about their culture and their background." (RP1)

"During the last two years we've not had regular social contact so I haven't seen many of my colleagues and many of the students in the chemistry department. Post-COVID-19 pandemic we need to get back, I would like to see my students once a week, I would like to see my staff once or twice a week, we need regular meetings so people can see my face, human beings are social beings and we need to have that social interaction." (RP2)

RP2 further elucidated*, "In terms of economic, we need to ensure we strive in terms of university getting money in terms of two tranches one is by student fees and the other is by funding generating funding from donors (international and local) or the government. Hence, for the environment we need to alter the environment that we have, we need to look at our lecture venues, we need to look at our offices or office plans and see if it fits in with what we have been doing in the past two years. Do we need office that I call my office or I just need an office that is available when I go in. so if you have 20 or 30 staff you don't need 30 offices maybe you need 10 offices, one third of people that will go in at a time and that will free resources like utility bills? Restructuring and reorganizing the way we carry-out business in that environment."* (RP2)

"Financially, the university is not in good state and you'd think that with the COVID-19 pandemic they would have saved on some resources like bills but that money had to go somewhere in terms of PPE required, sanitizers. Student intake has dropped so we were not able to meet our targets of new students. To generate funds, things need to get to normal so people can travel, we can get more postgraduates from other countries." (RP3)

"The social responsibility of ensuring that your employee is in a good medical aid, to save guard the interest of employees. It's our social responsibility to see that we use our innovative minds to address the social economic impacts of the environment." (RP4)

"Environment, continuation of the hybrid form of practicals (online and contact) to reduce environmental waste generated in the labs. Economic, marketing the successful running of practicals on the university websites. The school could provide guidelines on the hybrid model. Social, using Zoom and Ms Teams for more online engagement with students and creating a greater awareness and hype on social media. (RP10)

The research participants are in support of Ranjbari, et al. (2021), that environmental sustainability is all about controlling scarce resources to minimize processing and reduce the waste generation to protect the environment and natural resources. While social sustainability focusses on people by integrating them and social responsibility, civil rights, health and safety.

The COVID-19 pandemic, as a global health emergency, has extremely impacted social sustainability by risking the life quality of human's healthy and safe lives. Health, human well-being and education are basic social needs to achieve social sustainability and have been paid more attention than other social issues by sustainability researchers considering the COVID-19 pandemic crisis effects.

Decreasing budgets have led tertiary institutions to cut expenditure, intensifying tuition, recruiting of undergraduates more hostilely, and trialling with new distribution modalities (Blankenberger and Williams, 2020). Tertiary institutions are important contributors to community equity by providing a channel for social mobility, thus budget shortfalls increase costs, decrease academic support, reduce scholarships and this has a serious impact for social equity (Hazelkom and Gibson, 2019; Marginson, 2018; Blankenberger and Williams, 2020).

4.3.4.1.1 . Emerging theme 4.1: The significance of being a constant learning entity

This emerging theme was aligned with RQ7, this question was meant to highlight opportunities and challenges presented by COVID-19 Pandemic that can be utilised recover pre-COVID-19 pandemic era.

"*UKZN wasn't a peaceful and tranquil environment and we need to remember that pre-COVID-19 pandemic we had things like protests, lots of protests, lots of load shedding. Moving to Ms Teams was extremely fortuitous thing that we did, a platform that allowed us to communicate and share information it has allowed us to improve on governance under very difficult and challenging circumstances moving forward. The challenge that is going to be with us for a long time is mental health issues and polarization of staff."* (RP1)

"*Now we can have meetings remotely much more often regardless of where we located. People have cut down on travel time. The challenge will be people taking advantage of the situation and say nobody is watching me and it is very difficult to manage people remotely."* (RP2)

"We are all quite good at online teaching so, even when we go back to contact teaching should we have disruption we will be able to put material online so we don't lose time. We are able to have meetings and keep contact both oversees and with local people through Ms Teams and Zoom. You need physical contact of experiment in the laboratory." (RP3)

"You need to have proper equipment to work online, you've got assessment or lecture online there's no power how do you move?" (RP4)

"Students can listen to the lecture in their own free time or space. Challenge is it to integrate people, they are student who don't know each other and also who have never met me." (RP5)

"I think they should consider staff development." (RP6)

"Refine IT systems and ensure seamless hardware and software capabilities for all staff. More consistent, reliable and timely communication that employees can trust. Fully reliable and updated website, ensure unproductive and inefficient staff are held accountable." (RP7)

"The COVID-19 pandemic has shown us that we can teach a number of students through online. We have a number of students sitting in very distant locations and accessibility to internet connectivity to these students is very difficult. University fell short of data some of the students picked up a bit late with their teaching." (RP8)

"I think in terms of opportunities we had numerous platforms like Ms teams and Zoom we never really bothered to go and learn what is it all about." (RP10)

RP11 felt the opportunity that was presented by the COVID-19 pandemic was the flexibility for staff to work from home which also saved on travelling expenses as no salary increment was given to staff during the COVID-19 pandemic.

Research participants shared the same sentiments as the scholars on opportunities and challenges presented by the COVID-19 pandemic. Opportunities: The sudden transition to online teaching and learning introduced vital opportunities to offer more relaxed learning possibilities, explore combined or cross-learning and a combination of synchronous teaching with asynchronous teaching (Marinoni, et al., 2020). The COVID-19 pandemic opened doors to develop old-style professional information and skills enhancement in IT programmes (Sepulveda-Escobar and Morrison, 2020). The COVID-19 pandemic has lubricated the wheels for technology to be embraced into higher education so that instruction can be communicated as conveniently as before (Khan, 2021). Online teaching forced academics to take part in professional growth opportunities provided to them by their organizations (Donitsa-Schidt and Ramot, 2020). According to Samarasekara, et al. (2020), the pandemic has assisted reflection on critically curriculum, course content and the academic approach.

Challenges: The online learning that was caused by the COVID-19 pandemic crisis had some challenges due to technological complexities and because all stakeholders were not ready for these drastic changes (Sepulveda-Escobar and Morrison, 2020; Regehr and Goel, 2020). According to Marinoni, et al. (2020), the transition from contact to virtual teaching brought some difficulties like lack of access to IT infrastructure, skills for remote learning and the proper requirements for other fields of study.

4.3.4.1.2 Emerging theme 4.2: The continual workshops to the personnel articulating their inputs on performance improvement

Emerging theme 4.2 was aligned with RQ10; this question covers suggestions that research participants would like see implemented by the School of Chemistry and Physics to cope with the COVID-19 pandemic.

"*The point that I've noted here is perspective and perspective is important. The insight for me from this whole ordeal was to try and put myself in the other person's shoes and ask the question, what is the experience like from their perspective."* (RP1)

RP1 shared the same sentiments as Greenleaf (1998), that servant leadership prioritizes the interests of the followers rather than the leader's own interests. Leadership styles that focus on the benefits and wellbeing of employees, focus on relationships with employees, and show admiration, indebtedness, and support to them are especially needed and valuable in today's global business environment (Setiawan and Irawanto, 2020).

"The School of Chemistry and Physics is to have a good plan on how we can support both teaching and research in terms of laboratory space because we don't need to support them in terms of the lecturing space. The space where we convey ideas that can be done remotely, but where things need to be done in laboratories we need to have that space where we support them. administratively where ordering of chemicals, paying for chemicals, receiving chemicals. Where we have technical support where we are able to run the laboratory and we supervise students effectively and the support that we need for both technical and administrative." (RP2)

"The school needs to think about its teaching in a more holistic manner. We're all like end scrambling around and we haven't got holistic plan as we used to have. I think that is more important. we've lost touch with the whole holistic plan of teaching curriculum and we need some time to be able to think and to be able to say ok we've made some changes we've adapted because of the COVID-19 pandemic. We can now see that actually it's all hanging together and we not all veered off in different directions. We need social cohesion of all the different staff in the school to come together and realize we are working for one united cause. The good of the students, the good of the university and we need to pull together." (RP3)

"It is important for the school to understand the importance of relevant and contemporary research. For example, I'm from the poor part of Kenya and I'm having a research in Kenya. I'm working on spaceship material and I know for sure we don't have a vehicle that has ever going to the space from Kenya. Maybe if I was based in America then that's relevant but I should be working on malaria. If I'm based in South Africa I should be working on energy, you can observe

catastrophic adversary impact of Eskom load shedding, therefore we do things that help your immediate society." (RP4)

RP4's argument was aligned with transformational leadership, which is recognized by most research disciples as the most suitable to use in educational institutions of higher learning, since it concentrates on the growth and revitalisation of leadership between teachers with diverse skills to collaborate in a variety of duties needed in different contexts (Antonopoulou, et al., 2021; Koirala, 2019; Masry-Herzallh and Stavissky, 2021).

RP6 coincides with RP3, *"I think we can do little more in terms of social interaction between staff for people to engage with each other. During the COVID-19 pandemic we had isolated relationship we only see people online. It will be best to see people on campus just in corridors meet them just to say hello and it good for the moral of the school."*

"Communication well, effectively and consistently, provide the best high-quality internet and IT systems, pay attention to staff wellness (mental health and psychosocial), encourage all staff to be vaccinated, move as many activities online as possible (for cost savings and to reduce exposure to the pandemic)." (RP7)

RP7's responses were consistence with a transformational leadership style. According to Schwantes (2020), the main four competencies required to deal with the challenges related to the COVID-19 pandemic catastrophe are flexibility, sensitivity, openness to suggestions and engagement. Dirani, et al. (2020) concurred by claiming that sense maker, emotional stability, technology enhancer, employee well-being and innovative communicator are important leadership traits during a crisis for the purpose of maintaining financial stability of the institution.

"I think it was important to the school to have had a meeting with everyone to let us be on the same page for example I'm part of management and I don't know which academic has comorbidities. So, who was not allowed to be on campus and who was allowed to be on campus so that kind of information was withheld. All the people that were going to campus should have been grouped into teams." (RP8)

"I just want people to feel valued, to feel that they are part of this family and everything that we achieve their hand is in it. I just want togetherness, we need to put strategy in place where we identify people strengths and areas that can improve in." (RP9)

"To investigate how other universities coped with the practical component of the academic program and the success rate. What tools and techniques were implemented to achieve the success." (RP10)

"Enable the management to make decisions that would be efficient to both support staff and students, promotes more interaction, more staff forums, more staff and students' interaction." (RP11)

RP11 coincides with a democratic leader; decisions are taken in consultation with employees although the leader has the final say. This promotes creativity, engagement, innovation and group members are more involved in ventures and decisions (Amanchukwu, et al., 2015). This style of leadership keeps employees motivated, highly satisfactied, skilled and productive due to the level of involvement in decision making. With this leadership style employees feel they are an asset to the institution rather than just being consumers.

4.4 Chapter summary

This Chapter focussed on the presentation of data and results obtained from the 12 research participants and their responses were linked to the different objectives set for the study. The participants' responses were linked to the literature review detailed in Chapter two of the study in order to integrate the empirical results with literature and cognate theoretical underpinnings. The participants answered questions based on their opinions, experience, and insights and expertise mainly derived from their involvement within the department. The next Chapter focusses on the findings, conclusions and recommendations of this study.

5 CHAPTER 5: RECOMMENDATIONS, CONCLUSION AND LIMITATIONS OF THE STUDY

5.1 Introduction

The previous Chapter presented the results of the study based on the input from the participants. The focus of this Chapter is to present findings relating to the objectives of this study. The participants have expressed different opinions, views, and perspectives in accordance with their expertise, and knowledge, insights and experience they have accumulated formally and informally within the School of Chemistry and Physics at UKZN in leadership and management positions. A qualitative study within the auspices of thematic analysis was employed, and this allowed the researcher to extrapolate comprehension and collect adequate data and knowledge in achieving the alignment with the study objectives. This chapter also encapsulates the conclusions and recommendations based on cogent literature and empirical data duly provided by the study participants. These were based on the findings depicted from the participants' responses and the literature contained in this research study. The research was limited to the School of Chemistry and Physics UKZN employees who were in leadership positions for a minimum period of three years.

The research objectives of the study were as follows:

- To examine the resource scenario provision to be post Covid-19 pandemic aligned.
- To determine the impact of the existing institutional recovery plan and implementation of best practices post-COVID-19 pandemic.
- To investigate the leadership and management strategic response to the impact of the COVID-19 pandemic.
- To assess the organizational performance on attainment of the triple bottom line (social, economic and environment) post-COVID-19 pandemic.

5.2 The rationale and significance of the study

The School of Chemistry and Physics was established out of a university reconfiguration process which was implemented in 2012. This College reconfiguration resulted in a merger between the disciplines of Chemistry and Physics, also incorporating the Mechanical Instrument Workshop (MIW), the Electronics Centre (EC) and the Glass Blowing Workshop (GBW) to establish the new school. The new School has a Council approved establishment of 68 academic, 62 technical and 13 administrative staff over three campuses (SCP, 2020). The School spans three campuses, with teaching and research being conducted on the Pietermaritzburg and Westville campuses

whilst service teaching to engineering and health sciences students takes place on the Howard College campus. This study was intended to identify, analyse and examine the gap constructs in terms of the phenomenon that the COVID-19 pandemic that strategically influenced on the organizational Performance Recovery and resilience within School of Chemistry and Physics at the University of KwaZulu-Natal as the unit of analysis for the study.

5.3 Integration of the study

The researcher opted to apply qualitative research methodology to gather and collate knowledge and content on the phenomenon constructs. Creswell (2014) posited that qualitative research methodology focuses on gathering information and uses themes (domains), emerging themes, categories and patterns to systematically examine the data collected from the research participants. Qualitative research methodology deals with concepts and theory instead of statistics which is synonymous with quantitative research methodology (Merrian and Robin, 2019). The sample size for the study was 12 interviewees occupying different management and leadership positions.

5.4 Consolidation of the research findings

A synthesis of the research findings is presented in the paragraphs below to give context to the research questions posed to the respective participants of the study. The alignment with the identified analysed and cogent dominant and emerging themes reflected in the previous chapter is also dealt with.

5.4.1 Objective one aligned findings: *To examine the resources scenario provision to be post-COVID-19 pandemic aligned.*

Investment in contingencies to augment resources for post-COVID-19 pandemic alignment

The findings indicated that contemporary oriented information technology (IT) and associated digitalisation culture within the 4IR was the most chosen as the appropriate resource that is required by the School of Chemistry and Physics (SCP) post-COVID-19 pandemic. This resource played a vital role during the COVID-19 pandemic as all teaching and learning activities were placed on to online platforms and were kept post-COVID-19 pandemic in a blended form with contact teaching. Eduard and Lucian (2020) confirmed that e-learning is an innovative stage for conveying knowledge and skills to the students, it is economical, saves time, has a broader

exposure, and encourages team learning and teamwork. The research participants further explained that IT resources introduced a modern and effective solution-driven communication method for business and at a social level. Hence, it allows access to information and knowledge digitally and it should be made cost-effective for all communities. Schleicher (2020) concurred that technology allows the scholastic ecosystem to gain admission to particular information well beyond the traditional means of a textbook.

Furthermore, resources, such as infrastructure, human capital, financial, and tangible resources were also mentioned by participants as pivotal for the SCP to recover its performance post-COVID-19 pandemic. Participants were of the opinion that the critical availability and accessibility of financial resources was overarching and provided leverage for institutional performance and realisation of its strategic imperatives. Langwenya-Myeni (2017) and Usman (2016) support the above argument that financial resources are vital for any institution in sustaining operational efficiency because with finances at the institution's disposal it can honour its payment obligations such as fixed and current assets and those that are operational in nature.

Research participants further stated that human capital is still required post-COVID-19 pandemic for human interaction during tutorials, practical sessions and for administrative duties. Usman (2016) concurred with the findings that human capital endowments play a significant role in any institution's sustainability, effectiveness and efficiency. Hence, the responsibility of management and leadership is to coordinate, plan, control, organize, leverage and maintain other forms of resources for efficient and effective institutional well-being.

Uko et al. (2015) support the above findings by highlighting that the fundamental and strategic resources in sustaining operational efficiency within the academic fraternity are financial, human, material, time, physical and information resources. Zhang and Shiming (2013); Lin (2015) also concur with the findings by mentioning that the institution must establish what resources are required and channel those resources to support graduates by delivering social services in the context of a systematic study under the usual social standing and unfavourable policy constraints simultaneously. This process will establish the best method to obtain the educational goals of the existing turbulent times and for the future.

The School of Chemistry and Physics is among one of the most expensive schools in the College of Agriculture Science and Engineering at the University of KwaZulu-Natal. It relies on blended teaching where students learn theory in class and perform practicals in the laboratories. The laboratory part requires instruments, chemicals and consumables to operate. These instruments need to be serviced and maintained after a certain period or even replaced due to aging, and that is a very expensive exercise. Thus, the three main resources mentioned above (financial,

information technology and human resources) are crucial for post-COVID-19 pandemic alignment.

Barriers, hindrances and constraints in integrating and aligning resources

The research findings indicated that the most significant barrier in assimilating and aligning the resources required during the COVID-19 pandemic was based on the consistency of the lines of communication. This is due to the fact that SCP is not isolated from the entire university and the university has a hierarchical organizational and bureaucratic structure where decisions are taken from top executive leadership of the university cascading to Colleges and then to Schools. The research participants felt that during the COVID-19 pandemic there were elements of real-time communication breakdown between these structures with resultant delays in relaying and encoding information and in some instances, it was not communicated correctly. There was a non-substantial indication on the direction on how to handle teaching and learning (T and L) or how to deal with cases that rose due to the COVID-19 pandemic. Research participants also indicated red tape in procurement processes for the purchase of sanitisers and PPE required by the School as some staff and students had to return to campus for laboratory work.

Bowers et al. (2017) support the above findings; crisis management strategy indicates that the better the internal resources and communications absorbed on response, and learning and development programs available throughout a crisis, the more likely that the institution and its teams will progress towards a common vision of recovery and overcome the disorder or toxic effects of adversity. Research participants were also of the view that the main cause of red tape in procurement was due to a lack of trust and transparency in terms of delegated and systematic decision flow.

Some research participants felt financial resources were the barrier as all other resources that were required during the COVID-19 pandemic relied on funds available to procure them. Blankenberger and Williams (2020) support the above findings, this new catastrophe emanates while tertiary institution funding is under distress. Thus, decreasing budgets have led tertiary institutions to cut expenditures, intensifying tuition, recruit undergraduates more hostilely, and trial with new distribution modalities.

5.4.2 Objective two aligned findings: *To determine the impact of the existing institutional recovery plan and implementation of best practices post-COVID-19 pandemic.*

Capacity and agility, legitimising with normative, cognitive and regulatory institutional certainty

The findings from the study indicated that the recovery plan must motivate and inspire staff and students' campus return as in the pre-COVID-19 pandemic. Working from home is less viable for the School as it is laboratory-based science; it requires people on the ground and it causes more stress for those who are able to come on campus. Some of the research participants felt the best practices are in place which are online teaching and learning it just needs guidelines for staff working from home as for the pre-COVID-19 pandemic. These guidelines should entail how to deliver to students the correct number of contact practicals and how to conduct assessments. Blankenberger and Williams (2020) shared some suggestions in support of the above assertion, tertiary institutions will also need to consider advancing or improving tangible and social network technologies to facilitate substitute paths for practical experiments.

The study also revealed that the best practices post-COVID-19 pandemic will be to adopt a hybrid model of teaching and learning while staff should work on rotation. Staff and students coming on campus will need to continue to use the screening app when they come to campus. Vyas and Butakhieo (2021) were in support of a hybrid approach as an alternative during COVID-19 pandemic; on the other hand, working from home was the only alternative to curb the spread of coronavirus.

Acceleration of recovery to the pre-COVID-19 pandemic era entailed by leadership and management

The research findings revealed that while academic operations will take time to return to the previous normality prior to the COVID-19 pandemic, the leadership and management will have to find new ways to adapt to the new reality. The COVID-19 pandemic taught staff that they can work from the comfort of their home and conduct lectures but going forward the only possibility is to use a blended method of teaching and learning. This argument was supported by claims made by Blankenberger and Williams (2020), stating that a sluggish rebound to the pre-COVID-19 pandemic era will be experienced, while disastrous episodes are change medium when presented into an ecological system, they will respond to attain a new equilibrium.

Thus, those in administration are required to be conscious and strategize on how to respond, by considering that this is a possible catalyst for transformation of traditional policies and institutions. However, the study also revealed that some research participants were convinced that encouraging staff and students to vaccinate, might accelerate the return to normality.

There were also perspectives from the research participants inferring that in rebounding to the pre-COVID-19 pandemic era, staff should be allowed to brainstorm the challenges they faced

during this pandemic as the School is cross-functional. This was supported by Lin (2015), universities are cross-institutional academic organizations meaning they should focus on supporting the School discipline structures to improve the total strength and competitiveness of the departments through increasing the inner and outer environment and join in resources in accordance with the demand. Hence, this can be achieved by considering the situation specific to each discipline and campus setting based on its landscape technology, application and foundation.

5.4.3 Objective three aligned findings: *To investigate the leadership and management strategic response to the impact of the COVID-19 Pandemic influence.*

Consolidation and fortification of the strategic leadership that is both sustainable and transformational

The research findings revealed that the School had a strategic response to the COVID-19 pandemic informed by contingency measures and tactics that were influenced by policies and procedures put in place for dealing with COVID-19 pandemic cases should they arise. The only challenge was the fact that the School is interlinked to the whole university and the university was very cautious in implementation, it was applying a general approach and there was communication breakdown from the executive leadership of the university and leadership of the school. Research participants further explained that this is due to the fact that UKZN is very large (five campuses) so applying general approach was merely to accommodate the entire university which triggered the operations of the School as it is a contact science-based school.

The above statement was supported by Lin (2015), who stated that universities are cross institutional academic organizations that should focus on improving the total strength and competitiveness of the departments through increasing the inner and outer environment and join in resources in accordance with the demand. University leaders surrounded by a crisis are still entitled to make cautious decisions on how to best serve his/her people, stimulate trust, and allocate control and activity, thus the nature of a crisis, like the COVID-19 pandemic, requires leaders, like the Head of School, to take initiative and act as a reliable, sincere voice for their public (Netolicky, 2020).

The research participants also indicated that school leadership took the initiative to invite the Vice-Chancellor of UKZN to visit the laboratories so he can see how School operates and the implementations towards curbing the COVID-19 pandemic within a laboratory space in order to bridge this general approach and communication breakdown. Despite all that being said, the

research participants felt the university at large had a strategic response towards curbing the spread of the COVID-19 pandemic because when government was implementing new levels and stages of lockdown restrictions, the university had already drawn guidelines to respond to the new regulations.

Nathanial and Van der Heyden (2020) supported the above argument, proposed on crisis management applied to the COVID-19 catastrophe, every leader should be aware of certain steps in order to manage effectively during a crisis like the COVID-19 pandemic. It is vital to categorize the crisis precisely and to communicate as soon as possible the directions and procedures that need to be followed to control the crisis, while exploring the problem in conjunction with different specialists and developing a clear strategy with well-defined indicators. All decisions taken should be communicated including the chosen scenarios before committing to action that will be constantly monitored.

Important leadership and management traits during the COVID-19 pandemic era

The findings of this study indicated that a leader during crisis needs to communicate, have empathy, sympathy, be available, be compassionate, be insightful, be consistent, reliable and quick in decision making. These findings were supported by Koehn (2020) who suggested four main abilities for a pragmatic leader: demonstrating a meaningful character, concentrating on learning experiences, sensitive agility, and accepting fear.

According to Schwantes (2020), who was also in support of the findings, the main four competencies required to deal with the challenges related to the COVID-19 pandemic catastrophe are flexibility, sensitivity, openness to suggestions and engagement. Dirani et al. (2020) further claimed that being a sense maker, emotional stability, technology enhancer, employee well-being, and innovative communicator, are important leadership traits during a crisis for the purpose of maintaining financial stability of the institution.

Leadership productivity/performance rating during the COVID-19 pandemic

The research findings indicated that some leaders felt being productive/performing or effective is determined by the effectiveness of the people you lead since it is a group effort. Thus, research participants further explained that judging by the size of the School (across three campuses) and in comparison with other schools, they were very effective.

This statement was supported by Fidelia (2020) who claimed that school leadership is not about individuals leading but a group of people that direct and have some influence within the school. Thus, it basically individuals with a shared vision in different levels and divisions of the school.

It simply means, it is not only the Head of School that runs, influences and controls towards a set vision.

Some research participants felt they were very effective during the COVID-19 pandemic as they gave extra hours of work, responding to emails, communicating with subordinates, students and providing direction. This argument was supported by Fernandez and Shaw (2020) that effective leadership during a crisis implies risk taking, flexibility, courage, alignment toward goals and resolutions, strategic vision, and applying an innovative style intended to gain a competitive advantage.

5.4.4 Objective four aligned findings: *Capacitation of human capital with both monetary and non-monetary aspects for the benefit of both internal processes and customer experience to augment organizational performance on attaining the triple bottom line*

To assess the organizational performance on attainment of the triple bottom line (social, economic and environmental) post-COVID-19 pandemic

Under social perspective the research participants felt the university/school community needs to regroup and find commonalities behind themselves and develop this new drive. Thus, staff and students need to return to campus as the university is about meeting people from different cultures and to learn from them. They also need to address the social economic impacts of the environment like the problem of load-shedding (Eskom). Leadership needs to ensure the wellbeing of staff and students as everyone was impacted by the COVID-19 pandemic. They need to ensure that they have a good medical aid and are working in a safe environment.

The research participants felt the finances of the institution are determined by the student enrolment and graduation success, which relates to increased revenue from students locally and from abroad, and also by approaching government and other people with an interest in the institution for funding. They also indicated that marketing the operations of the School on the university website can be a source of funding by attracting more students.

Blankenberger and Williams (2020) indicated the financial implications if the above suggestions are not executed; decreasing budgets have led tertiary institutions to cut expenditure, intensifying tuition, recruiting undergraduates aggressively, and trialling with new distribution modalities. Hazelkom and Gibson (2019); Marrginson (2018) concurred with the financial implications raised by Blankenberger and Williams (2020) that tertiary institutions are important contributors to community equity by providing a channel for social mobility, thus budget shortfalls increase

costs, decrease academic support, and reduce scholarships, and this has a serious impact for social equity.

Environmental perspective-research participants agreed on the blended approach of teaching and learning which they felt would minimize waste generated during practicals and air pollution by having at least 50% of contact practicals as opposed to 100%.

The argument made above was supported by Ranjbari et al. (2020), that environmental sustainability is all about controlling scarce resources to minimize processing and reduce waste generation to protect the environment and natural resources, while social sustainability focuses on people by integrating them and social responsibility concerns civil right, health and safety. The COVID-19 pandemic, as a global health emergency, has severly impacted social sustainability by risking the life quality, and human health and safe lives. Health, human well-being, education and basic social needs to achieve social sustainability have been paid more attention than other social issues by sustainability researchers when considering the effect of the COVID-19 pandemic crisis.

The significance of being a constant learning entity

The findings from this study revealed the following opportunities and challenges presented by the COVID-19 pandemic:

Opportunities: Research participants revealed that the COVID-19 pandemic introduced an alternative for teaching and learning in the event of unrest, namely, teaching can be moved to an online platform. The application of MS Teams and Zoom provided a new platform for academics to host meetings, conferences and lectures in the comfort of their homes. Students can now catch-up and listen to lecture recordings at their own leisure. The COVID-19 pandemic provided staff and students an opportunity to upgrade their soft skills. Academics can teach a high volume of students at different locations in just one lecture. The COVID-19 pandemic provided a platform to review teaching methods.

Marinoni et al. (2020) shared the same sentiments as the above findings; the sudden transition to online teaching and learning introduced vital opportunities to offer more relaxed learning possibilities, explore combined or cross-learning, and to combine synchronous teaching with asynchronous teaching. Sepulveda-Escobar and Morrison (2020) concurred that the COVID-19 pandemic opened doors to develop the old-style professional information and skills enhancement in IT programmes.

Khan (2021) further expanded in support of the above: the COVID-19 pandemic has lubricated the wheels for technology to be embraced into higher education so that instruction can be communicated as conveniently as before. Online teaching forced academics to consume

professional growth opportunities provided to them by their organizations (Donitsa-Schidt and Ramot, 2020). According to Samarasekara et al. (2020) the pandemic has assisted on critical curriculum reflection, course content and academic approach.

Challenges: Mental health issues and polarization of staff and students due to the impact of the COVID-19 pandemic are a major issue. Research participants also indicated the challenge of managing staff and students remotely as they tend not to do work properly when no one is watching. Students particularly copy during assessments. The other challenge highlighted is the issue of Eskom with load-shedding while conducting a lecture or assessment, the lack of proper online equipment, the sudden shift to online teaching without training on soft skills, poor network coverage in certain areas, and not enough data to access the internet. Humans are social beings so the COVID-19 pandemic has led to human isolation due to the restrictions.

Sepulveda-Escobar and Morrison (2020); Regehr and Goel (2020) were in support of the above challenges; the online learning that was caused by the COVID-19 pandemic crisis had some challenges due to technological complexities and because all stakeholders were not ready for these drastic changes. Marinoni et al. (2020) further concurred that the transition from contact to virtual teaching brought some challenges like lack of access to IT infrastructure, skills for remote learning and the proper requirements for other fields of study.

Continual workshops offered to personnel for articulating their inputs on performance improvement

The findings of this study revealed that the research participants would like to see leadership putting themselves in other people's shoes before deciding. Leaders who communicate well and effectively, take a consultative decision with all stakeholders, are concerned about staff well-being, and encourage vaccination. Greenleaf (1998) supported the above insight by relating them to servant leader: a servant leadership prioritizes the interests of the followers rather than the leader's own interests.

Setiawan and Irawanto (2020) concurred on servant leadership traits, leadership styles that focus on the benefits and well-being of employees, focus on relationships with employees, and show admiration, indebtedness, support to them are needed and valuable in today's global business environment. Research participants further mentioned that SCP requires a good plan on how to support both teaching and learning in terms of laboratory space as the school is science-based. One can reduce the number of staff coming to campus since lectures and meetings can be channelled to online platforms, and one can also introduce shared offices since staff only need to come on campus if they really need to be there to reduce cost.

Another suggestion was to introduce guidelines for blended teaching, and invest in research that deals with current challenges like the issue of Eskom with load-shedding. One could improve social cohesion by allowing staff and students back to campus. Leadership and management should make decisions in consultation with both staff and students. The above argument is aligned with a democratic leadership, that promotes creativity, engagement, and innovation, and group members are more involved in ventures and decisions (Amanchukwu, et al., 2015).

5.5 Recommendations of the study

5.5.1 Objective one*: Investment in contingencies to augment resources for post-COVID-19 pandemic alignment*

The researcher of this study suggests that the important and main resource that will align other resources for post-COVID-19 pandemic is financial resources with the overarching reference to the Information and Technology and Digitization aspect, which is commensurate with the transition to the new normal of the 4IR. This further accentuates the inculcation of the digitization culture and its conversion as it plays a critical role in the organization. Digital technologies suggest innovative framework opportunities for improved action and better success of educational goals (al-Shati, 2022). The School should improve ways of obtaining funding including grants and funding benevolent donors, in an attempt to capitalize the resource requirements for the School going forward.

Barriers, hindrances and constraints in integrating and aligning resources

Since the COVID-19 pandemic rose very quickly, no one had an idea on how to deal with it and all operations had to be shift to online platforms. Staff and students had to operate remotely so the main barrier in resource allocation was communication. Communication barriers happen in any communication process and they are more serious in remote education due to the physical distance between colleagues (Dabaj and Isman, 2004). The School should improve ways of communicating with all university stakeholders during and after the crisis as the SCP is linked to the university, especially when it comes to decision making.

5.5.2 Objective two: *To determine the impact of the existing institutional recovery plan and implementation of best practices post-COVID-19 pandemic.*

Capacity and agility, legitimising with normative, cognitive and regulatory institutional certainty

The recommended recovery plan for the post-COVID-19 pandemic is to encourage the university community to consider vaccination so that staff and students can return to campus. Vaccines have

become a game-changer for the COVID-19 pandemic; they decrease the frequency of symptomatic virus effects and the risk of spread of the virus to others (Greenhalgh, et al., 2019). The School should consider continuing with blended learning and only have practicals and assessments on campus. Since most courses were offered online in 2020–21, academics have also mastered a great deal on how to deliver effective teaching and learning online, however, some course content needs to return to contact mode of teaching and learning (Greenhalgh, et al., 2019). The School should also consider making some guidelines for blended learning, and policies and procedures to monitor staff that are working remotely.

Acceleration of recovery to the pre-COVID-19 era entailed by leadership and management

It not possible to go back to the pre-COVID-19 pandemic era without leadership and management coming up with a new strategy to operate in the new normal that is presented by the aftermath of the COVID-19 pandemic. Leadership and management need to devise policies and procedures to operate in a blended environment in consultation with all stakeholders involved.

5.5.3 Objective three: *To investigate the influence of the leadership and management strategic response to COVID-19 pandemic.*

Consolidation and fortification of the strategic leadership that is both sustainable and transformational

The strategic response that was used by the School was adequate in curbing the spread of the pandemic. During laboratory sessions students were kept at 50% of the capacity of the laboratory, social distances were implemented of two meters apart between students. The mandatory use of face masks at all times, sanitizer stations on every floor and in the laboratories, was also implemented. In a case of an outbreak, the School will shut down the laboratory for proper disinfection and conduct contact tracing for staff or students who were in contact with a suspected individual and facilitate COVID-19 pandemic testing for any possible cases.

Important measures which are probably effective at curbing the on-campus spread of the COVID-19 pandemic are: vaccination, wearing of masks, social distancing, reducing class sizes, improving ventilation, test/trace/isolate policy when the COVID-19 pandemic incidence take its toll, and supporting clinically susceptible people to work from home (Greenhalgh, et al., 2019).

The university was using a screening app for staff and students to test if they are good to come on campus. All COVID-19 pandemic symptoms were listed and made available for staff and students so they could see if they had signs of the COVID-19 virus and they could be tested within the

university clinic. For staff and students that were not on campus procedures for getting tested and testing centres were provided via emails.

Important leadership and management traits during the COVID-19 pandemic era

During the COVID-19 pandemic everyone was affected, some staff members and students succumbed to the virus and some lost relatives. The important leadership traits during a catastrophe is for a leader to show empathy, sympathy, be available, supportive, reliable, approachable, and who has good communication skills. According to Thornton (2021), leadership practices in response to the COVID-19 pandemic catastrophe should include: noticing signs and responding correctly, show empathy, communicating frequently and effectively, leading collaboratively, and familiarity with the crisis environment. The COVID-19 pandemic has emphasised the prerequisite for person- and people-oriented leadership with a focus on, among others, caring, empathy and compassion (Lawton-Misra and Pretorius, 2021).

Leadership productivity/performance rating during the COVID-19 pandemic

An effective leader during a crisis is a leader that is available whenever he/she is needed and to be responsive. The effectiveness or productivity of a leader in crisis is determined by the team effectiveness. It is pointless for a leader to see himself as performing well when the followers have a different perspective; a leader needs to be a team player. Transactional theories which also referred as management theories concentrate on the role of management, planning, group performance and the interaction between leaders and followers (Amanchukwu, et al., 2015). They focus on a system of rewards and punishments (Charry, 2012; Amanchukwu, et al., 2015). Thus, transactional theories suggest that a leader is mandatory to formulate policies and procedures that clearly state or highlight all expectations of followers and the consequences (rewards and punishments) aligned with meeting or not meeting expectations (Lamb, 2013; Amanchukwu, et al., 2015).

5.5.4 Objective four: *To assess the organizational performance on attainment of the triple bottom line (social, economy and environment) post-COVID-19 pandemic.*

Capacitation of human capital with both monetary and non-monetary aspects for the benefits of both internal processes and customer experience to augment organizational performance on attaining the triple bottom line

For the attainment of triple bottom line, the School will need to have more social interactions like team building workshops for all stakeholders and be considerate as everyone was impacted by this pandemic. The School also needs to improve on student recruitment to generate more funding for the School and on obtaining more sponsors. The School should invest more on green chemistry to minimize waste generation and air pollution. When an organization adopts an idea of "Triple Bottom Line" processes, they try to amalgamate the goals of each bottom line to make a valued, profitable, and environmentally sustainable organization (Savit and Weber, 2006).

The significance of being a constant learning entity

The COVID-19 pandemic provided staff and students an opportunity to develop soft skills and a chance to review the teaching curriculum. So, the School needs to invest on IT infrastructure to meet up with skilled staff and students for modern ways of operation.

Since staff and students are now familiar with the blended teaching system the School needs to devise policies and procedures to manage staff working remotely and to conduct online assessment so students will not cheat. The COVID-19 pandemic opened doors to develop old-style professional information and skills enhancement in IT programmes (Sepulveda-Escobar and Morrison, 2020). COVID-19 has lubricated the wheels for technology to be embraced into higher education so that instruction can be communicated as conveniently as before (Khan, 2021). Online teaching forced academics to consume professional growth opportunities provided to them by their organizations (Donitsa-Schidt and Ramot, 2020).

Continual workshops offered to personnel for articulating their inputs on performance improvement

The best insight to enhance performance will be for the School to allow staff and students to be part of decision making, and involve them in implementation of new strategies that will be used in the new normal/post COVID-19 pandemic.

5.6 Limitations of the study

Since this was qualitative research it required one-on-one interaction for primary data collection (interviews). However, due to the COVID-19 pandemic, social distancing and lockdown restrictions did not allow the researcher to conduct face-to-face and in-person interviews so as to adhere to safety regulations and protocols. The interviews were conducted on online platforms that made it time-challenging due to exogenous hindrances and interruptions such as Eskom load-shedding. Furthermore, the researcher was not in a position to read body language as participants answered the research questions. The School of Chemistry and Physics has two centres which are in Durban (Howard College and Westville Campuses) and Pietermaritzburg so geographical constraints made it difficult as some participants were sceptical in participating in the study.

Setting up for a qualitative study it time-consuming and during interview discussions participants were often deviating from the main issue to be addressed. The study only focused on participants from Leadership and Management, it did not include general employees and students, while it is acknowledged that they were also affected by changes brought by the COVID-19 pandemic.

5.7 Considerations for future research

This study was only focused on interviewing employees in leadership position in terms of performance recovery due the impact of the COVID-19 pandemic. Thus, for future study the researcher could like to see a study that will include employees at all levels and students as they were all impacted by the COVID-19 pandemic. Also, the School of Chemistry and Physics does not operate in isolation from the rest of UKZN, so for future studies it should include College staff and university staff in central offices, since instructions come from the university to college and then down to schools.

5.8 Conclusion

This chapter started by reflecting on the previous chapter presentation and analysis of the study findings. It presented the integration of the study components, recommendations, limitations to the study, and considerations for future research and conclusions. The narration of the analysis and the application of various components of the dissertation has been undertaken in a coherent and cogent manner considering all the critical components thereto. The recommendations were suggested in line with the objectives of the study that were presented in Chapter one, the literature review and theoretical framework from Chapter two and the findings that were presented and discussed from the data generated and presented in Chapter four. The objectives were re-stated

before being used as headings to organise the discussion of the conclusions. Lastly, the recommendations that were drawn from the findings were outlined.

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6 APPENDIX 1: INFORMED CONSENT LETTER

Informed Consent Letter

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Dear Respondent,

Research Article
Researcher: Mr. NNB Ndlovu (031) 260 1093/[redacted]
Ndlovub44@ukzn.ac.za/203507443@stu.ukzn.ac.za
Supervisor: Dr. T Ngwenya (031) 260 7825
Ngwenyat2@ukzn.ac.za
Research Office: HSSREC Research Office (031) 260 8350/4557/3587 hssrec@ukzn.ac.za

Researcher, who is a student at the University of KwaZulu Natal, Graduate School of Business and Leadership (GSB&L), Mr NNB Ndlovu is inviting you to participate in the research project entitled: The Covid-19 Pandemic Impact on Performance Recovery within School of Chemistry and Physics at the University of KwaZulu-Natal: The primary aim of this study is to investigate the Covid-19 pandemic impact on performance recovery within School of Chemistry and Physics at UKZN.

You may opt to discontinue participating or withdraw from the study at any time with no negative consequence. There will be no monetary gain from participating in this research. Confidentiality and anonymity of records identifying you as a participant will be maintained by the researchers undertaking this research project who are from the Graduate School of Business and Leadership, UKZN.

If you have any clarity seeking and queries, questions or concerns about completing the research instrument or about participating in this study, you may contact one of the researchers.

The data collection will be conducted via Zoom/MS team and should take you approximately 30-45 minutes to complete. I hope you will take the time to complete this survey.

Sincerely

NNB Ndlovu [redacted] Date :18/08/2021

This page is to be retained by participant

CONSENT

I..... (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

*I hereby **consent / do not consent** to have this interview recorded.*

SIGNATURE OF PARTICIPANT DATE

....

7 APPENDIX 2: GATEKEEPER LETTER

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

31 August 2021

Mr Brian Ndlovu (SN 203507443)
Graduate School of Business and Leadership
College of Law and Management Studies
Westville Campus
UKZN
Email: Ndlovub44@ukzn.ac.za Ngwenyat2@ukzn.c.za

Dear Mr Ndlovu

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

"The Covid-19 Pandemic Impact on Performance Recovery within School of Chemistry and Physics at the University of KwaZulu-Natal."

It is noted that you will be constituting your sample by handing out questionnaires to School Management Committee, school board of studies, academic leaders, module coordinators and laboratory supervisors/technicians (Taking in account the regulations imposed during lockdown ie restrictions on gatherings, travel, social distancing etc. Zoom, Skype or telephone interviews recommended) on the Westville and Pietermaritzburg Campuses.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using the 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

[redacted]

Dr KE CLELAND: REGISTRAR

8 APPENDIX 3: INTERVIEW SCHEDULE

INTERVIEW SCHEDULE

Title: - The Covid-19 Pandemic Impact on Performance Recovery within School of Chemistry and Physics at the University of KwaZulu-Natal

Unit of Analysis	School of Chemistry and Physics, UKZN
Philosophy	Epistemological Orientation
Paradigms	Ontological &: - Interpretivism Dimension
Approach	Inductive Reasoning
Question Type	Semi Structured

Main research question 1

RQ 1.

What are the resource scenario provision that in your view are suitable and appropriate for post COVID-19 alignment?

RQ 2.

How would you describe the barriers in assimilating and aligning the resources required during COVID-19?

Main research question 2

RQ 3.

To what extent is the existing institutional recovery plan and implementation have best practices for post COVID-19 impact?

RQ 4.

What could be the acceleration of rebounding to pre –COVID 19 era that the leadership and managing entails?

Main research question 3

RQ 5.

What is the degree of leadership and management in terms of the strategic response, which is commensurate with COVID-19 influence?

RQ 6.

What are the leadership and management attributes that you can consider as a priority during the COVID-19 era for the organizational benefit?

RQ 7.

What are the innovative opportunities and challenges that leadership and management could consider to accelerate the pre-COVID-19 era in terms of personnel interaction?

Main research question 4

RQ 8.

How would you assess your effectiveness in the crisis environment posed by COVID-19?

RQ 9.

What would you aspire as the organizational performance imperative on the attainment of the triple bottom line (Social, economic & environment) post COVID-19?

RQ 10.

What are insights that can be offered to UKZN School of Chemistry and Physics to cope with this pandemic that you might also like to observe.?

9 APPENDIX 4: ETHICAL CLEARANCE

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

18 September 2021

Mr Nkosenhle Nhlanhla Brian Ndlovu (203507443)
Grad School Of Bus &Leadership
Westville Campus

Dear Mr Ndlovu,

Protocol reference number: HSSREC/00003193/2021
Project title: The covid-19 pandemic impact on performance recovery within School of Chemistry and Physics at the University of KwaZulu-Natal
Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 29 July 2021 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 18 September 2022.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)

/dd

Humanities and Social Sciences Research Ethics Committee
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0)31 260 8350/4557/3587 **Email:** hssrec@ukzn.ac.za **Website:** http://research.ukzn.ac.za/Research-Ethics
Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

10 APPENDIX 5: TURNITIN REPORT

MBA-Dissertation

ORIGINALITY REPORT

8%	3%	0%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of KwaZulu-Natal Student Paper	3%
2	Submitted to Mancosa Student Paper	1%
3	pdfs.semanticscholar.org Internet Source	1%
4	wrap.warwick.ac.uk Internet Source	1%
5	myassignmenthelp.com Internet Source	<1%
6	researchspace.ukzn.ac.za Internet Source	<1%
7	hdl.handle.net Internet Source	<1%
8	www.uq.edu.au Internet Source	<1%
9	etd.uwc.ac.za Internet Source	<1%

10	vital.seals.ac.za:8080 Internet Source	<1 %

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		